

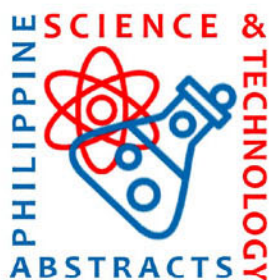
PHILIPPINE SCIENCE & TECHNOLOGY ABSTRACTS



**SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
INFORMATION RESOURCES AND ANALYSIS DIVISION**

Department of Science and Technology
Bicutan, Taguig City, Metro Manila
Philippines

JUNE 2016



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**Information Resources and Analysis Division
SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
Department of Science and Technology
Bicutan, Taguig City, Metro Manila
Philippines**

PSTA Production Team:

**ALAN C. TAULE
MARIBEL B. PALAFOX
ARJAY C. ESCONDO
MARIEVIC V. NARQUITA
ROBELYN M. CRUZ
JEFFREY T. CENTENO**

PHILIPPINE SCIENCE AND TECHNOLOGY ABSTRACTS

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January-June 2016

Published by:

Information Resources and Analysis Division
SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
Bicutan, Taguig, Metro Manila
Philippines

Acceptability of cassava (*Manihot esculenta*) siopao

Ostria, Michael Sam, Tanduyan, Serapion N., Kiamco, Ermelinda M.

Cassava is abundant in the Philippines and is only considered as supplemental food. Being abundant in Camotes Island, cassava was used as a dough ingredient of siopao. To find out its acceptability, experiments were set-up using 5 treatments: T0 (control) using all-purpose flour as dough filled with ground pork and other ingredients; T1 using 25% cassava flour mixed with 75% all-purpose flour; T2 using 50% cassava flour mixed with 50% all-purpose flour; T3 using 75% cassava flour mixed with 25% all-purpose flour; and T4 using 100% cassava flour. All the treatments were subjected to organolyptic tests in terms of texture, odor, flavor, palatability, and general acceptability. T4 was rated as having the best taste. As to texture and odor, T0 was rated highest, followed by T2. For palatability, T2 was rated highest followed by T4. For flavor, T4 was rated highest, followed by T2. For general acceptability, T4 was rated highest, followed by T0. ANOVA showed that there were no significant differences on the acceptability of cassava as a dough ingredient of siopao filled with ground pork and other ingredients in terms of flavor, odor, texture, palatability and general acceptability. (Author's abstract)

Keywords: *Agriculture, Manihot esculenta, Siopao, Acceptability, Cassava, Camotes Island*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 3

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

Adlay (*Coix lacryma-jobi* L.) field performance under different plant distances

Llemit, Glory May H., Aradilla, Agripina R.

The Philippine government through the DA-BAR spearheaded the search for a low-input crop that would address food security in the country. Adlay or Job's tears (*Coix lacryma-jobi* L.), which is a weedlike-crop was studied through adaptability and yield trials. Several menu of technology were studied and one of these was on the appropriate planting distance for the test crop. This study was conducted to evaluate the performance of Gulian Adlay variety as affected by different planting distances under

Musuan, Bukidnon condition. This study was laid out in strip plot in RCBD with the different row distances (R1-70cm, R2-80cm and R3-90cm) as the vertical factor and the hill distances (H1- 40 cm, H2-60 cm, H3-80m) as the horizontal

factor, in three replications at Musuan, Bukidnon from June 2012 to January 2013. Data gathered were analyzed using ANOVA and LSD was used for treatment comparisons. As per ANOVA, all parameters measured were not significantly influenced by row and hill distances, except on the number of grains per panicle, filled grains per panicle and grain yield per

hectare. A significant interaction between hills x row distance was observed on the grain yield of Gulian and it was noted that the best planting distance for this variety was 90cm x 80cm during wet season trial. **(Author's abstract)**

Keywords: *Agriculture, Adlay, Plantin, Distance, Hill, Row, Grains*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 44

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0003

Agricultural liming controls rhizome rot of ginger (*Zingiber officinale* Rosc.)

Dumale, Jr., Wilfredo A., Gapasin, Alexis O.

Ginger rot is now the most devastating disease of ginger. Chemical control was proven ineffective and costly, since the causal organism are easily transferred through seedpieces; and propagate very fast in acidic soils, which is a characteristic of ginger-growing areas.

We measured disease severity index (DSI) and disease incidence (DI) of ginger rot, and compared the rhizome yield, weights of marketable and non-marketable rhizomes in four soil pH levels: Treatment 1 (T1): original soil pH; 4.97. (control); Treatment 2 (T2): Soil pH adjusted to pH 6; Treatment.3 (T3): Soil pH 7; and Treatment 4 (T4): Soil pH 8, to investigate the potential of a liming program to control ginger rot.

DSI and DI were in the order T1>T2>T4>T3. DSI is strongly negatively correlated to soil pH ($R=-0.96$; $R^2=0.93$). DSI and DI were lowest when soil pH was maintained at neutral or near neutral (T3). However, both DSI and DI increased when the soil pH was raised from 7.0 to 8.0. Rhizome yield was in following order: T3>T4>T2>T1 with values 7.72, 6.96, 6.46, and 5.78 tons per hectare, respectively. The best yield was from plots ameliorated to soil pH 7 (T3). DSI is negatively strongly correlated with rhizome yield ($R=-0.96$; $R^2=0.93$), indicating that decreasing the disease severity had improved the rhizome yield.

The resulting proposed liming program could possibly solve the ginger rot problem of Nueva Vizcaya and the Philippines. **(Authors' abstract)**

Keywords: *Agriculture, Ginger rot, Disease severity index (DSI), Disease incidence (DI), Agricultural liming*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 50

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0004

Analyses of combining abilities and heterotic patterns of 11 yellow maize inbred lines

Magulama, Efren E., Sales, Emma K., Cadungog, Ramon C.

The knowledge on combining ability and heterotic patterns of maize germplasm is of great importance to maize breeders. The study was undertaken to determine the combining ability of 11 yellow maize inbred lines and to select parental lines that could be used for synthetic and hybrid variety formation. Eleven yellow maize inbred lines were used and crossed in diallel fashion to form 55 crosses. The entries were evaluated in alpha lattice with three replications. Significant differences in crosses were mainly due to specific combining ability effects constituting 78% for yield, 81 % for plant height, 69% for silking date, 78% for moisture content, and 55% for kernel number per ear, indicating the prevalence of non-additive effects conditioning the expression of these traits studied. SMYL 107 and SMYL 111 were good general combiners for grain yield and number of kernels per ear, respectively. Ten crosses were identified as promising single hybrids with yield potential of 8 to 9 Mg ha⁻¹ which were relatively better than the hybrid check variety. Of these 10 crosses, crosses SMYL 126 x SMYL 127 and SMYL 107 x SMYL 119 could be considered as potential single cross hybrids for commercial production. **(Author's abstract)**

Keywords: *Agriculture, General combining ability, Maize breeding, Inbreds, Hybrids*

USM R&D Journal, Volume No. 13 Issue No. 1, 88-94

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/1 2005

0005

Analysis of gamma ray-induced height related sorghum mutants

Ordonio, Reynante L.

Sweet sorghum (*Sorghum bicolor* L. Moench), is known for its high sugar content in the culm, which makes it an important bioenergy crop. One way to improve it is by understanding the genetic mechanisms controlling its various traits (e.g. plant height) by analyzing a library of mutants. Here, about 5000 seeds of sweet sorghum were subjected to 200 Gy of gamma radiation. The resulting M2 lines were screened for morphological mutants. As a result, some plant height-related mutants, namely I severe dwarf, 3 slender and I semi-dwarf were isolated.

The severe dwarf mutant (*br6ox*) showed twisted and irregular leaves that resembled known brassinosteroid (BR)-related mutants of rice. Consistent with the rice mutants, it had an abnormal skotomorphogenesis in the dark. Its height was also rescued by the application of brassinolide (BL), which suggested its deficiency in BR. After sequencing the mutant at different BR-biosynthetic genes, the gene *BR6ox*, which is involved in several steps in the production of BR, was found to be mutated. This finding was supported by *Agrobacterium*-mediated transformation.

The 3 slender mutants showed a striking resemblance to a rice mutant, *slrl*, which is defective in a DELLA protein that functions as a negative repressor of gibberellin (GA) signaling. As expected, sequencing the *SLRL* gene of the mutants revealed two alleles, both having a 2-bp deletion at the repression domain-coding region of the *SLRL* gene, which results in constitutive GA response and hyper-elongation in the mutants.

Lastly, the semi-dwarf mutant with brachytic culm was analyzed based on the assumption that it could be related to a previously reported agriculturally important *dw3* auxin mutant of sorghum. Analyzing the *DW3* gene of the mutant revealed a 5-bp deletion at the exon 1 of the mutant. This novel allele in sweet sorghum background has an important implication for agriculture since its mutation type is stable unlike the gene traditionally used for *dw3*-related semi-dwarf sorghums.

Overall, this study shows the usefulness of gamma ray for the systematic mutagenesis of sweet sorghum and the high correspondence of sorghum mutants to known rice mutants. **(Author's abstract)**

Keywords: *Agriculture, Sweet sorghum, Dwarf, Mutant, Gamma ray, Height*

Analysis of *Pyricularia grisea* populations from three different blast epidemics

**Bernardo, M.A. , Vera Cruz, C.M. , George, M.L.C. , Sridhar, R. , Reddy, J.N. , Dash, A.B. , Singh, U.D. ,
Mishra, D., Leung, H. , Sridhar,**

In spite of a great deal of research on the blast pathogen (*Pyricularia grisea* (Cooke) Sacc., an anamorph of *Magnaporthe grisea* (T.T. Hebert) Yaegashi & Udegawa) of rice and the disease itself, blast remains a serious constraint to rice production in areas with conducive environments and where susceptible cultivars are grown. There has been no effort to analyze the pathogen populations that occurred during the blast epidemics in India. Three of these epidemics occurred in the state of Orissa in the past decade. The first epidemic was in Banki, Cuttack District, in the 1997 wet season, during which traditional rice cultivars Laghubhutia and Golabondi were heavily infected by neck blast. The second epidemic, in the wet season of 2000 in Dhenkanal, Dhenkanal District, involved traditional cultivar Latamohu and high-yielding semidwarf Dhala Heera. They got severely infected by leaf blast. During the third epidemic (2002 wet season, Ganjam District), high-yielding variety Swarna grown in farmers' fields was severely infected by leaf blast.

(Author's abstract)

Keywords: *Agriculture, Pyricularia grisea, Magnaporthe grisea, Rice*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 22-24

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0007

Arbuscular mycorrhizal fungi associated with upland rice in a rotational shifting cultivation system

Rerkasem, B. , Yimyam, N. , Rama Youpensuk, S., Dell

A rich diversity of arbuscular mycorrhizal (AM) fungi has been found associated with pada (*Macaranga denticulata* Muell. Arg.), a pioneer tree species used for fallow enrichment in rotational shifting cultivation in the mountainous region of mainland Southeast Asia (Rerkasem et al 2002, Yimyam et al 2003, Youpensuk et al 2004). Association with AM fungi greatly enhanced nutrient uptake in pada growing in an acidic (pH 4.9) and infertile (4 ppm P by Bray II) soil. When N was not limiting, pada plants with AM fungi were found to take up five to six times as much N, P, and K as those without the symbiosis. This paper reports on the diversity of the AM fungi associated with the roots of upland rice growing in a rotational shifting cultivation system at Tee Cha village, Mae Hong Son, northern Thailand (19° 78' N, 93° 84' E, altitude 800 m). **(Author's abstract)**

Keywords: Agriculture, Arbuscular mycorrhizal fungi, Rotational shifting cultivation system, Rice

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 22-23

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0008

Assessment of fungal diseases in OPV corn (*Zea mays* L.) applied with biofertilizer

Marin, Mellprie B., Alovera, Revelieta B.

Application of biofertilizers not only minimize fertilizer loss and maximize nutrient uptake but also reduce incidence of pests and diseases of crops. Hence, a study with the objective of attaining good yield performance and fungal disease resistance in corn (Open-Pollinated Variety) was conducted to determine the effective biofertilizer for recommendation to farmers.

The study was laid-out using Randomized Complete Block Design with three (3) replications at the Agricultural Experiment Station, CMU, Musuan, Bukidnon. The four (4) brands of biofertilizers used were: Exquisite DB, Biospark™, X-Tekh, and Wellgrow.

Disease assessments show that there are only three (3) major fungal diseases identified during the Wet Season, namely: Stenocarpella Leaf Blight (caused by *Stenocarpelia macrospora*), Curvularia Leaf Spot (due to *Curvularia lunata*) and Corn Rust (due to *Puccinia polysora*). CMU Var 12 was susceptible to Curvularia Leaf Spot. Plants applied with Exquisite DB had a mean of 65.94%. However, plants were Moderately Resistant to Stenocarpella Leaf Blight having 27.81%, as the highest mean, for plots applied with Exquisite DB. All plants were Resistant to Corn Rust, however, the lowest mean (9.42%) was exhibited by plants applied with X-Tekh.

Analysis of variance indicated no significant difference among treatment means for Stenocarpella Leaf Blight and Corn Rust diseases while a significant difference was noted for Curvularia Leaf Spot. For yield, there was no significant difference among the treatment means but of the four biofertilizers applied, highest Adjusted Grain Yield (kg/ha) was recorded from plots applied with Exquisite DB with an average yield of 4,805.56 kg/ha. **(Authors' abstract)**

Keywords: Agriculture, *Stenocarpella macrospora*, *Curvularia lunata*, *Puccinia polysora*, OPV, Resistance

0009

Basal N fertilization increases productivity of rainfed upland rice

Singh, R.K., Singh,

Under rainfed upland situations, rice grows in an environment prone to N losses due to volatilization and runoff. Farmers in eastern India hesitate to invest more in N inputs because of stress (biotic and abiotic)-related risks. Earlier studies (Sinha et al 1994, Singh et al 2002) recommended N application in two splits (20 and 40 d after rice emergence) in upland rice. We compared the response of upland rice variety Vandana to two split N applications: two N splits with basal and two N splits only during four consecutive wet seasons (2000-03).

The on-farm experiment used a randomized complete block design involving 11 farmers' fields under rainfed conditions in villages Khorahar, Handio, and Sakhia in Hazaribag, Jharkhand, India. The 11 fields were treated as replications. Soil in farmers' fields varied from silt loam to sandy loam, with pH 5.9-6.1, 0.22-0.39% organic C, 2.67-5.31 ppm double acid-soluble P, and 131-176 ppm available K. Fields were plowed once in the off-season (December-April) and three times before seeding. The recommended levels of P (13 kg ha⁻¹) and K (16 kg ha⁻¹) were applied in the form of single superphosphate and muriate of potash, respectively. Short-duration (95 d) variety Vandana was used as the test variety. **(Authors' abstract)**

Keywords: *Agriculture, Volatilization, Runoff, Biotic, Abiotic*

0010

Between-habitat movement of rice arthropods and its ecological role

Zhang, Wenjun, Qi, Ya

Natural enemies of rice insect pests harbored in heterogeneous habitats around rice fields have been identified as the natural agents for sustainable rice pest management for a long time (Way and Heong 1994). However, the movement of rice arthropods must be investigated to analyze the sensitivity of the natural enemies in tracking insect pests. In this study, the movement of rice arthropods along a rice transect is detected by using an algorithm for detecting boundaries of ecological transects in order to find and confirm mechanisms for natural and sustainable control of rice insect pests by their natural enemies.

A transect along the east-west direction and traversing 6 ha of rice fields and uncultivated habitats on the IRRI upland farm was established (Fig. 1). Transect sites were spaced at approximately 5-m intervals and were sampled for arthropods and vegetation every 2 wk in the growing season, using a suction sampler with a 0.16-m² enclosure and pin-frame sampler, respectively. Edges in the landscape were distinguishable as roads (o), borders between rice and natural vegetation (r-w), rice bunds (b), and rice-rice bund-rice (rbr), etc. Laboratory sorting treated different life stages (immatures, adults) separately. Data from the records were stored as a site-by-taxa matrix. Nine transects were obtained for arthropod categories and sampling dates (predaceous, parasitoid, and herbivorous arthropods, each with three transects at three sampling dates). **(Authors' abstract)**

Keywords: *Agriculture, Rice arthropods, Algorithm, Predaceous, Parasitoid, Herbivorous arthropods*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 43-45
2004,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 29/2 2004

0011

Bioactives and proteins in indigenous edible Mindanao ferns as an alternative food source

Mendez, Rainear A., Villalobos, Ann P., Lagumbay, April Joie D., de la Cruz, Reggie Y., Amoroso, Victor B.

Many Filipinos suffer from cancer, atherosclerosis, and other degenerative diseases which may be due to the high concentration of free radicals from pollutants and to the type of food we eat. Ferns in the Philippines had been used by native people as food, tea and medicine for a long time. We conducted a study to determine the protein content and antioxidant potential of our ferns to demonstrate their health and wellness benefits for possible reintroducing into the Filipino diet. Ten species of indigenous edible ferns from Mindanao were determined using the Bradford assay to have protein content ranging from 0.08 to 4.39 mg/g wet weight and antioxidant activity by the DPPH assay as high as 83% that of ascorbic acid or at 143 to 588 ORAC units/g wet weight. Of these ten fern species, *Marsilea crenata* (upat-upat) gave the highest protein content and antioxidant activity per wet weight with *Cyathea contaminans*, a tree fern, having

the lowest protein content/wet weight. Phytochemical profiles were prepared by Thin Layer Chromatography (TLC). The relative component proteins by SDS–PAGE indicated proteins with molecular weights ranging from 19 – 92kDa, each with only one subunit. The profiles among the ten ferns were similar and differences in the band intensities and the integrity of the proteins were maintained . We established a pteridogarden of these ten ferns in the University Fernery with mass production in the Mt. Musuan Botanical and Zoological Gardens. As an output of the study, we prepared fern gourmet where staff and caterers participated in a contest evaluated by a sensory panel. As part of our extension work to educate the public of the health and wellness benefits of ferns in the diet, we held seminars and trainings, and prepared brochures on the propagation of these ferns and recipes for the fern gourmets. **(Author's abstract)**

Keywords: *Agriculture, Pteridogarden, Ferns, Anti-oxidants, Proteins, Phytochemicals*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 7

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0012

Bioinformatics and crop information systems in rice research

McLaren, Graham , Bruskiewich, Richard, Metz, Th

The triple revolution in biotechnology, computing science, and communication technology has stimulated informatics applications in rice research. This review specifically covers the impact of biology-focused informatics ("bioinformatics") in rice research on the discovery of genotype-phenotype relationships for priority traits, using diverse data sources.

Bioinformatics is a scientific discipline lying at the intersection of biology, mathematics, computing science, and information technology. Bioinformatics can be discussed within the following frameworks:

- Applications: What kind of research questions can be answered using bioinformatics?
- Databases: What data sources and applicable semantic standards (ontology1) are pertinent to answering these research questions?
- Protocols, algorithms, and tools: What analysis protocols, computing algorithms, and software tools can be applied to answer these research questions?

- Infrastructure: What hardware, software, and networking systems are required to support the above?

This review will focus primarily on germplasm-based crop research, although many of the same tools can be applied to current problems in soil microbiology, entomology, and other areas of crop research. Also, some of the design principles of bioinformatics information systems will be useful for other research fields, such as geographic and agronomic information systems. **(Authors' abstract)**

Keywords: *Agriculture, Biotechnology, Computing science, Communication technology, Genotype, Phenotype*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 5-12

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0013

Breeding for virus resistance in squash (*Cucurbita moschata* Duchesne ex Poir.)

Maghirang, Rodel G., Dolores, Lolita M., Oraye, Claudette D., Alcachupas, Araceli L.

Genetic resistance is the simplest, most effective and efficient approach in limiting losses to virus diseases in squash such as Squash Leaf Curl Virus (SLCV), Zucchini Yellow Mosaic Virus (ZYMV) and Papaya Ringspot Virus (PRSV). Since local varieties are generally susceptible to virus diseases, breeding lines from foreign sources with resistance to these viruses can be crossed with the local accessions in order to recombine the desirable traits from the two groups of germplasm. Hence, this paper presents results of the breeding efforts we are doing in order to come up with virus resistant varieties. The first year of our breeding activities were devoted to evaluation of germplasm and hybridization between the foreign (breeding lines from the Asian Vegetable Research and Development Center identified to be resistant to viruses) and local (susceptible) accessions. Crosses were done based on the result of initial field trial and on the initial and confirmatory screening of ZYMV and PRSV resistance under greenhouse conditions. For the second and third year of our breeding activities, generation advance and backcrossing were done. The segregating lines were evaluated and the selected plants were selfed or sibbed for generation advancement. Selection between lines and selection within the lines were conducted. Nine (9) lines were selected based on resistance to viruses in the field, earliness, good eating quality, fruit thickness and fruit weight). The selected breeding lines will be evaluated further both in the field and greenhouse. **(Author's abstract)**

Keywords: *Agriculture, Squash breeding, Virus resistance, Cucurbita moschata Duchesne ex Poir.*

0014

**Bromelain powder recovery of commercially grown pineapple plants at Valencia City,
Bukidnon, Philippines**
Valleser, Vences C.

Bromelain is a proteolytic enzyme present in the different parts of a pineapple plant. Bromelain extraction gives serious attention to one of the pineapple exporters from Valencia City, Bukidnon for its economic importance especially in the pharmaceutical market. Preliminary investigation was conducted to determine the bromelain powder recovery from different growing stages of two cultivated pineapple varieties. The treatments were: T1) 19-month old 'Sensuous' pineapple plant stump, T2) 14-month old 'MD2' pineapple ratoon sucker, T3) 34-month old 'MD2' pineapple plant and T4) 19-month old 'MD2' pineapple plant. Pineapple stump juices were extracted using the juice extractor prototype from Taiwan. The extraction of bromelain powder was performed at the Biotechnology Researches Services located at Alanib, Lantapan, Bukidnon. Highest amount of bromelain powder (1.15 g bromelain powder/kg stump) was recovered from 19-month old 'Sensuous' pineapple plant stump. The 34-month old 'MD2' pineapple plant had a 1.13 g/kg recovery, whereas, 0.9 g bromelain/kg stump was extracted from 19-month old 'MD2' pineapple plant. The lowest bromelain recovery of 0.7 g/kg was from 14-month old 'MD2' pineapple ratoon sucker. **(Author's abstract)**

Keywords: *Agriculture, Bromelain, Bukidnon, Pineapple, MD2 Pineapple, Pineapple stump*

0015

Characteristics of St. Croix progenies
Pastor, Corazon Diana A., Balneg, Benito B., Sair, Roseminda R.

Sheep is the least developed among the livestock industry. Smallholder farmers raise it to supplement their family income. The low productivity of sheep can be attributed to poor genetic quality, poor nutrition, and poor management practices. Genetic quality can be improved through breeding using improved breed. St. Croix has been reported as adapted to tropical condition, fertile, and resistant to parasites. It has no horn, long tail and is pure white in color. This study was conducted to evaluate the reproductive performance of the parental stocks using their offspring. Two groups of ewes and two purebred St. Croix rams were used. Flock mating system was practiced. All animals were fed by combined grazing and cut and carry feeding system. F1 lamb had an average birth weight of 2.34 kg, average weight at 8 months of 17.02 kg, sex ratio of 1.48, twinning percentage of 25.5% and percent mortality of 8.75%. The color of the lamb produced varied from pure white, pure brown, 50% white and 50% brown, 90% black and 10% white. Male lamb produced had horns and all the lamb produced had long tails. Physical characteristics of the male parent dominantly showed in the progenies like color and the size of tail. **(Author's abstract)**

Keywords: *Agriculture, Lamb, Sheep, St. Croix, Progeny, F1*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 26

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0016

Chemical properties of lateritic soil and yield of rice as influenced by addition of fly ash

Chandrasekaran, A. , Subramoniam, S

Fly ash is a waste product from thermal power stations. It has no economic use and it is a pollution hazard. Coir pith is an organic waste and rice husk ash is a rare waste product from rice mills. A study was undertaken to assess the use of these waste materials in improving the lateritic soils of Kanyakumari District, Tamil Nadu, India, under irrigated rice cultivation. In this area, rainfall is more than 1,500 mm. Because of slow soil reaction during rice cultivation, most of the macroand micronutrients are not in the available form, resulting in low productivity. A field experiment was conducted in a farmer's field. The lateritic soil has a pH of 4.79. Rice variety ADT37 was used. Different combinations of fly ash (10 and 15 t ha⁻¹) with different doses of lime, rice husk ash (12.5 t ha⁻¹), raw coir pith (12.5 t ha⁻¹), and coir pith compost (12.5 t ha⁻¹) were tried in a randomized block design with three replications. Initial and postharvest soil samples were collected and their chemical properties analyzed (Jackson 1973). Grain and straw yields were also recorded. **(Author's abstract)**

Keywords: *Agriculture, Lateritic soil, Yield of rice, Fly ash*

0017

Community based forest management (CBFM): making th most of non-timber forest products (NTFPs)

Ella, Arsenio B., Domingo, Emmanuel P., Samiano, Florena B.

The project has generated data and information on the availability of non-timber forest products (NTFPs) in 9 Community-Based Forest Management (CBFM) areas studied; and their suitability for handicraft production.

The seminars/trainings held on NTFPs collection, processing, utilization and marketing for handicrafts significantly affected the people's way of life by giving them livelihood at sustainable harvest level for NTFPs. The upgrading and innovative skills these farmers obtained led them to develop new products from alternative raw materials by NTFP collectors and handicraft producers. Some People's Organizations have already market of their woven products indicating of bright hope for steady income among farmers and forest dwellers ill the rural communities.

Installations of mechanical equipment to press leaves of selected NTFPs prior to their weaving had already been recommended to 3 rural communities with strong support from Local Government Units (LGUs) and other cooperators.

The positive results of the project would somehow be a big boast to the growth of handicraft industry in the Philippines. **(Authors' abstract)**

Keywords: *Agriculture, Non-timber forest products (NTFPs), Community based forest management (CBFM), Handicraft, Livelihood, Sustainable*

0018

Comparative characterization of in situ *Oryza rufipogon* Griff. populations in Lakes Apo and Napalit, Bukidnon

Balos, Jenalyn L., Jamago, Joy M.

wild rices are valuable gene sources for rice breeding. Four of the 25 wild *Oryza* species can be found in the Philippines; one of these is *O. rufipogon* which grows around Lake Apo (~373 meters above sea level, masl), Bukidnon, reported in 1961. It is believed to be one of the progenitors of *O. sativa* and has valuable traits for cold, drought and salinity tolerance, as well as resistance to tungro virus. On February 2012, sightings of *O. rufipogon* in Lake Napalit (~2,824 masl), Bukidnon were confirmed by faculty and student researchers of Central Mindanao University. This study compared the morpho-ecological status of *O. rufipogon* populations around the two lakes. Ten 1 m x 1 m quadrants with *O. rufipogon* clusters were established per lake. Initial findings from November 2012 to January 2013 showed that Lake Apo populations (LAP) have longer leaves (35.10 cm), culms (123.58 cm), and awns (65.19 cm) than those in Lake Napalit (LNP): 20.70 cm leaf, 70.55 cm culm, and 49.37 awn lengths. However, leaf width (0.85 cm LAP, 0.84 cm LNP), panicle length (35.90 cm LAP, 37.49 cm LNP), percent panicle shattering (71.99% LAP, 68.33% LNP), and number of basal primary branches per panicle (7 LAP, 6 LNP) were comparable. Rainfall was higher in Lake Napalit (73.50 mm) than in Lake Apo (26.33 mm). Temperature was relatively cooler in Lake Napalit (23.5°C) than in Lake Apo (25.3°C). Variable characteristics between the two populations will be potentially useful in rice breeding. **(Author's abstract)**

Keywords: *Agriculture, Wild rice, Bukidnon, Rice breeding, Oryza rufipogon, Plant genetic resources, Lake Apo, Lake Napalit*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 14

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0019

Comparative study of different techniques in eradicating virus infected abaca (*Musa textilis* Nee) plants in Region XI

Macarayan, Olympio B.

A study conducted to compare the effectiveness, efficiency and cost of different techniques in eradicating virus infected abaca plants at Manambulan Fiber Research and Seed Station, Fiber Industry Development Authority, Manambulan, Tugbok District, Davao City.

It was a single factor experiment involving five treatments and arranged in Randomized Complete Block Design (RCBD) replicated four times.

Results revealed that stumps or corms of virus infected abaca undergone manual dismantling while others were treated with Glyphosate and 2, 4-D impregnated in bamboo sticks at 1.5 ml per stick and 2.0 ml per stick respectively reached complete damage from fourth to fifth week of observations. Which means, eradicating diseased abaca plants by manual and the use of chemically impregnated bamboo sticks have the same effect. The use of direct treatment of Glyphosate and 2, 4-D through soft drink straw at 1.5 ml and 2.0 ml per stump respectively did not show good results instead a number of recovering regrowths were observed.

Although using manual method, Glyphosate and 2,4-D treatment through bamboo stick impregnation have the same effect in eradicating virus infected abaca plants, manual method appears to be more expensive compared to the other techniques. **(Authors' abstract)**

Keywords: *Agriculture, Abaca, Disease eradication, Virus, Manual method, Impregnated, Glyphosate, 2,4-D, damage, Stumps*

USM R&D Journal, Volume No. 13 Issue No. 2, 172-177

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0020

Confined field test of pro-vitamin A enriched 'golden rice' event GR2-R introgressed lines of IR64 and PSB Rc82

Alfonso, Antonio, Somera, Jean, Espejo, Emilie, Miranda, Ronalyn, Avellanoza, Eleanor, Tabano, Dindo, Nazareno, Eric

The Golden Rice 2 event "R" (GR2-R) was introduced from the donor Kaybonnet harboring the GR2-R locus into two popular Philippine varieties, IR64 and PSB Rc82. IRRI scientists performed the preliminary work in the Philippines using market-assisted backcrossing and line selection. Selected progenies and introgression lines were tested under contained and confined conditions at IRRI. In this study conducted by OhilRice, a total of 80 introgression lines derived from these crosses were subjected to confined field testing (CFT) with the approval and under the regulatory supervision of the Plant Industry, Department of Agriculture. The CFT involved 38 introgression lines of IR64 at BC3F3. Evaluation focused on the following parameters : morpho-agronomic and post-harvest characteristics, reaction to pests and diseases, genetic similarity to the recurrent parent based on 373 genome-wide SNP markers , and total carotenoid content after two months of storage at ambient temperature. Among the IR64-GR2R lines, 32 were selected as closely resembling the wild

type IR64 based on phenotypic acceptability and morpho-agronomic characteristics. The selected IR64-GR2R lines had the following characteristics: 75 to 126 cm plant height, 80 to 86 heading days, 101 to 106 maturity days, and 5.17 to 11.20 µg/g total carotenoid content, as compared to 7.65 µg/g in Kaybonnet and 0.42 µg/g in IR64. Among the PSB Rc82-GR2R lines, 13 were identified as similar to wild type PSB Rc82, having 92 to 132 cm plant height, 81 to 86 heading days, 104 to 111 maturity days, and 80.5 to 90.5% recurrent parent genome recovery. Based on these results, selected lines will be subjected to generation advance, phenotypic selection and multi-location field evaluation.

(Author's abstract)

Keywords: *Agriculture, Golden rice 2, Confined field test, Vitamin A deficiency, Beta carotene, SNP genotyping*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 11

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0021

Contribution of on-farm assessment of improved varieties and crop management to yield of deepwater rice

Singh, B.N. , Gho

Characterizing the deepwater rice-growing environment under a global area of 9 million ha vis-à-vis improved rice production technology can considerably enhance production and productivity (Setter et al 1998). Two prime constituents of this production technology-improved varieties and crop management-appear to be major contributors to enhanced grain yield. Improved crop management practices are needed for improved varieties to realize their yield potential (Ghosh 2002). **(Author's abstract)**

Keywords: *Agriculture, Crop management, Deepwater rice, Panisahara*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 38-39

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0022

Crop yield, disease incidence, and insect pest attack in relation to N dynamics in rice

Singh, R. | Singh, J. | Rekhi, R.S. | Goel, R.K., Singh, R. | Singh, J. | Rekhi, R.S. | Goel,

The decline in rice yield on the Indo-Gangetic plains is a matter of great concern (Abrol et al 2000). We evaluated available soil N, plant N content and uptake during rice growth, and incidence of major diseases and insect pest attacks in an ongoing long- term experiment (since 1982) at the PAU farm (30° 56'2 N and 75° 27'2 E). The experimental site is characterized as semiarid subtropical, with soil pH of 8.1, electrical conductivity of 0.18 dS m⁻¹, 0.21% organic carbon, 3 kg NaHCO₃-extractable P, and 93 kg NH₄ac-extractable K ha⁻¹. The fertilizer treatments were a control; application of recommended optimum (100%) and supra-optimal (150%) amounts of N, NP, NPK, NPKZn; half N through *Sesbania aculeata* green manure (GM) and the rest through urea; and one-third N through farmyard manure (FYM) and the rest through urea plus recommended amounts of PKZn. The recommended amounts of N, P, K, and Zn were 120, 30, 30, and 3 kg ha⁻¹, respectively. Nitrogen was applied in three equal amounts at transplanting and at 3 and 6 wk after transplanting, whereas all of P and K were drilled at puddling. The experiment was laid out in a randomized block design with six replications. **(Author's abstract)**

Keywords: *Agriculture, Sesbania aculeata, Green manure (GM), N dynamics*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 65-67

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0023

CSR23: a new salt-tolerant rice variety for India

Gregorio, G.B. , Singh, R.K., Mishra,

A vast area of sodic soils in India lies in the provinces of Uttar Pradesh and Haryana, whereas coastal saline soils are spread throughout the coastline of India running through Maharashtra, Gujarat, Kerala, Tamil Nadu, West Bengal, and Pondicherry. Most of these areas lie barren or produce low yields. However, these same areas can be transformed into arable and highly productive land if suitable salt-tolerant crop varieties are available. The rice crop is the obvious choice in coastal and sodic areas as it can withstand standing water and also sustain salt stress. **(Author's abstract)**

Keywords: *Agriculture, CSR23, Salt-tolerant, India*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 16-18

2006,

0024

Detection and isolation of *Fusarium* spp. causing degnala disease in water buffaloes

Belotindos, Lawrence P., Abes, Nancy S.

Degnala disease is an endemic, more or less fatal disease of water buffalo. This disease characterized by necrosis, followed by gangrene of body appendages. The animal becomes weak and emaciated, but also becomes crippled, causing enormous economic losses due to decreased productivity and functional capacity in the form of reduced milk production and draught capacity. This disease is believed to be caused by mycotoxicosis resulting from ingestion of contaminated feeds with *Fusarium* spp. which are opportunistic nosocomial pathogen often fatal invasion mycoses. A total of three animals were found suffering from necrotic lesions on feet and between digits. Moreover, gangrenous ulceration of the earlobes and tail rot were observed. This study aimed to identify the causative agent by performing differential diagnosis, such as ELISA and conventional serological tests for viral and bacterial diseases, as well as plate culture for fungal isolation. The result showed negative from various tests. However, a *Fusarium* species was isolated from the rice straw fed to water buffaloes and clearly identified by staining and direct microscopic exam. The *Fusarium* species was recognized based on colony and presence of multiseptated sickle-shaped conidia. This findings confirmed the presence of Degnala disease caused by the mycotoxicosis produced by *Fusarium* spp. It is recommended to avoid feeding mouldy rice straw in buffalo. However, further field and laboratory investigation are needed to understand the mycotoxin involved in producing Degnala disease. (Author's abstract)

Keywords: *Agriculture, Degnala disease, Fusarium spp., Water buffalo, Mycotoxicosis*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 24

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0025

Detection of caprine arthritis encephalitis (CAE) virus in blood samples by loop-mediated isothermal amplication (Lamp) assay

Balbin, Michelle M., Belotindos, Lawrence P., Gutierrez, Charito, Abes, Nancy S., Mingala, Claro N.

Caprine arthritis encephalitis (CAE) virus, of the subfamily Lentivirus of the Retroviridae causes persistent disease which is characterized by polyarthritis and mastitis in adult goats and progressive paresis (leukoencephalomyelitis) in kids. This is transmitted mainly through ingestion of virus-infected colostrum and by direct contact. A loop-mediated isothermal amplification (LAMP) assay was developed for the detection of caprine arthritis encephalitis (CAE) virus using blood samples. Species-specific primers amplifying the *gag* gene of the proviral region were used to detect CAE virus. The LAMP reaction result was obtained 60 minutes after incubation at a constant temperature of 63°C in a heating block. Resulting amplicons of the assay were visualized by addition of SYBR green dye after the reaction and by agarose gel electrophoresis. The sensitivity of LAMP assay was evaluated by comparing its result with nested-PCR. Based on the experiments, the result of the assay indicates a rapid and sensitive test for the detection of CAE virus. **(Author's abstract)**

Keywords: *Agriculture, Loop-mediated isothermal amplification (LAMP), Caprine arthritis encephalitis (CAE) virus, Proviral region, Nested-PCR*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 18
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0026

Detection of quantitative trait loci for leaf chlorophyll content at maximum tillering

Kamiuntan, H. , Lin, D.Z. , Dong, Y.J. , Terao, H., | Ogawa, T. , Matsu

Leaf chlorophyll content (LCC) is an important physiological character, being closely related to photosynthetic ability in rice. In this study, 182 recombinant inbred (RI) lines derived from a backcross of Koshihikari (japonica)/Kasalath (indica)//Koshihikari, kindly provided by the National Institute of Agrobiological Resources, Japan, were used to identify quantitative trait loci (QTLs) for LCC at the maximum tillering stage of rice. The seeds of 182 RI lines, along with those of both parents, Koshihikari and Kasalath, were sown on 10 April 2004. After 30 d, seedlings were transplanted to the experiment farm of Miyazaki University, using a single seedling per hill and 10 × 15-cm spacing. The recommended cultural practices were followed. At maximum tillering stage, 30 newly developed and healthy leaves for each line were selected for LCC measurement with two replicates using a chlorophyll meter (SPAD-502, Minolta Co., Ltd., Japan). Average values for each line and a subset of 162 restriction fragment length polymorphism (RFLP) markers (www.rgrc.dna.affrc.go.jp/jp/data/KK-BIL182-20030506.xls) were used for QTL statistical analysis. The QTL analysis was performed by Windows QTL Cartographer software version 2 (Wang et al 2003) through the composite interval mapping method. A locus with LOD >2.0 was to be declared a putative QTL. In addition, the additive effects and the percentage of variation explained by an individual QTL were also estimated. **(Author's abstract)**

Keywords: Agriculture, Leaf chlorophyll content (LCC), Quantitative trait loci (QTLs), Koshihikari (japonica), Kasalath (indica)

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 16-17

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0027

Detection of *Xanthomonas oryzae* pv. *Oryzae* by NCM-ELISA in naturally infected rice plants

Suryadi, Y., Kadir,

Bacterial blight (BB) caused by *Xanthomonas oryzae* pv. *Oryzae* (Xoo) is an economically important bacterial disease (Mew 1987). Effective control techniques need to be developed to improve crop production in the country. The spread of BB occurs through plant debris, weeds, water, and seed. Hence, early detection and identification of the pathogen are crucial in an integrated disease management program. This can be done through seed health testing and plant quarantine.

(Author's abstract)

Keywords: Agriculture, *Xanthomonas oryzae* pv. *Oryzae* (Xoo), Enzyme-linked immunosorbent assay, *Ralstonia solanacearum*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 34-35

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0028

Detrimental effects of niclosamide 250EC at preseeding in direct-seeded rice culture

Desamito, M.S. , Joshi, R. C. , Martin, A. R. , Sebastian, L. S., Coupland,

During the field evaluation of the potential low-dose metaldehyde formulation against golden apple snail (GAS), *Pomacea canaliculata* (Lamarck), we consistently observed that only microplots treated with niclosamide 250EC had adverse effects on the growth and establishment of direct-seeded rice (DSR). This prompted us to verify field observations under screenhouse tests at the PhilRice-Central Experiment Station in Nueva Ecija, Philippines. Commercial synthetic molluscicides such as niclosamide 250EC and metaldehyde are used among lowland irrigated transplanted rice farmers in Asia. However, niclosamide 250EC is preferred over metaldehyde formulations because of its "quick-kill" action on GAS. Unfortunately, niclosamide 250EC is lethal to nontarget beneficial water-borne organisms such as frogs, fish, etc. Hence, in the future, it is important for rice farmers to practice ecologically sustainable GAS management options that are safe to the rice crop, their health, and their environment. **(Author's abstract)**

Keywords: *Agriculture, Pomacea canaliculata (Lamarck), Golden apple snail (GAS), Direct-seeded rice (DSR), Niclosamide 250EC*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 36-37

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0029

Development of a technology to increase the productivity of tugui (*Dioscorea esculenta*)

Legaspi, Noralyn B., Malab, Beatriz S.

Yams (*Dioscorea*) play a vital role as source of human food in the country especially in times of food scarcity. *D. esculenta*, locally known as tugui, is one of two species which are of economic importance in the Ilocos Region. Tugui thrives well in marginal areas and is considered as cash crops by upland farmers. The lack of a recommended high-yielding and acceptable variety and a production technology however, limits the productivity of farmers to only about 2.6-3.3 t ha⁻¹. In an effort to increase productivity, a series of research projects were conducted to identify promising accessions that could be recommended to farmers and improve the existing cultural management practice. After three years of evaluation both on-station and on-farm, six accessions (Accessions # 9, 3, 2, 1, 4, and 15) were identified, with mean yields ranging from 13.33 t ha⁻¹ to 14.54 t ha⁻¹. These accessions are also highly acceptable to consumers. In terms of crop management, the application of two tons organic fertilizer per hectare was found to sustain high yield and maintain the residual fertility of the soil after continuous cropping, thus shifting cultivation is avoided. In addition, the use of bigger setts (40-90 g) was found to significantly increase yield by 138% as compared to the farmers' practice of using small setts. Planting the identified promising accessions, coupled with improved cultural management practices

increase the productivity of tugui. With this, the marginal/idle areas can be made productive and be used to support the government's program on food security. **(Author's abstract)**

Keywords: *Agriculture, Yam, Marginal, Accession, Dioscorea, Tugui*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 5

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0030

Development of loop-mediated isothermal amplification (LAMP) protocol for rapid detection of white spot syndrome virus (WSSV) in selected sites of the Philippines

Nicolasora, Amalea Dulcene, Caipang, Christopher Marlowe, Maralit, Benedict A., Maningas, Mary Beth B.

Shrimp disease outbreaks in the Philippines have remained uncontrollable because disease diagnostics is inaccessible to most shrimp farmers. A new technology known as loop-mediated isothermal amplification (LAMP) is a practical alternative for rapid detection of viral and bacterial pathogens. This assay is performed under isothermal condition using four sets of primers that target six distinct regions in the DNA template. In this study, loop mediated isothermal amplification protocol for detection of WSSV was developed which we hope to bring to the farmer's level. Asymptomatic *Litopenaeus vannamei* samples were collected from selected sites (Iloilo, Batangas, Bulacan, Laoag, and Leyte) were tested for WSSV infection using LAMP. Results showed that samples from Iloilo, Batangas, Bulacan, and Leyte were positive for WSSV infection, while shrimps collected from Laoag were found to be WSSV-free. LAMP assay was performed along with the conventional PCR method for further confirmation and detection. Temperature range of 55p C - 68p C for WSSV detection incubation period of 45 minutes to 1 hour were shown to be viable conditions for the LAMP assay. The detection of WSSV using LAMP was found to be 10 times more sensitive than PCR. These results suggest that LAMP protocol can serve as a good alternative for the conventional PCR due to its higher sensitivity, speed, and practicality because it does not need an expensive thermal cycler. This can make pathogen detection accessible to small scale shrimp industries in the country. **(Author's abstract)**

Keywords: *Agriculture, Loop-mediated isothermal amplification (LAMP), White spot syndrome virus (WSSV), PCR, Litopenaeus vannamei, Shrimp*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 19

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

Development of TGMS lines and two-line rice hybrids through a shuttle breeding program between IRRI and China

Virmani, S. S. | Mou, Tongmin | Xu, Junying | Li, Chunhai | Sanchez, D. L., Virmani, S. S. | Mou, Tongmin | Xu, Junying | Li, Chunhai | Sanchez,

Based on the discovery of photoperiod-sensitive genic male sterile (PGMS) rice mutant Nongken 58S (Shi 1981), rice scientists in China began work on the two-line system of hybrid rice breeding in the early 1980s. Subsequently, some thermosensitive genic male sterile (TGMS) rice mutants, such as Annong S-1 and 5460S, were developed in 1988 through screening of breeding materials and radiation, respectively (Lu et al 1998). The two-line system was established in China by using PGMS and TGMS lines. This method was considered more efficient than the three-line system in exploiting heterosis to increase yield. **(Author's abstract)**

Keywords: *Agriculture, Photoperiod-sensitive genic male sterile (PGMS), Thermosensitive genic male sterile (TGMS), Hybrid rice*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 14-15

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

Dhanrasi, a new lowland rice variety with *Oryza rufipogon* genes for improving yield potential and resistance to biotic stresses

Mishra, B. , Majumder, N.D. , R

Rice production in the rainfed shallow lowlands in the eastern region and the favorable shallow lowlands in the southern region of India has, for a long time, remained stagnant. The potential of high-yielding varieties is not fully realized. Several breeding lines are being evaluated every year in these ecosystems in trials organized under the All India Coordinated Rice Improvement Program (AICRIP). When compared with national checks Salivahana and Pranava, none could qualify for release in favorable shallow lowlands in the southern region. However, in the rainfed shallow lowlands of the eastern region, CR1002 (1992) and Pooja (1999) were released for cultivation. This shows that yield improvement

per se of varieties bred for these ecosystems, especially in favorable shallow lowlands, is limited, though improvement was considerable in quality and pest resistance as reflected by the release of several varieties at the state level. **(Author's abstract)**

Keywords: *Agriculture, Oryza rufipogon, Biotic stresses, Dhanrasi*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 13-14

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0033

Differential growth response of contrasting rice (*Oryza sativa* L.) genotypes under flooding during germination

Pacleb, Myrish A., Entila, Frederickson D., Ismail, Abdelbagi M.

Anaerobic stress is one of the major abiotic problems causing great loss in crop production especially in rice. Climate change which causes rise in sea level greatly influences flooding which significantly affects crop cultivation. Thus, identifying tolerant genotypes tolerant to anaerobic conditions during germination is necessary. The objectives of this work are to: perform detailed phenotyping of the germination events under flooding and normal condition; monitor developmental stages, particularly dissect variations on organogenesis and associate the observed disparities to distinct strategies of tolerance; and detect and quantify hydrogen peroxide (H_2O_2)' one of the reactive oxygen species, with 3,3'-diaminobenzidine staining to determine the H_2O_2 pattern during germination and to elucidate its role in developmental transition or stress responses. Six genotypes from different sub-groups namely: NSFTV I.D. No. 13, 19, 61, 71, 212 and 216 were sown under flooding and control conditions. Ma-Zhan Red and IR42 were used as tolerant and sensitive checks, respectively. Morphological growth parameters such as root and shoot development, coleoptile emergence, and radicle protrusion were recorded at three time points: day 2, 4 and 7 after sowing. histochemical staining of H_2O_2 was performed using 4-d and 7-d-old seedlings. NSFTV LD. No. 216 from temperate japonica group showed significantly higher tolerance to anaerobic stress displaying faster coleoptile and radicle elongation started at day 4 after sowing while slow or no coleoptile and radicle elongation observed on other varieties. In addition, H_2O_2 concentration was found to be higher in genotypes that have failed to elongate its coleoptiles and radicles but lower in NSFTV LD. No. 216 variety. The identified genotype possibly is a good donor for tolerance of flooding during germination and should be further evaluated. **(Author's abstract)**

Keywords: *Agriculture, Oryza sativa L., Anaerobic stress, H2O2 concentration, Elongation ability, Submergence tolerance*

**Disease resistance and yield assessments of peanut (*Arachishypogaea* L.) inoculated with
Sclerotium rolfsii Sacc. at different growth stages**

Marin, Mellprie B., Franje, Nonito S.

Sclerotium rolfsii Sacc. is an economically important pathogen causing damping-off, seed borne rot, pod rot, and stem and root rot diseases in peanut. A study using split plot arrangement in Randomized Complete Block Design replicated three (3) times was conducted to determine the yield potential of three promising peanut varieties (PSB Pn 1, PSB Pn6, and CV Pn 90320) as influenced by growth stage inoculation and varietal resistance to *Sclerotium rolfsii*. Inoculation of *S. rolfsii* served as the factor under the Main Plot, Variety represented the Subplot factor, and Growth Stage for the Sub-subplot. The inoculation of *S. rolfsii* had a highly significant effect on the severity of stem rot infection while variety factor had a significant effect on the percent pre- and post-emergence damping-off infection in variety CV Pn 90320 at 20.766% and 18.192%, respectively. There was also a highly significant effect of growth stage on the percent pre- and post-emergence damping-off infections. On the three-factor interaction, the Seedling Stage was the most susceptible stage of peanut to pre-emergence damping-off while Full Pod Stage was the most susceptible to post-emergence damping-off, stem rot, and pod infections. The highest yield of 1,447.7 kg/ha was recorded from variety PSB Pn 1 inoculated with *S. rolfsii* at full pod stage. The three-factor interaction effect was found to have no significant difference on yield. However, the same interaction caused a significant effect on the percent pod infection of the three peanut varieties. **(Author's abstract)**

Keywords: *Agriculture, Sclerotium rolfsii, Inoculation, Peanut, Varietal resistance, Yield*

DNA barcoding of Philippine traditional and modern rice varieties

Uy, Mary Rose DL., Tabanao, Dindo Agustin A., Abella, Evaristo A., Mingala, Claro N.

DNA barcoding is a method for reconstructing the taxonomic classification at the molecular level through gathering sequences. This study was undertaken to obtain a DNA barcode from traditional and modern rice varieties, using standard markers set forth by the International Barcode of Life. Chloroplast loci were used in resolving varietal genotype differences within traditional and modern rice varieties. The three loci: *rbcL*, *matK* and *trnH-psbA* were evaluated in terms of ease of amplification and sequencing, sequence quality and discriminatory power. All exhibited 100% PCR amplification and sequencing success across 70 rice cultivars. The DNA sequences from different varieties were analyzed using Mafft alignment procedure in Jalview. Results showed highest frequency of SNPs in *matK* locus. To estimate nucleotide diversity and genetic relationships among traditional and modern rice varieties, parameters of estimates of

nucleotide diversity were calculated. Results revealed *matK* locus obtained the highest nucleotide diversity among traditional and modern varieties with $\theta = 0.01828$. Also, *matK* locus obtained the highest nucleotide diversity within traditional and modern rice varieties with $\theta = 0.02086$. Neutrality tests were investigated by calculating Tajima's *D* and Fu and Li's *D** and *F** values. All yielded negative values implying a bias towards an excess of rare alleles in the population which may indicate recent population growth

and selection. A multi-locus analysis produced a more resolved tree than single locus analysis. As a benchmark study in barcoding of Philippine rice varieties, these data can be used in further standardization and establishment of DNA barcodes and will provide significant information that can be utilized in plant breeding purposes in rice varieties.

(Author's abstract)

Keywords: *Agriculture, DNA barcoding, Single nucleotide polymorphisms, rbcL, matK, trnH-psbA*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 25

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0036

Documentation of dipterocarp species in second growth forest in selected municipalities of Ilocos Norte

Batin, Charlie B., Jamias, Dionisio, Damaso, Erly Stanley, Gorospe, Mary Anne

Nowadays, only few remnants of dipterocarps forests are left in the Philippine archipelago due to illegal logging and conversion of forestland into permanent human settlements. Dipterocarps are the most important source of timber and the

greatest biodiversity of South East Asia. Some of these species are already critically endangered, hence, an inventory of these remaining dipterocarp species are very vital to initiate programs for the protection and conservation of dipterocarp species. This study aims to: (1) identify the dipterocarp species available in Ilocos Norte and; (2) characterize the identified dipterocarp species in terms of leaf and bark including their species classification. The study used the Quadrat method of sample collection. Identified dipterocarp trees in Ilocos Norte includes yakal (*Shorea astylosa*), palosapis (*Anisoptera thurifera*), Red Lauan (*Shorea negrosensis*), White Lauan (*Shorea contorta*), Narig (*Vatica mangachapoi*), Mayapis (*Shorea squamata*) and Guijo (*Shorea guiso*). A total of one hundred fifty nine (159) dipterocarp species was recorded in all the sites where palosapis is the most dominant in all the sites. Moreover, most of the documented dipterocarp species were considered as tree in terms of growth classification with an average diameter at breast height (Dbh) of greater than 10 cm followed by seedling (< 5cm) and sapling (5.01-10 cm). Leaf and bark characteristics of the dipterocarp species were varied from one site to another. Based on IUCN Red List Classification, all the documented dipterocarp species in Ilocos Norte were critically endangered. Relevant policies and program initiatives in the protection and conservation of the remaining dipterocarp species in Ilocos Norte provides maximum environmental services to stakeholders. **(Author's abstract)**

Keywords: *Agriculture, Dipterocarp, Biodiversity, Forest, Diameter at breast height, Quadrat*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 43

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0037

Drought-induced shifting of stem borer species in shallow deepwater rice

Singh, G. , Singh, C.V. , Singh

The yellow stem borer (YSB) *Scirpophaga incertulas* Walker is a major and ubiquitous rice pest of either deep/semideep or irrigated rice. This species is dominant among the pyralids. A severe drought during the 2002 wet season (WS) (446.5 mm rainfall vs 1,200 mm average) drastically reduced the total adult moth population. From July to September, light trap collections decreased by 93.7%. In spite of these conditions, the semideepwater (SDW) entries showed heavy white ear infestation. We examined the reasons for these variations at the NDUAT research station. **(Author's abstract)**

Keywords: *Agriculture, Yellow stem borer, Scirpophaga incertulas Walker, Pyralids*

Ecophysiological and cytopathological impact of poultry litter ash (PLA) to *Paramecium caudatum*

Ignacio, Christian Dick D., Domingo, Doreen D.

Poultry litter Ash (PLA) is used as fertilizer due to its high phosphorus content and low solubility content. Due to its high supply, they are just dump in caves and land fields taken by the water going to rivers and lakes during rainy days. When spread on agricultural lands, excessive Phosphorous (P) is applied leading to P accumulation in soil. Accumulation of P in the soil has the potential to leave the farm's boundaries as soluble P via runoff and promotes eutrophication of surface waters affecting organisms like *Paramecium caudatum*.

The study aimed to determine the ecophysiological (in terms of food vacuole and contractile vacuole activity) and cytopathological (in terms of mortality, form of changes in the body size, shape and macronuclear changes) impact of PLA to *Paramecium caudatum*. Four varying concentrations of PLA used: 2.5 x 10⁴ ppm, 5.0 x 10⁴ ppm, 7.5 x 10⁴ ppm, 1.0 x 10⁵ ppm and control (nutrient medium only).

Results showed that there was a significant difference on the mean number of food vacuoles (fv) formed between control (fv=7.3) and 1.0 x 10⁵ ppm concentration (fv= 1 0.3) after 30 minutes of exposure to treatment implying the capability of the organism to absorb PLA. In the contractile vacuole activity, a significant difference on the time per pulsation/contraction of the contractile vacuole of the *Paramecium* among the treatments was revealed. Zero mortality of *P. caudatum* was observed after 1, 2, and 3 hours of exposure to PLA implying that the amount of applications of the treatment in varying proportions were still tolerable to the organism. No significant difference on the size of the macronucleus shown among the treatments.

(Authors' abstract)

Keywords: *Agriculture, Paramecium, Ecophysiological, Cytopathological, Poultry litter ash (PLA), Food vacuole*

0039

Effect of chicken manure on the growth and yield of mulberry plant in Caoayan, Sual, Pangasinan

Bacuso, Paul M., Inumpa, Arnold M., Toring, Pepito M., Espiritu, Zoraida R.

A study to determine the effect of chicken manure on the growth and productivity of mulberry plants in a newly established plantation in Caoayan, Sual, Pangasinan was conducted. The study utilized the one year old plants in a 500 square meters within one hectare newly established plantation. The four parameters namely; plant height, weight of whole shoot, weight of pure leaves per tree and number of leaves per plant were used to evaluate the effect of chicken manure. The results on all the four parameters indicated that chicken manure is an effective side dressing for better growth and development of mulberry plants, thus resulting to higher leaf yield. **(Author's abstract)**

Keywords: *Agriculture, Chicken manure, Mulberry plant, Caoayan, Sual, Pangasinan*

PTRI Samay Bulletin, Volume No. 4 Issue No. 1, 1-4

(Filipiniana Analytics)

Fil(S) TS1300 S42 4/1 2004

0040

Effect of duration of transport time and holding temperature in the cryopreservation of boar semen

Ancheta, Jennica Camille G. , Aquino, Flocerfida P. , Leoveras, Ma. Elizabeth DC. , Ocampo, Lerma C., Atabay, Eufrocina P.

In the Philippines, extended boar semen is preferred over the frozen semen in doing Artificial Insemination of swine because of the premise that extended semen is of better quality and efficiency. This is not always the case as cryopreservation technique is becoming more advantageous in genetic improvement and conservation since sources of genetic materials such as semen, oocytes, embryos, somatic cells, etc. can be stored and be used after prolonged period even after the donor animal died.

A total of seven ejaculates were collected and were diluted 1:1 using Beltsville Thawing Solution (BTS), and were

placed in a Styrofoam box maintained at 25-30°C. Upon reaching the PCC facility, the semen sample was cooled to 15 °C and was placed in a refrigerated centrifuge to simulate a day's travel. This was done to determine the effect of duration of transport time and holding temperature to the post-thaw motility of cryopreserved boar semen.

Lactose-Eye Yolk (LEY) freezing extender was used following FAO guidelines for freezing of Livestock genetic materials. Semen pellet had an average volume of 8.08 ml, an average motility of 65% and an average sperm concentration of 290.14×10^7 . Average post thaw motility of the semen was 18.57% although cryopreservation of the semen was done a day after the collection because the sperms had already developed resistance to cold shock being incubated for 24 hours in their own seminal plasma thus still produced live sperms. **(Authors' abstract)**

Keywords: *Agriculture, Cryopreservation, Boar semen, Post-thaw motility*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 10

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0041

The effect of foliar fertilizer on the growth and leaf yield of mulberry

Bayeng, Jr., Fermin O.

The response of mulberry applied with foliar fertilizers (Complezal, Crop Giant and Peters Professional) were determined. Results of the study revealed that the different foliar fertilizers significantly differ on their effects on height increment but did not differ on their effects on the final height, total leaf yield and average number of nodes per sample plant. Peters Professional effected the highest height increment followed by Crop Giant and Complezal. **(Author's abstract)**

Keywords: *Agriculture, Foliar fertilizer, Mulberry, Fertilizer*

Samay Bulletin, Volume No. 2 Issue No. 1, 1-6

(Filipiniana Analytics)

Fil(S) TS1300 S42 2/1 2002

0042

Effect of low-light stress at various growth phases on yield and yield components of two rice cultivars

Rama Sin

Solar radiation has a profound impact on crop growth and productivity. During the rainy season, photosynthesis is generally impaired because of the reduction in light intensity and duration brought about by the excessively cloudy weather. This constitutes a major constraint to rice productivity and production in the tropics (Yoshida 1981, Singh 2000). The solar radiation requirements of a rice crop differ at various growth phases (Yoshida and Parao 1976). Shading during the vegetative growth phase slightly affects rice growth and yield, while shading during the reproductive phase has a pronounced effect on sink capacity (spikelet number per panicle and per unit land area). During ripening, shading markedly reduces grain yield because of a spurt in spikelet sterility (Yoshida 1981).

Rice cultivars adapted to various geographical conditions also differ in their light requirements. Cultivars that are traditionally being grown in the tropics are supposed to have greater tolerance for low-light stress than recently introduced cultivars. Thus, identification of such rice cultivars will be essential in developing high-yielding varieties that can survive in low-radiation conditions during the wet season. Two rice cultivars-one, a traditional tall variety grown locally (C14-8) and the other, a modern semitall variety (Mansarover)- were evaluated for their growth and yield performance under low-light stress at different growth phases. **(Authors' abstract)**

Keywords: *Agriculture, Solar radiation, Photosynthesis, Rice cultivars*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 36-37

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0043

Effect of neem seed kernel extracts on stem borer damage and yield of upland rice in southeastern Nigeria

Amaugo, G.O. | Emosairue, S.O. , Amaugo, G.O. | Emosairue

Stem borers are considered important insect pests of rice in most parts of the world. They have been implicated as the major constraint to rice production in West Africa (Ukwungwu 1990). Reliable data on yield loss caused by stem borers are not available in southeastern Nigeria. However, a screenhouse experiment at Badeggi, in the middle belt of Nigeria, showed that yield loss caused by *Diopsis thoracica* (West) ranged from 5% to 19% (Akinsola 1980). Dakuo et al (1991)

reported a yield loss of 33% in irrigated rice caused by lepidopterous stem borers (*Chilo zacconius*, *C. diffusilineus*, *Maliarpha separata*, and *Sesamia calamistis*) in Burkina Faso.

Various control strategies have been adopted against stem borers, one common method being the use of synthetic insecticides, which can be environmentally disruptive and can result in the accumulation of residues in the harvested produce (Chinniah et al 1998). The use of synthetic insecticides is rare in southeastern Nigeria, where farmers produce the bulk of the rice. Although some risks accompany the use of synthetic insecticides, some insecticides of plant origin are safer to handle and use. Neem products are examples of such plant-derived insecticides, which have been used in some Asian countries. Their use on field crops is not yet popular in Nigeria. Our study reports the effect of the frequency of application of 5% neem seed kernel extract (NSKE) on rice stem borer damage and grain yield. **(Authors' abstract)**

Keywords: *Agriculture, Stem borer, Chilo zacconius, C. diffusilineus, Maliarpha separata, Sesamia calamistis, Seed kernel extracts*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 24-25

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0044

The effect of nitrogen on rice grain iron

Prom-u-thai, C. , Rerkas

Previous studies have shown that iron (Fe) content of rice grain may vary widely among rice genotypes (Senadhira et al 1998, Promu-thai and Rerkasem 2001). In addition, grain Fe may also be affected by environmental and management conditions. This experiment measured grain Fe concentration in five rice genotypes (KDML 105, IR68144, Ubon 2, Basmati 370, and RD6) grown under three levels of N (0, 60, and 120 kg N ha⁻¹). The field experiment was in a split-plot design with three replications. Basal fertilizer consisted of 6.6 kg P and 12.4 kg K ha⁻¹. The basal fertilizer and half of the N were applied at transplanting and the other half of N was applied after 4 wk. Fe concentration was determined in mature grain, as unhusked (whole grain with palea and lemma intact) and brown rice (palea and lemma removed), husk (palea and lemma), and polished grain (30 s) by dry-ashing and atomic absorption spectrometry **(Author's abstract)**

Keywords: *Agriculture, Nitrogen, Basal fertilizer, Iron (Fe), KDML 105, IR68144, Ubon 2, Basmati 370, RD6*

Effect of nursery seeding date and phosphorus fertilization on rice seedling growth

Reddy, M. D. , Ashok Kum

During rabi (Nov-Dec), the growth of rice seedlings in nurseries in some of the rice-growing areas in Andhra Pradesh, India, is poor due to the prevailing low temperature. The suppressed growth of seedlings caused by low temperature is described as cold injury (Shibata 1970). Also, absorption of phosphorus was most strongly inhibited at low temperature ($<16^{\circ}\text{C}$). The low concentration of P in soil solution P (2.5 times less) during cooler months necessitates the application of higher doses of P (Katyal and Venkatramaya 1983). Hence, there exists a need for producing vigorous seedlings through proper nursery management. A field study was conducted during the 2001-02 rabi season at College Farm, Rajendranagar, to evaluate the effect of low temperature and P fertilization on seedling growth of rice variety IR64. The treatments consisted of three dates of wet nursery sowing (20 Nov, 1 Dec, and 10 Dec) and four levels of P fertilization (0.5, 1.0, and 2.0 kg P_2O_5 100 m^{-2}). Soil was a sandy clay loam with pH 7.9, low in available N (223 kg ha^{-1}), and medium in P (17 kg ha^{-1}) and K (242 kg ha^{-1}). The experiment was laid out in a randomized complete block design (factorial) with three replications. Each nursery plot was 2 m \times 3 m and was fertilized with a uniform dose of N and K at 1.0 kg 100 m^{-2} . **(Author's abstract)**

Keywords: *Agriculture, Phosphorus fertilization, Low temperature, Cold injury*

Effect of organic and inorganic P fertilizers on sustainability of soil fertility and grain yield in a rice-pulse system

The use of indigenous rock phosphate (RP) as fertilizer is becoming increasingly important in India. The RP deposit in India was estimated to be about 260 t (Narayanasamy and Biswas 1998). Khasawneh and Doll (1986) reported that RP is as effective as water-soluble P fertilizer under suitable environments. As the availability of RP increases slowly and continuously when in contact with the soil, its effectiveness was two to three times more than that of triple superphosphate (Chien and Hammond 1988). **(Author's abstract)**

Keywords: *Agriculture, Inorganic P fertilizer, Organic P fertilizer, Soil fertility, Rice-pulse system, Grain yield*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 41-43

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

0047

Effect of organic farming on management of rice brown planthopper

Sujeetha, R. P. , Venugopal, M. S., Alic

In southern India, brown planthopper (BPH) *Nilaparvata lugens* takes a heavy toll on rice production. It directly causes damage and acts as a vector of many diseases. An experiment involving a cultural method of control was conducted using synthetic fertilizers and biofertilizers. Biofertilizers are becoming popular as a cheap and safe alternative to conventional chemical fertilizers (Sharma 2001).

The experiment was laid out in a completely randomized block design in the insectary. Test variety ADT36 was planted in pots with wetland soil collected from the field. There were nine treatments (1: 100-50-50 kg NPK ha⁻¹, 2: 120-50-50 kg NPK ha⁻¹, 3: 2 kg azospirillum ha⁻¹, 4: 500 kg azolla ha⁻¹, 5: 100-50-50 kg NPK ha⁻¹ + 2 kg azospirillum ha⁻¹, 6: 100-50-50 kg NPK ha⁻¹ + 500 kg azolla ha⁻¹, 7: 120-50-50 kg NPK ha⁻¹ + 2 kg azospirillum ha⁻¹, 8: 120-50-50 kg NPK ha⁻¹ + 500 kg azolla ha⁻¹, 9: untreated check [12.5 t farmyard manure ha⁻¹]) and each treatment was replicated thrice. Five hills were maintained per plot. Inorganic and organic fertilizers at the computed doses were applied in the respective treatments and the soil was thoroughly mixed. **(Authors' abstract)**

Keywords: *Agriculture, Brown planthopper (BPH), Nilaparvata lugens, Biofertilizers, Synthetic fertilizers*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 36-37

2003,

(Filipiniana Analytics)

0048

Effect of rice crop establishment methods on hybrid rice productivity in northwest India

Tomar, O.K. , Sharma, S.K. , Gangwar

Nonavailability of irrigation water and a shortage of labor during peak periods increase labor wages and make transplanting and manual weeding costly, invariably causing delays in farm operations. Moreover, puddling as a prerequisite for transplanting deteriorates the soil. Land preparation becomes difficult and requires more energy to achieve proper soil tilth for succeeding crops. To solve this problem, many farmers switch to direct-seeding under unpuddled conditions.

Direct-seeding can reduce the labor requirement, shorten crop duration by 7-10 d, and provide grain yield comparable with that of transplanting (De Datta 1986). Because of the need to develop appropriate rice crop establishment methods to improve rice yield, this study was carried out to assess the effect of different establishment methods on hybrid rice productivity. **(Authors' abstract)**

Keywords: *Agriculture, Direct seeding, Hybrid rice, Rice crop establishment methods*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 42-43

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0049

Effect of the system of rice intensification on hybrid rice performance and yield

Julfiquar, A.W. , Ahmed, G.J.U. , Islam

The system of rice intensification (SRI) was developed by Father Henri de Laulanie in Madagascar in the early 1980s. He was a Jesuit priest who spent over 30 y working with farmers in this country (Barkelaar 2001). Because it is a set of recommended practices, SRI is considered a system rather than a technology. Rather than being simply adopted, practices associated with SRI should always be tested and varied, according to local conditions (Uphoff et al 2002). Reported results with SRI methods were remarkable.

In some areas in Madagascar with the poorest soils and where yields of 2 t ha⁻¹ are known, farmers using SRI get yields averaging more than 8 t ha⁻¹, with some getting 10-15 t ha⁻¹ (Barkelaar 2001). Yuan (2002) stated that, if inbred varieties can obtain such a high yield, it is quite possible that hybrid rice, especially super hybrid rice, can yield even higher using SRI methods. This belief is based on two considerations. First, hybrid rice varieties have 44 December 2005 greater yield potential than inbred varieties under the same conditions. Second, traditional Chinese cultivation methods are similar to SRI in some respects, such as the use of organic fertilizers, wide spacing between plants, manual weeding (instead of using herbicides), keeping soil wet, and alternate drying and flooding. **(Authors' abstract)**

Keywords: *Agriculture, System of rice intensification (SRI), Chinese cultivation methods, Organic fertilizers*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 43-45

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0050

Effects of cultivating a rice crop under aerobic conditions with film mulching on soil microbial activity

Xiang, Fang , Shiming, Luo , Kunzhen

Cultivated rice is a heavy consumer of fresh water. Approximately 50% of the fresh water used in Asian agriculture goes to rice production. Traditional lowland rice with continuous flooding has relatively high water inputs and its sustainability is now being threatened with increasing water shortage. Water savings and "producing more rice with less water" are crucial to food security in China. Plastic film mulching cultivation of dryland rice has been reported to use only 40% of the amount of water usually needed to grow rice in submerged conditions. Grain yields remained at 90% of those of high-yielding submerged systems (Peng et al 1999). A recent study of film mulching on upland cultivated rice focused on the changes in plant morphology and yield, cultivation techniques, water-saving effects, and nutrient use (Liang et al 1999, Cheng et al 2003). The aim of this study was to examine the effects of film mulching on soil microbial amount and enzyme activities.

Rice cultivar Yue-Xiang-Zhan was used in the experiment conducted in the early and late season of 2002. It was laid out using a random complete block design with three replications in Guangzhou. Three treatments were used: T1 = rice cultivated under aerobic conditions; T2 = rice cultivated under aerobic conditions, covered by plastic film; and T3 (check) = traditional rice production. All 32-m² plots were enclosed by dams 50 cm wide and 15 cm high to ensure

independent hydrological conditions. Except for traditional rice production, for the T2 and T3 treatments, the field was not irrigated only at transplanting time (1 wk after transplanting); the remaining growth stages completely depended on rainfall. **(Authors abstract)**

Keywords: *Agriculture, Rice, Film mulching, Lowland, Aerobic conditions*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 28-29

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0051

Effects of long-term application of manure and fertilizer on the upland rainfed rice-cropping system

Senapati, P.C. , Senapati,

The cultivation of upland rain fed rice is risky and expensive. Tribal farmers in Orissa plant it on hilltops, hillocks, and hill slopes. Nutrient-use efficiency is very low and moisture stress further reduces yield. Farmyard manure (FYM) and green leaf manure (GLM) are used to increase yield and maintain soil fertility.

We conducted an experiment to select an integrated nutrient management practice suitable for the rainfed rice-cropping system. Organic and inorganic sources of nutrients were used. The trials were conducted during kharif from 1994 to 2001 in a permanent plot at the AICRP site. There were eight experiments-nine treatments replicated thrice (27 plots, 10' 8 m2 each). Short-duration (85 d) rice variety Zhu 11-26 was grown continuously in kharif and a local variety of horsegram was grown in rabi. The experimental design was a randomized block design. **(Authors' abstract)**

Keywords: *Agriculture, Manure, Fertilizer, Farmyard manure (FYM), Green leaf manure (GLM), Organic, Inorganic*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 60-61

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0052

Effects of low light on yield and physiological attributes of rice

Vanangamudi, M. , Lakshmi Praba, M., Thandapan

The rice crop in India occupies about 40 million ha of land, mostly raised during the wet season (July-October). However, yield in this season is very low, averaging around 1.2 t ha⁻¹. The major cause of impaired yield is reduced light intensity due to overcast skies prevailing during this season (Murty et al 1975). Since sunlight is critical in photosynthesis, it has been well documented that, under low sunlight, dry matter accumulation is impaired. Information on key physiological parameters is therefore necessary to understand the nature of yield manipulation in the wet season. This study aimed to determine the influence of induced low light at different growth stages of the rice crop and the consequent changes in its physiological and yield components. **(Author's abstract)**

Keywords: *Agriculture, Rice crop, Wet season, Dry season, CO 43*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 71-73

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0053

Effects of silicon sources and fertility levels on transplanted rice

Singh, Kalyan , Sudhakar, P.C. , Singh

Even with the balanced use of NPK in long-term studies, high yield levels in rice could not be maintained because of other macro- and micronutrient deficiencies and deterioration in the soil physical ecosystem. Rice is a known silicon (Si) accumulator and it benefits from silicon nutrition (Takahashi 1995). There is an acute disposal problem with respect to industrial wastes such as basic slag (16% Si) and fly ash (30% Si). In addition, there are also problems with agricultural wastes (e.g., rice straw, 4% Si) because of the reduction in animal power on the farm. Our study aimed to evaluate different industrial and farm wastes as a source of Si for sustained rice yields. **(Author's abstract)**

Keywords: *Agriculture, Organic carbon, Silicon, Fertility level*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 61-63

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

Efficiency of physical barriers in maintaining isolation distance in hybrid rice seed production

Singh, G.R. , Yadav,

In spite of the success of hybrid rice, the nonavailability of affordable quality seed of hybrids, particularly those developed using the cytoplasmic male sterility system, remains a serious problem in India. Even achieving the minimum standard of isolation distance is a constraint to quality seed production in hybrid rice. This is mainly because the areas most suitable for hybrid rice seed production are also found in the mainstream of the rice belt. Shrinking natural resources, particularly cultivable land, resulted in growers not wanting to part with their land for other purposes. The only option for growing hybrid rice seed is either time isolation or physical barrier isolation.

Time isolation is not usually resorted to because of growers' preference in growing specific varieties. Therefore, the use of physical barriers is a better option. However, knowledge on barriers' efficiency is insufficient. This study investigated the efficiency of some physical barriers that could be used in hybrid rice seed production. **(Authors' abstract)**

Keywords: *Agriculture, Hybrid rice , Cytoplasmic male sterility system, Sesbania aculeata*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 39-40

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

Egg production rates of three calanoid copepod (crustacea, copepoda) species from a sardine fishery site off Dipolog City, Zamboanga del Norte, Philippines

Demandante, Rizza Z., Metillo, Ephrime B., Sensano, Chery Mae A.

Sardines are important fisheries species in the Philippines. These species are primarily zooplanktivorous in almost all their life stages, but studies on their zooplankton prey are very rare. Many studies point to the fact that prey population dynamics are strongly linked with positive recruitment and production in many of subtropical and temperate sardine

species. This study determined egg production rates of three copepod species from a sardine fishery site off Dipolog City. Females of *Cosmocalanus darwini*, *Subeucalanus* sp., and *Paracalanus* sp. were fed singly or a mixture of the microflagellate *Isochrysis* sp. and the chain-forming diatom *Chaetoceros* sp. for 12 hours, and their egg production rates were determined. Compared with copepods in the control (unfed) group that showed mean egg production rates of 0-4 eggs female⁻¹ day⁻¹, all three copepod species fed singly with *Isochrysis* sp. showed highest mean rates of 7-12 eggs female⁻¹ day⁻¹. Highest egg production rates may be related with high polyunsaturated fatty acid content in *Isochrysis* sp., which is essential for the growth and egg production of these copepod species. **(Author's abstract)**

Keywords: Agriculture, Copepods, Egg production, *Cosmocalanus darwini*, *Paracalanus* sp., *Subeucalanus* sp., *Isochrysis* sp., *Chaetoceros* sp.

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 27

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0056

Endo- and ectoparasites of the Philippine rice field rat, *Rattus tanezumi* Temminck, on PhilRice farms

Marquez, L.V. , Sebastian, L.S. , Joshi, R.C. , Antolin, M.M., Duque,

The Philippine rice field rat, *Rattus tanezumi* Temminck, is one of the principal pre- and postharvest pests of rice and other agricultural crops. This species usually thrives in lowland and upland rice fields but can also be found in or near places of human habitation. They damage agricultural crops and also serve as reservoir hosts for diseases of certain human and domestic animals caused by helminths, protozoans, and microbes.

Many endoparasites infecting the different viscera of *R. tanezumi* belong to taxonomic groups Nematoda (roundworms), Cestoda (tapeworms), and Trematoda (flukes). The more important ones are those that are transmissible to humans. In contrast, there have been few reports on the ectoparasites that infest these rats. These are the mites, ticks, and fleas, some of which may serve as vectors of microbial infections to humans and domestic animals.

Rattus tanezumi is an alternative meat source for the rural folk. Rat meat is a favorite accompaniment to alcoholic beverages during drinking sprees. Unknowingly, some zoonotic infections can be transmitted to humans through improperly cooked rat meat and viscera, accidental wound contamination with rat urine, or rat bites during handling and precooking preparations. **(Authors' abstract)**

Keywords: Agriculture, *Rattus tanezumi*, Nematoda (roundworms), Cestoda (tapeworms), Trematoda (flukes)

Enhancing outcrossing potential in hybrid rice

Singh, G.R. , Yadav, R.D.S. , Srivastava,

In spite of a successful hybrid rice research program in India, the nonavailability of good-quality seed of CMS-based hybrids, released in the recent past to farmers at a reasonable price, remains a big challenge (Rai 2004). Among other factors, the inherent low variability of suitable floral traits, which influence outcrossing, in parental lines of the respective hybrids is itself a key factor responsible for the low percentage of seed set (Liang et al 1991, Virmani and Athwal 1974, Yadav et al 1998). Keeping these in view along with the mode of action of some homoeopathic medicine on human reproductive systems, a number of these resources were tried to explore their usefulness in enhancing outcrossing of parental lines of hybrid rice. Among them, Pulsatilla, Agnus Cast, and Acid Phos were found worth investigating (Yadav and Srivastava 2003). **(Author's abstract)**

Keywords: *Hybrid rice, Pulsatilla, Agnus Cast, Acid Phos, Agriculture*

Enhancing the productivity of white corn through the utilization of corn cobs as potassium fertilizer

Ocampo, Apolonio M., Santos, Primitivo Jose A., Lapoot, Carmelito R., Tumamang, Severino C., Salazar, Artemio M.

Corn is the second most important cereal crop in the Philippines and the corn industry contributes significantly to the country's economic development. White corn is now being promoted as an alternative staple to rice to supplement the country's food gap. An aspect that can enhance white corn productivity is the effective use of nutrients from agricultural waste, such as corn cobs and naturally occurring indigenous fertilizers. Corn cobs are part of the maize ears that are not utilized for food; these are usually used for cooking fuel or just burned in the field. The mineral nutrients of corn cobs have not been analyzed. In particular, knowledge of the potassium content and the incorporation of corn cobs in the soil as organic fertilizer source (substitute for inorganic source), may mean substantial savings for the corn farmer. This project sought to: 1. compare the cobs from different corn cultivars and their contribution to soil fertility and corn yield in terms of available potassium and other nutrients; 2. to evaluate the effectiveness of corn cobs and ashes when used as K-source for the soil and as foliar spray; and 3. to determine the time required for the potassium to be available for plant uptake in the field. Greenhouse and field experiments were conducted in UPLB, Isabela, and Bukidnon. Preliminary results show that corn cobs are promising materials as potassium source for fertilization of white corn. Ten to fifteen tons cobs per hectare for open pollinated variety, and 20 tons per hectare for hybrids are recommended to provide sufficient K fertilization and rapid growth. Corn fields yielding 6-8 tons grains per hectare can produce 1.5-2 tons cobs/ha at 80% shelling percentage. Ashed corn cobs gave the highest growth and biomass production compared to whole, shredded or finely ground cobs. **(Author's abstract)**

Keywords: *Agriculture, White corn, Corn cobs, Potassium fertilization, Potassium nutrition, Ashed corn cobs*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 35

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0059

Evaluating integrated nutrient management for the biasi system of rainfed rice cultivation

Rajput, A.S. , Victor, V.M. , Swarnkar

Biasi is a set of cultural operations traditionally practiced in direct seeded rice. In this operation, the field is plowed by an indigenous plow in standing water 30-50 d after emergence. Bullock plowing often followed planking and chalai (thinning and distribution) operations. This system is very popular in the eastern region of India; about 75% of the area (25.5 million ha) is under the biasi system. The effectiveness of the system greatly affects yield. Often, operation is delayed because there is less rain to flood the field. The post-biasi operation, which is done to redistribute seedlings, has high labor requirements and is costly. The other major drawbacks are high plant mortality (38-40%) and heavy weed intensity. It is important to evaluate a suitable integrated nutrient management system under biasi to increase yield with minimal operational cost. Use of green manure, especially *Sesbania rostrata*, which nodulates in roots as well as in stems,

gives better performance and maintains the nutrient supply. A significant savings of 40 kg N ha⁻¹ was recorded by incorporating 40-d-old *S. rostrata* in a standing rice crop under biasi (IGKV 1994). Green manure incorporation will thus improve yield. **(Author's abstract)**

Keywords: *Agriculture, Biasi, Sesbania rostrata, Rice cultivation*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 34-35

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0060

Evaluating sodicity tolerance in rice hybrids

Anthoniraj, S. , Mohandas, S. , Naina Mohammed, S.E. , Rama Geet

Although rice cultivation is being pushed into marginal and saline lands because of urbanization and industrialization, increasing rice demand has to be met using these problem soils.

Increasing the productivity of rice in saline/sodic soils is a felt need inasmuch as rice is one crop that can grow relatively well in submerged conditions. This can be achieved either by breeding salt-tolerant rice varieties or applying suitable management practices. The first strategy, however, is sustainable and economically viable. **(Authors' abstract)**

Keywords: *Agriculture, Rice cultivation, Saline soils, Sodic soils, Urbanization, Industrialization*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 26-27

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0061

Evaluation of growth and yield performance of traditional upland rices in low elevation upland agroecosystem

Badar, Araceli J., Antonio, Menisa A., Agustin, Epifania O., Bucao, Dionisio S., Dumaoal, Imelda D., Jamias, Dionisio L., Gorospe, Mary Ann B.

In answer to the Philippines' rice self-sufficiency goal, the expansion of production areas for upland rice and propagation of traditional rice varieties for food security are recommended. Traditional upland rice (TUR) is usually cultivated through *kaingin* system in high elevation mountainous areas that pose ecological hazards to the upland agro-ecosystem and forest resources. Considering the wide agro-ecological adaptability and resiliency of this crop, the utilization of less risk-prone areas (*i.e.* lower-elevation and marginal upland) is possible resulting not only in converting less productive soil to become productive but also enhancing the sustainability of the environment. A total of 42 traditional upland rice varieties were planted in low elevation upland areas of Batac, Ilocos Norte during the 2010 and 2011 wet seasons in order to evaluate the agronomic performance and to identify high yielding TUR varieties adaptable to lower elevation upland agro-ecosystem. Six promising entries were found adaptable for low elevation (78-97 meter above sea level) uplands as manifested by their good growth and yield performance. TUR 36, TUR 4 (*Isek*), TUR 28 (*Pamplona*), TUR 42 (*Maluit*), TUR 46 (*Wagwag*) and TUR 47 (*Limon*) consistently produced yields of 3.3 to 4.6 t ha⁻¹. They are tall and low tillering, have medium panicles, are fertile to highly fertile, medium maturing, and weighed approximately 26 to 30 g/1000 grains. These entries also possess highly acceptable sensory qualities, *i.e.* aroma, gloss, smoothness and taste. (**Author's abstract**)

Keywords: *Agriculture, Traditional upland rice, Rice self-sufficiency, Agronomic evaluation, Promising traditional upland varieties, Sensory qualities*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 12

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0062

Evaluation of indigenous and naturalized multipurpose trees as alternative to *Leucaena leucocephala* in hillyland farming

Calub, Blesilda M.

A study was conducted in Laguna, Philippines to evaluate herbage production, coppicing ability, tree growth and persistence of indigenous or naturalized MPTs as compared to that *Leucaena leucocephala* which has been infested by psyllids (*Heteropsylla cubana*). Six multipurpose tree species (MPTS) (*Gliricidia sepium*, *Erythrina orientalis*, *Moringa oleifera*, *Bauhinia monandra*, *Pithecellobium dulce*, and *L. leucocephala*) were established in hedgerows and subjected to initial cutting at three different ages of trees and to three cutting frequencies.

Despite the psyllid infestation on *L. leucocephala*, results indicate that it still can perform well, although yields are less compared to those reported prior to the psyllid infestation. *L. leucocephala* need to be totally replaced in the farming system but mixed plantings with indigenous or naturalized MPTs is highly recommended, to wit, *B. monandra* and *G. sepium*.

Age of trees at initial cutting affected subsequent annual leaf and stem dry matter yields but not survival rate. MPTs can be cut as early as six months after planting. Initial yields will be low but this is compensated in subsequent cuttings.

Cutting frequency had a highly significant effect on stem dry matter production. Cutting every 120 days favored the production of more stems than when done every 60 or 90 days,

G. sepium had the highest survival rate after three years of regular pruning, followed consecutively by *E. orientalis*, *L. leucocephala*, *P. dulce* and *B. monandra*. Lowest survival rate was observed in *M. oleifera*. **(Authors' abstract)**

Keywords: Agriculture, *Leucaena leucocephala*, *Heteropsylla cubana*), *Gliricidia sepium*, *Erythrina orientalis*, *Moringa oleifera*, *Bauhinia monandra*., *Pithecellobium dulce*, *L. leucocephala*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 37-56
(Filipiniana Analytics)
Fil(S) T1 N2 18/3 1993

0063

Evaluation of sulfonylurea herbicides to control weeds in transplanted rice

Singh, R.P. , Mukherj

Rice is an important food crop in India, but its average yield is rather low. It faces various production constraints, including competition from weeds that can reduce yield by 25-53%. Infestation commonly occurs 15-45 d after transplanting (DAT) (Subhaiah and Sreedevi 2000).

In recent years, a number of preemergence herbicides, including butachlor and thiobencarb, were applied to control weeds. These herbicides effectively controlled many grass weeds, except for some sedges and broadleaves.

Repeated use of herbicides may have resulted in weeds developing resistance and shifts in weed flora, leading to low weed control efficiency (Kathiresan 2001). The current study examined a wider range of herbicides. **(Authors' abstract)**

Keywords: *Agriculture, Sulfonylurea herbicides, Rice, Butachlor, Thiobencarb*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 20-21

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0064

Farmer participatory learning on integrated crop management of lowland rice in Mali

Hamadoun, A. , Youm, O. , Togola, M.A. , Nwilene

The African rice gall midge (AfRGM) *Orseolia oryzivora* Harris and Gagné and rice yellow mottle virus (RYMV) are principal biotic constraints to the sustainable intensification of rainfed and irrigated lowland rice, posing the most serious challenge to human endeavors in West Africa (Nwilene et al 2002). Considerable progress has been made to control both stresses through integrated pest management (IPM) components. But, there has been no focus on farmers' needs, knowledge, and capacity for learning ways of managing pest and disease problems under locally observed conditions (Defoer et al 2004). Often, farmers are handicapped because they lack a basic understanding of pest and disease symptoms, ecology, natural enemies, development patterns of crops and pests, appropriate control measures, soil condition and its effect on the crop, and the effect of weather conditions on pest populations and disease incidence. They do not understand pest resurgence and the reasons for not using insecticides indiscriminately. There is a growing realization that future agricultural growth hinges on smallholder farmers, who must be knowledgeable and exposed to a learning process that involves continuous observation and feedback from the local environment and that enhances decision-making capacity. This paper reports efforts made to train lowland rice farmers on crop management practices and IPM options to enable them to carry out their own experiments on their own farms. **(Author's abstract)**

Keywords: *Agriculture, Integrated crop management, Orseolia oryzivora, Integrated pest management*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 35-37

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

Farming and seed conservation practices of rice farmers in the marginal uplands of Lake Sebu, South Cotabato, Philippines

Ruby Pena, Jane , Martin, Tres Tinna , Lasalita-Zapico, Florence, Gonzales, JoyL

This study was undertaken to make an inventory of the upland rice resource base of Lake Sebu, to document traditional farming and seed conservation practices of the T'bolis and to detect the occurrence of genetic erosion in the farmer's fields. Participatory rural appraisal (PRA) techniques were the methods used in the study. Results revealed a very high level of genetic diversity (136 landraces) of traditional upland rice cultivars in the area. Seed movement was also unrestricted in the area for most of the sitios. The system of cultivation in the area, however, is done at the subsistence level and is purposely geared towards domestic consumption. No effort is also exerted with respect to the conservation of the rice resource and it is made possible through continued utilization. For the T'bolis in Lake Sebu, the availability of planting materials does not warrant conservation. Genetic erosion therefore occurs in farmers' fields and traditional varieties are lost on a continuous basis. Unless mitigating measures are done to save the upland ecosystem, these valuable genetic resources will be irreversibly lost. **(Author's abstract)**

Keywords: *IP (indigenous peoples), IK (indigenous knowledge), Participatory rural appraisal, Rice farming, Traditional rices, Upland rices, Agriculture*

USM R&D Journal, Volume No. 16 Issue No. 1, 7-11

2008,

(Filipiniana Analytics)

NP

Fertilizer optimization in rice by eliminating hidden nutrient deficiencies

Murugappan, V. , Latha

Intensive rice cultivation with modern high-yielding varieties using high-analysis fertilizers has induced secondary and micronutrient deficiencies in soils. Many times, these hidden nutrient deficiencies are not identified and corrected before field experiments are conducted to define fertilizer recommendations. These hidden nutrient deficiencies, if not identified and removed beforehand, will limit crop yield and the optima thus defined using the experimental data will be

inappropriate. This is one of the reasons for the recently observed plateau in the average yield growth of rice. This paper describes a systematic approach of experimentation, which enables identification and removal of such hidden nutrient deficiencies, if any, at experimental sites used for evaluating fertilizer optima for rice. The study was conducted in a farmer's field in Ramapuram village in Thanjavur District (black calcareous soil belonging to the Kalathur series), representing the major rice-growing tract of Tamil Nadu, in the Cauvery Delta Zone. **(Author's abstract)**

Keywords: *Agriculture, Fertilizer optimization, Rice cultivation, Incubation , Greenhouse, Field experiment, On-farm evaluation*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 63-65

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0067

A generator of a web map of biological interactions for rice invertebrates

Wu, H.X. , Qi, Y.H. , Zhang

In a rice habitat, dozens, hundreds, or even thousands of invertebrate taxa interact with each other. A complex web of biological interactions is thus generated. If we assume that 60 taxa are found in a rice habitat and they interact with each other, a total of 1,770 pathways will be generated on a web map. It is obviously impractical to draw this map by hand. However, we have not found a fast tool to generate the web map until now. For this reason, we developed network software to automatically generate a web map of biological interactions (direct or indirect) for rice invertebrates. A web map can be drawn by a computer with investigated data or pathway information included in an html file. Fourteen distance measures can be chosen for generating pairwise taxa with significant parametric or non-parametric correlations on the basis of randomization tests (Manly 1997, Qi and Zhang 2003, Zhang and Schoenly 2001) or classic statistical tests (Zhang and Fang 1982). Two choices are provided to generate web pathways: (1) the first is to compute significant correlations between taxa and (2) the second is to include the pathway information in the html file. **(Author's abstract)**

Keywords: *Agriculture, Taxa, HTML, Web map*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 45-78

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

Genetic analysis of IR64 mutant lines of rice (*Oryza sativa* L.) contrasting in salinity tolerance at seedling stage

Ismail, Abdelbagi M., Katimbang, Meggy Lou, de Ocampo, Marjorie P., Egdane, James

The present study was carried out to identify quantitative trait loci (QTL) controlling salinity tolerance in rice using SSR (simple sequence repeat) and SNP (single nucleotide polymorphism) genotyping. F2 populations were developed from crosses of an IR64-derived salt-tolerant mutant (D167-1-3) with IR29, a sensitive variety, as well as between an IR64-derived sensitive mutant (S730-1) and FL478, a highly tolerant RIL.

About 188 F2 plants of each of the two crosses were phenotyped by screening for salt tolerance at the seedling stage using hydroponics. The segregation patterns of these mutations were studied to test the feasibility of using these populations to map the underlying mutant loci. A genetic linkage map for the F2 of the cross between FL478 and sensitive IR64 mutant was constructed with 69 SSRs and 142 SNP markers which covers 1,431.2 cM with an average distance of 14.05 cM between loci. Four QTLs were identified using Simple Interval Mapping found on Chromosome 3 and 4, associated with plant vigor (qv3.1, qv4.1) and shoot length (qsI3.1, qsI4.1). Linkage analysis was also performed with the F2 population from the cross between IR29 and tolerant IR64 mutant with the 68 SSR and 104 SNP markers. Nine QTLs were detected: qses3.1, qs13.1, qsd3.1, qrl3.1, qrl12.1, qsf3.1, qsk2.1, qsnk3.1, and qchlb6.1 for traits like SES, shoot length, plant Vigor, root length, shoot fresh weight, and shoot Na⁺/K⁺ ratio. To assert more accurately the significant threshold of each QTL detected, permutation analysis was performed to reconfirm the presence of each QTL across the

12 chromosomes. QTLs reconfirmed through these permutations may potentially be useful as fine-mapping targets for map-based gene cloning and functional analysis and also for breeding by combining these QTLs in desirable genotypes using marker assisted backcrossing. **(Author's abstract)**

Keywords: *Agriculture, Rice, QTL, Salinity tolerance, SSR, Mutant*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 27

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Genetic diversity and population structure of *in situ* populations of *Oryza rufipogon* in Lake Apo and Napalit, Bukidnon

Labarosa, Sandy Jan E., Tabanao, Dindo Agustin A., Jamago, Joy M.

Oryza rufipogon Griff. is one of the important wild rices in rice breeding. In the Philippines, its natural populations had been reported only in Lake Apo, Bukidnon. In 2012 however, other populations were confirmed in Lake Napalit, Bukidnon. This study was conducted from October 2013 to February 2014 in both lakes to determine their morphological and molecular diversity, as well as, population structures. Twenty-four quadrants from Lake Napalit populations (LNP) and 14 from Lake Apo populations (LAP) were established and characterized for morphological diversity. DNA from leaf samples per quadrant were analyzed using 99 polymorphic SSR markers. Five of 17 quantitative characters (ligule length, leaf blade length and width, flag leaf length and width) differed between populations as per t-test. Standardized Shannon-Weaver Diversity Indices (H') showed LAP with higher levels of diversity than LNP. Sixteen and 42 pairs of morphological characters were correlated in LAP and LNP, respectively. Cluster analysis based on Ward's Minimum Variance using 33 morphological traits revealed that LAP and LNP were generally 40.20% genetically similar. However, molecular analysis showed higher genetic diversity in LNP than LAP. Nei's genetic distance and F_{st} estimates also showed that LAP and LNP were distinct. F_{is} and F_{it} values revealed that LAP and LNP were non-randomly mating. LNP therefore can be potential sources of new alleles for rice breeding but there are increasing threats to the populations in both lakes. **(Author's abstract)**

Keywords: *Agriculture, Wild rice, Oryza rufipogon, Bukidnon, Genetic diversity, Population structure*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 34

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0070

Genetic diversity, heterotic pattern, and combining ability in yellow maize inbred lines as revealed by SSR markers

Magulama, Efren E., Sales, Emma K., Butardo, Nilda G., Cadungog, Ramonito C.

The knowledge on genetic diversity, heterotic pattern, and combining ability of maize germplasm is of great importance to maize breeding. This study was undertaken to (a) assess the genetic diversity of 11 yellow maize inbred lines using SSR markers, (b) determine the combining ability of these lines and (c) compare the efficiency between factorial and diallel mating design in identifying promising crosses. Eleven inbred lines were crossed in a diallel fashion to form 55 crosses and evaluated in alpha lattice with three replications. Using 39 SSR markers, cluster analysis grouped

the 11 lines into three distinct clusters consisting of GI- 6 lines, GII-4 lines, and GIII-1 line. Of the top 14 single crosses, 9 crosses came from crossing inbred lines belonging to different groups while 5 crosses came from the same group. Clustering of lines followed by factorial mating appeared more efficient (27%) than conventional diallel mating (25%) in finding promising hybrids. Significant differences in crosses were mainly due to specific combining ability effects contributing 78% for yield, indicating the prevalence of non-additive effects conditioning the expression of these traits. Three crosses could be considered as potential single cross hybrids for commercial production. The results imply that the use of SSR markers can greatly help reduce the number of crosses (as usually done in diallel mating), thereby, saving the cost and time in making crosses and field testing. **(Author's abstract)**

Keywords: *Agriculture, Genetic diversity, Heterotic patterns, Combining ability, SSR makers*

USM R&D Journal, Volume No. 13 Issue No. 2, 166-171

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0071

Genetic polymorphism identification of *Estrogen receptor (ESR)* gene associated with litter size in Philippine pigs (*Sus scrofa*)

Labonite, Laila M., Matias, Sherwin D. , Fernando, Trinidad C. , Cruz, Hannah M. , Dela Cruz, Renmar M. , Flores, Ester B. , Herrera, Jesus Rommel V.

Low heritability of litter size in pigs has long been addressed by researchers through the use of marker-assisted selection (MAS). One of the major genes being studied is the *Estrogen Receptor (ESR)* gene which belongs to intracellular group of receptors localized at pig chromosome I (p25 - p24). The *ESR* gene was found to have a significant influence in pig's litter size without any genetic negative correlation to growth and carcass traits. Thus, in this study, polymorphism of *ESR* gene associated with litter size was identified in local pigs. Isolation of genomic DNA was done in 599 pigs of various breeds. *ESR* genotypes were identified through Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) method. The 120-bp PCR product was digested using the *PvuII* restriction enzyme. Purified PCR products were sequenced using the ABI Genetic Analyzer 3500 and the sequence information were verified with reference sequence using National Center for Biotechnology Information (NCBI) BLAST. Further sequence analysis was done using the Sequencher Software v.5.2.3. Results showed that 33% of the population has AA genotype while 67% has AB.

Moreover, the allele frequencies were 0.67 and 0.33 for allele A and allele B, respectively. Verification using the NCBI Blast revealed 97-100% for AA and 93-96% for AB identities with *Sus scrofa* partial *ESR* gene intron. Sequence analysis showed that the preferred allele B is a G to A/T transition. Filipino farmers' profitability is highly dependent on

the reproductive performance of their pigs, thus, selection of allele B will potentially increase the efficiency and productivity of our local pig industry. Larger sample size and association with phenotypic data is recommended for further research. **(Author's abstract)**

Keywords: *Agriculture, Pig, Estrogen receptor gene, Litter size, Marker-assisted selection (MAS)*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 4

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0072

Genetic purity testing of parental lines using conventional grow out test

Brena, Susan R., Saludaes, Rica Amir G.

Genetic purity test is mandatory for seed certification to ensure that seeds released for cultivation are free from genetic contamination. Grow-out test (GOT) is one way of testing genetic purity of seed lots based on morphological criteria of the true-to-type plants. The objective of the study is to evaluate the purity of parental lines seed lots produced at the Philippine Rice Research Institute. Samples were grown in 20cm x 20cm grow-out matrix with 500 hills per plot. The experiment was laid out in a randomized complete block design (RCBD) with 3 replications.

Twenty-seven seed lots of parental lines (3 PRUP TG101, 9 PRUP TG102, 9 IR68897-A and 6 IR58025-A) produced on dry season 2014 were tested. Genetic purity through visual evaluation was conducted based on the base color, plant height, days to heading and grain shape. Sixteen of the 27 seed lots had purity of 97% below and were rejected. Off types had purple-colored bases, taller or shorter as compared to the majority of the population, had different grain characteristics and were early or late to head. Among the parental lines tested, 6 lots of IR68897 -A, 1 lot of PRUP TG101 and 3 lots of PRUP TG102 had the highest purity percentage of 98. On the other hand, 2 lots of IR58025-A had the lowest (92%). These impurities may be caused by improper post-harvest practices.

DNA fingerprinting utilizing simple sequence repeats (SSR) markers is currently undertaken to confirm these results. **(Authors' abstract)**

Keywords: *Agriculture, Grow out test, Seed lots, Parental lines, Genetic purity, Off types*

Genetic screening of the acid meat condition in domesticated swine using PCR-RFLP

Manalaysay, Jessica G., Antonio, Nathaniel D., Apilado, Ralph Lorenz R., Bambico, Joseph F., Mingala, Claro N.

The Acid Meat condition is a dominant genetic defect in the Rendement Napole (RN) gene that causes reduced water holding capacity, low pH, pale color, reduced processing and cooking yield due to increased drip, and strong metallic taste that often leads to poor meat quality. This study was conducted to determine the genotype of the RN gene of 200 breeder pigs from five farms in Luzon. They were classified as normal (rn/rn), heterozygous mutants (RN/rn), and homozygous mutants (RN/RN). This classification will allow a new breeding system to be developed ensuring that all offspring are free of the defect by simply removing the mutants on the breeding herd. Genotyping was done by collecting blood samples subjected to DNA extraction and genotyping using PCR-RFLP. The restriction enzyme used was *BsrBI*. DNA sequencing was also done to validate the results. Results revealed that out of 200 animals 134 (67%) are normal, 63 (32%) heterozygous mutants and 3 (1 %) homozygous mutants for the Acid Meat condition. The screening of genetic diseases such as this will help the determination of their presence in a given swine population and reduce the unwanted effects on meat quality thus increasing its market value. Gene screening is a technique that should be utilized to detect the genes that may have a potential economic effect in increasing the meat production and quality of our swine. **(Author's abstract)**

Keywords: *Agriculture, Acid meat, RN gene, PCR-RFLP*

Genetic structure of four bovine populations in the Philippines using microsatellites

Icalia, Peter James C., Salces, Agapita J. , Seo, Kangseok, Ludan, Geronima

This study evaluated polymorphism of 11 microsatellite markers in four local genetic groups of cattle. Batanes cattle which has never been studied using microsatellites is evaluated for its genetic distance from the Ilocos cattle while Brahman and Holstein-Sahiwal are also included as there were insemination programs by the government using these two breeds. PCR products that were genotyped for each marker were analyzed using POPGENEv32. Results showed that 55% ($F_{st}=0.550$) of the genetic variation is due to the differences between populations while the remaining 45% is due to individual variation. The F_{st} value also indicates that there were very great differences from population to population using the range proposed by Sewall and Wright. The constructed phylogenetic tree based on Nei's genetic distance using the modified neighbor joining procedure of PHYLIPv3.5 showed the admixture of Brahman and Holstein-Sahiwal having them grouped in the same clade. Batanes and Ilocos cattle were grouped in a different cluster showing that they have descended from a single parental population. This would presumably address the claim that Batanes and Ilocos cattle are genetically distant from other groups and still exist despite the artificial insemination program of the government using Brahman and other imported breeds. The knowledge about the genetic structure of this population supports the development of conservation programs for the smallholder farmers. (**Author's abstract**)

Keywords: *Agriculture, Microsatellites, Populations, Genetic structure*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 6

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0075

Genome-wide association study (GWAS) for salinity tolerance in rice

de Ocampo, Marjorie P., Zantua, Rochelle E., Ismail, Abdelbagi M.

Three hundred twenty five lines that were previously genotyped were used to screen/evaluate physiological traits for salinity tolerance and to map loci controlling salinity tolerance through Genome-wide association studies (GWAS). The lines were grown in hydroponic solutions (Yoshida solution) for three weeks and then exposed to salt stress 10 d after germination to an EC6 dsm-1 followed by EC12 dsm-1. Phenotypic data were recorded for shoot length, root length, fresh shoot weight, fresh root weight, dry shoot weight and dry root weight. Measurements of chlorophyll, sodium and potassium concentrations were assessed. The genotype data obtained from the 44K data set and phenotypic data were run on TASSEL using General Linear Model (GLM). Genome-wide association studies identified highly significant peaks for salinity tolerance on chromosome 1 (%K shoots, %Ca, %Ca+b, %Cb, biomass shoots, plant height shoots); chromosome 2 (%K shoots, %Ca, %Ca+b, %Cb, SES); chromosome 3 (%K shoots, ~Ca, %Cb, biomass shoots, SES); chromosome 4 (biomass shoots, plant height shoots); chromosome 5 (%Ca+b, biomass roots, biomass shoots,

SES); chromosome 6 (%Ca, %K shoots, %Cb, %Ca+b, biomass shoots); chromosome 7 (%Ca+b); chromosome 9 (%Ca, %Cb and %Ca+b); chromosome 10 (%~ shoots, %Ca+b, % K roots); and chromosome 12 (%K shoots, plant height shoots). Threshold is 2.7×10^{-7} at a significance level of 1 ~ after Bonferroni multiple test correction (0.01136901). SES scores significantly correlated with biomass roots, biomass shoots, plant height roots, plant height shoots, %Ca, %Cb, %Ca+b, % Na shoots, % K shoots, % Na roots, % K roots, % NaK shoots and % NaK roots at 1 % level of significance. Candidate genes at most significant association are now being identified for future MAS in molecular breeding programs for salinity tolerance. **(Author's abstract)**

Keywords: *Agriculture, Genome-wide association study, Salinity tolerance, Rice, TASSEL*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 24
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0076

Genome-wide association study of tolerance to flooding during germination in rice and its breeding application

Entila, Frederickson D., Miro, Berta, Ella, Evangeline S., Ismail, Abdelbagi M.

Direct-seeded rice has been progressively practiced in lowland and irrigated areas due to simplicity and cost effectiveness. Early flooding enables weed control but leads to poor crop establishment since rice germination is limited only to coleoptile elongation under flooded conditions. This entails development of varieties tolerant to anaerobic germination (AG). Genomewide association studies (GWAS) provide promising platform for linking genomics and phenomics using diverse germplasm accessions for the identification of donors for anaerobic germination tolerance in a facile and manageable approach, hence expediting crop improvement. The diversity panel (343 accessions) consisting of 5 subpopulations was screened for AG tolerance under greenhouse conditions using seeding tray method. Seeds were sown at about 0.5-cm soil depth in each cell of the seeding tray initially half-filled with soil, covered with ~ 1 cm of fine soil, and then submerged in 10-cm water depth. Emergence and germination were measured at 14 d after seeding (DAS) in which seedling emergence above water is the function for survival. Dry weights of the emerged seedlings were gathered at 21 DAS to estimate for vigor. The 44K SNP genotypic data was used for association with the phenotype data using GAPIT. Analyses revealed that most of the AG tolerant varieties are japonicas with good root growth though few indicas and admixed had notable tolerance but had inferior root growth. Indicas and admix with considerable root growth under flooding are sensitive to the stress moreover, most of aromatics and aus are sensitive.

Most traits had association peaks located in chromosomes 1, 4, 5, 6, 9, and 10. Further studies will confirm these genetic variations and SNP peaks will be inspected for candidate genes. Biparental crosses will be done with the identified donors for QTL analysis to facilitate breeding for varieties suitable for direct seeding. **(Author's abstract)**

Keywords: *Agriculture, Quantitative traits, Direct seeding, Anaerobic germination, Varietal improvement, Crop establishment*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 20

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0077

Genotype X environment interaction of white quality protein maize (QPM) hybrids

Libayao, Carl F., Baldo, Nenita B., Magulama, Efren E.

Newly developed white QPM hybrids when grown under wide range of conditions may not perform similarly relative to each other. Hence, determining their relative performance across different locations is highly important before it is released into the market. Thirteen white QPM hybrids and three check varieties were evaluated across three locations from July to November 2011 to determine the genotype x environment interaction and to identify the most adapted QPM hybrids across locations. The

hybrid tested were the following: SMTWC 001, SMTWC 002, SMWTC 003, SMWTC 004, SMWTC 005, SMWTC 006, SMWSC 007, SMWSC 008, SMWSC 009, SMWSC 010, SMWSC 011, SMWSC0012, SMWSC 013, P30W40, IPB Var 6 and USM Var 10. The three locations used were Musuan, Bukidnon, Kabacan, North Cotabato and Banga, South Cotabato. The study was arranged in a Randomized Complete Block Design with four replications. Data were analyzed using MSTATC software. The study revealed that traits like plant height, ear height, days to silk, yield and yield components such as ear length, kernel row per ear, and grain yield varied significantly among the white QPM hybrids across locations. SMWSC 007 SMWTC 001, SMWSC 010, SMWSC 012, and SMWSC 011 were observed the most adaptive white QPM hybrids across the three test locations. **(Author's abstract)**

Keywords: *Agriculture, QPM, Corn, Hybrids, GE interaction, Bukidnon*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 14

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Genotyping and molecular characterization of NRAMP1/-2 genes as location of markers for resistance and /or susceptibility to *Mycobacterium bovis* in swamp and riverine water buffaloes

Mingala, Claro N., Belotindos, Lawrence P., Abes, Nancy S., Cruz, Libertado C.

Natural resistance-associated macrophage proteins (NRAMP) is associated with disease resistance across animal species. It plays a critical role in innate immunity and adaptive immunity. This study investigated the contribution of NRAMP1 and NRAMP2 to the resistance or susceptibility of water buffalo to *Mycobacterium bovis* infection. Water buffaloes were TB tested by single intradermal tuberculin test (SITT) using Bovine antigen. Animals which reacted to SITT were subjected to comparative intradermal tuberculin test (CITT). NRAMP genes were then further examined by PCR and single strand conformational polymorphism (SSCP) assay. The isolated genes were also cloned and sequence to confirm the nucleotide polymorphisms. Nucleotides were assessed by sequence alignment. The SSCP result showed that among the reactor and non-reactor animals to intradermal tuberculin test, four conformational patterns in *NRAMP2*. SSCP showed that the frequency of occurrence of four-band pattern were mostly from the reactor animals (66.41%). Sequence alignment clearly established the nucleotide polymorphisms between the conformational patterns. This study suggests that these polymorphisms are potential markers for resistance or susceptibility to *Mycobacterium* infection. The findings regarding the allelic patterns comparing the reactor and non-reactor water buffaloes will be very useful in future breeding plan for the selection of TB resistant animals. **(Author's abstract)**

Keywords: *Agriculture, NRAMP1, NRAMP2, Water Buffalo, Mycobacterium, Disease resistance, Disease susceptibility*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 20

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

Giri—a high-yielding, slender-grain, sheath blight-and bacterial blight-resistant variety for shallow-water conditions in West Bengal

Sinha, S.K. , Biswas, A., Sen,

Rice cultivation in lowlands is complex because of the presence of several biotic and abiotic stress factors. Submergence tolerance and incidence of different pests and diseases, including constraints to the adoption of control measures in waterlogged fields, are special problems for this ecosystem. In addition, superior grain quality, especially long slender grains, is lacking, except for variety Sashi, which was recently released from this research station by Sinha et al (2001). **(Author's abstract)**

Keywords: *Agriculture, Slender-grain, Sheath blight-resistant, Bacterial blight-resistant, Shallow-water*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 17

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0080

GIS-based assessment of groundwater supply and demand for drinking and irrigation in selected barangays of Batac, Ilocos Norte, Philippines

Utrera, Rodel T., delos Reyes, Jr., Aurelio A., Luyun, Jr., Roger A., Saludes, Ronald B.

The study was done in selected barangays of Batac, Ilocos Norte to assess the groundwater supply and demand for drinking and irrigation purposes using geographic information system (GIS). Aquifer in the study area was characterized by conducting pumping test. Locations of pumped wells were determined using Global Positioning System (GPS) Receiver. Point data on hydraulic properties was determined and used in the estimation of available groundwater supply in the study area. A map on transmissivity, specific yield and specific capacity was generated using GIS. Groundwater demand in the area was estimated based on domestic consumption of current population and average seasonal groundwater supplied to different crops

planted in the area. Transmissivity in the area ranges from 65.53 m²/day to 825.48 m²/day while specific yield and specific capacity in the study area ranges from 0.000948 to 0.025021 and 31.76 m²/day to 153.08 m²/day, respectively. Results of the study revealed that the safe yield (24,140 m³/day) in the area is more than enough compared to the groundwater demand (10,478.64 m³/day). Groundwater demand in the area only accounts for about 40% of the total groundwater supply. However, management of our groundwater resources is becoming more important as the demand for domestic and agricultural purposes increases. Therefore, sustainability criteria must be formulated to maintain a reliable and adequate water supply for the future. **(Author's abstract)**

Keywords: *Agriculture, Groundwater supply, Groundwater demand, Safe yield, Hydraulic properties, Geographic information system*

Grain spawn viability of oyster mushroom (*Pleurotus sajor-caju*) at different storage conditions and period

Saldares, Guia G.

Spawn is the mushroom mycelium growing on a substrate which serves as the planting material in mushroom cultivation. The quality of spawn is one of the most important factors for successful crop. The method of spawn storage of mushroom is one that gives great impact of mushroom yield. . .

The study was conducted using 2X5 factorial design arranged in completely randomized design (CRD) replicated 3 times. The study therefore made to evaluate grain spawns viability stored at different conditions and period. The different storage conditions were assigned in Factor A, while the different storage periods were assigned in Factor B.

Results revealed that the grain spawns viability of oyster mushroom at different storage conditions and period influence the growth and performance of the oyster mushroom. On the basis of the results, among the 2 different storage conditions, grain spawns stored at refrigerator temperature (A1) consistently showed the best yield performance of *P. sajor-caju* compared to grain spawns stored at room temperature (A2). On the other hand, mushroom grain spawns stored at 2 to 3 months (B2) and (B3) exhibited good results considering the growth and yield performance of *P. sajor-caju*. **(Authors' abstract)**

Keywords: *Agriculture, Spawn, Grain spawn, Yield performance, Oyster mushroom, Cultivation*

Growth, yield and fruit quality of 'sensuous' pineapple in response to varying planting densities

Valleser, Vences C., Valleser, Jean L.

New and improved crop genotypes need to have the optimal cultural methodologies such as optimum planting density. A study was conducted to (1) evaluate the effect of varying planting densities on the growth, yield and fruit quality of a newly developed pineapple genotype named 'Sensuous' and to (2) determine the planting density that will give its best growth, fruit yield and quality. Treatments were four planting densities: T1- 75,000 plants per hectare (pph), T2- 65,000 pph, T3- 55,000 pph and T4- 45,000 pph. The experiment was laid-out in a Randomized Complete Block Design (RCBD) with four replications. Heaviest fruits (mean of 1.77 kg/fruit) were obtained from 55,000 pph but was comparable with the fruit weight in 65,000 pph (mean of 1.68 kg/fruit). Mean yield/ha (i.e. number of fruits/ha) of 'Sensuous' pineapple was indirectly proportional with average fruit weight. Significant increase of Pack 5 (2.05- 2.4 kgs) fruits was noted at 45,000 and 55,000 pph with 8,830 and 7,476 fruits, respectively; compared to 65,000 pph (4,686 fruits) and 75,000 pph (4,875 fruits). Pack 7 (1.45- 1.69 kgs), Pack 8 (1.21- 1.44 kgs) and Pack 9 (1.08- 1.20 kgs) fruits were significantly higher in 75,000 and 65,000 pph compared to 55,000 and 45,000 pph. Highest number of boxes was recorded in 75,000 pph with 5,717 and the least number of boxes (3,994) produced was from 45,000 pph. Finally, fruit quality was not affected by varying planting densities. **(Author's abstract)**

Keywords: *Agriculture, Pineapple, Planting density, Fruit quality, Novel pineapple variety*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 46
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0083

Hardinath 1, an early-maturing rice genotype released in Nepal

Adhikari, N.P. , Chaudhary, B. , Yadaw, R.B., Akhtar

In Nepal, rice, with an annual production of 4.45 million t from 1.56 million ha, ranks first among the crops grown in the country (MOAC 2004). Early-maturing genotypes are grown mainly during chaite (spring) and bhadaia (summer) seasons under irrigated conditions. Nearly 21% of total cultivated land is under irrigation.

Cultivation of chaite-season rice is limited because of poor quality and low yield. However, a single variety, Ch 45, has been planted since the late 1950s in most parts of the country. In 1998, brown planthopper damaged the monocrop,

causing heavy losses in Chitwan District. In 2002, neck blast affected Ch 45 in 40% of the rice area in Chitwan. To improve production and productivity, suitable, early-maturing, and high-yielding genotypes with better grain quality were required in these areas. **(Authors' abstract)**

Keywords: *Agriculture, Hardinath 1, Rice, Chaite, Bhadaiya*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 15-16

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0084

Harvesting cycle and nitrogen requirement of three ramie (*Boehmeria nivea* L. Gaudichaud) cultivars
Macarayan, Olympio B.

Three ramie varieties (Saikeiseishin, Formosa, and DES Strain #1) were tested to verify and evaluate the improved cultural fiber production technology components. The fertilizer levels used were control (no fertilizer), 70, and 140 kg N/ha both using urea (46% N). Harvesting cycles used were 40 and 60 days. This was conducted in a farmer's field at Poblacion Calinan, Davao City.

Results showed that a Saikeiseishin, Formosa, and DES Strain #1 did not significantly respond to specific rates of nitrogen application and harvesting cycles except for the tensile strength of the fibers. The tensile strength of Saikeiseishin and Formosa harvested either at 40 days or 60 days cycle was high. It was also found that the base diameter of harvested stalks, fresh weight of harvested stalks with leaves and flowers, fiber yield for both unbrushed and brushed fibers, and the fiber recovery of Saikeiseishin, Formosa, and DES Strain #1 did not vary significantly. However, Formosa obtained the highest average length of harvested stalks but failed to differ significantly with Saikeiseishin.

Nitrogen application significantly influenced the growth, yield, and fiber quality of ramie. It was found that application of 70 kg nitrogen per hectare per cropping season was optimum for the increase in length and base diameter of harvested stalks, fresh weight of harvested stalks with flowers and leaves, fiber yield/ha/harvest, and percent recovery in soil containing a range of 1.0 to 2.0% organic matter. Significant interaction was noticed between nitrogen application and harvesting cycle in the tensile strength of the ramie fibers. Fiber tensile strength of ramie applied with 140 kg nitrogen per hectare per cropping per season harvested at 40 or 60 days harvesting cycle was found significantly high.

Harvesting cycles 40 and 60 days did not differ significantly in length, base diameter of harvested stalks, fresh weight of harvested stalks with leaves and flowers, unbrushed and brushed fiber yield, and tensile strength of fiber. Based on these results, harvesting ramie at 40 days cycle was significantly acceptable provided that the basic growth requirements of the crop are present.

Application of 70 kg N/ha/cropping season rendered a considerably high return on investment for both 40 and 60 days harvesting cycles regardless of the ramie cultivar used. **(Authors' abstract)**

Keywords: *Agriculture, Ramie cultivars, Harvesting cycle, Nitrogen requirement, Growth, Fiber yield and quality*

USM R&D Journal, Volume No. 13 Issue No. 1, 95-106

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/1 2005

0085

HPLC profiles of polyamines in the leaves and anthers of a new thermosensitive genic male sterile rice line

D. Vijayalakshmi, U. Bangarusamy

Hybrid rice is successfully cultivated in India and, in recent years, the country has released commercial rice hybrids having at least 1 t ha⁻¹ higher yield than inbred checks. The cytoplasmic male sterility (CMS) system, also known as the three-line system, is presently the most widely used system for producing F1 rice hybrids. Although effective, the system is cumbersome because CMS lines require specific maintainer and restorer lines and possess wild abortive (WA) cytoplasm that is vulnerable to biological stresses. On the other hand, the thermosensitive genic male sterility (TGMS) system does not require restorer lines, and the seeds of TGMS lines are multiplies by selfing when exposed to the right temperature at the critical growth stage (in the tropics, 5-15 d after panicle initiation) (Maruyama et al 1990). **(Author's abstract)**

Keywords: *Agriculture, Cytoplasmic male sterility (CMS) system, Thermosensitive genic male sterility (TGMS) system, Hybrid rice, Polyamines*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 12-13

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

Identification and evaluation of salinity tolerance among hybrid parent lines

Pacada, Imeldalyn G., Desamero, Nenita V., Santiago, Jasmin II C., Valida, Gelyn D.

Hybrid rice is known to have more tolerance to abiotic stress because of its genetic plasticity. This can be attested in experimental evidences showing some F1 hybrids adaptable to different abiotic stress condition. However, in order to develop superior hybrids adapted to abiotic stress, mining of parent lines having resistance or tolerance to various abiotic stresses should be established first. This study therefore aimed to screen the hybrid parent lines for salinity tolerance using salinity tolerance screening at seedling stage (SALTSSS), and evaluate its Na⁺ and K⁺ ion content using atomic absorption spectrophotometry (AAS). Four Cytoplasmic Male Sterile (CMS), eight restorer, and 14 maintainer lines were identified having salinity tolerance using SALTSS. This include PhilRice-bred maintainer and restorer lines (in the background of Phil Rice released varieties). Comparison of susceptible and resistant check using AAS showed that the identified parent lines having tolerance to salinity has higher Na⁺/ K⁺ ratio accumulation in both shoots and roots. A high Na⁺/ K⁺ ratio in the cytosol is essential for normal cellular functions of plants. This results indicate that maintaining higher Na⁺/ K⁺ ratio, a well-known mechanism for maintaining cell homeostasis, helps the plant in reducing Na⁺/ toxicity in the cell. These lines with salinity tolerance can now be directly used in developing F1 rice hybrids adapted for saline area. **(Author's abstract)**

Keywords: *Agriculture, Cytoplasmic male sterile, Maintainer, Restorer, Atomic absorption spectrophotometry*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 21
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

Identification of maintainers and restorers using WA source cytoplasmic male sterile lines in rice

Motiramani, N.K. | Bisne, R. , Motiramani, N.K. | Bis

The cytoplasmic male sterile (CMS) lines introduced from China are unsuitable to use as such in developing hybrid rice in India. Therefore, it is imperative to identify maintainers and restorers among the lines developed through conventional breeding procedures. Maintainers with higher adaptability and restorers should have higher combining

ability. Four CMS lines (wild abortive, WA, cytoplasmic background)-IR68885A, IR62829A, DRR2A, and PMS10A- and eight testers-BKP232, R827-287, Pusa Basmati, R1060-1674-1-1, R714-2-103, Culture 1001, Super rice 2, and R304-34-were used in the line \times tester (4×8) analysis with 32 hybrids.

The experiment was laid out in a randomized block design with two replications. Identification of maintainers and restorers was carried out by observing spikelet fertility and pollen fertility. A very low magnitude of pollen and spikelet fertility was observed for hybrids (Table 1). The lines identified as effective maintainers can be further backcrossed with their respective F1s to look for completely sterile backcross progenies so that these can be developed as new CMS lines. Hybrids showed more than 70% spikelet fertility and 80% pollen fertility (Table 2). (**Authors' abstract**)

Keywords: *Cytoplasmic male sterile (CMS), Agriculture, Rice, Spikelet*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 14-15
2005,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 30/1 2005

0088

Imbaw (*Adontia edentula*) as a resources, food and livelihood of Camotes Islands, Central Philippines

Andriano, Berenice T., Tanduyan, Serapion N., Pasaje, Genes M., Muaña, Gabriel T., Abellanosa, Sherlyn M.

Imbaw, known as mangrove clam (*Adonita edentula*) and an abundant resource in the mangrove areas of Camotes Islands, Cebu was studies with respect to its perceived abundance, food processing, and livelihood of the inhabitants. An interview questionnaire was prepared for the gleaners, vendors and selected residents of Camotes Islands. Results show that imbaw are usually found in muddy areas with less pneumatophores and usually caught 2 feet below the surface. They are gathered throughout the year during low tide. Phases of the moon have nothing to do with its abundance. Collection relies on visual techniques and direct contact with the bottom. Perceived distance between clams is 3 meters. Imbaw is prepared as tinola, broiled, and salad (kinilaw). Broiled imbaw mixed with a bit of margarine is served during special occasions. Gleaning usually is concentrated in mangrove areas of Teguis, Poro Cebu being the largest mangrove area in Camotes Islands. Marketing is done through middle men with an average of 5 pieces large clams and 15 pieces smaller clams, which require an hour of gleaning. Prices for bigger clams range from Php2.00 to Php3.00 per piece and smaller clams is Php0.50 to Php 1.00 each. Results further show that 1/3 of their catch was left for the gleaners kitchen and 2/3 for the market. Proceeds of clam gleaning are usually for food purposes only. Perceived problems are the many

gleaners; areas are severely disturbed and lower catch when smaller clams are gathered due to its scarcity. Reforestation and size limits were the suggested measures to solve scarcity. **(Author's abstract)**

Keywords: *Agriculture, Imbaw, Adontia edentula, Resource, Food, Livelihood*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 4

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0089

Impact analysis of Technology Assessment and Refinement through Institution-Village Linkage Program

Konkan Krishi Vidyapeeth, B.S. , Kokate, K.D., Pawar,

The Indian Council of Agricultural Research has developed a new approach, the Technology Assessment and Refinement through Institution-Village Linkage Program (TAR-IVLP), that emphasizes the participatory approach in technology selection, testing, evaluation, refinement, and adoption. The TAR-IVLP has been implemented in the village Hodawade of Vengurle tahsil in Sindhudurga District, Maharashtra, India, since 1996, providing an ideal platform through which appropriate technology is disseminated to stakeholders. **(Author's abstract)**

Keywords: *Agriculture, Technology Assessment and Refinement through Institution-Village Linkage Program (TAR-IVLP), Technology selection, Testing, Evaluation, Refinement, Adoption*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 32-33

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0090

Impact of integrated plant nutrient management on upland rainfed rice cultivation

Jena, B. , Sahoo, S. S. , Senapati, H. K., Saho

The poor tribal farmers of Kandhamal District, Orissa, India, practice the age-old method of agriculture. Their fertilizer consumption is only 4 kg ha⁻¹. They cultivate local low-yielding rice varieties under a monocropping system in the upland, hill slopes where nutrient leaching is a major problem. To remove sole dependence on chemical fertilizers, integrated plant nutrient management (IPNM) approach is introduced in the area. Experiments were conducted during 2000-01 kharif on seven selected farmer's fields (each farmer treated as a replicate). **(Author's abstract)**

Keywords: *Agriculture, Fertilizer, Integrated plant nutrient management (IPNM), Rice*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 56-57

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0091

Impact of organic manure and inorganic phosphatic fertilizer on yield and nutrient uptake in a rice-rice cropping system

Subramanian, E. | Kaleeswari, R.K. , Subramanian, E. | Kaleeswari

The complementary use of organic manures and chemical fertilizers augments the efficiency of both substances to sustain a higher level of rice productivity. An increase in grain and straw yields has been reported with increasing levels of Gliricidia leaves because of the overall improvement in soil properties such as water and nutrient retention. Field experiments were conducted at the ACRI research farm during the 2000-01 wet seasons (Aug-Dec) to study the influence of organic manures and inorganic phosphatic fertilizers on the rice-rice cropping system. **(Author's abstract)**

Keywords: *Agriculture, Gliricidia sepium, Inorganic phosphatic fertilizer, Organic manure fertilizer, Rice-rice cropping system*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 57-60

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0092

Impact of pulse applications of herbicides on biomass of grasses and sedges and their effects on the yield and yield components of direct wet-seeded rice

Awan, I. U. , Hayat, K. , Nadim, M. A., Anjam

Because rice is a staple and an important export commodity for Pakistan, an economical and time-saving cultivation method becomes indispensable. This study aimed to develop a package of technologies to support direct seeding by identifying weed management strategies, establishing appropriate time and date of seeding, and promoting efficient application of herbicides.

An experiment using a splitplot design with three replications was conducted in 1999 and 2000. A subplot size of 5×3 m² was used in each treatment. Main plots were assigned to different herbicide application times (3, 6, and 9 wk after seeding [WAS]), whereas the subplots comprised four herbicides (Ronstar-12 L at 2 L ha⁻¹, Topstar-800 WG at 100 g ha⁻¹, Rifit-500 EC at 1 L ha⁻¹, and Acelor-50 EC at 250 mL ha⁻¹) with one control treatment. Fertilizers at 120-39.6-49.8 kg NPK ha⁻¹ were used. Full doses of P and K and half of N were applied at the time of planting, while the remaining half of N was applied at panicle initiation. Pregerminated seeds of IR6 (100 kg ha⁻¹) were used. The soil is mostly silty clay. Annual precipitation (250–300 mm) mostly occurs in July and August. The 1999 experiments took place on a field where the previous crop was *Brassica napus*, while the 2000 experiments followed a wheat crop. Soil under the experiments during both years (1999-2000) had a pH of 8.2 and 8.5, respectively. **(Authors' abstract)**

Keywords: *Agriculture, Ronstar-12 L, Topstar-800 WG, Rifit-500 EC, Acelor-50 EC, Brassica napus, Herbicides on biomass*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 48-49

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

0093

Improved amylose content of rice (IR72) induced through gamma radiation

Barrida, Adelaida C., Rivera, Faye G., Manrique, Mary Jayne C., Dimaano, Arvin O., Costimiano, Eduardo C.

In general grain quality and quality preferences vary across rice growing countries and regions. Filipinos preferred translucent, well milled, long grain rice with aroma and minimal broken grains which is soft after cooling. The amylose content of rice starch is a major eating quality factor. The aim of this study is to develop rice mutants with good eating quality and low to intermediate amylose content through induced mutation using gamma radiation. Low to intermediate

amylose content in rice were identified and selected among the advance generation lines irradiated with 200 and 300Gy dose of gamma radiation. Screening was done using qualitative method (Iodine staining method). Selected lines were analyzed quantitatively, to determine the percent amylose content. Percent amylose were group to several categories where; 0-6% is waxy, 6-12% is very low, 12-18% is low, 18-24% is intermediate and >25% is high. Results were further confirmed using the molecular marker technique by looking at the waxy gene which code for granule bound starch synthase I (GBSSI) and controls amylose content in rice. Among the 30 lines selected and analyzed, 2 lines were confirmed to have a gene base mutation with a low to intermediate amylose content. Thus, induced mutation using gamma radiation has successfully improved amylose content in rice (IR72). **(Author's abstract)**

Keywords: *Agriculture, Amylose, Synthase I, Waxy gene, Mutation*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 11
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0094

Improvement of collapsible containers from indigenous materials for agricultural crops

Eguia, V. M., Cuaresma, T. G., Cruz,

Improvement on collapsible containers made from bamboo was effected on the framings and binding materials.

Physical and performance evaluation showed that there was no significant effect on the performance of the crate when used in the actual field service testing. Bamboo collapsible crates with bamboo framings proved to be more durable than those made with wooden framings.

Cost analysis showed that collapsible crates with bamboo framings is lower in production cost by 28% than those with wooden framing. Results of service testing showed that these crates perform as well with that of plastic crates previously used ZAF-BMC. **(Authors' abstract)**

Keywords: *Agriculture, Collapsible container, Indigenous materials, Bamboo*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 19 Issue No. 4, 43-54
(Filipiniana Analytics)
Fil(S) T1 N2 19/4 1994

Improving rice for broad-spectrum resistance to blast and salinity tolerance by introgressing genes from *O. rufipogon*

Padmavathi, G. , Mishra, B. , Majumder, N.D. , R

Wild species of *Oryza* are an important source of tolerance for biotic and abiotic stresses. Several genes of agronomic importance such as those that confer resistance to blast, bacterial leaf blight, brown planthopper, tungro, and grassy stunt virus have been transferred from wild species into elite breeding lines of rice, including the quantitative trait loci (QTLs) for biotic and abiotic stress resistance that have been identified earlier (Brar and Khush 1997, Amante-Bordeos et al 1992).

Blast, caused by the fungus *Pyricularia grisea*, is one of the most destructive diseases of rice. Surveys done by Widawsky and O'Toole (1990) and Geddes and Iles (1991) confirm that it remains a serious constraint to rice production in South Asia. Host-plant resistance is the most promising method to control blast (Bonman et al 1992). We report here the transfer of broad-spectrum resistance to blast and salinity tolerance from *O. rufipogon* into high-yielding variety B90-15 (IET15420). **(Authors' abstract)**

Keywords: *Agriculture, O. rufipogon, Salinity tolerance, Blast tolerance, Pyricularia grisea*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 17-19

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

Industrial process for the production of slow-release potassium silicate fertilizer using the internal heat type fluidized bed reactor

Dominguez, L. G., Mallillin, A. T., Manalo, L. A., Mecado, B. Y., Pigao, C. G., Yamada, K., Ishibashi, K., Hosada, H., Quizon, A., Canceran, M.

A new and unique type of fertilizer (SLOW RELEASE TYPE) containing silicon, potassium, calcium and magnesium has been developed. Rice husk and dolomitic limestone are pulverized separately to pass through 100 mesh sieve, then

mixed thoroughly with K₂CO₃, molasses and sawdust. The mixture is passed through the extruder and finally granulated in the granulator. Finally the granules obtained are dried, then subjected to heat treatment by the use of the internal heat-type fluidized bed reactor, a self-sustaining heat reactor with rice husk, saw dust and molasses as the heat sustaining source. **(Author's abstract)**

Keywords: *Agriculture, Potassium silicate fertilizer, Fluidized bed reactor, Silicon, Calcium, Magnesium*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 19 Issue No. 1, 9-23

(Filipiniana Analytics)

Fil(S) T1 N2 19/1 1994

0097

Influence of high- and low-temperature treatments on seed germination and seedling vigor of coarse and fine rice

Farooq, M. , Hafeez, K. , Basra, S.M.A., Warriach,

Rapid and uniform crop stand is a prerequisite for better quality produce. If seeds germinate erratically over a long time, seedling growth will not be uniform and plants will mature over a wider period. Seed invigoration treatments are therefore developed to improve seed performance during germination and emergence.

Dry-heat treatment of seeds is used to control external and internal seed borne pathogens such as fungi, bacteria, viruses, and nematodes (Nakagawa and Yamaguchi 1989), and to break seed dormancy (Zhang 1990). In general, the high temperature in this treatment reduces seed viability and seedling vigor, but the optimum temperature for breaking dormancy promotes seed germination and seedling emergence in cereal crops (Lee et al 2002) and cotton (Basra et al 2003). The degree of promotion of seed germination by dry-heat treatment showed wide intraspecific variation (Herranz et al 1998). Nonlethal heat shock treatment before radicle emergence effectively promoted the germination of barley, wheat, and cotton seeds (Dell' Aquilla and Di Turi 1996, Dell' Aquilla et al 1998, Basra et al 2003). **(Authors. abstract)**

Keywords: *Agriculture, High-temperature treatment, Low-temperature treatment, Seed germination, Seedling vigor*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 75-77

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

Influence of irrigation, nutrient management, and seed priming on yield and attributes of upland rice

Varughese, K. , Thomas, U. C. , Tho

The productivity of upland rice is very low because of a host of problems, among which soil moisture stress, poor native soil fertility, and high weed infestation are the most important ones. Under upland situations, moisture stress is likely to occur during any of the growth stages of the crop, which may adversely affect growth and yield. Presowing treatment improves germination, promotes plant and root growth, and increases crop survival under water-stress conditions. A field experiment was conducted at the Instructional Farm in Vellayani of Kerala Agricultural University, India, during the late first crop season of 1999 to examine the response of upland rice to different levels of irrigation, nutrient management, and seed priming.

Soil characteristics at the trial site were a sandy clay loam texture, organic C 1.7% (Walkley and Black's rapid titration method, Jackson 1973), pH 4.8 (pH meter with glass electrode, Jackson 1973), and available N, P₂O₅, and K₂O of 238 (alkaline potassium permanganate method, Subbiah and Asija 1956), 32.8 (Bray 1 method, Jackson 1973), and 160 kg ha⁻¹ (ammonium acetate method, Jackson 1973), respectively. Treatments consisted of three irrigation levels (irrigation water [IW]/cumulative pan evaporation [CPE] ratio of 1.5 [I1], 0.1 [I2], and rainfed [I3]; three nutrition levels (20-10-15 [F1], 40-20-30 [F2], and 60-30-45 [F3] kg NPK ha⁻¹); and two seed priming methods (1% [S1] and 2.5% (KCl) [S2]. The experimental layout was a split-split-plot design with three replications: irrigation levels in main plots, nutrient management in subplots, and seed priming in sub-subplots. Irrigation was given to a depth of 50 mm. Upland rice variety Matta Triveni (PTB45) was dibbled at a spacing of 20 × 10 cm. This variety was released from RARS, Pattambi, Kerala. It has a duration of 95–105 d. The grains are red, long, and bold. **(Authors' abstract)**

Keywords: *Agriculture, Irrigation, Nutrient management, Seed priming, Soil moisture, Soil fertility, Weed infestation*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 39-40

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

Inheritance of purple pigmentation in two-line rice hybrids

Nadarajan, N. , Mahaling

Many scientists have systematically studied how purple color is inherited in rice leaves. Three pairs of basic genes (C, A, P) control the inheritance of anthocyanin pigments (Nagao 1951). The C-A-P gene system in japonica rice is suitable for indica rice (Kinoshita 1984). Tongmin et al (1996) studied the inheritance of two purple rice lines and the possibility of their use as morphological markers in hybrid rice breeding.

The experiment was conducted in 2000-03 at ACRI. The genotypes involved in the crosses were aromatic rice varieties (ADT41, Pusa Basmati 1, and Basmati 370), nonaromatic varieties (ADT39 and AD98028), and a nonaromatic TGMS line (TS29) with purple basal nodes. **(Author's abstract)**

Keywords: *Agriculture, Purple pigmentation, Two-line rice hybrids, Green pigmentation, Basal nodes*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 12-13

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0100

Inheritance of scentedness in two-line rice hybrids

Nadarajan, N. , Mahaling

Aroma in scented rice has its unique value, from both consumption and commercial points of view. Knowledge of the inheritance pattern of aroma would help in deciding what breeding methods to use to develop high yielding rice hybrids. Various techniques to detect and evaluate aroma, in order to study the inheritance of aroma in rice and improve the effectiveness of breeding programs for scented hybrid rice, have been proposed (Sood and Siddiq 1978). A digenic segregation ratio of 9 nonaroma:7 aroma was obtained by Tripathi and Rao (1979) and Hsieh and Wang (1988). The segregation ratios of nonaromatic to aromatic plants in two F₂ populations from crosses between aromatic and nonaromatic and between nonaromatic and aromatic were both 3:1. This indicates the inheritance of a single recessive gene with regard to aroma but that, in one F₂ population, from the cross nonaromatic/aromatic, the ratio was 9:7, indicating that two complementary recessive genes control aroma in aromatic rice (Dong et al 2001). **(Author's abstract)**

Keywords: *Agriculture, Two-line rice hybrids, Scentedness, Digenic segregation, Aroma*

Integrated natural resource management for rice production

Kam, Suan

Research over the past 30 years by the agricultural research community at large has made significant achievements in boosting productivity and alleviating poverty through increasing farm income. However, these agricultural advances have also had effects that resonate across the landscape, in some cases undermining the integrity of natural resources that people depend on to meet a wide range of needs. In addition, achieving further improvements in agricultural production has become more challenging than ever before. This has to be accomplished using land, water, biological, and other resources that are increasingly limited in supply in the face of increasing population pressure and competing demands from other sectors of economic development. Dr. Ian Johnson, president of the Consultative Group on International Agricultural Research (CGIAR) centers, succinctly summarized the importance of natural resource management (NRM) in his statement that "...mismanagement of natural resources may be the 'Achilles heel' of long-term sustainable development." These recent trends are driving a demand for broadening research and management approaches that are aimed not only at productivity gains but also at ensuring truly sustainable development in the economic, social, and ecological sense. These approaches have generally been described as integrated natural resource management (INRM). However, INRM means different things to different people, mainly because there are many facets of natural resources and there are many ways by which they are used to meet human needs. **(Author's abstract)**

Keywords: *Agriculture, Consultative group on international agricultural research (CGIAR), Natural resource management (NRM), Rice production, Integrated natural resource management (INRM)*

Interaction among resistant rice genotypes, whitebacked planthopper *Sogatella furcifera* (Horvath), and egg parasitoid *Anagrus* nr. *flaveolus*

Uthamasamy, S. , Nalini, R. , Gunathilagar

Ecological approaches such as the use of resistant varieties are major components of pest management in rice. Rice cultivars resistant to whitebacked planthopper (WBPH) *Sogatella furcifera* (Horvath) (Hemiptera: Delphacidae) are important in integrated pest management. A study was carried out to elucidate the interactions between rice genotypes resistant to WBPH and its egg parasitoid *Anagrus* nr. *flaveolus* (Hymenoptera: Mymaridae). Ten rice genotypes-PSBRc 10, Babawee, IR36, IR72 (resistant), A5174, A5368, A5301, A5372 (moderately resistant), IR26 (susceptible), and TN1 (highly susceptible)-were used in the screenhouse and microplot experiments. **(Author's abstract)**

Keywords: *Agriculture, Sogatella furcifera* (Horvath), *Anagrus* nr. *flaveolus*, *Whitebacked planthopper* (WBPH)

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 29-30

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0103

Invasion of weedy rice in rice fields in Thailand: problems and management

Wild rice (*Oryza rufipogon* Griff.), a relative of cultivated rice (*Oriza sativa* L.), is common in natural habitats throughout Thailand (Chitrakorn 1985). Characteristics of wild rice include seed shattering, black seed coat, awns on seeds, red pericarp, and sensitivity to photoperiod (Oka 1988). The oldest farmers say that wild rice has always been a common feature of rice fields in Thailand. They and younger farmers as well recall that, even 20 y ago, it was found mainly in natural habitats on the edges of farm ditches, deep depressions, and swampy places, but rarely in rice fields. Weedy rice with characteristics of *O. rufipogon* has been recognized as a weed in rice fields, but the level of infestation had been quite low, until recently. **(Author's abstract)**

Keywords: *Agriculture, Oryza rufipogon, Oriza sativa* L., *Weedy rice*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 20-22

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

The IRRI 3.5 Hp multi-mode power unit: a lightweight power source for small rice based farming systems

Salazar, G. C., Borlagdan, P. C., Pasikatan, M. C., Quick, G. R.

A power unit which is light but powerful enough to perform different farm operations was developed. Powered by a 3.5 hp gasoline engine with integral 2:1 speed reduction, the multi-mode power unit (MMPU) consists of basic modules which can be easily transformed to perform plowing, puddling, row seeding, interrow weeding, and other farm operations. The MMPU was designed to be light enough to be carried by 2 persons, thus making possible mechanization of small or isolated paddy farms and irregularly-shaped narrow rice terraces. It could be operated by women.

This paper describes the design and development of the basic unit, the puddler, plow, seeder, and upland weeder modules and the subsequent field tests. **(Authors' abstract)**

Keywords: *Agriculture, 3.5 Hp multi-mode power unit, Small rice based farming systems, Plowing, Puddling, Row seeding, Interrow weeding*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 19 Issue No. 4, 29-42

(Filipiniana Analytics)

Fil(S) T1 N2 19/4 1994

Kadous: an aromatic, high-yielding variety with good cooking quality

Padasht, F. , Eghlidi, A. , Tarang, A. , Erfani, A. , Allahgholipour, M. , Nahvi, M. , Jauhar Ali, A. , Mohammed Salehi, M.S. , Eshraghi, A. , Soroush, H.R., Alinia, F. , Khush,

In Iran, rice is an important source of carbohydrate, next to wheat. In recent years, rice production in Iran increased from 2.4 million t (2000) to 3.3 million (2003). This came from an area of 615,000 ha. This sudden increase in rice production and productivity is attributed to the wide-scale adoption of improved varieties. Furthermore, with Iran's economic boom, consumer preference has been toward premium-quality rice. Therefore, rice breeders needed to develop varieties with superior cooking quality features that match those of traditional landraces such as Hashemi, Musa Tarom,

and Hassani, while keeping the yield level close to that of improved semidwarf varieties. Through this strategy, it is possible to partially replace traditional landraces (60% of the country's total area) with improved rice varieties having the same cooking quality. **(Author's abstract)**

Keywords: *Agriculture, Kadous, Carbohydrate, Wheat*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 16-17

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0106

Karjat 6, a new, superfine medium-duration rice variety in Maharashtra, India

Rewale, A.P. , Dalvi, V.V. , Waghmode, B.D. , Ingale

Rice is grown on 1.5 million ha in Maharashtra State, India. Of the total area under rice, about 56% is planted to fine and superfine varieties; the rest is under coarse-grained varieties. Early, medium-late, and late varieties, respectively, occupy about 40%, 40%, and 20% of the area in the state. Because fine-grained varieties are preferred, the Karjat rice research station developed Karjat 4, an early-maturing variety (115-120d), and Karjat 6, a medium-duration (130-135 d) line suitable to the varied agroecological conditions in the state.

Karjat 6 (KJT-12-6-25-9-13-50-13) was developed through the pedigree method. It involved a cross of Heera and Karjat 4. Recommended for commercial cultivation in Maharashtra in 2005, Karjat 6 is a semidwarf (95-100cm) variety having short, slender grains, 1,000-kernel weight of 13.30 g, and average grain yield of 3.5-4.0 t ha⁻¹. The variety has 68.1% milling and 65% head rice recovery. **(Authors' abstract)**

Keywords: *Agriculture, Karjat 6, Superfine medium-duration rice variety, Maharashtra, India*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 19-20

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0107

**Leaf description of local and foreign mulberry varieties grown at Philippine Textile
Research Institute-Technology Center (PTRI-TC), La Trinidad, Benguet**
Toring, Pepito M.

The study was conducted to identify the physical characteristics of mulberry leaves of different mulberry varieties grown at PTRI-TC, La Trinidad, Benguet. It aimed to establish ground information and basis for more studies on the morphology of mulberry for future selection and breeding purposes.

Six local and five foreign varieties were studied. The parameters for leaf description used were the color of matured leaf, leaf shape, leaf tip, leaf base, leaf margin, and leaf texture.

Varietal differences were observed on the leaves of 11 different mulberry varieties. The leaf features alone though, are insufficient basis for varietal identification. The close similarities of the leaf characteristics are confusing and misleading especially to the beginner's eye. Nonetheless, the result of the study using leaf features for mulberry varietal description can be a take off point for other related studies particularly on the nomenclature of existing varieties in the country. **(Authors' abstract)**

Keywords: *Agriculture, Mulberry, Leaf shape, Leaf tip, Leaf base, Leaf margin, Leaf texture*

Samay Bulletin, Volume No. 2 Issue No. 1, 31-39

(Filipiniana Analytics)

Fil(S) TS1300 S42 2/1 2002

0108

**Long-term effects of fertilizers and herbicides on a nematode population under a rice-
wheat-cowpea system**
Ram, Nand, Singh

Nematodes are ubiquitous. They respond to soil inputs and management practices and can be used as a measure of the biological response of soils to these manipulations (Bohlen and Edwards 1994). Fertilizers and herbicides are regularly being used to enhance crop production. But information on the behaviour of nematodes under the continuous use of these agricultural inputs in a fixed crop sequence over the years is meager. This study was carried out during the 30th year of the long-term fertilizer experiment initiated in 1971 with the rice-wheat-cowpea system at Pantnagar (29° N, 79° 3' E) on an Aquic Hapludoll in northern India. The climate is humid subtropical (Nand Ram 1995). **(Author's abstract)**

Keywords: *Agriculture, Herbicides, Fertilizer, Nematode population, Rice-wheat-cowpea system*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 26-27

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0109

A low cost fodder chopper

Pasikatan, M. C., Quick,

A flywheel-type feederless, inclined axis chopper was developed for small area rice and livestock farmers. The prototype was designed to be powered by a 2.6 KW (3.5 hp) engine, which drives by belt four angled blades rotating below a fixed counter edge. A hopper presenting the crop perpendicularly to the inclined blade housing, assisted by a strong suction produced by the blade rotation to ensure convenience and safety in manual feeding. The length of chop set at 25 mm is partly regulated by the distance between the rotating blades and the bottom of the housing. The rotation blades and the counteredge are both reversible.

Tests with napier grass, corn stalks, and rice straw showed satisfactory performance with the appropriate clearance, speed and moisture content ranges of the material presented. Highest capacities at 1500 rpm were 1186, 1148 and 744 kg/hr for napier grass, corn stalks and rice straw, respectively. Chopped materials having length of 50 mm or less, were 94%, 93% and 62% for napier grass, corn stalks and rice straw, respectively. Corn stalks required the highest power demand at 2.3 kW. .

The chopper performance was comparable to higher cost commercial choppers in terms of capacity and specific energy, but it can be made for 20 to 33% the cost of imported choppers in its class. The cattle flattening system through silage feeding which uses a low cost chopper as equipment, will give a conservative return on investment of 26% as compared to the 13% of a free grazing system. **(Authors' abstract)**

Keywords: *Agriculture, Fodder chopper, Angle blade, Rice, Livestock*

, Volume No. 19 Issue No. 4, 13-27

(Filipiniana Analytics)

Fil(S) T1 N2 19/4 1994

Managing invasive alien mollusc species in rice

Joshi, Ravin

The golden apple snail (GAS) *Pomacea canaliculata* (Lamarck) (Gastropoda: Ampullariidae) is a freshwater mollusc that originated from the floodplains along the Paraguay and Paraná rivers that cut through Paraguay, Brazil, and Bolivia and that drain into the Atlantic in Argentina (Pain 1946). It is also known by its other common names: golden miracle snail, jumbo snail, Argentinean apple snail, channeled apple snail, mystery snail, and South American apple snail. Some of these names have been used for more than one species of ampullariid (Cowie and Thiengo 2003, Cowie and Hayes 2005). GAS, however, is the common term for the pest species in Asia (Joshi 2005). **(Author's abstract)**

Keywords: *Agriculture, Golden apple snail (GAS), Pomacea canaliculata, Ampullariid*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 5-13

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

Marketing channels and margins of recyclable solid waste materials in Kabacan, Cotabato

Etac, Ereth M., Garcia, Francisco Gil

This study was conducted mainly to trace up the marketing channels of recyclable solid waste materials in Kabacan, Cotabato and to determine the marketing margins received by the participants in different recyclable materials. The relative location of the participants was also determined using GIS technology. The population of this study consisted of five scavengers, five junkers, eight junkshop operators, two ambulant buyers, and six bulk buyers. Since no establishment engaged in recycling was registered, the researchers went to the junkshops and approached the owners and told them the purpose of this study; then the other participants were identified. The scavengers were interviewed in the dumpsite at Brngy. Sanggadong while they were gathering materials while the junkers were asked at the junkshops where they

sold their collections. These junkshop operators gave the address of the ambulant buyers who purchased their materials, specifically Balisbis Junkshop in Kidapawan City and ESC Trading in Koronadal City. From these ambulant buyers, the

location of the bulk buyers were traced. There were four bulk buyers in Davao City namely: Dupcor (Toril), Danny Estorres (Agdao), Southern Metal (Agdao), and Andy Kua (Agdao). Cebu metal—a bulk buyer in General Santos City purchased the scrap iron and steel from the junkshop operators and ambulant buyers while GenSan Metal Trading purchased the bottles collected by Balisbis Junkshop.

There were 15 different recyclable materials traded by the participants in the recycling business such as broken plastic materials, aluminum materials, discarded wet cell batteries, scrap iron and steel, galvanized iron sheets, tin cans, copper, bronze, and different kinds of bottles like “lapad”, long neck, Sho Hok Tong, beer size, catsup, and soft drink bottles.

Buying price and selling price were also asked in order to determine the marketing margins that were received by the participants. It was found out that the ambulant buyers received the highest marketing margins in most of the recyclable materials traded in this business. **(Authors' abstract)**

Keywords: *Agriculture, Garbage collection, Junkshop, Segregation, Recycle, Reduce, Reuse*

USM R&D Journal, Volume No. 16 Issue No. 2, 135-154

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

0112

Metabolic responses to salinity stress of rice genotypes with varying tolerance

Katimbang, Meggy Lou, Entila, Frederickson D., Pacleb, Myrish, Ismail, Abdelbagi M.

Salinity is a major constraint for rice production, especially in coastal deltas. Several mechanisms are associated with salt tolerance in rice, including changes in synthesis and transport of metabolites and ions, both at the cellular and the whole plant level. This study attempts to determine the variation in metabolic profiles in tolerant and sensitive rice genotypes in response to salt stress at seedling stage.

NSIC222 (sensitive) and FL478 (tolerant) were used to assess changes in selected metabolites in response to salt stress of 100 mM NaCl. Plant responses were determined by measuring Na⁺ concentrations in leaf samples. A GC-MS-based protocol was used to investigate early metabolite changes following salt stress for 24 hours.

After 24 h in 100 mM NaCl, FL478 had lower amino acid profiles (especially glutamine, aspartic acid, and serine), and silanol and organic acids such as octadecanoic acid, than the sensitive NSIC222 suggesting no apparent cell damage

and better tolerance as a consequence of lower Na^+/K^+ ratio in the cytoplasm. Indole-3-acetonitrile (IAN) and L-proline were found in both varieties after salt stress but absent under control conditions with concentrations significantly higher in FL478 than in NSIC222. Increasing metabolite levels (IAN) could help cope with the increased osmotic potential. Only a few metabolites responded to salt stress after 24h of treatment, probably as a shock-response rather than adaptive responses that require longer time to develop. **(Authors' abstract)**

Keywords: *Agriculture, Rice, Metabolomics, GC-MS, Salinity tolerance*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 26

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0113

A method for transforming rice stinkbug counts in rice

Singh, V.S , Kalra, N. , Thein, Mu Mu , Chand

Most statistical procedures presuppose a normal distribution, with variance independent of mean insect population. However, in field counts of a majority of insect species, variance varies as a power function of the population (Taylor 1961). Such data have to be transformed before analysis to eliminate the dependence of the variance on the mean population. **(Author's abstract)**

Keywords: *Agriculture, Leptocorisa varicornis F., Logarithmic transformation, Pusa-834*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 28-30

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0114

Molecular analyses of the abaca (*Musa textilis* nee cv. abuab) filtered-genome using next generation sequencing and sanger-based sequencing

Vilela, Julianne A., Diaz, Ma. Genaleen P., Ocampo, Eureka Teresa M., Lalusin, Antonio G., Laurena, Antonio C.

There is no existing genomic information on the Philippine endemic abaca which is the country's most economically important fiber crop. This study aims to start building the genomic resources of abaca and fast-track marker assisted breeding of improved abaca varieties.

Full genome sequencing and assembly in many plant genomes have been complicated by the large fraction of repetitive DNA, to enrich for genes and low-copy sequences, methylation-sensitive restriction enzyme, with six base pair recognition site, was evaluated on genomic DNA of abaca as a different approach for gene enrichment. *PstI* was used to digest abaca genomic DNA and 400 bp fragments were sequenced using Ion PGM System Ion 318C Chip V2. Microgenomic library was constructed to verify the Next Generation Sequencing (NGS) data, employing Sanger-based sequencing.

Total of 3,949,794 NGS reads were obtained and assembly of the sequences revealed 3,853 contigs. From the reads, *PstI* reduced the number of sequence reads with repeat elements to 3.1 % and 86.3% had significant expressed sequence tag (EST) alignment. *PstI*-Filtered genomic DNA was also used to construct microgenomic library with only 1.3% repetitive elements but generated 86.6% significant expressed ESTs alignment. Total of 68 SSR-based primers were successfully designed and 57% were verified by-PCR.

The abaca functional gene database is being constructed. This strategy was able to capture functional gene space with less repetitive elements (DNA transposons, LTR retrotransposon, Non-LTR). **(Author's abstract)**

Keywords: *Agriculture, Abaca, Exome, Hypomethylated, ABTV*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 23

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0115

Molecular characterization of lymphocyte-activation gene 3 (LAG-3) of swamp- and riverine-type water buffaloes

Padiernos, Ryan Bismark C. , Rivera, Shanemae M., Abella, Evaristo A., Cruz, Khristina J., Mingala, Claro N.

Lymphocyte-activation gene-3 (LAG3) is a membrane protein that plays an important role in the down-regulation of T cell activity during the events of chronic diseases and infection. In this study, molecular characterization of LAG3 of swamp- and riverine- type water buffaloes was done by DNA sequencing, homology and phylogenetic analysis. Bubaline LAG3 sequences contain an open reading frame of 1530 nucleotide, encoding a polypeptide of 505 amino

acids. Nucleotide sequence homology of LAG3 reveals 99.7 % identity in swamp- and riverine- water buffaloes. Additionally, the putative amino acid sequence identity of bubaline LAG3 with other selected mammals is between 62-96%. LAG3 protein sequence of water buffalo contained a transmembrane domain, four extracellular domains containing different conserved regions throughout and the 'KTGELE' inhibitory motif found in the intracellular region of bubaline LAG3. However, one highly conserved cysteine residue in mammalian LAG3 was replaced by tyrosine in both swamp- and riverine- type water buffaloes. Phylogenetic analysis generated high bootstrap value between the two types of water buffalo which further confirmed the degree of relationship between bubaline species. Results of the study give insight towards the development of molecular markers for disease resistance and manipulation of responsible genes and immune molecules that influence disease progression. This is the first report that describes the genetic characteristic of LAG3 in swamp- and riverine- type water buffaloes. **(Author's abstract)**

Keywords: *Agriculture, Characterization, LAG3, Water buffalo*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 9
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0116

Molecular strategies to use nuclear male sterility in plant hybrid breeding

McCouch, S. , Li, Xingi , Yuan, Longping, Xiao, J

The exploitation of plant heterosis is an effective approach to increase food production. Heterotic hybrid varieties in major crops such as rice, wheat and cotton can show more than a 20% yield advantage over the best conventional ones under the same cultivation conditions. Difficulties in breeding elite male sterile lines and producing commercial hybrid seed hamper the development of hybrid crops. **(Author's abstract)**

Keywords: *Agriculture, Nuclear male sterility, Plastid transformation, Photoperiod-sensitive genic male sterile lines, Thermosensitive genic male sterile lines*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 10-12
2004,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 29/2 2004

Monitoring panicle initiation development to safeguard thermo-sensitive genetic male-sterile hybrid seed production of NSIC RC 202H and 204H

Ragas, Richie Eve G., Brena, Susan R., Boholano, Isagani V., Palanog, May O.

Seed setting on thermo-sensitive genetic male-sterile (TGMS) line depends primarily on its flowering synchronization with the pollen line. Accurate prediction of flowering time is an important factor which determines management decisions in order to optimize hybrid seed yields. In rice, flowering date is predicted by the basis of panicle initiation. During the 2014 dry and wet seasons, hybrid seed production experiments were conducted. Panicle development of parent lines of Mestiso 19 (NSIC RC 202H) and Mestiso 20 (NSIC RC 202H) were evaluated at three-day interval starting from the development of panicle primordia to flowering. Results showed that panicle of TGMS line of Mestiso 19 develops 3-4 days later than its pollen parent while TGMS line of Mestiso 20 is 1-2 days ahead of its pollen parent. During the stages III-VIII of panicle development, the difference in panicle length between parents of Mestiso 19 and 20 are 10 ± 3 mm and 4 ± 0.5 mm, respectively. From this study, it is concluded that sowing dates of parent lines of both TGMS hybrids should be adjusted according to inequal differences in panicle development. **(Author's abstract)**

Keywords: *Agriculture, Thermo-sensitive, Male-sterile, Rice, Hybrid seed production, Panicle initiation*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 31
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

Monitoring rice and corn crop cultivation in Northern Philippine using modis data

Alibuyog, Nathaniel, Comiso, Josefino C.

Satellite remote sensing data are used to study the distribution and estimate the areal coverage of the two most dominant crops, namely, rice and corn, in the Philippines. The EOS/Terra MODIS data were used to assemble a 15-year time series of monthly NDVI data over Northern Luzon at a resolution of 250m. The monthly data were used to investigate seasonal patterns of crops and to derive nine phenological parameters from the distributions of rice and corn in Northern Luzon which in turn were used in conjunction with a maximum likelihood classifier to discriminate areas planted by rice and those planted by corn during the wet and dry seasons. Classification was done in areas that usually have two cropping seasons and where the starts of the planting seasons are consistent with those expected from climatology. The resulting maps show a spatial distribution of corn

and rice crops during the wet and dry seasons that are generally plausible and found to be highly correlated and comparable, with some exceptions, to data published by the Bureau of Agricultural Statistics. **(Author's abstract)**

Keywords: *Agriculture, Rice, Corn, MODIS, Phenology, Remote sensing*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 45

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0119

Morpho-agronomic diversity of some traditional corn (*Zea mays* L.) varieties from Bukidnon

Taban, Bethel Grace P., Baldo, Nenita B.

Genetic diversity is the key to overcome the hump in corn varietal improvement. For possible future gene mining, morpho-agronomic diversity of 29 traditional corn varieties (TCV s) collected in Bukidnon was determined in 2013-2014. This study also determined the degree of association among traits and the genetic relationships among the genotypes. Data from 19 quantitative and 16 qualitative traits were analyzed using ANOVA for RCBD with two replications, Standardized Shannon-Weaver Diversity

Index (SSWDD, Pearson's Simple Correlation Moments (PSCM), and Ward's Minimum Variance for cluster analysis. ANOVA revealed highly significant variations ($p < 0.01$) among TCVs for days to 50% seedling emergence and tasseling, ear height and plant height at maturity, days to maturity, weight of 100 seeds, cob diameter, kernel width, and number of kernels per row. Quantitative traits were generally highly diverse ($H' > 0.75$) with grain yield having the highest diversity ($H' = 0.91$) as estimated by SSWDL. However,

qualitative traits showed low diversity ($H' = 0.30$). PSCM showed that grain yield was positively and significantly associated with eight traits, where the highest was with ear diameter ($r = 0.64$). Cluster analysis based on 35 traits however, revealed that Lawaan and Bulldog, Kalarikay and Silangan, MBC CWC and Tinigib #4, Sigi-sigi #1 and Calempo #2, Tinigib #2 and Sige-sige #6 (yellow), and Sigi-sigi #2 and MLAB Red were duplicates (100% genetic similarity). **(Author's abstract)**

Keywords: *Agriculture, Corn, Zea mays, Bukidnon, Morpho-agronomic diversity, Traditional varieties*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 37

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Morpho-agronomic diversity of some upland rice varieties from IRRI under Musuan, Bukidnon conditions

Dinoy, Irene M., Jamago, Joy M.

Maximizing rice production of upland agro-ecosystems can help achieve rice sufficiency in the country. This study was conducted from October 2013 to March 2014 to determine the: (1) morpho-agronomic diversity of 15 upland rice varieties (URVs) and 4 inbreds from IRRI, (2) relationships among their morpho-agronomic traits, and (3) their genetic relationships. Data from 32 traits were analyzed using Standardized Shannon-Weaver Diversity Index (SSWDI), Pearson's Simple Correlation Moments (PSCM), and Ward's Minimum Variance for cluster analysis. SSWDI estimated high variability for 10 quantitative traits ($H' > 0.76$) except for days to maturity ($H'=0.71$) and grain length ($H'=0.70$) with only moderate diversity. Mean diversity for 12 quantitative traits was high ($H'=0.85$) but low ($H'=0.20$) for 15 qualitative traits. The genotypes were non-variable ($H'=0.00$) for leaf blade attitude, culm attitude, ligule color and panicle attitude of branching. PSCM revealed 48 positively associated traits and 18 negatively associated traits. Highest positive correlation was between days to first heading and days to main heading ($r=0.88$), whereas, rice bug infestation and awn presence showed the highest negative correlation ($H'=-0.90$). Cluster analysis that produced two groups showed Cluster I with 8 genotypes at 71 % genetic similarity and Cluster II with 11 genotypes at 59% genetic similarity. No duplicates (100% similarity) were identified. Results suggest that the IRRI DRVs may have potential alleles for developing improved upland rice cultivars. **(Author's abstract)**

Keywords: *Agriculture, Rice breeding, Bukidnon, Genetic diversity, Upland rice, IRRI*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 22

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Morpho-agronomic diversity of upland rice landraces and traditional varieties from Bukidnon

Fuentes, Mark Jayson N., Jamago, Joy M.

Cortes (2011) collected 140 upland rice landraces and traditional varieties (URLTVs) from 24 barangays in Bukidnon that were culturally valuable to indigenous communities. These were highly diverse for most seed traits. Sixty-six URLTVs with adequate viable seeds were grown on August 2012 at the CMU-Agricultural Experiment Station for morphoagronomic characterization to determine their potential use in upland rice breeding. The study was a balanced lattice design with two replications. Only 55 URLTVs with adequate plant stand were considered for data collection. Most URLTVs were short-statured, perhaps as a natural adaptation to wind-treatened agro-ecosystem conditions, although based on Shannon-Weaver Diversity Index, plant height at 35 and 90 days after planting (DAP) were highly diverse ($H'=0.94$ and 0.83 , respectively). At 90 DAP, height ranged from 51.60 to 95.80 cm. Other highly diverse traits were: flag leaf length ($H'=0.90$), number of culm ($H'=0.90$), culm length ($H'=0.88$), days to first heading ($H'=0.82$), and main heading date ($H'=0.92$). Qualitative traits often useful as genetic markers have variable diversity: presence/absence of awn ($H'=0.22$), auricle color ($H'=0.36$), and leaf blade attitude or angle ($H'=0.32$) had low diversity; panicle exertion ($H'=0.49$) had moderate diversity, whereas panicle: attitude (or angle) of branches ($H'=0.53$) and lemma/palea color ($H'=0.83$) with 9 colors identified had high diversity. Such phenotypic variations need to be confirmed at the molecular level to fully determine their value in upland rice varietal improvement. **(Author's abstract)**

Keywords: *Agriculture, Rice breeding, Oryza sativa, Rice, Traditional varieties, Landraces, Bukidnon*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 13

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0122

Morphological and physiological screening of upland rice landraces in Maasim and Alabel, Sarangani Province, Philippines

Duldoco, Roman Abdul Kadir, Aguilar, Catherine Hazel

The study was undertaken to assess the morphological variability of 26 upland rice cultivars collected in Maasim and Alabel, Sarangani Province and to evaluate physiological responses of traditional rice cultivars to drought and salt stress. A total of 12, 27 and 17 morphological parameters respectively were evaluated during the vegetative, reproductive and post-harvest stages and were henceforth analyzed using principal component analysis (PCA) and cluster analysis. The traditional cultivars were subjected to different levels of salt concentration (4dS/m, 8dS/m, 12 dS/m, and 20dS/m) and different levels of PEG concentration (10%, 15% and 20%) for drought and salt screening. UPGMA dendograms generated from morphological data revealed the divergence of *Manumbay*, *M'labat* and *Larangan* from the rest of the cultivars during vegetative stage, *Blawen* during reproductive stage and *Unknown (Pilit)* and *Pilit na dili mabal 'an* during post-harvest stage. PCA, on the other hand,

identified most of the quantitative traits as discriminant traits in grouping cultivars in both dendrograms and scatterplots. Results of physiological screening for both drought and salinity during germinative and seedling stages showed that all evaluated parameters were inhibited by increasing NaCl and PEG concentrations. Among the cultivars that were screened, *Azucena M* was considered to be least tolerant to drought as shown by its poor performance in most of the assessed parameters while *Larangan*, *Mayaman* and *Lanuton* were drought tolerant cultivars. *Mayaman* was also considered as the most

tolerant cultivar to salt stress while *M'likat Blawen* and *M'likat Lagfisan* were least tolerant. Results of this study therefore provide baseline information for varietal selection for cultivation in drought-prone and saline soils especially during these times when the specter of global climate change is an imminent possibility in the coming years. **(Author's abstract)**

Keywords: *Agriculture, Drought, Salinity tolerance, Upland rice, Morphological*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 33

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0123

Mulberry sapling development as affected by variety and planting method

Bayeng, Jr., Fermin O., Basaen, Adelfa M.

The study was conducted to compare the effect of horizontal and vertical planting methods for cutting of mulberry varieties Kanva, Kingson, S54 and Thailand on the monthly growth height, percentage cutting survival, and number of sapling developed. Results revealed that in vertical and horizontal planting methods the Thailand variety yielded significant difference in monthly growth height, percentage cutting survival and number of saplings developed over varieties Kanva, Kingson and S54. Kingson proved to perform better in horizontal planting method as compared to vertical. Vertical planting method showed more advantages than horizontal for Kanva and S54. **(Author's abstract)**

Keywords: *Agriculture, Mulberry, Horizontal planting, Vertical planting*

PTRI Samay Bulletin, Volume No. Issue No. , 9-14

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.6 2006

Multi-location field trials of betacarotene-enriched 'golden rice' event GR2-R in the Philippines

Alfonso, Antonio A., Tabanao, Dindo A., Nazareno, Eric S., Espina, Mary Jane C., Espejo, Emily O., Miranda, Rinalyn T., Avellanoza, Eleanor S., Diocton, IV, Reynaldo F., Romero, Marissa V., Boncodin, Raul M., Gonzales, Sotero T., Baliuag, Neil Nemesio M., Alibuyog, Anielyn Y., Villegas, Violeta N.

Golden Rice (GR) is a new type of rice that produces the provitamin A beta-carotene in the endosperm and has the potential to help alleviate vitamin A deficiency. As part of an effort to develop and evaluate locally-adapted GR, multi-location field trials (MLT) were conducted at 4-5 locations in the country for 2-3 seasons. The agronomic traits and performance of nine advanced introgression lines of GR2 event "R" in the background of IR64 were evaluated in comparison with wild type IR64 in locations representing different rice growing environments in the Philippines from January 2012 to September 2013. While significant differences were observed among the lines and IR64, two entries (GR2-RXIR64-B3F5-148-10-10-10-12, Line 2; GR2- RXIR64-B3F5-148-10-10-10-59, Line 3) were found to be very similar to IR64 in terms of yield, days to flowering and maturity. Across seasons and locations, Line 3 produced the highest average yield of 4.32 t/ha, which is comparable to 4.72 t/ha in the wild type. All the Golden Rice lines had high total carotenoid and beta-carotene contents ranging from 4.04-10.35 µg/g and 3.50-6.08 µg/g, respectively. Line 6 (IR64XGR2-R-B3F5-239-19-9-13-32) consistently had the highest TC content with an average of 6.99 µg/g across seasons and locations. MLT results revealed that the level of beta-carotene content in the Golden Rice lines was high and stable across seasons and locations. However, more research is necessary to improve the yield and other preferred traits to ensure adoption by farmers and consumers. **(Author's abstract)**

Keywords: *Agriculture, Golden rice, Nutritious rice, Beta-carotene, Multi-location field trial, Agronomic performance*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 13

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Mycorrhizal banana cvs lakatan and cavendish grew healthy in *Fusarium* wilt infested areas in Mindanao

Aggangan, Nelly S., de Manuel, Alexis

Banana is one of the top fruit exported in many countries and considered as one of the dollar earner for the Philippines. However, *Fusarium* wilt infestation devastated the banana industry in Mindanao, thus this study was

conducted to determine if Mykovam mycorrhizal biofertilizer can restore the productivity of *Fusarium* wilt infested area in Panabo City, Davao del Norte and in Nabunturan, Compostella Valley previously planted with banana cvs. Lakatan and Cavendish, respectively. Planting materials were suckers from four-year old mycorrhizal (SM) or non-mycorrhizal mother (SNM) plants or tissue cultured (TC) meriplants. The last two planting materials were inoculated with Mykovam™ (10g per plant) during field planting while suckers from mycorrhiza ones were not re-inoculated. Lakatan experiment was established under coconut palms

or under open field, whereas, Cavendish experiment was done under open field conditions following RCBD with five blocks and 3m x 3m spacing. All plants received 100g NPK two months after planting and 100g plant-1 after three months. Results show that, all the banana plants grew healthy and there were no signs of *Fusarium* wilt disease one year after field planting. At 9th month after inoculation or field planting, suckers started to have flowers/fruits, whereas, TC plants had flowers on the 11th month. One year after planting, TC Lakatan gave a 10% more fruits under coconuts and 7.6% in the open than from suckers. SNM plants gave more (8.7%) fruits than those taken from the SM (3.8%) plants, SNM plants might have more root colonization that translated into more fruits than from the SM plants which may also require re-inoculation. In conclusion, Mykovam™ biofertilizer can restore the productivity of banana cvs. Lakatan and Cavendish in *Fusarium* wilt infested areas in two provinces in Mindanao, Philippines. (Author's abstract)

Keywords: Agriculture, Panama disease, Mycorrhiza, Mindanao, Meriplants, Suckers

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 49

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0126

Mycorrhizal fungi and compost contribute heavy metal tolerance of cover crops in minewaste soil

Rocamora, Patrick M., Aggangan, Nelly S.

Mine waste dumpsite in Barangay Capayang, Mogpog, Marinduque has been abandoned and barren for 25 to 30 years. The soil contains copper as high as 1000ppm with patches of talahib, *Acacia auriculiformis* and ferns. Fruit bodies of ectomycorrhizal fungus *Pisolithus* were observed in *A. auriculiformis*. A nursery experiment was conducted to determine the contribution of mycorrhizal fungi and compost on the heavy metal tolerance of legume cover crops for rehabilitation. Surface sterilized seeds of kudzu (*Pueraria lobata*), kumpitis (*Clitoria ternatea*), patani (*Phaseolus lunatus*) and (*Desmodium cinereum*) were sown in pots filled with 2:1 mixture of mine waste soil and compost. Mycorrhizal fungi (Mykovam or MineVAM at 5g plant-1) were placed directly beneath the seeds (five seeds pot-1 thinned to two seedlings after one month). Results show that compost and mycorrhizal inoculation increased (50%)

seedling growth and survival except kumpitis, four months after planting. Kumpitis survived only if inoculated with mycorrhiza. Mykovam and Mine VAM were equally effective for kumpitis. Kudzu was the best among the four legumes especially when inoculated with mycorrhizal fungi with or without compost. Mine VAM was best for kudzu, patani and *Desmodium*. Mycorrhizal kudzu and *Desmodium* gave the highest stem length and biomass. Non-mycorrhizal kudzu gave the highest Cu concentration (18 mg/g) followed by kumpitis (13 mg g⁻¹). In mycorrhizal plants, Cu concentration ranged from 5 to 13 mg g⁻¹. MineVAM inoculated plants gave the highest (45 mg plant⁻¹) root Cu uptake and Mykovam inoculated plants had the lowest (30 mg plant⁻¹). The results show that kudzu and *Desmodium* are candidate cover crops in minewaste site amended with compost and mycorrhizal inoculation for better growth, survival and increased tolerance to heavy metals. **(Author's abstract)**

Keywords: *Agriculture, Mykovam, MineVAM, Desmodium, Kudzu, Marinduque*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 39

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0127

The nature of humic substances under long-term manuring and fertilization in a rice-wheat system

Das , D.K., Ram,

Humic substances (HS) are the most abundant organic constituents present in soil and aquatic environments. These substances result from a humification process that involves microbial and chemical transformation of organic debris. On the basis of varying solubility in acid and alkali media, the HS are divided into three fractions: (i) humic acid (HA)-alkali soluble but acid insoluble, (ii) fulvic acid (FA)-soluble in both alkali and acid, and (iii) humin-insoluble in both alkali and acid. Information on the nature of HS synthesized in a fixed cropping sequence is lacking. This study was conducted during the 28th year of a long-term fertilizer experiment established in 1971 with a rice-wheat-cowpea sequence on virgin land classified as Mollisol at Pantnagar (29° N, 79° 3' E) in northern India. The initial soil characteristics were pH 7.3, EC of-0.35 dS m⁻¹, and -1.48% organic C (Nand Ram 1995). **(Author's abstract)**

Keywords: *Agriculture, Humic substances, Fertilization, Rice-wheat system*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 29-31

2006,

(Filipiniana Analytics)

0128

NDR2026: a new rice variety released for mid-early irrigated areas of Uttar Pradesh, India

Verma, R.S. , Vishwakarma, R.N. , Tripathi, A.K. , Giri, S.P. , Dwivedi

In irrigated areas in Uttar Pradesh, the rice-wheat and rice-potato cropping patterns are most common. Early-maturing (110-120 d) rice varieties are in great demand and so are those with high yield potential and resistance to prevalent pests and diseases. There are limited releases (Narendra 80 and Saket 4) of this mid-early irrigated group. These varieties are grown to increase the overall productivity of such areas. Released by the State Variety Release Committee of Uttar Pradesh in October 2004, NDR2026 (IET14998) is one of the new additions in the mid-early group. **(Author's abstract)**

Keywords: *Agriculture, NDR2026, Rice, Uttar Pradesh, India*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 15-16

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0129

Neural network approximation of sampling yield-effort curves of rice invertebrates

Qi, Yanhong , Barrion, A.T. , Zhang,

Biodiversity studies in ecology and agriculture often begin with the analysis of sampling curves. To measure the completeness of sampling, a sampling yield-effort curve can be drawn that plots the number of taxa sampled against the sample size (Colwell and Coddington 1994, Zhang and Schoenly 1999a,b). This curve is a stepfunction with a slope that should decrease as sample size increases and as fewer taxa remain to be sampled. Many models or methods were developed to fit these functions. Most of these models, however, yielded fixed errors. Neural network methods, always with any desired accuracy, were widely used to fit functions in engineering and related research (Bian and Zhang 2000, Hagan et al 1996, Zhang and Qi 2002). Therefore, we expect a better goodness of fit for sampling yield-effort curves with neural networks. The back propagation (BP) neural network and the radial basis function (RBF) neural network algorithms are introduced and tested in this study to provide an effective tool to fit the sampling yield-effort curves and

to document the sampling information, based on data sets of invertebrates sampled in tropical irrigated rice fields. Some conclusions on rice invertebrates are obtained from the fitted functions of neural networks. **(Authors' abstract)**

Keywords: *Agriculture, Back propagation (BP), Radial basis function (RBF), Neural network algorithms*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 40-42

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0130

Next generation maintainer lines: multiple bacterial blight resistance genes and good grain quality

Pacada, Imeldalyn G., Waing, Frodie P., Unay, Jovylyn J., Quinones, Cheryl P., Coloma, Leah P., Tabanao, Dindo A.

Marker-assisted breeding of bacterial blight resistant hybrid rice maintainer lines was started at PhilRice in 2003. Although carried out successfully, there were difficulties in using them for cytoplasmic male sterile (CMS) conversion due to residual fertility restoration capacity. Thus, the first generations of improved maintainer lines were not effectively used in developing resistant F₁ hybrids. In this study, we sought to develop a new generation of maintainer lines with two or multiple resistance genes and no residual fertility in converted CMS lines. Maintainer lines assembled at PhilRice were screened by inoculating them with *Xanthomas oryzae* pv. *Oryzae* (*Xoo*) isolates and confirmed what possible genes were present using gene markers. We utilized IRBB62, a pyramided line having *Xa4*, *Xa7* and *Xa21* genes, and identified maintainer lines showing broader resistance for bacterial blight resistance gene but poor in morpho-agronomic traits as donor parents. A combination of forward breeding and marker assisted selection (MAS) were used in development and improvement of maintainer lines. After six generations, ten advanced lines were already uniform. Initial pollen sterility evaluation of F₁ progenies, using three cytoplasmic sources, showed different reaction to iodine staining. This implied the occurrence of sterility inducing factor present in the cytoplasm or in the nucleus of both parents. Grain qualities of these advanced lines exhibited acceptable value for percent chalkiness and amylose content. Therefore, with appropriate CMS source and proper selection, the development of new CMS lines in the background of improved maintainer line having resistance gene is possible. **(Author's abstract)**

Keywords: *Agriculture, Hybrid rice, Maintainer line, Xoo isolates, Bacterial blight, MAS*

0131

Nitrogen fertilizer increases protein and reduces breakage of rice cultivar Chainat 1

Dell, B. , Jamjod, S. , Rerkasem, B. , Leesawatwong, M., Ku

Rice breakage during milling is a serious problem in many parts of the world as it reduces farmers' income (Leesawatwong et al 2003). Breakage usually occurs in the middle region of the endosperm. Breakage during milling may be alleviated in some cultivars if the density of storage protein could be increased in the endosperm in the region of breakage, as cultivars with higher protein content are less vulnerable to breakage (Nangju and De Datta 1970). Nitrogen fertilizer has the potential to increase protein content in some cultivars (Perez et al 1996). The objective of this study, therefore, was to determine whether increasing the accumulation of head rice protein, through the use of N fertilizer, would reduce breakage during milling of Chainat 1 (CN1; a Thai high-yielding cultivar). **(Author's abstract)**

Keywords: *Agriculture, Nitrogen fertilizer, Protein, Rice cultivars*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 67-68
2004,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 29/2 2004

0132

Nursery technology for early production of robust rice seedlings to transplant under integrated crop management

Valliapan, K. , Jayaraj, T. , Ravi, V. , Balasubramanian, V. , Ramanathan, S. , Rajendr

The recently introduced integrated crop management (ICM) for rice has modified certain crop management practices in the system of rice intensification (SRI) developed in Madagascar to enhance rice productivity and increase farmers' profits. It involves transplanting of young (14- to 15-d-old) seedlings at wider spacing, mechanical weeding, intermittent irrigation, etc. Among these, the use of young seedlings is the single most important practice contributing to high yields. Planting of 15-d-old seedlings at one seedling per hill produced higher rice yield than planting 21-d-old seedlings

in North Sumatra, Indonesia (Makarim et al 2002). In the conventional wetbed nursery, seedlings do not attain the expected size (15- to 20-cm height) even at 25-30 d after seeding (DAS) because of invariably high seeding rates and poor nursery management. In Tamil Nadu, India, the seed rate used for the wetbed nursery is as high as 80-100 kg per 800-m² nursery area to plant 1 ha, and the resultant seedlings are naturally thin and delicate. Therefore, we decided to develop a modified rice mat nursery (MRMN) for producing robust, healthy rice seedlings in 15 d by evaluating different soil + manure + rice husk mixes as a medium for MRMN. A few of the nursery management details such as thickness of the medium, lining of the seedbed, seed rate, and nutrient needs were standardized by nonreplicated preliminary trials. **(Author's abstract)**

Keywords: *Agriculture, Robust rice seedlings, Integrated crop management, System of rice intensification (SRI)*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 73-75

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0133

Off-season survival of golden apple snails in the Philippines

Joshi, R. C. , Martin, A. R. , Sebastian,

Golden apple snail (GAS) *Pomacea canaliculata* (Lamarck), an invasive species, was first introduced in southern and eastern Asia around 1980. It came from Argentina and Taiwan, meant for local consumption and for export as a gourmet item. In its introduced range, it became the top pest of aquatic crops such as rice and taro. Reducing GAS densities during the off-season (nonrice-growing months) should significantly reduce crop damage during rice planting months, but the lack of information on off-season GAS survival hinders the development of an effective management strategy. Hence, we estimated the percent survival of various GAS sizes for 3 mo after storage in nylon net bags (680 cm long × 450 cm wide) at the PhilRice screenhouse. **(Authors' abstract)**

Keywords: *Agriculture, Golden apple snail (GAS), Pomacea canaliculata (Lamarck), Philippines*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 32-33

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

Optimum conditions for mycelial growth and fruiting body production of *Pleurotus pulmonarius* (fries) Quélet spanish strain

Miguel, Jomar T., Kalaw, Sofronio P., Abella, Evaristo A., Reyes, Renato G.

Pleurotus pulmonarius (Fr.), commonly known as Indian Oyster or Phoenix mushroom is an exotic species of mushroom in the Philippines. It usually grows on lignocellulosic substrates such as hardwood, wood products and agricultural wastes such as rice straw, corn cobs, sugar cane bagasse, coffee residues and banana stalks. This species of mushroom is not yet commercially cultivated in the country due to lack of production technology. With the objective of developing practical and innovative production technology, we evaluated the influence of locally available indigenous culture media and physical conditions (pH, aeration, illumination, and temperature) on the mycelial growth and rice straw based substrate formulations for fruiting body production. *P. pulmonarius* cultured in potato sucrose gelatin with pH of 5.5 and incubated in sealed and dark condition at room temperature recorded fastest mycelial growth with a mean of 90 mm after 7 days of incubation. Among the grain spawning materials evaluated, corn grit produced luxuriantly thick mycelia and shortest incubation period with a mean of 6 days. Substrate formulation composed of 9 parts rice straw: 1 part sawdust recorded the shortest incubation period (12.67 days), highest mean weight of the fruiting bodies (86.71 g) and highest biological efficiency (27.77%). **(Author's abstract)**

Keywords: Agriculture, *P. pulmonarius*, Physical conditions, Indigenous culture media, Rice straw based substrate

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 6
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

**Organic seed-protectants against bean beetle, *Callosobruchus maculatus* (FAB.)
(Coleoptera: Chrysomelidae: Bruchinae), on stored mungbean, *Vigna radiata* (L.) R.
Wilczek**

Adorada, Joel L., Sumalde, Augusto C., Javier, Pio J., Caoili, Barbara L., Fernandez, Pamela

Screening and evaluation studies were conducted to identify effective mung bean seed protectants against *Callosobruchus maculatus* (Fab.). Among the 25 powdered materials, 26 lambanog-extracted solutions and eight edible

oils tested under free-choice and no-choice bioassays, the powdered materials of black pepper, marigold, ashed beetle, kamias, ipil-ipil, lambanog extracts of marigold, ipil-ipil, guava, luyang dilaw, and edible oils of vegetable, sesame, olive, canola, coconut, palm, corn, and virgin coconut oil were the most promising treatments for each preparations. However, after the final bioassay, none of the treatments can significantly deter oviposition, while only edible oils were very effective in reducing F1 emergence.

Bioassay studies revealed that edible oils are effective at 0.5% to 1.0% v/w dosages. At a high dosage of 2.5% (v/w), edible oils can slightly reduce germination rate, but can be managed by pre-germination treatment of 1 % soap solution. Post-oviposition test revealed that edible oils possess larvicidal properties against bean beetles by suffocating the larvae inside the seed after oil penetration. The edible oils were found effective for two months, but possibly longer, against all the life stages of bean beetles. The edible oils prevented respiration, hence, the mode of action is mainly a physical type of activity and any chemical toxicity or detergency is only secondary. **(Authors' abstract)**

Keywords: *Agriculture, Callosobruchus maculatus, Oviposition deterrence, F1 emergence, Powdered materials, Lambanog-extracted solution*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 38
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0136

Osmohardening: a new technique for rice seed invigoration

Farooq, M. , Hafeez, K. , Basra, S.M.A., Ahmad

Direct seeding could be an attractive alternative to transplanting of rice (Balasubramanian and Hill 2002), but poor germination, uneven crop stand, and high weed infestation are among the main constraints to its adoption (Du and Tuong 2002).

Seed priming is an effective technique for rapid and uniform seed germination of several cereal crops (Basra et al 2004, Farooq et al 2004). Seed hardening, also called wetting and drying or hydration/dehydration, is done by repeated soaking and drying of seeds in water (Pen Aloya and Eira 1993). Osmoconditioning is a special type of seed invigoration that has been used for slow hydration of seeds in aerated, low-water-potential solution (Bradford 1986). In earlier studies, hardening (Basra et al 2003) and osmopriming (Lee and Kim 1999) were found to be effective invigoration tools in rice. Seeds are hardened in tap or distilled water (Lee et al 1998); furthermore, seed priming is performed in a single cycle of wetting and drying (Lee and Kim 1999). These studies aimed to explore the possibility of rice seed priming by

two cycles of wetting and drying (osmohardening) like seed hardening in low-water-potential solutions. **(Authors' abstract)**

Keywords: *Agriculture, Osmohardening, Osmoconditioning, Osmoprimer, Seed germination*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 80-81

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0137

Two outstanding rice varieties developed through selection from naturally occurring genetic variation in Sri Lanka

Sumith de, D. , Abeysiriwarde

Crop improvement is based on creating genetic variability and using it through selection. Natural outcrossing and mutation are the main forces that create natural genetic variability in rice. As rice is a self-pollinated crop, incidences of natural outcrossing are rare and mutation is also one in a million. Therefore, the occurrence of natural genetic variability is rare and, as a result, use of such genetic variability has not been given much emphasis in rice. However, finding rare genetic combinations is possible in populations where genetic variability has occurred naturally. Two rice varieties—Lanka Samurdhi and Bg 250—having such rare genetic combinations have been developed through selections from naturally occurring genetic variation in Sri Lanka. Thus, the importance of naturally occurring genetic variability cannot be ignored and should be given due consideration in rice improvement. **(Author's abstract)**

Keywords: *Agriculture, Lanka samurdhi, Bg 250, Basmati 370, Artificial hybridization*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 22-23

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0138

Parentage verification using microsatellite markers in water buffaloes (*Bubalus bubalis*)

Herrera, Jesus Rommel V., Fernando, Trinidad C., Faylon, Ma. Pia P., del Barrio, Leslie Anne M., Maramba, Jennifer F., Flores, Ester B.

Generation of breeding values requires accurate recording of sire, dam and offspring in the pedigree or herd registry. Misidentification of an animal may give undue credit to a wrong bull thereby affecting the breeding value prediction. Verification of pedigree lines is very important, particularly for those who avail of the many breeding technologies in livestock that have been developed and are being widely used today (such as artificial insemination and embryo transfer). The advent of DNA marker technology, in particular analysis using microsatellite (MS) markers, offers several advantages over conventional parentage testing systems. This study sought to identify polymorphic microsatellite markers that can be used for routine parentage verification of Philippine buffaloes. Out of 75 cattle MS markers genotyped by fragment analysis, twenty markers were found to be polymorphic in Philippine Carabao Center's dairy buffalo populations. These twenty markers - FBN12, BM1706, CSSM047, INRA006, RM372, RM209, MB101, RM04, BMS1001, MAF65, ILST012, BMS555, MAF45, TGLA227, CSSM019, BM8129, BOVILS30, BMS2152, CSSM037 and TGLA73 - had a PIC value greater than 0.5 and heterozygosity values greater than 0.6. Paternity analysis using at least twelve markers with the aid of the Cervus 3.0 software resulted in the identification of the most probable sire (out of several candidate males). Moreover, parent pair analysis with known sexes resulted in the identification of the most likely dam (out of four possible females) and sire (out of four possible males) of an embryo transfer (ET) calf. **(Author's abstract)**

Keywords: Agriculture, Water buffalo, Parentage verification, DNA, MS marker, Paternity analysis

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 25

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0139

Participatory research on the effect of on-farm water management practices

Jose

Irrigation facilities have been built for considerable areas of cropped land, but the desired level of output by way of increased irrigated area and agricultural production has not been achieved. This is mainly attributed to the wastage of water at certain reaches. As rice is a major consumer of irrigation water, much has to be done to improve water-use efficiency in rice fields and this is possible only through farmers' participation. Farmers generally have the impression that field-to-field flowing water is best for rice growth. They are reluctant to follow scientific recommendations in water

management. (Scientific water management relates to maintaining the standing water at 1-2 cm from transplanting to tillering and 1-5 cm from tillering to 10 d before harvest.) Rice yield can be influenced by different water management practices such as continuous submergence (Mandal and Chatterjee 1984), varying levels of submergence at different growth stages (Thorat et al 1987), and shallow submergence (5 ± 2 cm) during the crop's entire growth cycle (Jha and Sahoo 1988). Our study aimed to evaluate the effect of scientific water management along with farmers' practices on rice cultivation and to demonstrate how farmer participation in the research program can enhance water management.

(Author's abstract)

Keywords: *Agriculture, Farm water management, Rice, Irrigation facilities*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 44-45

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

0140

Philippine traditional rice (*Oryza sativa*) varieties classification into *Japonica* and *Indica* using cheng's index

Vizmonte, Jr., Pacifico, Catabona, Kathleen E., Villamor, Jayson O., Millas, Renneth A., Tabanao, Dindo Agustin A.

One hundred seventy (170) different Philippine traditional varieties were classified into *japonica* and *indica* group using the six characteristics in determining varieties following Cheng's Index which were glume color at heading, glume hairiness, leaf pubescence, interval between 1st and 2nd node of panicle axis, grain shape and phenol reaction.

Morphological traits like basal leaf sheath color, leaf blade anthocyanin coloration, leaf blade attitude (penultimate leaf), collar color, auricle color and ligule color were also evaluated. The traits were based on the Descriptors for Wild and Cultivated Rice (IBPGR-IRRI Rice Advisory Committee, 1980).

Cheng's index validated the previous study done by Philippine Rice Research Institute (PhilRice) on the same groupings of traditional rice varieties based on Single Nucleotide Polymorphism (SNP). The result of traditional rice varieties classification using Cheng's index corroborates with that of SNP in terms of morphological and biochemical traits.

Since *japonica* and *indica* varieties are specific to certain types of ecosystems, the government through the Department of Agriculture (DA) will find it useful to farmers. **(Author's abstract)**

Keywords: *Agriculture, Traditional rice varieties, Japonica, Indica, Cheng's index*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 29

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0141

Phosphorus nutrition reduces brown spot incidence in rainfed upland rice

Singh, C.V. , Singh, R.K., Shukla,

Brown spot, caused by *Helminthosporium oryzae* (Breda de Haan), is a disease in upland rice that markedly reduces yield. The disease is exacerbated by nutritional imbalance in the soil (Shukla 2002). Low phosphorus (P) and potassium (K) content contributes to infection (Chattopadhyay and Chakrabarty 1965). Also, the disease has higher incidence in dry soil than in wet soil and is therefore more severe in rainfed fields than in irrigated/flooded ones (Kulkarni et al 1979). In the rainfed upland, nutrient availability depends not only on the potential nutrient amount but also on rainfall pattern during crop growth. **(Author's abstract)**

Keywords: *Agriculture, Helminthosporium oryzae (Breda de Haan), Dry soil, Wet soil, Phosphorus, Potassium*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 31-32

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0142

Phosphorus requirements of *Azolla microphylla*

Arora, A., Saxena

Azolla, a free-floating, N₂-fixing aquatic fern, is an established N biofertilizer for flooded rice. Phosphorus (P) is the most critical and limiting input for *Azolla* rice cultivation (Majumdar et al 1993). *Azolla* absorbs P from the floodwater

and makes it available to the plant. Different species of *Azolla* have different P requirements. An efficient P-scavenging strain is needed to ensure an adequate P supply.

We tested the P-scavenging ability of *A. microphylla*, the most efficient strain under north Indian climatic conditions. *A. microphylla* was obtained from germplasm collected at IARI. It was grown and maintained in N-free Espinas and Watanabe (E&W) medium in 8 × 10 × 2-in trays at 30 ± 2 °C in a polyhouse (Watanabe et al 1977). To avoid drying, trays were topped with fresh medium every other day. The effect of P concentration on *A. microphylla* was studied using P-starved inoculum (*Azolla* fronds maintained in E&W medium minus P for 14 d). We also grew 0.5 g of P-starved fronds in 200-mL E&W media supplemented with different amounts of potassium dihydrogen phosphate to give 1-20 ppm P in 500 mL glass beakers. **(Authors' abstract)**

Keywords: *Agriculture, Azolla microphylla, Biofertilizers, Azollarice cultivation, Germplasm*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 25-26
2005,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 30/2 2005

0143

Physiological characterization for drought tolerance of selected rice varieties in Lake Sebu, Philippines

Florence Lasalita- Zapico, Janmichaelben G. Miranda, & Michelle I. Pare, Florence Lasalita- Zapico, Janmichaelben G. Miranda, & Michelle I.

Physiological characterization of upland and lowland rice cultivars obtained from Lake Sebu was undertaken. Sixteen rice cultivars were screened during two stages of growth, namely: the germinative and seedling stage. Results showed that increasing PEG concentrations inhibited root/shoot emergence. It was also observed that upland cv Kalimumo showed best responses to drought stress during germinative stage. Lowland cv IR 28, on the other hand, performed most poorly. Plant height, Relative Water Content (RWC), and vigor rating were likewise inhibited by low moisture stress (LMS) regime imposed on the seedlings 14 days after sowing (DAS). Moreover, the low vigor rating of upland rice cultivars to chemically-induced drought could be attributed to their morphology and the prevailing climatic conditions during the conduct of the study. The upland cultivars which were taller and which had low tillering capacity as compared to their lowland counterparts lodged easily due to heavy gusts of wind. LMS, on the other hand, had enhancing effects on leaf rolling and this became even more intensified with prolonged exposure to drought stress. This response is a protective mechanism that allows the plant to conserve water, thus enabling it to survive better under drought conditions. **(Author's abstract)**

Keywords: Agriculture, Lowland rice, Upland rice, Traditional rice, Polyethylene glycol

USM R&D Journal, Volume No. 16 Issue No. 1, 13-16

2008,

(Filipiniana Analytics)

NP

0144

Physiological response of rice and weeds under anaerobic germination and its implications for crop management

Entila, Frederickson D., Herath, Swarna, Namuco, Ofelia S., Ella, Evangelina S., Johnson, David E., Ismail, Abdelbagi M.

Weed infestation is the major predicament in direct seeding in which its control heavily relies on herbicide application. Imposing early flooding limits weed growth but most rice varieties had poor seedling establishment due to anoxic stress. Understanding the mechanisms associated with weed and rice response under anaerobic germination (AG) is critical in developing integrated weed management approaches in direct-seeding. The response of three rice genotypes: Khao Hlan On (KHO), Mazhan Red (MR), and IR64; and two *Echinochloa* spp: *E. colona*, *E. crus-galli* to early flooding were evaluated. Dry seeds were sown at 1-cm soil depth and flooded to 0, 1, 5 and 10 cm depths. Lipid peroxidation, total phenolic content (TPC), reactive oxygen species (ROS) scavenging enzymes and amylase activity were assayed in germinated seeds at 4 d after sowing (DAS). Seedling emergence and growth were assessed at 21 DAS. Flood-tolerant rice genotypes; KHO and MR had higher seedling emergence, faster shoot and root elongation and higher biomass production with 5 cm and 10 cm flooding. Lower MDA content, higher TPC, higher superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX), guaiacol peroxidase (POX) and, higher amylase activities of tolerant rice genotypes were associated with their high seedling emergence under flooding. In contrast, higher lipid peroxidation, lower TPC, lower ROS scavenging enzyme and amylase activities in IR64 rice genotype and *Echinochloa* spp., were associated with lower emergence, growth and biomass production under flooding. Biomass accumulation, root and shoot elongation, antioxidant content, and activities of ROS scavenging enzymes and amylase had significant positive correlations with emergence at 21 DAS. Early flooding of 5 cm to 10 cm is effective for managing these weeds in direct seeding when AG tolerant rice genotypes are used. **(Author's abstract)**

Keywords: Agriculture, Early flooding, Direct seeding, Antioxidant, *Echinochloa* sp., Weed management

PMK(R)3—an early-maturing, drought-tolerant rice variety for Tamil Nadu, India
*Johnson Thangaraj Edward. Y.S. , Raghuraman, S. , Balasubramaniyan, P. , Palchamy, A. , Subramanian, M. ,
Ganesh, S.K. , Robin, S. , Jeyapraka*

Rice is cultivated as a rainfed crop in the districts of Ramanathapuram and Sivaganga in southern Tamil Nadu. The success of rainfed rice cultivation depends on receiving sufficient rainfall at critical growth stages of the crop. Rice lands in Tamil Nadu often suffer from premature withdrawal of monsoons. The rice crop is thus subjected to varying degrees of drought stress, and this affects yield greatly. To minimize yield loss during years of significant deviation from normal rainfall, rice varieties with improved drought tolerance are needed.

PMK(R)3 (Paramakudi), an early-maturing (107-118 d) rice variety developed at TNAU, is capable of fulfilling this need. Derived from UPLRi /CO 43, it has recorded a mean grain yield of 3.0 t ha⁻¹ from 83 trials. These trials were conducted across years and locations, with a 13% and 17% yield increase over local drought tolerant check varieties PMK 2 and TKM 11, respectively (Table 1). Under direct-sown conditions in the national coordinated trials, it gave the highest yields in 1995-96 and 1998-99, 12% and 26% more than the early-maturing national checks, Annada and Tulasi. PMK(R)3 was released as a new variety for cultivation in Tamil Nadu. **(Authors' abstract)**

Keywords: *Agriculture, PMK(R)3, Drought-tolerant, Rice*

**Polymorphism of prolactin receptor gene marker for increased litter size in different
Philippine swine breeds (*Sus scrofa*)**

Fernando, Trinidad C., Cruz, Hannah M., Labonite, Laila M., Matias, Sherwin D., Dela Cruz, Renmar M., Flores, Ester B., Herrera, Jesus Rommel V.

The developments of molecular methods for genetic evaluation offer great potentials to hasten the process of genetic improvement and enhance the efficiency of breeding and selection in swine industry. Prolactin Receptor (PRLR), gene for litter size, is a specific receptor for the hormone prolactin, which is an anterior pituitary peptide hormone involved in many different endocrine activities and is essential for reproductive success. This study aimed to screen different swine breeds in the Philippines for PRLR genetic polymorphisms. Genomic DNA extraction from 635 blood samples was done using standard protocol. Polymerase chain reaction (PCR)-restriction fragment length polymorphism (RFLP) method, using PRLR marker, and *AluI* restriction enzyme was carried out to analyse the samples for genetic variability. ABI Genetic Analyzer 3500 was used for sequence analyses of the PCR products and the sequence information were confirmed with reference sequence using National Center for Biotechnology Information (NCBI) BLAST search. Results revealed three genotypes having genotypic frequencies of 0.12, 0.38 and 0.50 for AA, AB and BB genotypes, respectively. Allele frequencies for A and B were 0.50 and 0.88 respectively. Sequences also showed 98-100% for AA, 96-99% for AB and 99-100% for BB similarity with the genotype of *Sus scrofa* PRLR gene, complete coding region (cDNA) using NCBI BLAST. Previous studies showed that allele A of PUR increases litter size in swine. This allele A was defined to be a G to A transition in swine chromosome 16. Screening for the favourable allele A using PRLR gene marker can positively improve the productivity of swine industry in the Philippines. Increase in the number of sample size is recommended for further study. (**Author's abstract**)

Keywords: *Agriculture, Swine, PRLR gene, Litter size, PCR-RFLP*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 7
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0147

Population of janitor fish (*Hypostomus plecostomus*) in Pulangui Lake, Bukidnon, Central Mindanao

Quimpang, Victoria T., Ediza, Marilou M., Ombao, Michael Angelo D.

A study on the population of janitor fish (*Hypostomus plecostomus*) in Pulangui Lake, Bukidnon was conducted with the aim to determine the population level of janitor fish and its effect on the fishing gears of the fishermen. Specifically, this study sought to: 1) determine the percentage composition of janitor fish in the gillnet catch; 2) determine the Catch

Per Unit Effort (CPUE) for the janitor fish in the lake; and 3) describe the gillnets of fishermen reported damaged by the janitor fish. Two study sites were chosen situated at Dologon and Tubigon, both in Maramag, Bukidnon, with 3 sampling periods in both study sites. There were 46 fishermen respondents: 26 in Station 1 (Dologon) and 20 in Station 2 (Tubigon). The study showed that the janitor fish was a minor component of the total catch (8.23%) and a CPUE of 0.298 (kg/person/gillnet/trip). A total number of 190 janitor fish was collected during the entire study. Most of the janitor fish collected were 21 - 30cm in length. Characteristics damage made by the janitor fish on the gillnets were in the form of jagged cuts on the nylon strand caused by the spiny hard skin and sharp fins of the janitor fish. Based on the findings of this study, the janitor fish being a minor component of the fish catch is a minimal threat at present. However, like other invasive species, this can be a potential ecological and fisheries problem in Pulangui Lake in the future. It is therefore recommended that population control measures of this fish should be given immediate attention by the concerned authorities. Further study is recommended to include other fish landing areas and longer data monitoring to determine further changes in the population of janitor fish in the lake. **(Author's abstract)**

Keywords: *Agriculture, Population, Janitor fish, Pulangui Lake, Catch per unit effort (CPUE)*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 29
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0148

Population stocks structure of yellowfin (*Thunnus albacares*) tuna in western and central pacific inferred from microsatellites analysis

Perez, Sweedy Kay, Aguila, Roselyn, Lopez, Grace, Santos, Mudjekeewis

Yellowfin tuna is one of the highly migratory larger tuna species. It is shared by the Philippines with neighbor fishing countries which are likewise highly dependent on the tuna industry for their economy. The sustainable management of tunas, particularly of yellowfin, in the Philippines and in the Western and Central Pacific (WCP) is therefore imperative and this requires an established stock identity. In this study, the population structure of yellowfin tuna in the region was analyzed through 243 individuals from Zambales, Puerto Princesa, Samar, General Santos, and Bismarck Sea using nine microsatellite loci. A significant level of genetic differentiation among the population was observed ($F_{st} = 0.1644$, $P < 0.05$). The STRUCTURE analysis revealed that Bismarck Sea samples were different from the Philippine samples. Two divergent stocks in the WCP may exist. **(Author's abstract)**

Keywords: *Agriculture, Thunnus albacares, Highly migratory, Microsatellite, Genetics, Population structure*

Postharvest technology of rice: role of farm women in storing grains

Sumathi, P. , Budhar

The importance of grain storage in rice production is often ignored. Inadequate storage facilities and improper storage methods can cause considerable losses to rice farmers. Total postharvest losses in food grain account for 9.3% of total production, 6.5% of which are losses incurred during storage alone (Gandhi 1983). Minimizing these losses can increase food grain supply, thereby making headway in feeding millions of hungry people. Farmers must therefore learn how to store rice properly, especially during the transitory period, to protect the grains from the effects of weather or from insects and pests.

Women's role in this respect is yet to be recognized, in spite of their significant involvement in food processing and food storage. Women farmers play distinct and well-accepted roles in all the activities of rice cultivation, and 93% of the farm women are themselves actively involved in storing rice grains (Sumathi and Budhar 2003). They receive less than 5% of extension services worldwide, their priorities are rarely reflected in agricultural research or national policies, and their role as agricultural producers is still largely unrecognized and has not been addressed (LEISA 2002). **(Authors' abstract)**

Keywords: *Agriculture, Postharvest technology, Rice, Inadequate storage*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 87-88
2004,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 29/2 2004

Predatory behavior of mirid bug, *Cyrtorhinus lividipennis*, on rice plants with different nitrogen regimes

Hu, C. , Lu, Z.X. , Yu

The mirid bug, *Cyrtorhinus lividipennis*, is a plant-feeding and predatory insect, preferring plant- and leafhopper eggs and young nymphs (Shepard et al 1987). It is now one of the important predators of brown planthopper (BPH) *Nilaparvata lugens* and whitebacked planthopper (WBPH) *Sogatella furcifera* (Heong et al 1991). Its populations were highly correlated with planthoppers maintaining a high density in the field even in the absence of BPH, but Laba and Heong (1996) found no preference for BPH and WBPH eggs. Tritrophic interactions among plants, herbivores, and natural enemies can be affected profoundly by host-plant quality, architecture, and distribution (Boethel and Eikenbary 1986). *C. lividipennis* population density increased significantly in the field with higher N fertilization through improved nutrient conditions in rice plants (Meerzainudeen and Kareem 1999). Through a series of laboratory experiments, we tried to quantify the influence of N on the predatory behavior of *C. lividipennis* in rice.

Rice plants (IR64) under four N regimes-200, 100, 50, and 0 kg ha⁻¹ (labeled 200N, 100N, 50N, and 0N, respectively)-were studied. Ammonium nitrate was applied at different rice growth stages. An electronic chlorophyll meter (SPAD 502, Minolta Camera Co., Osaka, Japan) was used to assess tissue N. By pooling the data from all plant growth stages, a relationship between leaf N content (N) and leaf SPAD readings was found to be $N\% = 0.1151 \text{ SPAD} - 1.2772$ ($F = 162$, $P < 0.001$). This linear model was used to predict the N content of plants for all the experiments. The insects employed in this experiment were successively mass-cultured on host plants with low (0N) and high (200N) N regimes and were labeled 0NGi and 200NGi for BPH and 0NFi for and 200NFi for mirid bug, respectively (i is the number of successive generations on rice plants with the same N regime). **(Authors' abstract)**

Keywords: Agriculture, *Cyrtorhinus lividipennis*, Mirid bug, Brown planthopper (BPH), *Nilaparvata lugens*, Whitebacked planthopper (WBPH), *Sogatella furcifera* (Horvath)

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 38-40

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0151

A preliminary forecast of the intensification of global and regional rice production

Qi, Yanhong, Zhang,

Rice is the staple food that feeds nearly half of the world population (Way and Heong 1994). In the past 3 decades, the steadily increasing rice production has reduced the food shortage in Asia and the world (IRRI 2003). However, the increased use of land and pesticides aggravates the deterioration of environmental quality and human health (Altieri 1994, Heong and Escalada 1998, Tilman et al 2001). A perspective on future rice production is essential for estimating

the biological and environmental impacts caused by intensive rice production and for taking appropriate measures to avoid these side effects without threatening overall food security. In this paper, seven variables related to intensive rice production were fitted with data in the past 3 decades and a forecast for the years 2005-25 was made. **(Author's abstract)**

Keywords: *Agriculture, Rice production, World rice statistics, IRRI*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 33-35

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0152

Production of *Porphyra* "Gamet" and its impact to livelihood in coastal areas

Agngarayngay, Nestor M., Santos, Loreto Antonio P., Agngarayngay, Zenaida M.

Porphyra is the most expensive seaweed production in Ilocos Norte. It is the most sought-after seaweed locally and internationally, which explains its demand. The *Porphyra* production in Ilocos Norte is confined to gathering that local seaweed from the wild. However, *Porphyra* production has failed to progress from its primitive state due to its age-old method of sun drying to prolong the shelf life of *Porphyra*. This study highlighted the status of *Porphyra* production and its impact on the livelihood of those who are engaged in the industry. Data were gathered from a semi-structured interview of 57 respondents who have been engaged in *Porphyra* production in Ilocos Norte. The demographic and socio-economic profiles of the respondents and their harvesting and sale practices were determined as frequencies and percentages: Pearson's *r* correlation coefficient and chi square determined the relationship between respondent's practices as to the frequency of gathering. The harvesting practices of *Porphyra* gatherers were: 50-69 gathering per season; frequency of gathering was five times a week with an average volume of three ganta (1,400 g fresh weight) of *Porphyra* harvested per gathering. Improvement of drying technique of *Porphyra* would increase production and consequently, give higher income to gatherers. It is recommended that the local governments of Burgos and Pagudpud, Ilocos Norte should form a cooperative and acquire mechanical dryers for drying *Porphyra*. **(Author's abstract)**

Keywords: *Agriculture, Harvesting practices, Mechanical dryer, Livelihood, Porphyra production, Socio-economics, Sun-drying*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 33

(Filipiniana Analytics)

Productivity of irrigated rice as influenced by leaf color chart-based N management in the Tungabhadra Project (TBP) area in Karnataka, India

Basavanneppa, M.A. , Nagappa, A. , D.P. Biradar, A Shivakumar, A. Nagappa, M.A. Basavanneppa, Shivakumar

The use of proper doses of nutrients, N in particular, is important to attain high yields and efficient nutrient use in intensive rice ecosystems. Poor N-use efficiency by rice is largely because of N losses in the rice ecosystem through NH₃ volatilization, denitrification, runoff, and leaching. Any method that promotes N-use efficiency would help rice farmers immensely by reducing their N fertilizer cost. In a survey conducted in the Tungabhadra Project (TBP) area, it was found that farmers applied a high dose of N (230 kg ha⁻¹) and only 35.2 kg P ha⁻¹ and 24.9 kg K ha⁻¹. Too much N application, along with inadequate P and K fertilizers, led to an imbalance in fertilizer use in the TBP area. This practice resulted in higher pest and disease incidence and serious lodging in rice. Unbalanced fertilizer use led to high pesticide use to control pests, which translated into more pesticide expenditures. Lodging caused reduced yield and poor grain quality. In addition, the excess N leached, polluting water sources over time. This has been occurring in the TBP area in recent years. **(Author's abstract)**

Keywords: *Agriculture, NH3 volatilization, Denitrification, Runoff, Leaching*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 40-42

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

Profile distribution of organic matter, phosphorus, potassium, cation exchange capacity, and base saturation of usmarc experimental area grown to corn

Eugenio, Meashel C., Nicor, Flora P.

A survey was conducted to determine the organic matter (OM), P, K, CEC, and BS status of soil grown to corn and to assess the profile distribution of OM, P, K, CEC, and BS of soil at USMARC experimental area grown to corn.

Soil pH of the corn area at USMARC ranged from strongly acid (pH 5.48) to slightly acid (pH 6.51). The first three layers (0-98 cm) contained marginal amount of OM (4.20%- 2.04 %) and moderate to low (0.21-0.07 %) nitrogen, Bray No.2 extractable P was deficient to marginal (11.24-24.92 ppm), high amount of available potassium (875 ppm to ISO ppm), adequate level of CEC (24.91 to 27.27 cmol (+)/kg), adequate level of base saturation (45.05 to 55.48 %) and high amount of exchangeable K, Ca, and Mg.

At depth below 98 cm, pH level was increased to slightly acid (pH 6.27-6.35), organic matter content was deficient (1.32-1.40 %) and nitrogen level was very low. Bray 2- extractable P level was moderate (24.33-24.92 ppm), available K was adequate to marginal (375-150 ppm), CEC and base saturation (%), exchangeable Ca and Mg were all adequate.

Soil texture at the surface was clay loam while all layers below the surface had sandy clay loam. Particle density obtained increased with depth while bulk density, percent porosity and water holding capacity decreased with increasing soil depth. The soil at USMARC grown to corn is generally fertile with only phosphorus considered as deficient at the surface (0-8 cm). (**Authors' abstract**)

Keywords: *Agriculture, Corn, Rupture resistance, Soil characteristics, Soil profile, Soil texture*

USM R&D Journal, Volume No. 13 Issue No. 2, 155-165

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0155

Purification of Sahdyari rice hybrid parental lines through paired crosses for nucleus seed production

Waghmode, B.D. , Ingale

The availability of genetically pure and good-quality seed is a primary prerequisite for exploiting the potential of hybrids. Lack of purity in parental lines and improper isolation conditions in seed production result in poor hybrid seed quality. Chinese scientists reported that, with every 1% decrease in the purity of hybrid seed, the eventual yield loss in F1 hybrids would be about 100 kg ha⁻¹ (Sharma 1995).

In 1998, RARS-Karjat identified and released a rice hybrid from the cross IR58025A/BR827-35-3-1-1R-Sahdyari- for commercial cultivation in Maharashtra State. Maintaining or improving the purity of the parental lines of Sahdyari

was a major challenge. Thus, efforts were made to purify the three parental lines of Sahdyari through paired crosses.

(Authors' abstract)

Keywords: *Agriculture, Sahdyari rice hybrid, Nucleus seed production, Purification*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 18-19

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0156

Quality of shallow water table as affected by long-term fertilizer use in the rice-wheat system

Ram, Nand , Behera

In India, the increase in foodgrain production from 50.8 million t (1951-52) to 203.6 million t (1998-99) is mainly attributed to the adoption of high-yielding crop varieties and use of fertilizers. Consequently, fertilizer consumption during the corresponding period increased from a mere 0.55 kg ha⁻¹ to 90.04 kg ha⁻¹ (FAI 1999). The increased use Quality of shallow water table as affected by long-term fertilizer use in the rice-wheat system and/or misuse of fertilizers had frequently been cited as the cause of water quality deterioration (Miller 1979). Nitrate leaching can occur in intensively cultivated areas with a shallow water table (Bajwa et al 1992). In the face of increasing food demand of the burgeoning population, efficient fertilizer use in crops and the prevention of groundwater pollution are critical (Singh and Sekhon 1976). In the tarai region of Uttaranchal, the water table is shallow (about 1 m deep) and rice-wheat is the predominant cropping system. Since the inception of this long-term experiment, no study on groundwater quality has so far been conducted. This study aimed to monitor the impact of continuous fertilizer use (more than 30 y) under intensive cropping on the nutrient enrichment of groundwater. **(Author's abstract)**

Keywords: *Agriculture, Rice-wheat system, Fertilizer, Shallow water table*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 29-31

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

Quantification of TE2-4 DSRNA isolated from *Rhizoctonia solani* using dual labeled oligonucleotide probe

Domingo, Doreen D., Bharathan, Narayanaswamy, Bawingan, Paulina A.

TE2-4 strain of *Rhizoctonia solani* is a wild type isolate with *Zea mays* as its plant host. The study aimed to quantify the dsRNA from TE2-4 of *R. solani* isolates using dual labeled oligonucleotide probe. Highly purified TE2-4 dsRNA isolated and characterized from wild type strain of *R. solani* was nuclease-treated, reverse transcribed, cloned and sequenced for the development of probes (di-hybrid dsRNA probe design using fluorophores and quenchers utilizing the sequenced data). Hybridization of the probe to dsRNA from TE2-4 was conducted using Real-time PCR. Out of 16 randomly selected clones that were tested for gel electrophoresis, four fragments (5, 6, 7 and 9) were cloned in a pDrive vector and selected for sequencing. Selection was based on the differences in size, concentration of the cloned fragments and the shown hue of the bands in the gel. Cloned fragments with the primers and the designed TE2-4 probe were hybridized as reflected by the determined cycle threshold (ct = 3.89 to 35.40), melting temperature (T_m = 82.6°C to 87.2°C) and sensitivity of detection (+). There was no specific pattern of proportionality (like direct or reverse) of the obtained ct values and melting temperatures against the various cDNA concentrations prepared. However, amplification/hybridization of primers and probe to plasmid and dsRNA of TE2-4 was successful. **(Author's abstract)**

Keywords: Agriculture, TE2-4, Cycle threshold, Cloning, Hybridization, *Rhizoctonia solani*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 17

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Radiation disinfestation as a quarantine treatment for solo papaya

Manoto, Eugenia C., Bilog, Glenda P., Resilva, Sotero S.

Solo papaya is subject to infestation by the Oriental fruit fly, *Bactrocera dorsalis* (Hendel). Since ethylene dibromide has been banned for use as a fumigant for fruits, gamma radiation was investigated as an alternative quarantine disinfestation treatment for solo papaya. Results of small-scale laboratory tests showed that 150 Gy completely prevented the emergence of *B. dorsalis*. For egg-infested solo papaya, pupal recovery decreased with increasing dose while insect survival was not associated with fruit maturity. For larvae-infested ones, insect survival, in general, was highest in the full-ripe stage and lowest in the one-fourth-ripe stage of the fruit. Confirmatory tests of the

proposed treatment using more than 100,000 test Insects revealed that 150 Gy radiation dose is sufficient to provide Probit 9 quarantine security for solo papaya. **(Author's abstract)**

Keywords: *Agriculture, Radiation disinfestation, Bactrocera dorsalis (Hendel), Oriental fruit fly, Solo papaya, Gamma radiation*

Philippine Nuclear Journal, Volume No. Issue No. , 17-24

(Filipiniana Analytics)

Fil(S) QC173 P55 v9 1992

0159

Radiation-induced mutant of rice variety NSIC Rc144 with broad-spectrum resistance to bacterial blight

Avellanoza, Eleanor S., Miranda, Ronalyn T., Espejo, Emilie O., Garcia, Nelson S., Nogoy, Franz Marielle C., Agustin, Ace Mugssy L., Alfonso, Antonio A.

Mutant lines of commercial rice variety NSIC Rc144 produced through ^{60}Co radiation treatment were screened for resistance to bacterial blight (BB). Bacterial blight screening was conducted in the field starting at M2 generation through induced leaf clipping method using the Maligaya isolate of the causal agent, *Xanthomonas oryzae* pv. *oryzae* (*Xoo*). M2 plants with <10cm lesions were selected and advanced for verification of resistance. In the next generation, 39 highly resistant M3 plants with short lesions were selected. The average lesion length in the wild type NSIC Rc144 was 23.5 cm (susceptible). Subsequent progeny evaluations resulted in the identification of 24 resistant (6.5 cm ave. lesion length) M7 sister lines whose origin can be traced to a single M2 plant. Results of DNA fingerprinting using 63 SSR markers revealed that all 24 resistant M7 lines were 100% similar with each other and clustered with NSIC Rc144 with 94% similarity. Two mutant lines, MSL 37 and MSL 40, exhibited 97.5% and 96.6 % similarity to NSIC Rc144. Disease screening using different *Xoo* races revealed that these two lines are resistant to multiple *Xoo* races. Further molecular evaluation are underway to evaluate relationship of the mutated gene(s) with known bacterial blight resistance genes. **(Author's abstract)**

Keywords: *Agriculture, Induced mutation, Bacterial blight resistance, DNA fingerprinting, Simple sequence repeats*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 18

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Rajendra sweta, a new high-yielding quality rice variety for Bihar's irrigated ecosystem

Chaudhary, R.C. , Sahai

After the introduction of highyielding rice varieties in the 1960s, breeding programs were started in India to develop high-yielding semidwarf lines. One decade later, research efforts focused on developing high-yielding quality rice. Both customers and farmers appreciate fine-grained quality rice as it fetches a high market price. Rajendra Sweta (RAU710-99-22) was developed from the cross Sita/Pusa Basmati 1//Katarni, varieties with superior grain quality and high yield potential. The State Variety Release Committee of Bihar approved the release of *Rajendra Sweta* for the irrigated ecosystem in 2004. **(Author's abstract)**

Keywords: *Agriculture, Rajendra sweta, Bihars irrigated ecosystem, Rice*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 18-19

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

Rat pest species breeding patterns in the trap barrier system plus a trap crop (TBS + TC) at the PhilRice-CES farm: management implications

*Sebastian, L. S. | Martin, A. R. | Joshi, R. C. | Duque, U.G. | Marquez, L.V., Sebastian, L. S. | Martin, A. R. |
Joshi, R. C. | Duque, U.G. | Marquez,*

The rice field rat, *Rattus tanezumi*, is the principal non-native rodent pest species reported in the Philippines. A medium-sized murid rodent with a tail that is longer than its head and body (Stuart 2004) is considered to cause serious damage to rice at both pre and postharvest stages (Singleton 2003, Joshi et al 2000). In the Philippines, the use of synthetic rodenticides is the most common means of rat control. However, an ecologically based rodent management (EBRM) approach that uses a trap barrier system plus trap crop (TBS + TC) has recently been found to be widely successful on Asian rice farms (Singleton et al 2001). Effective management of *R. argentiventer* in Indonesia and Vietnam using TBS + TC relies on removing female rats from the population before the rice booting stage, before they are able to

successfully raise the first litter of the year (Singleton et al 1999). This paper is the first report on the breeding dynamics of *R. tanezumi* caught in a TBS + TC. **(Author's abstract)**

Keywords: *Agriculture, Rattus tanezumi, R. argentiventer, Ecologically based rodent management (EBRM), Trap barrier system, Trap crop*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 26-28

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0162

Record of a hyperparasitoid on *Pseudogonatopus nudus* Perkins (Dryinidae: Chrysidoidea) parasitizing *Nilaparvata lugens* (Stål) from Asia

Kanagarajan R. , Manickavasagam, S., Prabhu,

Plant- and leafhoppers of rice are well-recognized noxious pests and severe populations have often caused serious rice yield losses. Many natural enemies are reported on these hoppers in rice. Among the parasitoids, mymarids and trichogrammatids are the most common. The rest of the parasitoids, dryinids, pipunculids, strepsipterans, and vellids, are unstable but still contribute to the biological management of hoppers. In a routine attempt to collect dryinids, parasitized brown planthopper (BPH) and green leafhopper (GLH) nymphs and adults showing the larval sac protrusion symptom were collected during the 2004 Kuruvai crop (July-Sep). They were transferred to potted plants under greenhouse conditions and reared till IRRN 31.1 25 the matured dryinid larvae came out and pupated on the surface of the culm region. Surprisingly, from a few pupae of dryinids, instead of dryinid adults emerging, other parasitoids came out. Later, these parasitoids were identified as *Cheiloneurus exitiosus* (Perkins) [*Echthrogonatopus nigricornis* (Hayat) is a synonym] belonging to the family Encyrtidae. It is a larval-pupal parasitoid. This hyperparasitoid on dryinid (*Pseudogonatopus nudus*) Perkins, seems to be the first record from Asia. **(Author's abstract)**

Keywords: *Pseudogonatopus nudus, Parasitoids, Mymarids, Trichogrammatids, Nilaparvata lugens, Cheiloneurus exitiosus, Agriculture*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 24-25

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

Reduction in chemical use following integrated ecologically based rodent management

*Escalada, M. M. , Huang, N. H. , Sang, P. M. , Brown, P. R. , Tuan, N. P. , Sudarmaji, , Singleton, G. R. ,
Heong, K L., Jaco*

Rodents generally cause chronic preharvest losses of 5–10% in rice and, in some regions, the problem is escalating (Singleton 2003). Impacts of pests on smallholder rice farmers also have important social and environmental dimensions (Heong 1999). Farmers often use inappropriate methods in their desperate attempts to reduce the impacts of rodents. This includes the use of broad-spectrum poisons such as endosulfans, organophosphates, and carbamates. Occasionally, these are mixed with used engine oil before applying them to flooded rice crops (Sudarmaji et al 2003). These chemicals and their inappropriate use are of major environmental concern. Another management action is the use of power mains to electrocute rats in flooded rice fields. This has led to deaths of people in the Philippines and Vietnam and therefore has major social implications.

Since 1996, there has been a concerted effort in Southeast Asia to develop an integrated package of ecologically based methods to manage rodent pests in lowland irrigated rice agroecosystems. This led to the development of village-level studies in West Java, Indonesia (Cilamaya; 1999-2002), and in the Red River (Vinh Phuc; 2000-02) and Mekong River deltas in Vietnam (Tien Giang and Soc Trang; 2001-02). We assessed whether these integrated practices lessened the impact of rats economically and environmentally and whether the involvement of smallholder farmers in the study influenced their perceptions and practices of rodent management. This paper reports on one element of this study: the use of chemicals, plastic exclusion barriers, and electrocution by individual farmers after they had participated in a community based program of integrated rodent management. **(Authors' abstract)**

Keywords: *Agriculture, Rodent management, Chronic preharvest losses, Endosulfans, Organophosphates, Carbamates*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 33-35

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

Residues of ^{14}C -chlorpyrifos in coconut by radiotracer techniques

Tejada, Amelia W., Calumpang, Susan May F., Magallona, Edwin D.

A coconut tree was root-infused with 5 g a.i. chlorpyrifos (Lorsban) plus 1.4 μCi of ^{14}C -chlorpyrifos. Coconut samples both young and mature, were taken 24 h up to 60 days after root infusion. Analysis of the meat and water was done. The maximum uptake of chlorpyrifos equivalents was on the 13th day after root infusion both in mature and young fruit. The residue in water reached the peak on the 20th day after infusion and declined thereafter. A preharvest interval (PHI) of more than sixty days maybe recommended for safe consumption.

The usual practice of storing copra in treated warehouses until it is processed into oil was simulated in the laboratory to determine the residues absorbed on the meat. Forty kg of copra with moisture content of 7-12 % were stored in an improvised warehouse, i.e. 1 m x 1.5 m x 1 m wooden box, which was treated with 100 ml 1 % a.i. Lorsban 50 WP plus 100 μCi ^{14}C -chlorpyrifos for protection against insects. Analysis showed that ^{14}C -chlorpyrifos equivalents ranged from 22.6 mg/kg on the 30th day to 8.2 mg/kg on the 90th day with a 63.7% reduction in residues. Bound residues were detected on samples stored for 60-90 days, with levels of 1.0 to 0.2 $\mu\text{g/g}$ ^{14}C -chlorpyrifos equivalents. This is within the Maximum Residue Limit of 2 mg/kg set by FAO/WHO for chlorpyrifos in most agricultural commodities.

Chlorpyrifos residues were also determined at various stages of refining and processing of crude coconut oil. It was subjected to alkali refining, bleaching and finally steaming. The residues were reduced by as much as 32.7%. (**Author's abstract**)

Keywords: *Agriculture, ^{14}C -chlorpyrifos, radiotracer techniques, Coconut, Coconut oil*

Philippine Nuclear Journal, Volume No. Issue No. , 11-16

(Filipiniana Analytics)

Fil(S) QC173 P55 v9 1992

0165

Response of Philippine golden mango to foliar fertilizer, paclobutrazol, and flower inducer applications

Calvo, Alfredo F., Turnos, Nicolas A.

Most profuse flowering of 6-year-old trees was obtained at 6.25 g paclobutrazol per tree plus 5% CaNO_3 while heaviest fruit yield resulted from 12.5 g paclobutrazol plus 5% CaNO_3 treatment. Urea (5%) was most effective in inducing vegetative flush to 6-year old trees immediately following harvest of fruits. Flowering and fruiting of 6-year old

trees were comparable among the four foliar fertilizers evaluated. Sixteen-year-old trees produced greater number of fruitlets and fruits and higher percentage of fruit bearing panicles when applied with 15 g active ingredient (ai) paclobutrazol/tree. Trees produced the longest panicles when induced with 3% CaNO₃. However, heaviest fruits were produced with Grow More FI. Fruiting was comparable among the seven foliar fertilizers evaluated.

The use of 6.25-12.5 g ai paclobutrazol per tree applied as soil drench followed by flower induction, with 3-5% calcium nitrate can effectively induce off-season flowering and fruiting of 6-year-old Philippine Golden mango. On 16-year-old trees (12.1 m canopy diameter), use 10-15 g ai paclobutrazol per tree as soil drench plus foliar spray with 3% CaNO₃ or KNO₃ in order to effectively induce off-season flowering and fruit production. A follow-up spray of any flower inducer is unnecessary for these trees. **(Authors' abstract)**

Keywords: *Agriculture, Calcium nitrate, Fertilization, Mangifera indica, Mango fruiting, Off-season fruiting, Potassium nitrate*

USM R&D Journal, Volume No. 13 Issue No. 2, 200-210

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0166

Response of six-year-old Philippine golden mango to foliar fertilizer, paclobutrazol, and flower inducer applications

Calvo, Alfredo F., Turnos, Nicolas A.

Five studies were conducted in New Visayas, Matanao, Davao del Sur from May 2003 to December 2004, to evaluate the responses of 'Philippine Golden' mango to paclobutrazol, flower inducers, and foliar fertilizers.

Most profuse flowering of 6-year old trees was obtained at 6.25 g paclobutrazol/ tree plus 5% CaNO₃, while heaviest fruit yield resulted from 12.5 g paclobutrazol plus 5% CaNO₃ treatment. Urea (5%) was most effective in inducing vegetative flush to 6-year-old trees immediately following harvest of fruits. Flowering and fruiting of 6-year-old trees were comparable among the four foliar fertilizers evaluated.

It is recommended to use of 6.25-12.5 g a.i. paclobutrazol per tree applied as soil drench followed by flower induction with 3-5% calcium nitrate can effectively induce off-season flowering and fruiting of 6-year-old Philippine Golden mango. **(Authors' abstract)**

Keywords: *Agriculture, Paclobutrazol, Flower inducer, Foliar fertilizer*

0167

Response of transgenic rice expressing two BT genes to nongtarget insects

Riazuddin, S. , Bashir, K. , Husna

In this study, 15 plants per plot per line were selected to study the extent of damage caused by nine different insects of three orders (Hemiptera, Homoptera, and Orthoptera) belonging to five different families. These insect species were first identified in the experimental field and the damage they caused was characterized. The number of leaves damaged by any of these insects per plant was counted and expressed as a percentage of total leaves. Data were processed by analysis of variance, followed by Duncan's multiple range test. **(Author's abstract)**

Keywords: *Agriculture, Basmati rice, BT genes, Transgenic rice*

0168

Can rhizobial inoculation promote rice growth through nitrogen fixation?

Jaiswal, H.K. , Mishra, R.P.N. , Singh

The discovery of *Rhizobium leguminosarum* bv. *trifolii* and photosynthetic *Bradyrhizobium* as rice endophytes from Egypt and Africa has added a new paradigm in beneficial plant-microbe association with their role in plant growth promotion (Yanni et al 1997, Chaintreuil et al 2000).

These bacteria were capable of colonizing rice root interiors endophytically (in intercellular space) while promoting plant growth of certain rice cultivars. Earlier, other bacteria such as *Azospirillum* and *Herbaspirillum* were isolated from rice and they showed colonization and growth promotion (Okon and Labandera-Gonzales 1994, James et al 2002).

In India, where rice has been under cultivation for many decades, we looked at the possibility of such natural rhizobial endophytes occurring in Indian soils. **(Authors' abstract)**

Keywords: *Agriculture, Rhizobium leguminosarum bv. trifolii, Photosynthetic bradyrhizobium, Nitrogen fixation, Azospirillum, Herbaspirillum*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 28-29

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

0169

Rice seed priming

Basra, S.M.A., Farooq, M., Ahmad

Seed priming is a technique in which seeds are partially hydrated until the germination process begins, but radicle emergence does not occur (Bradford 1986). Priming allows the metabolic processes necessary for germination to occur without actual germination.

Primed seeds usually exhibit an increased germination rate, greater germination uniformity, and, at times, greater total germination percentage (Basra et al 2005). Increased germination rate and uniformity have been attributed to metabolic repair during imbibition (Bray et al 1989), buildup of germination-enhancing metabolites (Basra et al 2005), osmotic adjustment (Bradford 1986), and, for seeds that are not redried after treatment, a simple reduction in imbibition lag time (Bradford 1986). Other scientists have given excellent reviews on seed priming. Our review aims to sum up earlier work on rice seed priming. **(Authors' abstract)**

Keywords: *Agriculture, Seed priming, Germination process, Rice*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 45-48

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

Role of giant bamboo (*Dendrocalamus asper*) on soil erosion and sediment yield reduction within Taganibong sub-watershed in Bukidnon, Philippines

Marin, Rico A., Puno, George R., Toledo-Bruno, Angela Grace

The main stream of Taganibong watershed in Bukidnon drains to the Pulangi river system that supports the National Power Corporation (NAPOCOR) Pulangi IV dam. This watershed has problem on flooding downstream due to soil erosion and siltation occurrences during heavy rainfall. This study is aimed to quantify the erosion and sediment yield of the bamboo stand within taganibong watershed and compare this in an area devoid with bamboo stands. The two areas serve as the research site of the study where 9 erosion plots were established per site to measure soil erosion. In determining sediment yield, three sediment collectors were established per site to trap the flowing water in the stream.

Findings showed that bamboo stands can withhold soil loss of up to 80% when compared with an open area. Significant difference was observed in soil erosion between giant bamboo stand and an open area with 19 Ton Ha-1 and 107.28 Ton Ha-1, respectively. In terms of sediment yield, bamboo stand is considerably lower ranging from 1.09 to 1.45 gram/m²/hr as against the open area with values ranging from 21.95 to 59.53 gram/m²/hr. The results of the study may imply that giant bamboo is effective

in reducing soil erosion and sediment yield which are the major causes of siltation and flooding along lowland areas.

(Authors' abstract)

Keywords: *Agriculture, Taganibong, Watershed, Soil erosion, Sediment yield, Giant bamboo*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 40

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Sahyadri 2, an early rice hybrid for Maharashtra State in India

Waghmode, B.D. , Jambhale, N.D. , Ingale, B.V., Dalvi,

In India, rice is predominantly grown on 1.4 million ha of traditional and 0.9 million ha of nontraditional areas in the state of Maharashtra. Average productivity is 1.7 t ha⁻¹. A total of 53 high-yielding rice varieties (HYVs) have been released for commercial cultivation in the state for various agroecological conditions. The productivity of rice nevertheless remained stagnant during the last decade. The adoption of rice hybrids, along with proper crop management practices, is certainly an alternative for increasing productivity in the state. The RARS in Karjat, District Raigad, has

identified and released the first rice hybrid, Sahyadri, for commercial cultivation. It has medium-late growth duration and a high yield potential, (6.5-7.5 t ha⁻¹). The area under hybrid rice is increasing gradually in the state, but nearly 60% is planted to early-duration rice varieties. Efforts were therefore made to develop suitable early-duration rice hybrids with desirable characteristics to increase rice productivity. **(Author's abstract)**

Keywords: *Agriculture, Sahyadri 2, Rice hybrid, Maharashtra State in India*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 20-21

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0172

Screening eggplant germplasm for drought tolerance under greenhouse condition

Delfin, Evelyn F., Manaday, Sarah Jane B., Canama, Alma O., Ocampo, Eureka Teresa, Maghirang, Rodel

Drought stress can adversely affect the plant morphology, physiological processes and potential fruit yield of hardy vegetable crops like eggplant (*Solanum melongena* L.). The threat of climate change has made it imperative to develop new eggplant varieties for drought-prone environments. One hundred eggplant genotypes consisting of commercial varieties and different species from the national eggplant germplasm collection were screened for drought tolerance under greenhouse conditions. Greenhouse experiments were conducted in batches with two commercial varieties (Dumaguete Long Purple and Mistisa) as controls. Three-week old seedlings were transplanted to 16 liter-plastic pails containing 10 kilograms. Drought was imposed on 6 week-old seedlings by discontinuing irrigation for drought treatment and regular watering for the well-watered treatment. The top 20% and the lowest performing entries for each batch were included in a verification trial in order to identify possible parental materials. The performance of 27 selected genotypes together with the check varieties was reassessed under drought conditions in the greenhouse. These genotypes differed significantly in terms of measured morphological and physiological traits. Wide variation in stomatal conductance, an indication of stomatal opening under stress, was observed with values ranging from 64.02 – 294.49 mmol/m²s. The relative leaf water content (RWC) of the entries also differed significantly with RWC values of 43 to about 100% under drought. On the other hand, the root shoot (RS) ratio values showed entries with high dry matter allocation to the roots. Moreover, root dry weight values ranged from 0.12 to 1.72 g plant⁻¹. The significant variation among eggplant genotypes under drought condition indicated opportunities for the development of drought tolerant eggplant varieties. **(Author's abstract)**

Keywords: *Agriculture, Eggplant, Drought, Germplasm, Breeding, Root morphology*

Screening of mungbean for pre-germination waterlogging tolerance

Oraye, Claudette D., Enicola, Elmer E.

The available moisture from the previous rice crop is said to be sufficient in fulfilling the mungbean requirement during the plant growth stage but a different scenario happens when excessive rainfall comes during the critical stage of the crop. Waterlogging during the pre-germination stage of mungbean often leads to poor seed germination and vigor thereby reduces subsequent growth and yield and even restricts nodule activity and nitrogen fixation. Hence, development of waterlogging tolerant varieties will help reduce damages brought about by heavy rains as well as help increase the adaptability of this otherwise resilient crop. Seeds of forty-nine (49) accessions of mung bean from the National Plant Genetic Resources, nine (9) Pag-asa series varieties and three (3) breeding lines were subjected to 3 days waterlogging. Germination rate between the control and waterlogged seeds almost had no difference in most of the accessions. Root length is more affected than the shoot length. In fact, only PHL 13057 had root length in control which is not significantly different to that of the waterlogged seeds. Sixteen (16) accessions, one (1) variety and two (2) breeding lines were selected based on parameters gathered for further evaluation - PHL 5241-SG, PHL 5241-DG, PHL 12625, PHL 12785, PHL 12926, PHL 12928, PHL 12949, PHL 12950, PHL 12953-DG, PHL 12954, PHL 12959, PHL 13057, PHL 15253-DB, PHL 15259-SG, PHL 15290-DGDB, PHL 15330, Pag-asa 17, 646-1 and 646-6. Selected accessions will advance to several days of waterlogging to determine the super tolerant varieties. Additional parameters will be added such as field emergence, seedling dry weight and electrical conductivity to further determine the vigor of these seeds. **(Author's abstract)**

Keywords: *Agriculture, Mungbean breeding, Waterlogging tolerance, Pre-emergence*

Screening of resistance and/or susceptibility of pigs (*Sus scrofa*) to salmonellosis using PCR-RFLP

Miguel, Michelle A., Mingala, Claro N.

Salmonellosis can cause outbreak or septicemia, acute or chronic enteritis and wasting in weaned pigs, but may occur in other age groups. Salmonella in the gut of pig can contaminate carcasses during the slaughter process and their presence creates potential public health risks due to food poisoning. The bactericidal/permeability-increasing protein (BPI) gene plays an important role in the natural defense of the host and was found to be associated with resistance/susceptibility to Salmonella infection and identified as a candidate gene for disease resistance breeding in pig. This study was conducted to screen and determine the genotype of the pigs that are resistant or susceptible to salmonellosis using PCR-RFLP with the application of BPI gene as molecular marker for disease resistance. This screening may be helpful for the genetic improvement of porcine disease resistance to this bacterium. In this study, blood samples ($n=200$) were collected from swine breeder farms. Genomic DNA was extracted from these samples and genotyping was done by PCR-RFLP analysis using *AvaII* restriction enzyme. Out of 200 samples, 182 samples were found to be resistant, 12 were heterozygous resistant and 6 were susceptible. The genotypic frequency showed that 91% pigs are resistant (GG), 6% were heterozygous resistant (AG) and 3% were susceptible (AA) to salmonellosis. The genetic screening for resistance or susceptibility using a molecular marker for disease resistance will enable us to identify animals carrying beneficial alleles that are to produce offspring with improved resistance to pathogen, thus providing information for the swine industry on improving accuracy of selection, reducing disease incidence and accelerating the rate of genetic improvement of the trait. **(Author's abstract)**

Keywords: *Agriculture, BPI gene, PCR-RFLP, Salmonellosis, Pig*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 5
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0175

Seed diversity of Bukidnon upland rice (*Oryza sativa* L.) landraces and traditional varieties under musuan conditions

Mamugay, Christian L., Jamago, Joy M.

Bukidnon which is a "pineapple country" surprisingly has several upland rice landraces and traditional varieties (URTVs) which showed some phenotypic variability. Forty-nine of 140 URTVs collected in 2010 to 2011 were used to

validate the seed diversity reported by Cortes (2011) based on 13 traits. Seed samples were obtained from a field experiment at CMU-AES in 2012-2013 laid out in a 7x7 simple lattice design with two replications. Eight quantitative and 12 qualitative seed traits were characterized. ANOVA showed significant differences ($p < 0.0001$) for grain length, width and thickness; weight of 100 seeds; caryopsis length and width; and length of sterile lemma. Standardized Shannon-Weaver Diversity Index (H') estimated high variability ($H' = 0.76-0.93$) for 9 traits, moderate variability ($H' = 0.49-0.59$) for 6 traits, and low variability ($H' = 0.04-0.40$) for 5 traits. Mean H' for quantitative traits was 0.78 and 0.44 for qualitative traits. Pearson's Simple Correlation Moments revealed 69 significant associations among the seed traits, with highest for grain length and caryopsis length ($r = 0.89$). Cluster analysis using Ward's Minimum Variance showed some duplicates (100% genetic similarity) and near duplicates. Cluster I had 26 URLTVs at ~28% genetic similarity and Cluster II had 23 URLTVs at ~54% genetic similarity. Under Musuan conditions, the subset of 49 URLTVs (mean $H' = 0.59$) from Cortes' (2011) collection of 140 (mean $H' = 0.64$) validated the moderate range of seed diversity of Bukidnon URLTVs which may still have some Useful alleles for upland rice breeding. **(Author's abstract)**

Keywords: *Agriculture, Rice, Bukidnon, Seed diversity, Landraces, Upland rice*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 15
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0176

Segregation and inheritance of TY-3 gene introgression in BC₁ and F₂ populations of tomato (*Solanum lycopersicum* L.)

Canama, Alma O., Camiring, Andrea Danna S., Reyes, Melquiades E. C.

Tomato (*Solanum lycopersicum* L.) is a high-value commodity in the country consumed as fresh or processed and is a rich source of vitamins, minerals and lycopene. Virus disease caused by tomato leaf curl Philippine virus (ToLCPV) is one of the most destructive diseases of tomato in the Philippines. Breeding lines from AVRDC have multiple Ty resistance genes against tomato leaf curl virus and Ty-3 locus has been identified to be effective against ToLCPV.

BC₁ and F₂ populations were derived from the cross between ToLCPV-susceptible 'Super Apollo' and AVRDC resistant tomato lines containing Ty genes. A co-dominant sequence characterized amplified region (SCAR) marker was used to analyze the segregation and inheritance of Ty-3 gene introgression in the BC₁ and F₂ populations. Chi-square analysis was used to assess the expected Mendelian ratio of 1:1 and 1:2:1 in a backcross and F₂ population, respectively. The BC₁ plants amplified either the following: a) two fragments corresponding to the ty-3 and Ty-3 or Ty-3a and b) one fragment corresponding to the ty-3 from Super Apollo lacking the

Ty-3 gene introgression. Segregation ratio was not significantly different from the expected 1:1 ratio in a backcross population. Homozygous resistant *Ty-3/Ty-3*, heterozygous *Ty-3/ty-3* and homozygous susceptible *ty-3/ty-3* genotypes are expected in an F₂ population. The inheritance of *Ty-3* gene-specific marker fitted the expected 1:2:1 Mendelian ratio for an

F₂ segregating population. The findings of the study significantly contributed to the understanding of the inheritance of the *Ty-3* resistance locus in the current tomato breeding efforts for ToLCPV resistance. **(Authors' abstract)**

Keywords: *Agriculture, BC1, F2, SCAR marker, Tomato leaf curl Philippine virus, Tomato, Ty-3 gene*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 12

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0177

Seven species in one: using mitochondrial DNA to resolve the genetic identity of *Dulong*

Thomas, Jr., Rey C, Campos, Wilfredo L., Santos, Mudjekeewis D.

Sustainable management of marine resources requires accurate identification of fish species in all their life stages. Such information is essential for managing biodiversity hotspots, such as the Verde Island Passages in the southern tip of Luzon Island. Among the marine species in the area is a group of small fishes collectively known as *Dulong*. Morphological data from previous investigations concluded that this congener is composed of either the family Clupeidae or Engraulidae in their larval stage. To verify these findings, we utilized partial fragments of the 16S rRNA gene. Seven species from the families Clupeidae, Gobidae and Scombridae were identified among the collections. However, no members of Engraulidae were identified among the samples, possibly due to the seasonality of its abundance. Species distribution and genetic data suggest high connectivity among most sampling sites. Interestingly, individuals collected from the outermost fringes of the Verde Island Passages exhibited different species composition. Such pattern might indicate different ecosystems within this region which merits further investigation. **(Author's abstract)**

Keywords: *Agriculture, Dulong, Clupeidae, 16S rRNA, Species composition, Connectivity*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 31

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

Short-duration rice varieties adaptable to sodicity

Anthoniraj, S. , Naina Mohammed, S.E. , Geetha, D. , Ra

Sodicity is one of the most widespread problems in irrigated agriculture. Rice is best suited for growing in problem soils since it can be cultivated under flooded conditions. Although rice strongly tolerates sodicity, reduction in grain yield varies quite a lot compared with that under favorable environments. Growing the most sodicity-tolerant rice varieties is a long-term strategy that can ensure better economic returns. Because of the complexity in the inheritance pattern of sodicity tolerance and because of screening problems, only a few rice varieties are released for commercial cultivation in sodic conditions (Gregorio et al 2002). Though there are reports on cultivar differences in sodicity tolerance, studies on screening for adaptability of popular rice varieties to sodic conditions are scanty. Some crop varieties, although not bred for unfavorable environments, fared well under abiotic stresses. (IR64, which was developed for irrigated conditions, was later observed to possess drought tolerance.) **(Author's abstract)**

Keywords: *Agriculture, Sodicity, Abiotic stresses, Drought tolerance*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 2, 34-35

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/2 2005

A simple screening technique for salinity tolerance in rice: germination rate under stress

Abaysiriwardena, Z., Sumith de

Currently available screening procedures for tolerance for salinity in rice have their own limitations (Ponnamperuma 1977, Aslam et al 1993). Hence, an investigation was carried out to develop a low- cost, simple, reliable, and efficient laboratory procedure to screen rice cultivars for this trait. The hypothesis tested was whether cultivar differences in ability to sustain seed viability and show normal germination when presoaked in saline solutions with high concentrations for several days under laboratory conditions are associated with level of salinity tolerance in the field. **(Author's abstract)**

Keywords: *Agriculture, Salinity tolerance, Germination rate under stress, Rice*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 78-79

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0180

Single nucleotide polymorphisms in three genes of the water buffalo (*Bubalus bubalis*) associated with milkyield and milk component traits: their impliction to the Phiippine Carabao Center's dairy buffalo breeding program

Herrera, Jesus Rommel V., Villanueva, Amie S., Maramba, Jennifer F., Flores, Ester B.

Selection of dairy buffalo cows by the Philippine Carabao Center (PCC) involves collecting milk performance data for 2-3 lactations prior to ranking them based on the milk production, a process which requires 6-7 years to identify a good milker. In the case of bulls, milk performance data of daughters are first evaluated, requiring around 8 years to identify animals with high genetic merit. Using available performance records coupled with deoxyribonucleic acid (DNA) markers (i.e., single nucleotide polymorphisms, SNPs) associated with milk traits, identification of good dairy animals can be dramatically shortened to 2-3 years while increasing the accuracy of selection. Thus this study sought to identify water buffalo SNPs associated with milk yield and milk component traits. DNA samples of buffalo cows with milk performance data were used in this study. Since the buffalo genome has not yet been sequenced, primers used to amplify the coding regions were based on the gene sequence of cattle. Association studies revealed that the combined effect of three SNP markers found in beta-lactoglobulin, protease inhibitor and prolactin receptor genes have favorable association with milk yield, fat yield, protein yield, milk protein, and milk fat percentages. Onlu young semen donor bulls with high genetic merit that carry the the favorable genotypes of the three markers will be used for breeding immediately rather than wait for progeny testing (PT), thereby reducing the number of bulls entering the PT program, resulting in lower investment costs in the long term. **(Author's abstract)**

Keywords: *Agriculture, Water buffalo, Milk production, DNA, SNP, Breeding program*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 22

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

Soaking time and its effects on the milling recovery and grits quality of parboiled adlay (*Coix lacryma-jobi* L.)

Baguhan, Leonie Lee B., Aradilla, Agripina R.

Adlay or Job's tears (*Coix lacryma jobi* L.) is a weed-crop recently introduced as a staple crop in the Philippines for food and nutrition security. Menu of technology (MOT) have been undertaken by DA-BAR since 2011 to include postharvest handling like parboiling of adlay grains prior to milling. This study was conducted to compare the possible effects of soaking time on the milling recovery and grits quality of parboiled adlay. This study was laid in a 3 x 4 factorial in CRD with three replications at the Seed Technology Laboratory of Central Mindanao University, Musuan, Bukidnon from May 2013 to January 2013. The grains of three adlay varieties were assigned as Factor A (V1-Ginampay, V2-Tapol, V3-Gulian) and soaking time in hot water (S1-0 hours, S2-2 hours, S3-3 hours, S4-4 hours) as Factor B. Data gathered were analyzed using ANOVA and LSD for treatment mean comparisons. As per ANOVA, all three parameters measured significantly differed among treatments. Parboiling significantly affected the milling recovery and milling yield of adlay grains. Grains soaked for 2 to 4 hours had higher milling recovery than unsoaked treatment. Likewise, grains soaked for 3 hours (S-3) had higher milling yield and Gulian variety consistently obtained higher milling recovery and milling yield than Ginampay and Tapol. It was revealed that parboiled Gulian had more head grits with rough-textured grits compared to other varieties used. Therefore, Gulian could be a more suitable variety for parboiling at 3-4 hours. **(Author's abstract)**

Keywords: *Agriculture, Adlay, Parboiling, Milling yield, Milling recovery, Grits*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 52
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

Soil biological health: a major factor in increasing the productivity of the rice-wheat cropping system

*Laurens, J.G. , Duxbury, J.M. , Devare, M.H. , Ahmed, H.U. , Nahar, M.A. , Siddique, A.A. , Shaheed, M.A. ,
Banu, S.P., Abawi, G.S. , Meisner,*

The rice-wheat cropping system was rapidly adopted in South Asia after the development of input-responsive, high-yielding varieties of both crops in the 1960s and 1970s. This became one of the world's major food production systems,

occupying about 20 million ha and providing staple grains to more than 1 billion people. However, the rice-wheat system is under stress today. Diminishing yields in long-term experiments (Duxbury et al 2000), stagnating farmer yields, and declining factor productivity (Hobbs and Morris 1996) indicate that the sustainability of the rice-wheat system is questionable. Neither farmers nor researchers are sure of the reasons for the alarming trend. Since 1994, the Rice-Wheat Consortium for the Indo-Gangetic Plains-composed of national agricultural scientists from Bangladesh, India, Nepal, and Pakistan, advanced research institutions, and international agricultural research centers-has been working to address sustainability concerns about the rice-wheat cropping system (Gupta et al 2003). **(Author's abstract)**

Keywords: *Agriculture, Rice-wheat cropping system, Soil biological health, Meloidogyne, Rhizoctonia, Pythium, Helminthosporium*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 5-11

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0183

Species of mysids (crustacea, mysidacea) in seagrass beds of Misamis Occidental, Northern Mindanao, Philippines

Metillo, Ephrime B., Aliman, Anjela S.

Tropical seagrass beds are important coastal ecosystems as habitat, nursery and spawning grounds for many ecologically and commercially important shellfish and finfish species, but studies and information on the prey of these fishes, the seagrass zooplankton, are scarce. An indicator of a healthy seagrass bed ecosystem - mysidacean shrimps - are very common resident seagrass zooplankton that tropically link small zooplankton and finfish species. This study was conducted to identify and classify the different mysid species collected from seagrass beds of seven municipalities of Misamis Occidental. Eight species were identified, and all species were found to be new records from the study area. All under Family Mysidae, Subfamilies Siriellinae, Gastrosaccinae, and Mysinae were represented respectively by *Siriella gracilis* and *S. sinensis*; *Anchialina grossa*, *Haplostylus bengalensis*, *Haplostylus* sp., *Iiella ohshimai* and *Pseudanchialina inermis*; and *Mesopodopsis* sp. *Siriella sinensis* was present in all sampling sites. *Haplostylus* sp. and *Mesopodopsis* sp. are possible new species. **(Author's abstract)**

Keywords: *Agriculture, Seagrass ecosystem, Zooplankton, Mysidacea, Taxonomy, Misamis Occidental*

SSR-based DNA finger printing and targeted gene discovery in selected Philippine sugarcane varieties

Bello, Erin B., Sendon, Pamella Marie V., Balingit, Jean Claude P., Lalusin, Antonio G., dela Cueva, Fe M., Laurena, Antonio C.

Cultivated sugarcane (*Saccharum spp.*) is a complex autoploid with chromosome numbers ranging from 100-130, derived from interspecific hybridizations between *S. officinarum* and the wild relative *S. spontaneum*. Characterization of different sugarcane genotypes is an integral part in establishing the genetic pedigree of current commercial varieties. Moreover, superior varieties can be developed through the use of molecular markers targeting important agronomic traits. In this study, 17 Philippine sugarcane varieties were fingerprinted using 48 *Saccharum*-based simple sequence repeat (SSR) markers available in scientific journals. SSR-based markers were selected based on high polymorphic information content (PIC) values and maximum number of alleles. The presence of SSRs was also determined in the DNA sequences of genes associated with sucrose content (Sucrose Phosphate Synthase-B, Sucrose Transporter 1 and Sucrose Transporter 4) and resistance gene-analogues (RGAs) linked to biotrophic fungal resistance. Genomic DNA was extracted from the 17 varieties using a modified cetyltrimethylammonium bromide (CTAB) double extraction method. Polymerase chain reaction (PCR) was performed using the 48 SSR-based primers for DNA fingerprinting and gene-specific primers for amplification of targeted genes. For DNA fingerprinting, PCR products were electrophoresed in 6% non-denaturing polyacrylamide gel and the resulting band patterns were scored to determine the PIC values of each SSR marker. Amplified regions of the targeted genes were sequenced and the presence of SSRs was determined using available bioinformatics tools. **(Author's abstract)**

Keywords: *Agriculture, Sugarcane, Simple sequence repeats (SSR) markers, DNA fingerprinting, Sucrose content, Fungal resistance*

Submergence tolerant rice: mitigating the effect of climate change in flash flood-prone areas in the Philippines

Alfonso, Antonio, Somera, Jean, Espejo, Emilie, Miranda, Ronalyn, Avellanoza, Eleanor, Tabano, Dindo, Nazareno, Eric

Cultivated rice, *Oryza sativa* L., needs water in order to grow and produce the most important staple food for more than half of world's population. when completely underwater for several days particularly at vegetative stage, rice seedlings wilt and die causing significant reduction in yield. This paper describes the genetic improvement of rice *via* transfer of *sub1* locus for submergence tolerance from IR64-Sub1 into high yielding varieties using marker-assisted breeding methods. Six commercial varieties - NSIC Rc160, NSIC Rc128, NSIC Rc154, NSIC Rc158, and PSB Rc82 - were used in conventional hybridization and development of progenies. Using *sub1* markers ART5 and RM8300 in chromosome 9, foreground selection of plants with *sub1* identified improved lines currently at BC2F2 and BC3F1. Recombinant selection using 5 microsatellite markers in the *sub1* region combined with background selection using 27 markers identified 7 improved PSB Rc82, now at BC2F2. Promising submergence tolerant rice cultivar in the background of NSIC Rc160 showed 58% survival compared to IR64-Sub1 and IR42 (control) at 39% and 0%, respectively, under on-farm evaluation in San Antonio, Nueva Ecija. The development of submergence tolerant rice varieties will give farmers an option to alleviate the effect of submergence as a result of climate change particularly in flash flood-prone areas in the country. **(Author's abstract)**

Keywords: *Agriculture, Rice, Sub1, Submergence tolerance, Marker assisted selection, Genetic improvement*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 10
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

Subsurface drainage to increase rice productivity in a saline environment

Manjunatha, M.V. , Gupta, S.K. , Satyanarayana, T.V., Kuligod,

The average productivity of rice in India-at less than 2 t ha-l-is, by all standards, low (MIB 2003). Irrigated rice yields in the range of 2.5-4.0 t ha-l in many places are far from their anticipated productivity of 6.0-7.5 t ha-l. Such low yields, in many cases, can be due to salt-related soil degradation. As such, a rising water table, appearance of salt efflorescence at the soil surface, and declining rice yields cause farmers, researchers, and policymakers to worry because those problems can jeopardize the future of irrigated agriculture and bring about downtrends in the economy. Based on the

outcome of baseline and soil surveys, it has been hypothesized that large areas going out of cultivation and low yields can be attributed to the high water table, accompanied by salt-related land degradation. Studies began under an Indo-Dutch Network Project at 10 locations in four irrigation commands covering two states of India to assess the yield-salinity relationships for rice and to test improved drainage techniques to reverse or mitigate salt-related problems.

(Author's abstract)

Keywords: *Agriculture, Salt efflorescence, Soil surface, Soil degradation*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 91-93

2004,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 29/2 2004

0187

Survey and characterization of indigenous food plants in Ilocos Norte, Philippines

Antonio, Menisa A., Utrera, Rodel T., Agustin, Epifania O., Jamias, Dionisio L., Badar, Araceli J., Pascua, Miriam E.

Indigenous and traditional edible plant species, usually referred to as indigenous food plants (IFPs), are disappearing at an alarming rate, posing serious threats to food security and agricultural production especially in areas that depend on them for food and livelihood. This study was undertaken to document the IFPs of seven upland and remote municipalities of Ilocos Norte province. It generated information on the IFPs identity and taxonomic nomenclature, socio-economic importance, ethnobotany, and geographic location. A total of 46 IFPs representing 28 plant families were identified. Most of them were wild species; the others were landraces or native varieties of cultivated crops. The identified IFPs are important plant genetic resources contributing to food sufficiency, nutrition, and household income supplements in the study sites. Ethnobotanical data indicate that the plants have become an integral part of the people's daily diet. Seven of the IFPs showed specific elevation, temperature and soil moisture requirements which contributed to the uniqueness of a species in one or two sites. Many of them, however, showed adaptability to a wide range of geomorphic and soil conditions. Recognizing the benefits of these IFPs, the upland communities conserve them through *in situ* conservation and conservation through use. Additionally, the Mariano Marcos State University (MMSU) collected available germplasm and maintains them as living plants and seeds. To prevent further genetic erosion and to protect the IFPs from extinction, collaborative efforts and interventions among various stakeholders should be instituted and strengthened. **(Author's abstract)**

Keywords: *Agriculture, Indigenous food plants, Biodiversity conservation, Plant genetic resources, Wild plant species, Traditional varieties*

Tawas as coagulant for carabao wastewater

Saliling, Willie Jones B. , Lagasan, Zuraida U. , Cabugwason, Jr, Edward B. , Bansilan, Joha

This research study was conducted at the Chemistry Laboratory, CAS-USM last October 9, 2006 to determine the coagulation efficiency of tawas used in carabao wastewater treatment, and to determine the quality of its supernatant. This study was laid out with four treatments such as the control (500ml of carabao wastewater without Tawas) as T1, T2 (500ml of carabao wastewater mixed with 1g of Tawas), T3, (500ml of carabao wastewater mixed with 2g of Tawas), and T4 (500ml of carabao wastewater mixed with 3g of Tawas); replicated three times. Before doing the replications of treating the carabao wastewater through coagulation process using tawas as coagulant, series of trials were done to find the amount of tawas that would purify carabao wastewater.

Result of the study showed that different amounts of tawas when mixed in the same amount of carabao wastewater, resulted into different coagulation efficiency. It purified carabao wastewater. It lessened the total suspended solid and turbidity. Tawas as coagulant also made the acid wastewater into basic one. 500 ml of carabao wastewater, as 1g, 2g, and 3g of tawas was added, the pH value became basic.

It is recommended tawas that concentration of 3g of Tawas per 500 ml of carabao wastewater be used. (**Authors' abstract**)

Keywords: *Agriculture, Animal wastes, Microorganisms, Polluted water, Water purification*

Technology Assessment and Refinement through Institution-Village Linkage Program (TAR-IVLP): an effective institutional mechanism for assessing the appropriateness of rice varieties

Ramanathan, S. , Anantharaman, M. , Santhosh Kumar, K.P. , George Jose

Rice is cultivated under different types of production systems by farmers living in varied socioeconomic and agroecological conditions. Farmers' participation in technology assessment is essential in generating technologies suitable to their needs. The Technology Assessment and Refinement through Institution-Village Linkage Program (TAR-IVLP), promoted by the Indian Council of Agricultural Research (ICAR), adopts a holistic approach with the village as an operational unit.

The use of farmers' participatory research was the main component in the technology assessment. The CTCRI under ICAR implemented the TAR-IVLP in Chenkal village in Thiruvananthapuram District, Kerala State, southern India. Here, rice is cultivated as a transplanted crop under canal-irrigated conditions. Average productivity in this lowland production system is 1.9 t ha⁻¹; the district average is 2.2 t ha⁻¹. Conway et al (1987) revealed that not using highyielding varieties suited to local farming conditions contributed to the low productivity of this ricebased production system. **(Authors abstract)**

Keywords: *Agriculture, Rice, Indian Council of Agricultural Research (ICAR), Canal-irrigated conditions*

IRRN International Rice Research Notes, Volume No. 31 Issue No. 1, 37-38

2006,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 31/1 2006

0190

Temporal variation in sugar exudation rate of hydroponically grown Pusa Basmati 1 at seedling stage

Ghosh, S. , Majumd

Root exudates, along with dead root hairs, epidermal cells, and root caps, are a source of energy for the microbial community in the rhizoplane and rhizosphere. They aid in the mineralization of organic matter, nutrient cycling, and trace gas (CH₄, N₂O, etc.) production (Aulakh et al 2001). MacRae and Castro (1966), Marathe (1970), and Waschutza et al (1992) have identified raffinose, glucose, fructose, arabinose, ribose, and xylose in rice exudates. Glucose is the most abundant of all sugar exudates of plants in general (Boureau 1977). With growth of rice, the exudation of organic

acids such as oxalic, succinic, aconitic, citric, malic, tartaric, and lactic acids substitutes for the exudation of sugars (Aulakh et al 2001, Boureau 1977). Root and shoot biomass was positively correlated with carbon exudation, suggesting that it is driven by plant biomass (Aulakh et al 2001). A decrease in exudation was observed by Vancura et al (1977) when the source of seedling nutrition shifted from stored substances in the seeds and the endosperm to photosynthesizing leaves. As the nutrient supply from the leaves increases, root exudation increases again and maintains a rising trend up to the time of flowering. **(Author's abstract)**

Keywords: *Agriculture, Pusa Basmati 1, Root exudates, Dead root hairs, Epidermal cells, Root caps, Rhizoplane, Rhizosphere*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 46-47

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

0191

Is the trap barrier system with a rice trap crop a reservoir for rice insect pests?

Bahatan, A. D. , Gergon, E. B. , Joshi, R. C. , Martin, A. R., Cabigat,

In the Banaue rice terraces, we monitored the rice arthropod dynamics in a rice trap crop planted inside (1) a trap barrier system (TBS + TC), (2) surrounding rice crops 25, 50, 100, 200, and 400 m away from the TBS + TC setup, and (3) those grown in areas farther away (> 1,000 m) and where the TBS + TC system was not introduced.

Rice is planted once a year in Banaue, with seeds sown on seedbeds in late November and December. The area is planted to Lacoop, which is a photoperiodsensitive traditional rice variety with 6-mo maturity. Lacoop was also planted inside the TBS 1 mo in advance of the farmers' main crop. One of each TBS + TC setup was strategically established in terraced fields adjacent to the farmers' residences, creeks, and forest on 21 Dec 2002. This was done to lure rats from possible source habitats to the TBS + TC early in the rice cropping season, thereby reducing the number of breeding rats in the main season. **(Authors' abstract)**

Keywords: *Agriculture, Trap barrier system, Rice trap crop, Rice insect pests*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 30-31

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

Usefulness of improved open-pollinated varieties in the development of top-cross white maize hybrids

Magulama, Efren E. , Correjado, Vian

Non-conventional maize hybrids like top cross can be a profitable alternative to commercial inbred-hybrids. This study aimed to identify high yielding top cross hybrids, and select potential open-pollinated varieties (OPVs) that could be used as parent in the formation of top cross hybrids, and to compare top crosses with their parent OPVs. The experiment was carried out in 5 x 5 alpha lattice design with three replications, consisting of 16 top-cross hybrids, 8 parental OPVs, and one check hybrid. Significant differences among entries were noted in grain yield, tasseling date, ear height, kernel rows per ear, kernels per row, and kernel number per ear. Top-cross (TC) hybrids had greater yields (5.24 t/ha) than the parent OPVs (4.47 t/ha) by 17.23%. Three top- cross hybrids (5.92-6.16 t/ha) had comparative yields and even higher yields than the check hybrid (5.92 t/ha). Twelve top-cross hybrids (4.98-6.16 t/ha) showed higher yields than the OPV check (4.90 t/ha). Three CML 254 testcrosses had comparable yield with the hybrid check and none at all with CML 247 testcrosses. The yield advantage of CML 254 hybrids over of hybrid check varied from 1.5 to 4.2%. Two varieties showed positive general combining ability effects, namely: USM var 14 (0.23 t/ha) and USM var 18 (0.19 t/ha). The results imply that non-conventional hybrids could be a potential alternative to inbred-line hybrids for the resource-poor farmers. The production of top- cross hybrid seeds is much cheaper than the single, three-way, and double cross hybrids (conventional hybrids.). **(Authors' abstract)**

Keywords: *Agriculture, Conventional hybrids, General combining ability, Heterotic groups, Top crosses*

USM R&D Journal, Volume No. 16 Issue No. 2, 97-103

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

Using rice cultivar mixtures: a sustainable approach for managing diseases and increasing yield

Castilla, N. P. , Vera Cruz, C. M., Mew, T. W. , Zh

The adoption of modern rice cultivars has increased annual production in the past three decades by 2.4% per annum and average yield by 71% (Khush and Virk 2002). Modern cultivars continue to replace thousands of traditional cultivars (Chang 1994). Although the number of landraces used in breeding modern cultivars has increased in the same period (Hossain et al 2003), many modern cultivars share the same genetic background (Chang 1994), which has contributed to the instability of resistance against several rice diseases with high epidemic potential.

A sustainable approach in managing modern cultivars is functional diversification. Functional biodiversity (Schmidt 1978) is based on the principle of using cultivars with diversified functions to limit the development of diseases. A growing number of studies show that, in natural ecosystems, functional diversity leads to higher stability (Petchey and Gaston 2002). This means that, in agroecosystems, haphazard cultivar mixtures do not necessarily control diseases and increase yield and that prolonging the useful life of resistance genes and increasing crop productivity may be achieved by taking into account the functional differences in disease resistance and other agronomic traits of cultivars. Such functional diversification can be achieved by using multilines and cultivar mixtures (Wolfe 1985). **(Authors' abstract)**

Keywords: *Agriculture, Rice cultivar mixtures, Dilution effect, Barrier effect, Induced resistance*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 5-11

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

0194

Vaccine trial of recombinant *Schistosoma japonicum* paramyosin in water buffaloes

Jiz, II, Mario Antonio L., Mingala, Claro N., Lopez, Ivy Fe M., Chua, Mike, Gabonada, Jr., Francisco G., Acosta, Luz P., Wu, Haiwei, Kurtis, Jonathan D.

The overall aims of this project are to assess the safety and immunogenicity of the *Schistosoma japonicum* vaccine Paramyosin among water buffalos residing in endemic areas. The study was conducted in four villages in Leyte, an area highly endemic for *S. japonica*. One hundred fifteen animals provided baseline stool samples for coprologic examination, with preliminary results using FLOTAC showing a 10% prevalence of schistosomiasis. Forty-nine animals were treated with 25 mg/kg Praziquantel, and 40, 36 and 32 animals were given the first, second, and third dose of the paramyosin vaccine, respectively. The safety trial involved the first 20 animals and included skin testing, vaccination, anaphylaxis monitoring, and hematology and serum chemistry analysis. None of the animals exhibited anaphylaxis, and all hematology and serum chemistry markers were within normal range or were similar to pre-vaccination levels. Immunogenicity assessment showed that the paramyosin vaccine induced robust antibody responses to all animals, as

assessed by ELISA. Overall, this project demonstrated that the *S. japonicum* paramyosin vaccine is safe, well-tolerated, and immunogenic among water buffalos residing in endemic areas. Moreover, the outcome of this work shows promise for the development of a schistosoma vaccine for humans. **(Author's abstract)**

Keywords: *Agriculture, Schistosoma japonicum, Paramyosin, Vaccine, Immunogenicity, Water buffalo*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 23

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0195

Validation of cattle DNA markers for genetic defect screening in water buffaloes

Paraguison-Alili, Rubigilda, Herrera, Jesus Rommel V., Cacho, Roxan Grace C., Cruz, Libertado C.

Genetic defect screening is one of the important techniques contributing to the advancement of livestock industry. It involves a systematic method of determining genetic or inherited aberrations affecting different species of animals. Here, the use of DNA markers established for screening genetic defects in cattle, *i.e.* Bovine leukocyte adhesion deficiency (BLAD), Deficiency of uridine monophosphate synthase (DUMPS), citrullinemia and freemartinism, were applied to water buffaloes would guide the use of the more established genetic information of cattle on buffaloes. PCR and restriction fragment length polymorphisms (RFLP) were utilized to identify the inherited heterozygous and recessive allele conditions. DNA sequencing was also performed to verify the PCR products identifying the specific base change. Apparently, the mutation lethal in cattle was found in normal buffaloes for BLAD; thus, the established target gene markers for cattle may not be suitable for water buffaloes. Nevertheless, this study emphasizes the effectiveness of cattle gene markers for DUMPS, citrullinemia, and freemartinism for genetic defect screening applications on water buffaloes. Therefore, this study leads to having a standard molecular method for breeders in screening the animals at risk for the defects and identify carriers to eliminate recessive defect genes in the Philippine livestock. **(Author's abstract)**

Keywords: *Agriculture, Genetic defect screening, Philippine Carabao Center, BLAD, DUMPS, Citrullinemia, Freemartin*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 21

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

Vivek Dhan 82: a high-yielding, blast-resistant irrigated rice variety for the Indian Himalaya

Sharma, R. K. , Bhatt, J. C. , Gupta,

Rice is grown on about 1.44 million ha of mountain ecosystem in the Indian Himalaya, with total production and productivity of 2.52 million t and 1.75 t ha⁻¹, respectively. The Indian Himalaya region, composed of two geographically distinct flanks, the northeastern and the northwestern, represents a wide range of diversity in agroclimatic conditions such as soil, temperature, rainfall, and altitude. The prevalence of suboptimum temperature throughout the life cycle of the rice plant prolongs its maturity duration. In addition, the hills are known to be a hot spot for rice blast. Tolerance for low temperature stress and resistance to blast are thus considered essential for developing new varieties that can, in turn, improve rice productivity of the hill ecosystem

To develop a rice variety with resistance to blast and tolerance for low-temperature stress, a cross (VR1023) was made in 1986 between VL Dhan 221 (a short-duration, blast-resistant variety for the rainfed uplands) and UPR82-1-7 (genotype with good grain and better plant type). Promising uniform lines that were selected using pedigree methods were tested for yield and other ancillary attributes for two consecutive years at the experiment farm in Hawalbagh (1,250 m asl) before being nominated to the All-India Coordinated Testing under initial varietal trials (early hills) as IET15473 in 1997. On the basis of better yield performance in the hill zone, it was identified for release by the All-India Annual Rice Workshop and subsequently released by the CRVC in 2001 as Vivek Dhan 82 for cultivation in the hills and mountain areas of Uttaranchal (UA), Himachal Pradesh (HP), and Meghalaya states. This variety gave an average yield of 4.94 t ha⁻¹, compared with the national check K39's 3.35 t ha⁻¹, the regional check K448-1-2's 3.6 t ha⁻¹, and the local check's 4.26 t ha⁻¹ in coordinated trials conducted at different hilly sites of UA, HP, and Meghalaya (see table).

(Authors' abstract)

Keywords: *Agriculture, Vivek Dhan 82, Blast-resistant, Irrigated rice variety*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 24

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

Water management in brackishwater fishpond: the methods and practices of milkfish growers in Padre Burgos, Quezon

Luna, Zaldy O.

In brackishwater fishpond culture, water management is the most important aspect of fishpond operation. A sufficient supply of good quality water is essential because it affects production, growth, and survival of fish. This study was conducted to assess the methods and practices involved in water management of brackish water fishpond. The data can also be used as baseline information for the planning and development of mariculture. This study utilized the descriptive type of research and the survey questionnaire as the main tool for gathering the data. Key informant interviews (KII) and focusedgroup discussions (FGD) were conducted in Padre Burgos, Quezon Province. Results of the study showed that the culture system practiced is the extensive system with 65.71%, followed by semi-intensive 28.57%, and 5.71% for intensive system. The species cultured include: milkfish (*Chanoschanos*), shrimp (*Penaeusmonodon*), mudcrab (*Scylla serrata*), and grouper (*Epinepheluscoioides*). Sizes of fishponds vary from 0.4 to 55.0 hectares per individual fishfarmer. The source of water is through tidal fluctuation, brought into the ponds through river or creek. During low tide, 20 to 50% of pond water is released from pond, and when the tide begins to rise, the gate's slabs are removed and new water is allowed to enter until it reaches the desired water depth (50 - 100 cm) or when the water is fully replaced. Sixty percent of fishfarmers change water daily following the tides; 25.7% changed water twice a week and 14.3% changed the water once a week. Frequent change/freshening of pond water help improved water quality, thus improving fish growth. Maintaining optimum environmental conditions for fish growth is crucial to the success of one's venture in brackishwater fish production and proper water management is of utmost importance. **(Author's abstract)**

Keywords: *Agriculture, Water management, Brackishwater fishpond, Milkfish growers, Methods and practices, Padre Burgos, Quezon*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 32
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0198

A Web-based software for randomization tests of cluster analysis of invertebrate biodiversity in a rice ecosystem

Zhang, Wenjun | Zhang, Runjie | Gu, Dexiang, Zhang, Wenjun | Zhang, Runjie | Gu, Dex

As an important analytical tool, cluster analysis is widely used in ecological research—e.g., community classification, biological evolution analyses, and biogeographic comparisons (Krebs 1989). Dozens of algorithms for cluster analysis

have been developed for common use or special purposes (Zhang and Fang 1982). Most of them, however, do not use appropriate statistical tests in the computation procedures. Thus, we are not able to evaluate statistically the confidence of the classifications in the cluster analysis. Classical statistics can be used to answer the above question when statistical assumptions on data have been met. For example, are the individuals randomly sampled from the population of interest? Do clustered individuals come from different populations or groups that share equal population standard deviations or means? Do the values coincide with a normal distribution or with other known distributions (Manly 1997)? **(Author's abstract)**

Keywords: *Agriculture, Invertebrate biodiversity, Ecological research, Community classification, Biological evolution analyses, Biogeographic comparisons, Rice ecosystem*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 32-34
2004,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 29/2 2004

0199

Wedding rice not thrown but sown

***Sarkar, Ramani Kumar , Pathak, Ashutosh , Rashid, Abdul , Sirabanchongkran, Anothai , Nageswara Rao, G.,
Mou, Ton***

Marrying well is what some ethnic Karen farmers in the northern Thai village of Tee Cha do in an unexpected way. According to an award-winning scientific papers, families with marriage ties outside of the village grow rice crops that are better because they are more genetically diverse.

The paper won the IRRN Best Article Award in the Genetic Resources category, one of seven awards with which International Rice Research Notes, now in its 29th year of publication by the International Rice Research Institute (IRRI), is marking International Year of Rice 2004. **(Authors' abstract)**

Keywords: *Kinship, Wedding rice, Rice genetic diversity, Agriculture*

IRRN International Rice Research Notes, Volume No. 29 Issue No. 2, 6-9
2004,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 29/2 2004

Wet season performance of chinese cabbage with drip and sprinkler irrigation systems

Ruano, Cleofe P., Gutierrez, Herminigildo M.

A field experiment was conducted primarily to determine if benefits could be obtained in irrigating Chinese cabbage (*Brassica rapa* var. *chinensis*) during wet season in Makilala, Cotabato province. The drip and sprinkler irrigation schemes were tested and compared with the control (i.e. no irrigation). Among the treatments, drip irrigation provided the best performance in terms of yield. Both irrigation treatments proved to be superior to the control. Analysis also showed that irrigating during wet season was cost-effective and could bring more income to the farmer. The results showed that irrigation even during wet season in Cotabato province can result in better productivity of a Chinese cabbage vegetable farm. **(Author's abstract)**

Keywords: *Agriculture, Brassica rapa chinensis, Mechanical irrigation, Vegetable farming*

USM R&D Journal, Volume No. 13 Issue No. 2, 147-154

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

Yield potential and nitrogen use efficiency of irrigated lowland rice varieties through leaf color chart (LCC)-based nitrogen management with varying N-P-K ratios

Makahiya, Hazel Anne F., Cruz, Rolando T.

Nitrogen (N) is usually limiting in irrigated rice producing due mainly to leaching and volatilization. Therefore, increasing N use efficiency is needed to improve grain yield and reduce N losses and groundwater contamination. The leaf color chart (LCC) is an inexpensive (P50/unit) and practical tool used to assess the "real time" plant need for N. The LCC can be used to attain the grain yield potential (maximum yield under optimum crop management) and agronomic N use efficiency (ANUE or kg grain/kg N applied) and to lower cost of N fertilizer. However, phosphorus (P) and potassium (K) are also important in the attainment of yield potential. Inbreds PSB Rc82 and NSIC Rc160, and hybrid Mestiso 20 were tested in 2012 dry season. Fertilizer treatments were: a) control with no fertilizer; b) nutrient omission plots: (b1) N omission plot (-N,+P,+K), (b2) P omission plot (+N,-P,+K), (b3) K omission plot (+N,+P,-K); c) LCC-based N management with 4:2:1 NPK ratio, where 35 kg N/ha was applied when LCC reading was below 4; d) LCC-

based N with 4:1:2 NPK ratio, where 35 kg N/ha was applied when LCC reading was below 4; and e) growth stage-based N management, where N was applied in three splits: 35 kg N/ha each at mid-tillering, panicle initiation and flowering stages. All P and K fertilizers were applied basal at 14 days after transplanting. Mestiso 20 had significantly higher yields (6.6-10.4 t/ha) than yields of PSB Rc82 and NSIC Rc160 (5.2-9.5 and 5.0-8.9 t/ha), higher harvest index than PSB Rc82 and NSIC Rc160, and higher ANUE of 31.9-53.9 kg grain/kg N applied than inbred varieties. With LCC, varying the N, P and K ratio did not affect yield and ANUE since P and K were optimum under Maligaya clay soil condition based on nutrient omission plot technique. **(Author's abstract)**

Keywords: *Agriculture, Agronomic nitrogen use efficiency, Hybrid rice variety, Inbred rice variety, Leaf color chart, Yield potential*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 15

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

BIOLOGY

0202

An account of the accessioned collections of the UP Biology invertebrate museum

The University of the Philippines (UP) Biology Invertebrate Museum has recently completed the curation of its accessioned collections of invertebrates. This paper reports on the availability of the said collections to the community of researchers studying invertebrates. The accessioned collections were assessed in terms of their taxonomic scope, geographical range, and chronological breadth. A total of 4,238 accessioned specimens are in the Museum, which is composed of 1,108 non-insectan arthropods, 1,149 cnidarians, 178 echinoderms, and 1,803 mollusks. The insect specimens, all of which do not have any accession numbers, are yet to be curated. A total of 1,185 species belonging to 621 genera are found in the collections. The Museum's sampling activities were greatest in the western part of the Philippines, specifically in Puerto Galera, Oriental Mindoro. Much of the Eastern regions in the Philippines are yet to be sampled, particularly the terrestrial habitats. Prolific museum contributors include Francisco Nemenzo, Sr. (709 specimen lots), Neon Rosell (327 specimen lots), and Fernando Dayrit (233 specimen lots). At present, plans for collection expansion is underway, to encourage collaborative research with other natural history museums. **(Author's abstract)**

Keywords: *Biology, Invertebrate zoology, Museum, Philippine invertebrate fauna, Collection*

**Acticon: actinobacteria against *Fusarium oxysporum* TR4 in cavendish banana planted in
Sto. Tomas Davao del Norte**

Papa, Irene A., Zulaybar, Teofila O., Movida, Alxis John C., Galvez, Vida Faith, Paulite, Jesryl B.

The Cavendish banana (*Musa cavendishii*), a cultivar of *Musa acuminata* ranked No. 1. with 22% share in Philippine food exports. A major threat to the production is *Fusarium* Wilt caused by *Fusarium Oxysporum* f. sp *cubense* (Foc). affecting the Philippine banana Industry since 2002 up to the present in Mindanao. The search for sustainable and effective control under natural condition is one of the main thrust of the banana industry. This study aims to evaluate the efficacy of the formulated ActiCon in controlling the Foc in abandoned banana farm in Sto. Tomas, Davao Del Norte.

Results of the field experiment showed that ActiCon significantly controlled Foc in Cavendish with a mortality rate of 33% in preventive method of ActiCon application while a 56.77% mortality rate was observed in the control set-up with no ActiCon treatment. Moreover, a total of 661.7kgs and 323.8 kgs Cavendish banana was harvested for the preventive treatment and control set-up after the fourth harvest, respectively.

The HPLC profile of the components of the ActiCon, AQ30 and AQ121 was determined. The AQ30, which is 31.35% of the total crude extract eluted at room temperature (RT) is 10.52 minutes with a maximum absorption at A 269, 344 and 659nm. The AQ 121, which is 38.04% of the total crude extract eluted at RT is 18.03 min with a maximum absorption at A 200,300,341,353 and 402 nm. **(Authors' abstract)**

Keywords: *Biology, Actinobacteria, Biocontrol agents, Cavendish banana, Fusarium oxysporum TR4*

Analysis of selenium in blood using graphite furnace atomic absorption spectroscopy (GFAAS)

Monlinong, Jason Paul C., Portilla, Ma. Cristina B., Uy, Joanna Lyn S., Pascual, Cherrie B.

Selenium (Se) is a trace element with nutritional significance as shown in studies on patients of Keshan disease, cardiovascular diseases, viral infections, diabetes and neurological disorders; who have benefited from Se supplementation. On the other hand, excessive intake of Se may result to skin discoloration, hair loss and deformation of nails. On this account, selenium analysis of human blood is necessary for physicians who wish to monitor selenium levels of their patients. Flame AAS (F AAS)

analysis of Se usually results in poor sensitivity and recovery. In this study, we demonstrate that GFAAS with deuterium background correction can circumvent the problems encountered in FAAS analysis of Se in human blood.

Good linearity was obtained for Se standards over the concentration range of 0-5.0 ng/mL. Results were repeatable with % CV below 10 %. Limit of detection (LOD) and limit of quantitation (LOQ) were determined to be 0.08 ng/mL and 0.27 ng/mL, respectively.

Wet acid digestion was done, using 3:1 nitric acid/sulphuric acid, for sample pre-treatment. Known amounts of Se standards were spiked in blood samples and analysed for Se. Obtained % recovery ranged from 84.7-98.7 %. Blood samples from healthy volunteers were also analysed for Se and values obtained ranged from 2.08-11.7 µg/mL, which were comparable to selenium blood levels of subjects in other studies.

This study shows that GFAAS with deuterium background determination is a sensitive method for analysis of Se in human blood. **(Authors' abstract)**

Keywords: *Biology, Graphite furnace atomic absorption spectroscopy (GFAAS), Selenium, Whole blood, Deuterium background correction*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 161

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Antimicrobial activity and preliminary phytochemistry of *Greeniopsis multiflora* elmer (Merr.) (Rubiaceae) crude leaf extract

Karimi, Razieh B., Dedeles, Gina R.

The coffee family (Rubiaceae), although the fourth largest flowering plant family in the world, is understudied in the Philippines in terms of both basic and applied research. Of particular interest is *Greeniopsis multiflora*, an endemic, uncharismatic and cryptic taxon with high pharmacological potential as revealed by recent, molecular phylogeny-based classifications. This study evaluates the antibacterial and antifungal activities of the methanolic crude leaf extract using disc diffusion (against bacteria and yeast), mycelial expansion and spore germination (filamentous fungi) methods including the influence of pH and temperature. Minimum inhibitory and bactericidal concentrations were determined by microtiter plate method. In vitro time-kill study was assessed against *Methicillin-Resistant Staphylococcus aureus* ATCC 43300 (MRSA) through plate count technique. The anti-oxidant activity was also assayed by DPPH (2,2-diphenyl-1-picrylhydrazyl) test and the chemical constituents of the crude extract were analyzed through thin layer chromatography (TLC) and bio-autography. Results showed that *G. multiflora* methanolic crude leaf extract was active against *Staphylococcus aureus* ATCC 29213, MRSA, *Staphylococcus aureus* CMS 1090 and partially active against *Enterococcus faecalis* ATCC 29212. MBC value against MRSA and *S. aureus* was 62.5 mg/mL while time-kill test against MRSA showed an instant kill and with zero colony count at 1000 mg/mL (0 h interaction) and 500 mg/mL (4 h interaction). DPPH test showed positive anti-oxidant activity. TLC results exhibited the presence of alkaloids, phenols, tannins, flavonoids, essential oils, sugar, higher alcohol and steroids. **(Author's abstract)**

Keywords: *Biology, Greeniopsis multiflora, Antimicrobial activity, Methicillin-resistant Staphylococcus aureus (MRSA), Staphylococcus aureus, Preliminary phytochemistry*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 165
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0206

Antimicrobial properties of actinomycetes isolated from Balisong Cave, Pilar, Capiz

Zulaybar, Teofila O., Papa, Irene A., Anarna, Julieta A.

Philippine caves have been little studied for their potential as sources of novel microbial species and bioactive compounds. Actinomycetes from caves are of special interest because of their versatile metabolic activities and the most important property is its ability to produce various antibiotics valuable for medical, veterinary and agricultural use. There

is an urgent need to find new antimicrobial agents that are effective against multidrug resistant bacteria and against new emerging infections. The objective of this study is to determine the effectivity of new actinomycete isolates from rare environments.

Actinomycetes were isolated from Balisong cave, Natividad, Pilar, Capiz and screened for their activity against Methicillin-resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa*, *Salmonella typhimurium*, *Klebsiella pneumonia*, *Candida albicans* and *Ralstonia solanacearum*. Actinomycete isolate No.4 greatly inhibited the three test organisms, MRSA (25.95mm), *E. coli* (11.65mm) and *R. solanacearum* (22.35mm) by agar plug method. However, *S. typhimurium* (13.6mm) was inhibited by isolate No.2 while *K. pneumonia* (15.1mm) was inhibited by isolate No: 6. *P. aeruginosa* was not inhibited by all the actinomycete isolates while Actinomycete isolate No.1 inhibited *C. albicans* by 15.25mm.

Bioactive compounds from cave actinomycetes might be a good source of novel antibiotics which might be better than the existing one. **(Authors' abstract)**

Keywords: *Biology, actinomycetes, Klebsiella, Methicillin-resistant Staphylococcus aureus (MRSA)*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 94

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0207

Assessing mercury and arsenic contamination in blood and urine of residents of a small-scale gold mining community in Benguet

Uybarreta, Raynar Joseph, Salting, Al Omar, Gellynck, Marc P., Espiritu, Emilyn Q., Chan, Merab A.

Small-scale mining in the Philippines is considered a major income opportunity in rural communities but is a risky venture due to environmental and health repercussions. A major health effect is the entry of toxic heavy metals, such as mercury (Hg) and arsenic (As), inside the body. This study was conducted in a small-scale mining community in Benguet to determine human arsenic and mercury contamination in blood and urine samples from residents and to evaluate the extent of possible negative health effects. Eighty-one volunteers (30 miners, 35 non-miners, 16 control) were examined using a standardized questionnaire and clinical exam. Blood and urine samples were taken from participants and analysed for total Hg and As using atomic absorption spectrometry (AAS). Chemical analyses reveal the following results: 16 out of 30 miners positive for urine Hg (mean = 0.049 ug/l, SD= \pm 0.069 ug/l) and 1 out of 30 miners positive for blood Hg; 8 out of 35 non-miners positive for urine Hg (mean= 0.018 ug/ml, SD= \pm 0.017 ug/ml) and

2 out of 35 non-miners positive for blood Hg (mean = 0.025 ug/ml, SD = ± 0.007 ug/ml); 4 miners out of 30 positive for blood As (mean = 0.082 ug/ml, SD = ± 0.0025 ug/ml). All participants tested negative for As in urine. Positive results indicate heavy metal presence with little or no toxic effect but may manifest significant symptoms if exposure is sustained. **(Author's abstract)**

Keywords: *Biology, Small-scale mining, Mercury, Arsenic, Urine, Blood*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 155

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0208

Avifauna in oil palm plantation and advanced secondary dipterocarp forest of Mt.

Magdiwata, San Francisco, Agusan del Sur

Palmes, Gretchel M., Monte, Ralph B., Paz, Sherryl L.

Assessment of birds was conducted on Mt. Magdiwata, San Francisco, Agusan del Sur from October to November, 2011 using fixed radius point count method. The study compared the habitat characteristics, bird species richness, abundance and diversity of birds in oil palm plantation and the advanced secondary dipterocarp forest on Mt. Magdiwata. Habitat assessment results showed that there was significantly higher percentage cover of understory plants and epiphytes in the advanced secondary forest

while there was significantly higher percentage cover of fruiting trees in oil palm plantation. There was a total of 76 bird species detected in the two sites, of which 32 were Philippine-endemics. There were 55 bird species in the oil palm plantation, of which 21 of them were Philippine endemics, one was Mindanao-endemic and one was threatened while there were 63 species in the advanced secondary dipterocarp forest of which, 28 species were Philippine-endemics, one was Mindanao endemics and four were threatened. There was significantly higher species richness, abundance and diversity of birds including the non-endemics in oil palm plantation. However, there was significantly higher richness and diversity of endemic birds in advanced secondary dipterocarp forest. The study suggests that conversion of advanced secondary dipterocarp forests to oil palm plantation may result to habitat loss of some forest endemic birds and the existing threatened endemics on Mt. Magdiwata. Proper land use management and regulation of oil palm plantation expansion must be prioritized as part of long-term forest management plan. **(Author's abstract)**

Keywords: *Biology, Oil palm plantation, Philippine endemics, Mindanao endemics*

Biodistribution of the informal group basommatophora in the Philippines

Young, Patrick Noel Y., Fontanilla, Ian Kendrick

Basommatophora is an informal group within the molluscan subclass Pulmonata comprising of air-breathing freshwater snails that are typically characterized by eyespots located at the base of two noncontractile tentacles and two external genital orifices. They also have varied shell structures and habitats, not only within the group but also within families. Families of the Basommatophora are highly ubiquitous and may play a role in the life cycles of various parasites of humans and animals. Basommatophora has a worldwide geographical distribution across freshwater, terrestrial and marine habitats. However, little is known on their distribution in the Philippines. This report focuses on describing the biogeographical distribution of the basommatophorans in the Philippines through data gathered from museum collections, foreign databases accessed online, and identification of species found in various literatures. A qualitative description of the distribution of each Basommatophora family in the Philippines is given by distribution maps, indicating locations where specimens were collected and/or identified. A total of 336 counts of basommatophorans from 22 genera were encountered from available literature, museums and public databases. The majority of the occurrences are from the genera *Siphonaria*. The data and maps generated describe most of the distribution to be in Luzon, with Visayas and Mindanao having close counts with each other. The Philippines has the third most occurrences and genera of basommatophorans of all tropical countries in the world. However, the true diversity of the group could be higher if a more systematic sampling of the archipelago is conducted. **(Author's abstract)**

Keywords: *Biology, Basommatophora, Philippines , Biogeographical distribution*

Biogeographic distribution of streblidae in the Philippines (Diptera: Brachycera: Calyptratae)

Amarga, Ace Kevin, Yap, Sheryl, Adorada, Jessamyn R.

Streblids are obligate, highly specialized haematophagous hippoboscoids that are ectoparasitic on bats. This bat flies are largely confined in the subtropical and tropical but no taxa occurs in both biogeographic realm. Distributional evidence suggests that the distribution of these taxa is same as their host species and affinity of Philippine streblids is predominantly Malaysian. In the Philippines, there are 13 recognized species of streblids belonging to two subfamilies (Ascodiptennae and Brachytarsinae) representing five genera (*Ascodipteron*, *Brachytarsina*, *Maabella*, *Megastrebla*, and *Raymondia*). Of the known Philippine streblids, half of them are confined in the country. This exemplifies that the bat fly fauna especially streblids have high proportion of endemic forms (50% endemism) Among the ecoregions in the Philippines, Greater Luzon (10 species) and Greater Mindanao (7 species) harbour the highest diversity in terms of streblid fauna. Among the five genera, only one genera contains endemic species, the rest has its distribution throughout the Sundaic subregion extending to the Papuan subregion of the Australasian zoological realm. **(Author's abstract)**

Keywords: *Biology, Bat flies, Streblidae, Biogeography, Distribution, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 75

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Biomethanation of kitchen waste for biogas production

Herrera, David, Tansengco, Myra, Tejano, Judith, Retamar, Rochelle, Sikat, Gelito Joseph, Beraye, Jose Ricky, Esguerra, Reynaldo

This project focused on the development and optimization of anaerobic reactors for biomethanation of the organic materials from kitchen wastes. Laboratory- and pilot-scale reactors were fabricated and the efficiency of each set-up was examined based on biogas production. Anaerobic reactors for lab-scale batch experiment consisted of five plastic containers (6 liters) with cover. The substrate composed of kitchen waste (40%) mixed with varying inoculum (60%) as follows: reactor 1 - cow dung slurry; reactor 2 - swine waste effluent; and reactor 3 - cow dung slurry and swine waste effluent. Reactors 4 and 5 served as control set-ups and contain solely cow dung slurry or kitchen waste, respectively. Daily biogas production was highest in reactor 2 wherein kitchen waste was mixed with swine waste effluent. Average daily biogas production was

0.84 L of gas per day for reactor 2 while the other set-ups had only 0.30 L, 0.41 L, 0.51 L, and 0.49 L biogas per day for reactors 1, 3, 4, and 5 respectively. For batch pilot-scale experiment, a transparent plastic container (20 L) was used containing a substrate ratio of 40% kitchen waste and 60% swine waste effluent as inoculum. Kitchen waste was collected from canteens within DOST (Department of Science and Technology) compound while the inoculum was obtained from an existing anaerobic digester treating swine waste effluent. Pre-treatment of kitchen waste by sodium hydroxide solution and addition of urea were done to enhance degradation of materials and to optimize biogas production. Accumulated biogas from two trials averaged to 97 L for 32 days. Daily biogas production averaged to 3 L per day and biogas production per kilogram waste was 16.6 L/kg. Gas produced was flammable indicating that the methane content is above 50 percent. The biomethanation of biodegradable kitchen waste using the lab- and pilot-scale reactors showed potential benefit for bioenergy and waste management. **(Author's abstract)**

Keywords: *Biology, Biomethanation, Biogas, Biodegradable wastes, Kitchen waste polymer*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 125
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0212

Characterization and antagonistic potential of mucus-associated bacteria from *Sarcophyton* sp.

Yasay, Charmaine Joy M., Batuyong, Mae Ann R.

Corals host verdant varieties of heterotrophic bacterial communities such as those on the coral tissue, surface mucus layer and calcium carbonate skeleton, each of which has a distinct bacterial population. These bacterial associates play cardinal role in maintaining the health of the host organism by producing unique bioactive secondary metabolites which can be utilized as source of lead compounds for industrial, biotechnological and pharmaceutical applications. Bacterial strains associated with the surface mucus of *Sarcophyton* sp. (SMAB) were morphologically and biochemically characterized and studied for antagonistic activity against three (3) bacterial pathogens namely *S. aureus*, *P. aeruginosa* and *E. coli*. Of the twelve (12) bacterial isolates, only seven (7) bacteria showed antagonistic activity against at least one of the tested bacterial pathogens. The active isolates were further subjected to agar-well diffusion method. Out of the seven isolates, two (2) SMAB were good in activity against *P. aeruginosa* with zone of inhibition (ZOI) between 9-15 mm and one against *E. coli*. Similarly, two (2) were moderately active (ZOI= 5-8mm) against the same test organisms, while three (3) SMAB were weak in activity (ZOI=1-4mm) against *S. aureus*. Results indicated that the biological activity observed in the antagonistic bacteria, offers opportunities for further chemical analyses, such as isolation of the active compounds responsible for the activity. **(Authors abstract)**

Keywords: *Biology, Antagonistic activity, Bioactive compounds, Sarcophyton sp., Corals*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 90

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0213

**Characterization of bacterial isolates associated with identified symptoms of infection in
Porites lobata D. from Currimao Bay**

Calapit, Grace Joy C., De Claro, Mary Ann T., Rasay, Wilnorie P., Batuyong, Mae Ann R.

Coral disease is an increasing concern across diverse reef communities worldwide because it has become a significant agent of coral mortality. Symptoms of disease observed in coral communities occur as a response to biotic stressors such as bacteria and fungi and/or abiotic stressors such as increases in water temperature, UV radiation, sedimentation or localized pollution.

The study identified the common symptoms of infection in *Porites lobata* from Currimao bay through morphological description of the lesions such as type, pattern, color, location, distribution and margin. Morphological and biochemical characterization of bacterial isolates associated with the mucus and fragments of *P. lobata* showing symptoms of infection and the detection for the presence of *Vibrio* and *Pseudomonas* was also conducted.

The following six (6) symptoms were observed in the area: white spot with tissue loss; pinkish violet distinct lining; purple discoloration; distinct pink lining; white discoloration and violet nodular tissue discoloration. Results showed that there are diversities of bacteria residing in each of the colonies of *P. lobata* showing symptoms of infection different from the colonies without symptoms of infection and from the surrounding water medium. Some of the associated bacteria isolated are pathogenic while presence of *Vibrio* and *Pseudomonas* were detected on the samples. This baseline information can be used for future in-depth studies targeting specific diseases, to further elucidate pathogens, the disease progression and impacts to the reef community. **(Authors' abstract)**

Keywords: *Biology, Coral disease, Porites lobata, Currimao Bay*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 95

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Characterization of microbial biomass in aquaculture denitrification biofilters

Saliling, Willie Jones B., Losordo, Thomas M., Westerman, Philip

Development of biomass was observed in laboratory scale denitrification biofilters treating synthetic aquaculture wastewater. The bioreactors were packed with Kaldnes media, wheat straws, and wood chips. It was shown that changes in physical characteristics (appearance and mass) differed in each biofilter media type as well as with time. There were also visible differences with biomass development along bioreactor column height. Results of the PCR-DGGE (polymerase chain reaction - denaturing gel electrophoresis) revealed that bacterial population was diverse and varied among the media type and along column height. **(Author's abstract)**

Keywords: *Biology, Bacterial contaminants, Bioreactors, Nitrate leaching, Ribotypes, Washwater*

USM R&D Journal, Volume No. 13 Issue No. 2, 123-133

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

Charaterization of marine pigmented bacteria isolated from the mucus and fragment of *Acropora tenuis* D.

Batuyong, Mae Ann R., Gaoat, Cecille A., Tabin, Charmaine S.

The marine flora and fauna are considered as rich source of unique biological and chemical diversity with potential for various industrial applications such as food colorant.s, nutritional supplements , color additives, textile dyeing, pharmaceuticals, enzymes, cosmetics, fine and agrochemicals.

Ten (10) pigmented bacterial isolates from the mucus and fragment of *Acropora tenuis* D. with following varying colors: red, orange, peach, violet brownish, black and yellow designated as Isolates 1-10 were morphologically and biochemically characterized in terms of shape, Gram staining affinity, Casein Hydrolysis Test, Starch Hydrolysis Test, Lipid Hydrolysis Test, Gelatin Hydrolysis Test and Hemolysin Test.

Most of the Isolates are cocci while the others are bacilli All the Isolates showed negative results in the gelatin and lipid hydrolysis tests. While Isolates 4 and 7 turned positive for the protease and starch tests. Similarly, Isolates 3 and 10 are positive both in the Protease and Hemolysin tests while the other Isolates are negative to all the additional tests. The isolated pigmented bacteria from the. mucus and fragment of *A. tenuis* could be explored further for their promising industrial application. **(Authors' abstract)**

Keywords: *Biology, Pigmented bacteria, Acropora tenuis D., Coral*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 89

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0216

Color stability and application of enzymatically-extracted carotenoids from turmeric ginger meal

Mendoza, Jaydee P., Sapin, Arsenia B., Ramirez, Teresita J.

Carotenoid, being one of the largest classes of natural pigments extracted from plants, is most available and important source of colorants for use in the food, pharmaceutical and cosmetic industries. This study aimed to assess the stability of enzymatically-extracted carotenoids from turmeric ginger meal, a by-product of turmeric processing industry. The spray-dried carotenoid extracts were monitored for product color stability with the different chromatic properties determined using Minolta colorimeter CM5. Concentration of β -carotene content of the extracted carotenoid products was determined by spectrophotometric analysis and High Performance Liquid Chromatography (HPLC).

The pectinase-treated turmeric ginger gave an increase in the total carotenoid yield of 54.11% and 100.98%, water-soluble and lipid-soluble carotenoids, respectively, as compared with the non-enzymatic (control) treatment. Comparable result for β -carotene content was also obtained with values of 18.11 $\mu\text{g/ml}$ and 18.26 $\mu\text{g/ml}$, using spectrophotometric and HPLC methods, respectively. Physico-chemical and chromatic properties showed varying stability of the spray-dried products at different time interval. Even after 1 year of storage at room temperature and in dark condition, only a slight change in total carotenoid concentration was observed.

Application of spray-dried carotenoids in the preparation of gelatin was done and the color stability of the product was monitored. The change in the CIELab color parameters (L^* , a^* , b^* and ΔE^*_{ab}) was visible after a month of storage. Further investigation will be done to improve the color stability of the product. **(Authors' abstract)**

Keywords: *Biology, Carotenoids, High performance liquid chromatography, B-carotene, Chromatic properties, CIELab color parameters*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 99
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0217

Comparative evaluation of cocoon properties of four bivoltine silkworm strains

Basaen, Adelfa M., Josue, Jose J.

This study aimed to determine the cocoon quality of silkworm, *Bombyx mori* L. in terms of cocoon weight, cocoon length and width and percent cocoon shell. Further it investigated the silk filament as to the length, weight, size, percent raw silk, non-breaking length and percent reelability. The relationship between cocoon weight and size, and percent cocoon shell to silk filament properties were also determined. The four silkworm strains used (Lat51, B251, Lat51 x B251 and B251 x Lat51) were fed with Native Batac variety of mulberry tree.

Results of the study indicated that Lat51 x B251 gave the heaviest cocoon weight and longest cocoon length, and B251 x Lat51, the biggest cocoon size. The four varieties significantly differed in terms of cocoon weight and cocoon size but did not significantly differ in percent cocoon shell. B251 x Lat51 had the longest length of cocoon filament and non-breaking length of filament, heaviest weight of cocoon filament, highest raw silk and reelability percentage and coarse denier. Moreover, all the parameters in silk yam quality significantly differed except in percent reelability. Cocoon weight and size positively correlated with percent cocoon shell and cocoon filament properties. In other words, the increase in cocoon weight and size brought corresponding increase in percent cocoon shell and silk filament. The cocoon and silk yam quality obtained from the experimental samples are within international standards. **(Authors' abstract)**

Keywords: *Bombyx mori* L., Silkworm, Biology, Cocoon, Chemicophysical properties, Biology

Samay Bulletin, Volume No. Issue No. , 1-16
(Filipiniana Analytics)
Fil(S) TS1300 S42 v.1 2001

Comparative phytochemical analysis of wild and *Ex Situ* cultivated mangrove fern (*Acrostichum aureum* L.)

Agas, Gayle B., dela Cruz, Reggie Y.

This study was conducted to compare the phytochemical components of wild and *ex situ* cultivated mangrove fern, *Acrostichum aureum* L. To answer such objectives, young and mature fronds of *ex situ* cultivated *A. aureum* L. from Mt. Musuan Zoological and Botanical Garden, Musuan, Bukidnon were collected, while the wild plant frond samples were collected in Opol, Cagayan de Oro, Misamis Oriental. Hexane and methanolic frond extracts were then subjected to phytochemical screening to test for alkaloids, anthraquinones, phenols, tannins, flavonoids, terpenoids, and saponins. The obtained results revealed that *A. aureum* L. had the presence of all these phytochemicals tested. Alkaloids and anthraquinones were present only in the methanolic extracts from mature fronds of both wild and *ex situ* cultivated samples. Highest concentrations for phenols, tannins and flavonoids were found in methanolic extracts of mature fronds from *ex situ* cultivated samples and in young and mature hexane extracts of both wild and *ex situ* cultivated samples. Terpenoids were highest in methanolic extracts of mature fronds from *ex situ* cultivated samples. Highest but moderate amount of saponins were detected in methanolic extracts of mature fronds from *ex situ* cultivated samples. Generally, methanolic extracts gave more positive results than hexane extracts. It is concluded that *A. aureum* L. has phytochemical components responsible for its folkloric remedies; and the methanolic extract of mature fronds from *ex situ* cultivated samples gave the most abundant phytochemicals. Furthermore, mature *A. aureum* L. frond samples had higher amount of phytochemicals than young frond samples. In addition, *ex situ* cultivated samples had high amounts of phytochemicals compared to wild *A. aureum* L. **(Author's abstract)**

Keywords: *Biology, Acrostichum aureum L., Phytochemical screening, Wild and ex situ cultivated, Young and mature fronds*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 114

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

A comparative study of two endemic limestone *Begonia* species of Northern Palawan *Rubite, Rosario R., Ignacio, Ingrid Frances D., Pejana, Alyssa Louise B., Alejandro, Grecebio Jonathan D.*

Begonia of the family Begoniaceae is widely used for ornamentation because of its distinctly patterned leaves and flowers. Currently, there are 104 known Philippine species, 14 of which are located in Palawan thriving on limestone

topographies. In this study, we reported a *Begonia* species in El Nido, Palawan which is observed to be very similar to *Begonia wadei* in Coron Island, Palawan. Both species were found to be different from the other members of the *Begonia* section *Baryandra* because of their

suffrutescent stem and found in limestone crevices splashed with seawater compared with the other members, which prefer shaded, moist primary forest. Based on comparison of morphological, anatomical and molecular data, *Begonia* sp. of El Nido, Palawan was found to be a different species from *Begonia wadei*. The two species were morphologically different due to the asymmetric, clasping leaves and undulate leaf margin of *Begonia* sp. as compared to the subsymmetric, non-clasping leaves and denticulate leaf margin of *B. wadei*. Anatomical analysis also showed significant differences in terms of length of protective covering, width of interfascicular parenchyma between vascular bundles, length of vascular bundles and length of xylem tissues. Phylogenetic analyses of Philippines species of sect. *Baryandra* based on ITS sequences revealed that *Begonia* sp. is clearly separated from *B. wadei*. These evidences may eventually lead to the identification of *Begonia* sp. as a novel species. **(Author's abstract)**

Keywords: *Biology, Begonia wadei, Begoniaceae, El Nido, Coron, Internal transcribed spacer*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 117

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0220

Comparison of clinical and environmental isolates of *Acanthamoeba* based on morphology, protease and gelatinase activity, and the cysteine proteinase gene

Natividad, Filipinas F. , Matias, Ronald R. , Penuliar,

Acanthamoeba spp. are opportunistic pathogens that cause amebic keratitis and granulomatous amebic encephalitis in man. Recent attempts to correlate pathogenicity with species have been proven difficult due to inconsistencies in morphology-based classification. The objectives of this study were: (1) to compare clinical and environmental isolates based on morphology, protease and gelatinase activity, and the cysteine proteinase (CP) gene, and (2) to determine whether these features can be used to differentiate the isolates. Results show some degree of variation in trophozoite and cyst morphology. Zymography, demonstrated gross differences in banding patterns, and the protease activity of clinical isolates was greater than the environmental isolates (p -value < 0.01). Amplification of the CP gene yielded two bands in the environmental isolates, approximately 755 bp and 440 bp in length. In contrast, only one band, either the 755 bp or 440 bp band was amplified in the clinical isolates. The results confirmed the limitations of morphology in differentiating *Acanthamoeba* species, and suggest that zymography, protease activity, and detection of the CP gene are useful reference tests to distinguish pathogenic from non-pathogenic isolates. **(Author's abstract)**

Keywords: *Biology, Acanthamoeba, Cysteine proteinase gene, Protease activity*

Science Diliman: a journal of pure and applied sciences, Volume No. 22 Issue No. 1, 9-18

2010,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 22/1 2010

0221

**Comparison of different RNA extraction protocols in isolating total RNA from different
Cocos nucifera tissues optimized for next-gen sequencing**

***Acoba, Dianne, Punzalan, Ma. Regina, Cabria, Gamaliel Lysander, Evangelista, John Erol, Rivera,
Ramon, Rivera, Susan, Bautista, Ma. Anita, Palmes-Saloma, Cynthia***

The Philippines is the second top producer of coconut and is the top exporter of coconut oil in the world. Today it remains as an invaluable economic crop as it contributes 30% of the country's total agricultural export earnings. Availability of Next Generation Sequencing technologies to sequence DNA and RNA of coconut and other plant species facilitate generation of immense amount of information which can be used in fast-tracking varietal improvement regimes. Several extraction procedures have been reported but there is no established protocol for isolating high quality RNA from coconut tissues that can be used for Next Generation Sequencing. In this study, we evaluated 13 RNA extraction protocols including commercially available kits, tested published protocols, as well as manufacturers' recommended protocols to determine the optimal strategy in isolating robust and pure RNA that is compatible with NGS. RNA quality was visualized using Shimadzu MultiNA automated microchip electrophoresis and RNA quantification was performed using Qubit Fluorometer. Among the protocols evaluated, high quality RNA with intact and highly concentrated 18s and 25s bands

were obtained from the Agilent Plant RNA Isolation Mini Kit. This kit also yielded the highest A260/A280 and A260/230 ratios as measured using the NanoDrop spectrophotometer. Isolated total RNA from the Agilent kit was then validated by sequencing using Illumina HiSeq 2000 which generated 25.7M high quality reads primed for transcriptome assembly, differential gene expression analysis and gene ontology. **(Author's abstract)**

Keywords: *Biology, Coconut, RNA-seq,, Next-generation sequencing, Differential expression, Agriculture*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 112

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Comparison of two extenders for cryopreservation of native chicken (*Gallus gallus domesticus*) sperm in the Philippines

Guieb, Heinz Kesniel D. , Aquino, Flocerfida P., Ocampo, Lerma C., Valdez, Jr., Marcos B.

This paper presents the optimum extender for the cryopreservation of native chicken sperm. Two chicken extenders were compared in this study: Lake's Extender and Extender AU. Semen were collected from six male chickens and mixed with the extenders in a 1:1 ratio and observed for 0 h, 6 h, 12 h, 24 h, 36 h, 48 h, and 72 h. Sperm concentration, morphology, and motility were determined. Results showed that Extender AU was able to produce viable sperms having a sperm motility of >30% after 24 h of storage at 5°C. On the other hand, the Lake's Extender was not able to produce viable sperm after 6 h of storage at 5°C. However, both extenders were able to produce an acceptable range of normal sperm morphology (>70%). The work presented here can be used as basis for the storage of the native chicken sperm in the Philippines. **(Author's abstract)**

Keywords: *Biology, Philippine native chicken, Extender, Cryopreservation, Sperm*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 108
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

Conchological features of freshwater gastropod: *Pomacea canaliculata*

Selva, Eric Claire T.

Taxonomic classification of gastropods has been basically based on its conchological features such as shell height or length and width. These morphological characteristics are important in the identification and classification, hence, it is a rich source of taxonomic information that can be used to interpret evolutionary relationships among taxa. However, the morphology of the shells of gastropods are greatly influenced by the condition of the habitat which prompts up this study to correlate the conchological

features of *Pomacea canaliculata* with some physico-chemical parameters. One hundred samples of adult snails were collected in the different areas of Bukidnon and physico-chemical parameters were also taken in each collection site. Analysis of variance showed a significant difference in the conchological features specifically on the quantitative

measurements of shell, aperture and band. By using the Pearson correlation test, it was observed that the temperature have a significant effect on the shell height and width and band width. The result showed that as the temperature increases the height and width of the shell and the band width decreases. This result could be an adaptation towards the certain environment thus signifies to the effects

of the ecological characteristics of the habitat towards the morphology of the gastropod species. **(Author's abstract)**

Keywords: *Biology, Morphological features, Physico-chemical parameters, Pomacea canaliculata*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 102

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0224

Correlating mangrove diversity and soil characteristics in Sarangani Bay, Philippines

Tanedo, Mikaela Caryl T., Jumawan, Jess H.

Mangrove diversity and soil characteristics were correlated to give an insight on the spatial characteristics of mangroves in the sampling areas. Species diversity was computed and the data on abundance was square root transformed for biological data analysis. The soil characteristics were determined using granulometric method. Univariate and multivariate analyses were employed to correlate the biotic and abiotic relationships. A total of 64 quadrats were established using a purposive sampling method. There were 20 species of true mangroves were observed belonging to 12 different families. Species richness, abundance and Shannon diversity was highest in Alabel sampling site ($P < 0.001$). Dominance and evenness was highest in Glan with no significant difference in Maasim sampling site. Medium sand comprised 30.69% of soil in Maasim, gravel (29.19%) in Alabel and silt/clay in Glan (24.88%). *Rhizophora mucronata* and *Sonneratia alba* were dominant in medium sand soil in Maasim, *Rhizophora apiculata* and *Aegiceras floridum* in the gravel soil of Alabel, and *Rhizophora apiculata* and *Sonneratia alba* also in the silt/clay soil in Glan sampling site. Using Pearson correlation, Shannon diversity was positively correlated to very coarse sand ($P > 0.01$); gravel in Alabel ($P < 0.05$); and fine sand in Glan ($P > 0.01$). Cluster analysis showed distinct cluster of data true to the sampling sites. This observation was also supported with non-metric multidimensional scaling (nMDS). Analysis of similarities revealed that sampling sites were moderately similar ($R = 0.5547$). The study provided an insight of mangrove and soil relationships which is important in conservation and rehabilitation efforts in the area. **(Author's abstract)**

Keywords: *Biology, Mangrove diversity, Pearson correlation, Multivariate analysis, Cluster analysis, Sarangani Bay*

A database of commercial pesticides in cities of regions XI and XII, Mindanao

Sanmillan, Jr., Aguedo C., Tangonan, Naomi G.

The study was conducted to establish a database of pesticides in Cities of Regions XI and XII from October 2003 to March 2004.

Results revealed that there were 30 company respondents surveyed in Region XI, 3 companies from Region XII with a total of 33 agrochemical company respondents surveyed with 9 groups of pesticides available that totaled to 155 pesticide active ingredients and 366 pesticide brand names.

As a whole, majority (360 or 98.36%) of commercial pesticides and biopesticides were available in Region XI, Davao City. Among the nine groups of pesticides, insecticides ranked first (56 or 36.13%) according to active ingredients, as well as pesticide brand names, 143 (39.07%).

Biopesticides, on the other hand, had 2 active ingredients namely *Bacillus thuringiensis* var *kurstaki* and *Bacillus thuringiensis* subsp. *alzawai*. (**Authors' abstract**)

Keywords: *Biology, Database, Pesticides, Biopesticides*

Delignification and saccharification of sweet sorghum bagasse using the combination of alkaline and fungal treatment

Calica, Dane Mikhael S., Agrupis, Shirley C.

Lignocellulose is a promising alternative source of ethanol because of the abundance of renewable and sustainable feedstocks, particularly non-food residual biomass from the agricultural sector. The process of converting lignocellulosic biomass to ethanol involves disrupting the complex of lignin, cellulose, and hemicellulose, liberating cellulose and hemicellulose for hydrolysis to fermentable reducing sugars and subsequent fermentation of the sugars to ethanol. Extensive research in determining the optimal cost-effective technologies and treatments is essential for the success of lignocellulosic energy production. The purpose of this study was to determine the efficiency of the combination of alkaline and fungal treatment evaluated based on delignification and saccharification of sweet sorghum bagasse. Bagasses of mature sweet sorghum were collected as agricultural wastes from the MMSU Sweet Sorghum Project. The samples were first subjected to alkaline treatment: (1) 12% w/w NaOH and (2) 12%w/w NaOH + 10%w/w NaClO. Treated samples were then inoculated with individual conidiospores of *Pleurotus ostreatus* and *Trichoderma harzianum* for the independent culture. For the co-culture, samples were inoculated with both strains' spores at 1:1 ratio. Incubation was carried out at 27°C for 30 days via solid-state fermentation. Initially, analysis of the biomass constituents was conducted thru TAPPI standard laboratory analytical procedures. After the experiment, residual lignin components and glucose released were determined using NREL standard protocols. The results reveal that the combination of alkaline and fungal treatment effectively delignified and hydrolyzed the material. Findings point out that the employment of alkaline treatment was able to substantially remove lignin (72-93%) rendering the substrate more amenable to saccharification (10%-55%) by the lignocellulolytic enzymes secreted by the fungi resulting to a significant release of fermentable glucose (7-40%w/w). **(Author's abstract)**

Keywords: *Biology, Ethanol, Delignification, Saccharification, Alkaline, Fungi*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 129

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0227

Detection of simple sequence repeat markers associated with resistance to whitebacked planthopper, *Sogatella furcifera* (Horvath), in rice

Maheswaran, M. , Gunathilagaraj, K. , Kadirv

The whitebacked planthopper (WBPH), *Sogatella furcifera* (Horvath), is a serious insect pest that causes severe yield losses in rice-growing areas in tropical Asia. Through classical genetic analysis, six major genes conferring resistance to WBPH have been discovered in rice germplasm: Wbph1, Wbph2, Wbph3, Wbph4, Wbph5 (Khush and Brar 1991), and Wbph6(t) (Ma et al 2001). Using molecular markers, Wbph1 and Wbph6(t) have been located in linkage groups 7

(McCouch 1990) and 11 (Ma et al 2001), respectively. In addition to these major genes, quantitative trait loci (QTLs) associated with quantitative resistance to WBPH have also been mapped across rice mapping populations. A major QTL for tolerance for WBPH was mapped on linkage group 11 in a doubled-haploid (DH) mapping population derived from IR64/Azucena (Kadirvel et al 1999). A major QTL for antibiosis based on ovicidal response was detected on linkage group 8 in a recombinant inbred population (RIL) derived from Asominori/ IR24 (Yamasaki et al 1999). Two more QTLs for ovicidal response of WBPH were detected in a DH population derived from Zaiyeging 8/Zing 17 (Sogawa et al 2001). The search for QTLs conferring resistance to WBPH across mapping populations would help breeding programs develop cultivars with durable resistance to WBPH. Here we report our attempt to detect simple sequence repeat (SSR) markers associated with quantitative resistance to WBPH involving an F3 population derived from a cross between Basmati 370 and ASD16. **(Author's abstract)**

Keywords: *Biology, Sogatella furcifera (Horvath), Whitebacked planthopper (WBPH), Recombinant inbred population, Simple sequence repeats (SSR) markers, Standard evaluation system for rice (SES)*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 22-2003,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 28/2 2003

0228

Development of integrated pest and disease management for citrus

Tangonan, Naomi G., Evangelista, Conrado C., Ruano, Cynthia P.

Field survey on the incidence or prevalence of pest and diseases were done in various citrus orchards of North Cotabato. Citrus rind borer, *Prays endolemma* was the most destructive insect pest. Chlorpyrifos + betacyfluthrin offered significant protection to pummelo fruits from the attack of rind borer as shown by lower percentage infestation. Comparable effect was further noted with deltamethrin. Botanicals such as makabuhai, madre de cacao, and neem tree extracts did not significantly reduce infestation. Moreover, the two pummelo varieties namely Magallanes and Siamese did not differ significantly in terms of number of holes per fruit and percent fruit infestation.

Pink disease, damping-off, leaf spot, twig blight, and leaf blight were the most prevalent diseases attacking citrus. *Rhizoctonia solani*, *Sclerotium rolfsii*, and *Fusarium* sp. were noted as causing damping-off disease. Bioassay tests revealed that metalaxyl, chlorothalonil, captan, benomyl, and maneb were effective against *R. solani*. Metalaxyl, mancozeb, chlorothalonil, and captan were effective against *S. rolfsii*. Meanwhile, chlorothalonil, methyl thiophanate, benomyl, fosetyl-al, and mancozeb were effective against *Fusarium* sp. Effective botanicals tested in bioassay against

Colletotrichum gloeosporioides were euphorbia, peperomia, mahogany seeds, ginger, garlic, and madre de cacao leaves.

Troyer Citrange (cuttings and seeds) were resistant to *S. rolfsii*. Only Troyer (cutting) showed resistance against *R. solani*. Moreover, Volkameriana, Troyer were resistant to *Fusarium* sp. **(Authors' abstract)**

Keywords: *Biology, Biocontrol, Botanicals, Citrus rind borer, Troyer citrange, Volkameriana citrus*

USM R&D Journal, Volume No. 13 Issue No. 2, 219-248

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0229

Development of preharvest sprouting tolerance screening technique in rice

Khanam, M. , Sazzadur Rahman, M. , Mahbub, A.A. , Gomosta

Germination of seeds while on the parent plant before harvest is referred to as preharvest sprouting. Preharvest sprouting of seeds in the panicle is a common problem where rain and flash flood frequently occur and plants lodge because of gusty winds and when temperature remains favorable for germination. The occurrence of preharvest sprouting is erratic and unpredictable. It is a phenomenon, which depends on genetic, physiological, and environmental factors, and is therefore complex and changeable from year to year. Preharvest sprouting in the panicle is undesirable as it reduces both seed quality and quantity. Yield loss occurs because of shattering and threshing when depleted kernels are winnowed out. Specific gravity and packing ratio are reduced in the affected grain and, consequently, it has a significantly reduced test weight (Derera 1989). **(Author's abstract)**

Keywords: *Biology, Germination of seeds, Panicle, Sprouting tolerance*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 50-51

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0230

Dichlorophen and dichlorovos mediated genotoxic and cytotoxic assessment on root meristem cells of *Allium cepa*

Ahmad, Waseem , Nazam, Nazia , Lone, Mohammad Iqbal , Shaikh, Sibgh

Plants are direct recipients of agro – toxics and therefore important materials for assessing environmental chemicals for genotoxicity. The meristematic mitotic cell of *Allium cepa* is an efficient cytogenetic material for chromosome aberration assay on environmental pollutants. Onion root tips were grown on moistened filter paper in petri dish at room temperature. Germinated root tips were then exposed to three concentrations of each pesticide for 24 h. About 1 – 2 mm length of root tip was cut, fixed in cornoy's fixative, hydrolyzed in warm 1 N HCL, stained with acetocarmine and squashed on glass slide. About 3000 cells were scored and classified into interphase and normal or aberrant division stage. Cytotoxicity was determined by

comparing the mitotic index (MI) of treated cells with that of the negative control. The MI of cells treated with Dichlorophen and Dichlorovos at one or more concentration was half or less than that of control are said to be cytotoxic. Genotoxicity was measured by comparing the number of cells/1000 in aberrant division stages at each dose with the negative control using Mann – Whitney U test. Both Dichlorophen and Dichlorovos are genotoxic at higher concentrations i.e. 0.001%, 0.002% and 0.028%, 0.056% inducing chromosome fragment, chromosome lagging and bridges, stick chromosome and multipolar anaphase. **(Author's abstract)**

Keywords: *Biology, Allium cepa, Cytotoxicity, Genotoxicity, Mitotic index, Pesticides, Root tip cells*

Science Diliman: a journal of pure and applied sciences, Volume No. 24 Issue No. 1, 13-22

2012,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 24/1 2012

0231

Discrimination of several Philippine *Pandanus* species using gas phase FTIR

Aganda, Kim Christopher C., Nonato, Maribel G., Sevilla, III , Fortunato B., Santiago, Karen S.

A chemometric discrimination techniques for several Philippine *Pandanus* species, using gas phase Fourier Transform Infrared Spectroscopy (FTIR), was explored in this paper. Headspace volatiles were generated from each *Pandanus* sample after 40 minutes of incubation in a tightly sealed sample chamber. The static headspace generation parameters were optimized to increase the volatile metabolites generated from the *Pandanus* samples. FTIR studies revealed alcohols and carbonyls as dominant functional groups presen in the said volatiles. Principal component analysis (PCA) of FTIR data, showed clustering of the different *Pandanus* species. **(Author's abstract)**

Keywords: *Biology, Gas phase FTIR, Headspace, Pandanus, PCA, Chemometrics*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 156

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0232

Distribution of moss flora in montane forest of Mt. Apo natural park

Azuolo, Andrea G., Sariana, Lalaine G., Manual, Alven A., Yorong, Aimanuelzon P., Segumpan, Welven C., Salinasal, Razel L., Ora, Rovel P., Valiente, Exequiel

Mosses are the most conspicuous element of the bryofloral layer of the montane forest and play significant role as bioindicators of environmental change and nutrient cycling of the forest. Species richness of moss flora were examined through floristic survey. Plot sampling in a 20 x 20 meter quadrat and transect walk was employed. Distribution patterns of diversity, habitat preferences and bryophyte cover were likewise documented. Species identification were based on taxonomic characters.

Floristic survey revealed that the moss flora in the montane forests are characterized into different taxa having a total of 74 species, 35 genera and 19 families. Leucobryaceae and Sematophyllaceae predominated in the upper montane forest in terms of the number of species and Meteoriaceae and Sematophyllaceae family in the lower montane. Further examinations show 17 possibly new species distributed into representative genera such as *Leucobryum*, *Macromitrium*, *Braunfelsia*, *Trismegistia*, *Polytrichum*, *Acroporium*, *Pogonatum*, *Calymperes* and *Fissidens*. The moss habitat preferences were confined in their order of abundance at decayed logs, tree trunks, hanging twigs, litters, soil and fallen branch. Moss cover ranges 80-85% at the montane forest. .

In general, the moss floral species exhibited different species diversity at different elevations. The current data is an important considerations in monitoring bryophyte species diversity, and conservation initiatives be established as to its management and protection measures. **(Authors' abstract)**

Keywords: *Biology, Species richness, Diversity, Bryoflora, Bioindicator*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 57

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

**Diversity and status of butterflies at the University of Southern Mindanao (USM),
Kabacan, Cotabato**

Cano-Mangaoang, Cherie, Mohagan, Alma B.

Butterflies play an important role in our ecosystems. Their presence and diversity indicates the quality of the environment. Yet, their conservation in the lowlands are scanty. This paper provides information on the species-level diversity and status of butterflies in the two habitats within USM Campus viz., USM housing and Agro-ecosystem of Kabacan, Cotabato using time constraint and opportunistic sampling techniques with four hours sampling (8-12) exposure within one-month in 2014. Result of the study recorded 20 species of butterflies during the sampling period with 28 individuals from housing and 35 from agroecosystem. The USM Housing had 14 species and agroecosystem had 13 species with higher mean number of individuals. Diversity level using Shannon index (H') showed higher level of butterfly diversity (1.05) in the USM housing compared to agroecosystem (0.97). *Euchrysops cnejus* dominates with 9 individuals collected followed by *Junonia hedonia ida* with 6 individuals. Meanwhile, *Halpe luteisquama*, *Pelopidas mathias mathias*, *Zizula hylax pygmeae*, *Catopsila pyranthe pyranthe*, *Junonia almana almana*, *Melanitis leda leda*, and *Menelaides polytes ledebouria* with 1 individual each collected. Result also reveals 2 Philippine endemic, 1 rare and 17 common species. Similarity of species composition showed low Si=29% indicates that there is still the need to conserve the butterflies in the lowlands specially that 69% are disconcordant species. The results further suggest that each habitat are important for the existence of butterflies. **(Author's abstract)**

Keywords: *Biology, Butterfly, Lowland, Cotabato, Mindanao, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 76

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

**Diversity of anurans in kahiwaon stream and bagik-ikan river in Mt. Kalatungan,
Barangay Portulin, Pangantucan, Bukidnon**

Gumban, Charissa Joy A., Selpa, Eric Claire T., Nietes, Aurfeli D.

Anurans are very sensitive to environmental changes, for this reason they are considered to be important bio-indicators, meaning that the status of their populations can be used to monitor the health of the surrounding ecosystem. At present, the status of Mt. Kalatungan in the mountain range is considered partly disturbed due to deforestation and habitat loss of both flora and fauna. Consequently, efforts to collect baseline data about occurrence, distribution and status of population of anurans are needed. Inventory were done in two stations. Station 1 (Kahiwaon stream) is located at N 07. 90479° E 124. 86174 ° with elevation 1283 masl and station 2 (Bagik-ikan River) located at N 07. 90361 ° E 124.86691° with elevation 1234 masl. A 350 meters belt transect walk was done in each study station. A total of one hundred seventy three (173) individuals representing twelve (12) species in six (6) families of anurans were recorded in the two study stations. The most abundant species is *Ansonia mcgregori* with relative abundance (26.59%). There were three species listed in the list of vulnerable to extinction in the wild category: these are *Ansonia mcgregori*, *Ansonia Muelleri* and *Rhacophorus bimaculatus*; and one near threatened species, *Limnonectes magnus*. A higher abundance and diversity of anurans was observed in kahiwaon stream with H' value 0.754. This inventory of anurans in Mt. Kalatungan documented five (5) endemic species. **(Author's abstract)**

Keywords: *Biology, Bio-indicator, Status, Endemic species*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 61
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0235

Diversity of butterflies in Mt. Malombo 2, Datu Salunay, Marilog District, Davao City

Apostol, Andrea Marie P., Porquis, Heidi C., Marfil, Felisa Jyl C., Mohagan, Alma B.

Diversity assessment of butterflies was conducted to provide data on the species composition and species level diversity of butterflies across vegetation types in Mt. Malambo 2, Davao City. The study employed opportunistic, visual collection and transect line methods. A total of thirty two (32) species of butterflies were collected in Mt. Malambo 2, Davao City belonging to twenty six (26) genera and five (5) families of butterflies. The study revealed that butterfly richness was high in montane forest with (27) species of butterflies, followed by the agroecosystem (12) species and the lowest is the mossy forest with (3) species. *Ypthima stelleri stelleri* was the most abundant species in agroecosystem and montane forest and *Mycalesis felderi felderi* in the mossy. Shannon Wiener index showed higher level of diversity in Montane forest ($H' = 1.297$), lower in Agroecosystem ($H' = 0.885$) and the Mossy forest ($H' = 0.458$). Cluster analysis on similarity of species composition revealed 2 major clusters of habitats. Mossy forest was the most ecologically different habitat with a $Si = 8.82\%$ and agroecosystem combined with montane forest with a $Si = 50.47\%$. Mt. Malambo 2 has a

low diversity of butterflies based on the Kruger scale this is probably due to human disturbances. The data implies a need for local formulation of conservation strategies. **(Author's abstract)**

Keywords: *Biology, Diversity, Status, Butterflies, Conservation, Mt. Malambo 2, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 58

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0236

Diversity of orchids in Mt. Sinaka, North Cotabato

Panal, Cherry Lee T., Opiso, Jennifer G., Opiso, Guiller S.

This study specifically aims to identify, describe, determine the species composition, assess the local and conservation status, and determine the diversity indices of orchids in Mt. Sinaka, North Cotabato. Sampling plots were established across vegetation types and an alpha taxonomy was done from base to peak of the mountain.

A total of 95 species belonging to 37 genera were recorded. Among 37 genera, *Dendrochilum* is well represented with 10 species followed by the *Bulbophyllum* (9), *Appendicula* (6) and *Dendrobium* (6) while 23(63%) genera represented with a sole species. Among these species, 11 are widespread, 21 endemic, 1 critically endangered, 1 endangered, 23 new record in the region, 18 new record in Mindanao, 5 new record in the Philippines and 6 undescribed species. Locally, most of the orchid

species were found to be rare. Mt. Sinaka's orchid showed Shannon Index of Diversity of $H' = 1.2573$ showing Dipterocarp forest with the highest diversity index of $H' = 1.0855$ followed by mossy forest ($H' = 1.0829$) then montane ($H' = 1.0542$). However, among the three vegetation types, montane forest has remarkably high number of species yet low in diversity. Mt. Sinaka showed low to medium orchid species diversity yet a reservoir of threatened, endemic, new record species, locally abundant, common and rare orchids. **(Authors' abstract)**

Keywords: *Biology, Mt. Sinaka, Diversity, Distribution, North Cotabato, Orchids*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 55

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

**DNA barcoding and molecular phylogeny of Philippine *Argostemma* wall. (rubiceae)
including an account of a new endemic species and variety**

Alejandro, Grecebio Jonathan D., Aranas, Denmarc R., Hsu, Hao Wei

Argostemma Wall. is the largest paleotropical genus of *Argostemmaeae* (ca. 220 species) with SE Asia as its center of biodiversity. Foreign *Argostemma* species possess highly medicinal attributes and has been a great interest for evolutionary studies. In the Philippines, misidentification of its members has been apparent due to their morphological homogeneity making it difficult and undertreated. In Rubiaceae, the internal transcribed spacer (ITS) region of nuclear DNA, rps 16 intron and trnL-F region of chloroplast DNA have been proven useful in delimiting relationships at species level. Hence, the three data sets were used to (1) determine the phylogeny of *Argostemma* species, (2) evaluate the best DNA barcode for the genus, and (3) provide morphological descriptions of a newly discovered endemic *Argostemma* species and a variety. Seven *Argostemma* species were collected and subjected to genomic DNA extraction, amplification, sequencing and genetic analyses. Remarkable performances of ITS as DNA barcode was shown in terms of PCR (100%) and sequencing (83.33%)

success rates. ITS marker possessed the highest values in all three parameters namely: resolution of species (80%), variable informative sites (17.88%) and the highest mean interspecific distance ($7.9\% \pm 5.68$) that considered it as the best among the three loci. The generated phylogenetic tree including Philippine *Argostemma* proved its monophyly and endemic status (PP= 1.0) and closely related with psychotrichoides group. A novel species and variety from Mt. Halcon, Mindoro, *Argostemma scindum* and *Argostemma solaniflorum* var. *hyacintho*, are proposed in this study. Medicinal benefits

of the Philippine *Argostemma* could be explored, as this facilitate correct identification of its species. **(Author's abstract)**

Keywords: Biology, *Argostemma*, cpDNA, DNA barcoding, nrDNA, Philippine endemic

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 118

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

**DNA barcoding for molecular authentication of selected medicinal plants in Batanes Group
of Islands and commercially in Quiapo, Manila**

Raterta, Ruby, Alejandro, Grecebio Jonathan D.

The incorrect plant identification and unsustainable extraction of medicinal plants from their natural habitat may result in adulteration and substitution of herbal medicines in the market. This study evaluated the most effective marker using DNA barcodes of three chloroplast regions (matK, rbcL and trnH-psbA) and one nuclear region (ITS) with single primer pair locus for authentication and identification of 68 selected Philippine medicinal plants. It specifically sought to: 1) generate nucleotide sequences of medicinal plant using four barcode loci (matK, rbcL, trnH-psbA, ITS); 2) assess and identify the performance of the four potential barcodes based on universality of the markers and discriminatory power using pairwise sequence divergence analysis; and 3) determine the species resolution. A total of 68 medicinal plants collected in Batan and Sabtang islands, Batanes Province, and purchased in Quiapo, Manila constitute 35 families and 57 genera dominated by Rubiaceae, Rutaceae, Fabaceae, Compositae, and Moraceae. The genomic DNA of the medicinal plants was extracted, amplified, sequenced and analyzed using bioinformatics tools. In this study, matK and trnH-psbA showed the highest PCR and sequencing success rate, exhibited the best species discrimination and may serve as effective barcode marker by resolving 80% with 53 confirmed taxa of medicinal plants composed of 10 from Quiapo and 43 from Batanes group of islands including the 11 identified Philippine alkaloid-containing plants. The present study is the first information on DNA barcoding of medicinal species of Batanes flora, a fact that renders this study a worthwhile contribution to the Philippine medicinal plants. **(Author's abstract)**

Keywords: *Biology, DNA barcode, Medicinal plants, Batanes province, Nuclear marker, Chloroplast markers*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 110

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0239

Effect of biological treatment using rumen fluid on the lignocellulosic composition of rice (*Oryza sativa*) straw

Madigal, James Paul T., Abenes, Fiorello B., Agrupis, Shirley C.

Rice straw is an attractive lignocellulosic material for bioethanol production since it is one of the most abundant waste biomass in the country. One of the major challenges in developing the technology for bioethanol production from rice straw is selection of an appropriate pretreatment technique to release the cellulose and hemicellulose from lignin. The choice of pretreatment method determines the efficiency of enzymatic saccharification and fermentation of the substrate to ethanol. The present study aimed to evaluate the biodegradation effect of rumen fluid on the lignocellulosic composition of rice straw. Specifically, it was aimed to determine the

conversion efficacy of rumen fluid on the deconstruction of cellulosic components of rice straw to its monomeric sugar glucose and the yield of ethanol produced from the hydrolyzed sugar. Four concentrations: 1%, 5%, 10% and 20% of rumen fluid were used in the study to determine the extent of lignocellulosic deconstruction, amount of glucose released and ethanol yield. Results indicate that lignin, hemicellulose and cellulose were reduced to 50%, 52.54%, and 51.76% respectively. Conversion of cellulose to glucose was observed highest (17.2% w/w) in treatment with 1% rumen fluid and declined (11.2% w/w) in treatment with 20% rumen. Ethanol yield, determined using spectrophotometric methods wherein treatments yielded 6.48 mg/ml, 20.54 mg/ml, 22.76 mg/ml and 25.32mg/ml respectively suggesting that treatments with higher rumen concentrations also gave correspondingly higher yield of ethanol. These results indicate the potential of rumen fluid as biological treatment on the lignocellulosic composition of rice straw and cellulosic ethanol production. **(Author's abstract)**

Keywords: *Biology, Bioethanol, Saccharification, Lignocellulosic biomass, Biodegradation, Pretreatment*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 97

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0240

Effect of flag leaf clipping and GA3 application on hybrid rice seed yield

Sirajul Islam, M. , Ahmed, G.J.U. , Julfikar

Hybrid rice technology, now a reality in Bangladesh, aims to break the present yield ceiling of inbred rice to meet the future demand for rice in the country. Today, the major constraint to the expansion of this technology is hybrid rice seed production. With a view to increase per unit area production of hybrid seed, a field experiment was conducted at BRRI during the 2001 T. aman (wet season) and 2002 boro (dry season) to find out the effect of flag leaf clipping and gibberellic acid (GA3) application on hybrid rice seed yield. IR58025A (female parent) and BR827R (male parent) were taken as experimental materials. Four treatments were applied: T1 = control, T2 = GA3 application without flag leaf clipping, T3 = flag leaf clipping without GA3 application, and T4 = GA3 application with flag leaf clipping. The experiment was laid out in a randomized complete block design with three replications. Unit plot size was 21.5 m².

(Author's abstract)

Keywords: *Biology, Flag leaf clipping, Gibberellic acid (GA3), Hybrid rice*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 46-47

2005,

0241

Effects of methanol extracts from *Ophiopogon japonicus* on rice blast fungus

Matsuo, M. , Lin, D. , Tsuzuki, E., Sugimoto

Previous studies showed that dwarf lilyturf (*Ophiopogon japonicus* Ker-Gawl.) (Izawa 1967, Ishima 1963) contains allelopathic chemicals, which inhibited the germination and initial growth of three weeds — barnyardgrass (*Echinochloa crusgalli* L.), monochoria (*Monochoria vaginalis* Presl), and small flower umbrella (*Cyperus difformis* L.) (Lin 2001). This study determined whether methanol extracts of dwarf lilyturf have inhibitory effects on rice blast fungus *Pyricularia grisea*. **(Author's abstract)**

Keywords: *Biology, Ophiopogon japonicus, Methanol, Rice blast fungus, Barnyardgrass (Echinochloa crusgalli L.), Monochoria (Monochoria vaginalis Presl), Small flower umbrella (Cyperus difformis L.)*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 27-28

2003,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 28/2 2003

0242

Effects of siltation on coral reefs near key mining areas in Surigao del Norte, Philippines

Seronay, Romell A., Qiao, Maria Elma D., Calagui, Laurence B., Jumawan, Joycelyn C.

The effects of siltation on coral reef cover and reef fish communities near the key mining areas in Claver, Surigao del Norte was investigated during dry and wet season, in 2013. A total of five sampling stations were established in the coral reef areas in Claver and Gigauit municipalities. The benthic cover of the life form attributes including silt cover were measured using line intercept technique. Reef fish richness, abundance and biomass were determined using fish visual census. Sediment traps were used to

measure sedimentation rate. The coral condition index in Taganito Reef and Karaang Banwa stations decreased from fair during dry season to low during wet season. Silt percentage cover and fall out of sediments were highest in Taganito Reef and Malingin Island stations. These two silted stations were closest from Taganito River mouth, probably the

biggest contributor of silts discharged to the marine environment in Claver. Taganito Reef was severely affected by siltation than other monitored stations. Sedimentation rate in all stations ranged from 327 - 462 g/m²/day could be classified as severe catastrophe for some coral communities based on the review paper of Erftemeijer et al. Cabgan Island station, the farthest station from the Taganito River mouth was still receiving silts ranges from 329 - 397 g/m²/day. This indicates that a coral reef in the eastern part of Cabgan Island has already been affected by silts probably attributed by large scale mining activities. Fish biomass index and fish density index of high and medium imply that Cabgan Island may still be productive. The presence of refugia or Marine Protected Area in the western part of Cabgan Island may contribute for the high fish density index in the eastern part of Cabgan Island.

(Author's abstract)

Keywords: *Biology, Siltation, Coral cover, Fish biomass, Sedimentation rate*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 77

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0243

Efficient utilization of agro-industrial wastes through mushroom production in the Central Luzon Region, Philippines

Reyes, Renato G., Abella, Evaristo A.

The Central Luzon region in the Philippines is a rice based area where agricultural production is almost maximized. Farmers used to cultivate rice and other cash crops. The farming community in the region generates farm wastes as a result of intensive agriculture. Most farmers burn these wastes or let these be naturally decomposed in the field thus posing an ecological problem in the region. Through wise ecological management, these wastes can be utilized in the production of mushrooms and other crops. The efficient utilization of agricultural wastes would mean increased food production, additional income and maintenance of a sound agro-ecosystem. Thus, the Department of Biological Sciences, College of Arts and Sciences at the Central Luzon State University initiated the establishment of the Mushroom Technology Laboratory (MTL) in 1991. The MTL caters to the needs of the farming communities in terms of instruction, research, extension and training. In order to accomplish its functions, the MTL works hand in hand with other government and non-government organizations like the Mushroom Unit of the Quality Control and Training Center, a Carl Duisberg Gesellschaft South East Asian Program Office funded project and the Philippine Rural Reconstruction Movement, a pioneering non-government organization in the Philippines.

With its almost three years of existence, the laboratory was able to come up with a scheme that efficiently utilizes farm wastes in the region. Details of this technology will be presented in this paper. **(Authors' abstract)**

Keywords: *Biology, Agro-industrial wastes, Mushroom production, Cultivate rice, Ecological management*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 15-19

(Filipiniana Analytics)

Fil(S) T1 N2 18/3 1993

0244

Epigallocatechin gallate from *Camellia sinensis* L. (Kuntze) is a potential quorum sensing inhibitor in *Chromobacterium violaceum*

Rivera, Windell L. , Taganna, Joe

The problem on the widespread occurrence of antibiotic resistant strains of bacteria calls for novel methods of control of bacterial activity. One of the new viable alternatives to antibiotics is the use of substances that inhibit quorum sensing (QS) – a bacterial communication system that has been known to regulate the expression of virulence genes during infection. In this study, epigallocatechin gallate (EGCG) from green tea, *Camellia sinensis* L. (Kuntze) was tested for its ability to inhibit QS in a test organism, *Chromobacterium violaceum*. This microorganism produces a violet-colored substance, violacein, through QS. This study aimed to detect inhibition of QS-regulated violacein production in *C. violaceum* by EGCG and to determine the dynamics of QS inhibition relative to the concentration of EGCG. The effect of increasing concentration of EGCG on both violacein production and cell density of treated and untreated *C. violaceum* was determined in a 96-well-microplate format and read at 570nm and 620nm for violacein production and growth, respectively. The results show that addition of EGCG increased the growth of the organism while there is concentration-dependent decrease in the QS-controlled production of violacein. This study thus establishes that EGCG is a potential QS inhibitor and can be further studied and developed for its use as an anti-pathogenic but non-toxic drug. **(Author's abstract)**

Keywords: *Biology, Antibiotic resistance, Anti-pathogenic, Camellia sinensis L. (Kuntze), Chromobacterium violaceum, Epigallocatechin gallate, Quorum sensing inhibition*

Science Diliman: a journal of pure and applied sciences, Volume No. 20 Issue No. 1, 24-30

2008,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 20/1 2008

Ergosterol content of Basidiomycetes culture in rice

Kim, Y.D. | Kim, B.K. | Park, H.K. , Kim, Y.D. | Kim, B.K. | Park

Mushrooms are a rich source of natural vitamin D. Plant sterols are recognized as having positive health effects because they have been shown to decrease serum cholesterol levels and to play an important role in preventing colon cancer (Mattila et al 2002). Mushrooms contain a high amount of ergosterol, provitamin D₂, which can be converted to vitamin D₂ by ultraviolet (UV) irradiation. Because ergosterol is abundant in mushrooms, the best source of vitamin D is therefore sunlight. Vitamin D₂ is derived by photo irradiation from its precursor ergosterol.

Ergosterol undergoes photolysis when exposed to UV light of wavelengths 280-320 nm, yielding a variety of photo irradiation products. The principal ones are provitamin D₂, tachysterol, and lumisterol. Provitamin D₂ undergoes spontaneous thermal rearrangement to vitamin D₂. In the kingdoms Plantae and Animalia, ergosterol or vitamin D₂ is almost absent. Therefore, the intake of vitamin D from food is mainly emphasized in both northern and southern latitudes. Eating vitamin D-enriched food makes calcium more available for children, the elderly, and postmenopausal women (Mau et al 1998). **(Authors' abstract)**

Keywords: *Biology, Ergosterol, Basidiomycetes, Ganoderma lucidum, Phellinus linteus, Cordus versicolor, Pleurotus ostreatus, Lentneus edodes*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 43-44

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

Evaluation of CTAB-based methods for the generation of high molecular weight and high quality genomic DNA of *Cocos nucifera* for next-generation sequencing

Mariano, Jestine, Cadorna, Charles Anthon, Reyes, Jose Fernan, Aquino, Vermando M., Bautista, Ma. Anita, Palmes-Saloma, Cynthia

The coconut industry of the Philippines is a key agricultural sector that employs thousands of coconut farmers whose income from the business on a per hectare basis sadly lags behind vis-à-vis other agronomical crops, despite the fact the said industry contributes significantly to the export earnings of the country. There is much room for growth in this industry, and providing farmers with planting materials that give high yields and are suitable to their geological location will be a good start. To do so, the traditional selective breeding methods and marker-assisted breeding for the generation of hybrids is augmented by the Coconut Genomics Program, which aims to sequence the whole genome of heirloom varieties of coconut which have already been extensively used by the Philippine Coconut Authority. The first step in this project involves the generation of sufficient amounts of highly pure and enriched nuclear genome. The group tested several protocols based on the classical cetyl trimethylammonium bromide (CTAB)-based extraction method. One variation of the protocol, which was CTAB plus various reducing agents such as PVP40, β -mercaptoethanol, and ascorbic acid, generated DNA of *Cocos nucifera* var. Laguna Tall that was used for Illumina LongReads sequencing. A commercial kit from Qiagen was likewise tested, and the resulting DNA sample of *Cocos nucifera* var. Catigan Dwarf was used for genomic sequencing using the Ion Proton System. The results showed that the simple CTAB method was enough to produce relatively pure genomic DNA with low to negligible numbers of contaminating chloroplast and mitochondrial DNA sequences. **(Author's abstract)**

Keywords: *Biology, Cocos nucifera, Next-generation sequencing, Cetyl trimethylammonium bromide (CTAB)*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 106

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0247

Ex Situ* propagation and preliminary phytochemical examination of *Alocasia sanderiana

W. Bull (family araceae)

Cuizon, Felrod S., dela Cruz, Reggie Y.

Alocasia sanderiana has been classified as critically endangered and noted to have limited information regarding the presence of medically important phytochemicals. The corms of the plant specimens were collected and propagated in four treatments: T0 (Soil taken from the natural habitat), T1 (2 vermicast: 1 loam: 1 sand), T2 (1 vermicast: 2 loam: 1 sand) and T3 (1 vermicast: 1 loam: 2 sand). These were replicated three times and arranged in Completely Randomized Design (CRD). Data was gathered weekly and were subjected to Analysis of Variance (ANOVA). No Significant differences were observed in terms of the number of shoots, leaves and spadices and in terms of leaf blade and spadix lengths, petiole circumference and plant height. Moreover, 100% survival was observed in the specimens after 10 weeks.

Leaf blades and petioles of plant specimens which were removed from the corms before planting were subjected to hexane and methanolic extractions. Thin-layer chromatography was done subsequently which detected alkaloids, phenolic compounds (phenols, flavonoids and tannins), saponins and terpenoids. Test results showed the difference in phytochemical concentration and the number of spots isolated in leaf blades and petioles of hexane and methanolic extracts. In line with the results, it is concluded that

A. sanderiana can be successfully propagated ex situ and has the presence of abundant phytochemicals. **(Author's abstract)**

Keywords: *Biology, Alocasia sanderiana, Propagation, Corms, Thin-layer chromatography, Phytochemicals*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 91

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0248

Fingerprinting the rice isolates of *R. Solani* Kuhn using RAPD markers

Singh, M. , Singh, D. K. , Singh, U. S., Sing

The genetic differences underlying *Rhizoctonia solani* populations provide a useful means for examining the nature and spread of the population within the rice system. So far, no attempt has been made to define variability in relation to spatial distribution and no information is available on the amount of variability in *R. solani* within the field. Many anastomosis groups are subdivided on the basis of the cultural, virulence, molecular, biochemical, immunological, and other characteristics into intraspecific groups (ISGs) (Ogoshi 1987). The most convincing validation of AG and ISG concepts has come from molecular systematic studies (Vilgalys and Cubeta 1994). Our study was undertaken to (1) analyze the interfield variability within 46 Indian rice isolates of *R. solani* collected from two fields, one each at Seola-Kala, Dehradun District (hilly region, 24 isolates), and Nagina, Bijnore District (plain region, 22 isolates), for cultural and morphological characteristics, aggressiveness, anastomosis behavior, nuclear staining, and molecular characterization by RAPD analysis; (2) assess the agreement among five methods in differentiating the isolates; and (3) study the extent and possible factors responsible for intrafield variability in rice. This is the first attempt to define intrafield variability among *R. solani* isolates that cause sheath blight in rice. **(Author's abstract)**

Keywords: *Biology, Rhizoctonia solani, RAPD markers, Rice isolates*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 28-30

2003,

0249

Fishery of the short-necked clam *Paphia undulata* in Southern Negros Occidental, Central Philippines

del Norte-Campos, Annabelle G.C. , Villarta, Ka

This study documents the fishery of the short-necked clam *Paphia undulata* in coastal waters of southern Negros Occidental. Catch and effort estimates were determined based on daily records of compressor divers gathered between February-July 2008 in Himamaylan City and July 2008-May 2009 in the town of Hinigaran. Fishing and marketing practices in both areas were also documented and population biology information noted.

Compared to earlier conditions, present fishing patterns show a worsened stage of overexploitation primarily characterized by collection of predominantly small and immature (mostly <45 mm shell lengths) sizes. Intensity/duration and location of fishing also varied due to both abundance and demand factors.

The difference in sizes of clams and the varying fishing durations in each area suggest a non-uniform pattern of settlement resulting most likely from differential larval recruitment, the likely factors causing the local boom and bust fishery. The larger and long term extent of the effect of these factors can only be further investigated by parallel 2-3 year fishery-dependent and -independent surveys. **(Authors abstract)**

Keywords: *Biology, Paphia undulata, Catch, Catch rates, Central Philippines*

Science Diliman: a journal of pure and applied sciences, Volume No. 22 Issue No. 1, 43-51

2010,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 22/1 2010

0250

Growth performance of red algae *Gracilaria* sp. using long line and net cage method

Ediza, Marilou M., Leaño, Emmanuel Pacheco, Dela Cruz, Ramsor G.

A study was conducted in Simbucu, Kolambugan, Lanao del norte to: 1) determine the growth of *Gracilaria* sp. in terms of weight (g) and total length (cm) using long line method; 2) determine the growth in terms of weight (g) and total length (cm) using net cage method; and 3) determine the survival rate (%) using long line method and cage method after 45 days and monitor the physico-chemical parameters of the water, such as temperature (°C), pH, and salinity (ppt). Two treatment methods were used: long line method as treatment (T₁) and net cage method as treatment 2 (T₂). These were arranged in a complete randomized design (CRD) with 3 replications each. There were 3 long line and 3 net cages planted with 20 fragments of *Gracilaria* sp. with an initial length of 15 cm per fragment. Results of the study showed that after 25 days, T₁ had a mean weight (g) of 213.62 while T₂ was only 77.69. After 45 days, the total weight (g) and length (cm) of *Gracilaria* sp. increase with a mean of 347.35 (T₁) compared to T₂ of 83.34 only. Analysis of variance showed that T₁ had significantly higher growth than the net cage method (P<0.01). In total length (cm), T₁ had a mean length (cm) of 22.22 while T₂ was only 15.89 (P<0.05). However, no significant difference was observed in terms of total length after 45 days of culture (P<0.05). A significantly higher survival of *Gracilaria* sp. was observed from T₁ of 18.34 (91.70%) than T₂ of 10 (50%) (P<0.01) after 45 days of culture. Mean readings of selected physico-chemical parameters of water were: temperature: 23.5 to 24.6°C; salinity: 25.0 to 26.5 ppt; and pH: 7.5 to 7.8. Thus, the use of long line method gave higher production than the net cage method. It is recommended that further studies be conducted to compare the floating net cage and submerged net cage methods in terms of growth and survival in the same culture period. **(Author's abstract)**

Keywords: *Biology, Growth performance, Red algae, Gracilaria sp., Long line method, Net cage method*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 34

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 35/1 2013

0251

Growth promoting performance of rhizobacterial isolates from two species of mangrove plant on rice (*Oryza sativum*)

Estira, Flordeliz R., Felipe, John Paul V., Gudoy, Charmaine Vanessa B.

The use of growth promoting rhizobacteria (PGPR) has remained the promising option for sustainable, environment-friendly agriculture. The technology manipulates the crop rhizosphere microbial population by inoculation of beneficial bacteria to increase plant growth and therefore improve plant yield. This study evaluated the growth promoting performance of rhizobacterial isolates from two species of mangrove, *Rhizophora stylosa* Griff and *Sonnerata alba* J. Smith on Rice. Vegetative growth response of rice grown for one month on soil inoculated with the rhizobacteria was evaluated using these parameters: percent germination, number of leaves, plant height and total plant biomass. There

were six isolates from *S. Alba*: Isolate A is Gram(-) coccus, D is a Gram(-) bacillus while B,C,E and F are Gram(+)bacilli while there were five isolates in *R. stylosa*: Isolates A,B, and D are Gram(+) bacilli, C and E are Gram(-) bacilli. PGPR activity of all isolates from the two plants showed comparable responses in terms of % germination and number of leaves indicating same effect of the isolates

on these parameters. Isolate E of *R. stylosa* gave the highest percent (90%) while control plants had lower % germination of 75% (with inoculants) and 55% (with fertilizer). Similarly, *R. stylosa* isolates induced greater production of leaves than *S. alba* with Isolate E producing 8 leaves at 4 Weeks After Transplant (WAT) while Isolate F of *S. Alba* produced only 6 at 4 WAT. In terms of Plant Height, *S. Alba* isolates produced non-comparably taller plants (43.23cm-50.83 cm) than the control plants (32.10 cm) and *R. stylosa* isolates (40.67-53.07 cm). In terms of Total Biomass, Isolate F of *S. alba* produced non-comparably the greatest biomass of 92.77g while control plants had 63.66g (with fertilizer) and 79.25g (without inoculants). *R. stylosa* isolates produced comparable biomass with the control plants. Results indicate PGPR property of isolates from the two species of mangrove plants implying their potential as biofertilizer. **(Author's abstract)**

Keywords: *Biology, Biofertilizers, Mangrove, PGPR technology, Rhizosphere, Rice*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 113

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0252

Habitat use and site fidelity of irrawaddy dolphins (*Orcaella brevirostris*) in Bago-Pulupandan Coastal Waters, Negros Occidental, Philippines

Senoron, Janelle Alaiza, Carmona, Jennica Anix, Pido, John Dave, Espinosa, Mae Novelle, Genobis, Ira Mikkaella

This study is part of continuous efforts to document and monitor a small population of Irrawaddy dolphins in the coastal waters of Bago and Pulupandan, Negros Occidental and aimed at investigating the dolphins' habitat use and site fidelity. A total of 26 days from April until August 2014 were spent surveying the dolphins in an area of approximately 16 kilometers of coastline. The coastline was divided into sectors of approximately 1 kilometer each. Habitat use was measured by the total time spent by dolphins in a particular sector over the total observation time in any sector (Coefficient Area Use) (Karczmarski et al., 2000) while site fidelity was measured as the number of days a dolphin was identified as a proportion of the total number of days the survey were conducted. Among the 16 sectors, dolphins showed a significantly higher preference (Coefficient of Area Use of 0.18) to a shallow area adjacent to the mouth of Bago River (Sector 10). Using Duncan Multiple Range Test, dolphin's preference to sectors 7,8,9, 10 and 12 were all found to be

significantly different from the other sectors. Foraging was often observed more than any kind of behavior (Activity Index mean at 254.61), an indication that the area is an important feeding ground for the Irrawaddy dolphins. Socializing (AI = 111.29) was also observed, often between calves and adults, and also between two or more adults. Using Spearman Rank Correlation Coefficient (ps) the correlation coefficient between Area Use and Site Fidelity was computed to be 0.681 and significant at the $\alpha = 0.01$ level, indicating a significant correlation between the two variables. The results of this investigation have shown the importance of the area to Irrawaddy dolphins as a major feeding and nursing ground and recommends proper management of solid wastes, fisheries and boat traffic. **(Author's abstract)**

Keywords: *Biology, Irrawaddy dolphins, Site fidelity, Habitat use, Conservation and management, Bago-Pulupandan*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 56

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0253

Harnessing indigenous fungi from MMSU forest reserve in payao for the bioprocessing of lignocellulose biomass for cellulose ethanol production

Blanco, Ma. Tereza A., Agrupis, Shirley C., Birginias, Ma. Concepcion

This study was conducted to isolate and characterize indigenous fungi obtained from different biomass from the floor of MMSU Forest Reserve in Payao, City of Batac, Ilocos Norte; to test and compare the biodegradation potential of the fungal isolates on sweet sorghum bagasse and rice straw in terms on their saccharification and delignification efficiency prior to the production of cellulose ethanol and other value-added products.

Standard protocol for the isolation and characterization of isolates was followed. Determination of the biomass composition and glucose analysis followed the Technical Association of the Pulp and Paper Industry (TAPPI) and Dinitrosalicylic acid (DNS) standard procedures respectively.

There were nine pure isolates obtained and six were identified as *Trichoderma* (isolate 1), *Gliocladium* (isolate 2), *Aspergillus* (isolate 3), *Phanaerochaete* (isolates 4 and 7) and *Rhizopus* (isolate 9).

Results showed that all the 6 isolates used showed great potential for the bioprocessing of lignocellulosic biomass. Isolate 1 is the most effective in delignifying the sweet sorghum bagasse and saccharification efficiency. Isolate 4 gave the highest delignification and saccharification efficiency on rice straw. Independent used of fungal isolates in this study

showed specific lignocellulosic degradation efficiency which is a good focus of study for further evaluation.

Considering the good results, it is recommended that these isolates must be maintained in the laboratory and further explore their other utilization not only for cellulose ethanol production but other value-added products. **(Authors' abstract)**

Keywords: *Biology, Bioprocessing, Lignocellulosic biomass, Saccharification, Delignification*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 126

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0254

Hypoglycemic effect of *Ficus ulmifolia* Lam. (Moraceae) leaf extract on the blood and urine glucose levels of mice fed on a high carbohydrate diet

Baldeo, Margarette Y., Soriano, Melizza J., Rubite, Rosario R., de Vera, Miriam P.

The rising rates of diabetes diagnoses worldwide could ultimately impact the availability and costs of medication for this disease. Thus, researches which study plant-derived products for their blood glucose lowering properties are ongoing. This study tested whether an ethanolic extract from the fig species *Ficus ulmifolia* could have glucose-lowering effects in the blood and urine of test animals. Twenty male Swiss mice which had been fed a diet containing 67% corn syrup for 21 days were divided

into four test groups: a negative control group given no treatment; two groups supplemented with 100 mg and with 1000 mg of the fig leaf extract per kg body weight (designated as LE and HE mice, respectively); and a positive control group provided with 150 mg metformin/kg body weight. An oral glucose tolerance test was conducted on each mouse after 14 days of treatment. Measurements with a clinical glucometer revealed that blood glucose levels were lower by 47.5% among the HE group of mice compared to the untreated controls whose levels were about the same as the LE group of mice. There were no significant differences among the blood glucose

levels of the metformin-treated mice and the HE mice, indicating that the higher concentration of fig leaf extract had had a hypoglycemic effect. However, urine glucose levels among all test mice did not vary significantly. The findings suggest that supplementing mice fed a high carbohydrate diet with the crude leaf extract of *F. ulmifolia* has lowered their blood glucose levels possibly by promoting glucose absorption of somatic tissues rather than through increased urinary excretion. **(Author's abstract)**

Keywords: *Biology, Diabetes, Ficus ulmifolia, Glucose, Hypoglycemic effect*

The identification and utilization of eight Philippine major commercial forest vines for the handicraft industry

Escobin, Ramiro P., Banaticla, Maria Celeste N.

Eight major commercial species of Philippine forest vines suitable for use in the handicraft industry were studied to aid in their correct identification both in the field and the laboratory. Each species was provided with complete botanical description and information on the updated nomenclature, synonymy, local names, distribution and ecology, other economic uses and volume estimate. likewise, each one was illustrated by line drawing based on either live or preserved herbarium specimens. Their specific end-uses in handicraft manufacture, as well as preparation made prior to utilization, were also discussed. **(Author's abstract)**

Keywords: *Biology, Forest vines, Identification, Utilization*

Identification and utilization of five Philippine medicinal trees

Escobin, Ramiro P., Pitargue, Jr., Fernando C.

Five species of Philippine medicinal trees are presented in this paper: *Lagestroemia speciosa* (L.) Pers., *Pittosporum pentandrum* (Blanco) Merr., *Streblus asper* Lour. , *Strychnos nux-vomica* L. and *Vitex negundo* L. Included in their documentation are line drawings, herbarium specimens collected from actual field surveys, ecology and distribution, local and vernacular names, official common names, updated nomenclature, plant parts considered medicinal, indication and direction for use, therapeutic uses, constituents and other economic uses. These five species are part of the Forest

Products Research and Development Institute's (FPRDI) project that identified a total of 96 Philippine medicinal trees under 83 genera and 38 families. **(Author's abstract)**

Keywords: *Biology, Philippine medicinal trees, Identification, Utilization*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 136-148

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0257

Influence of changing rainfall patterns on the yield of rambutan (*Nephelium lappaceum* L.) and selection of genotypes in known drought-tolerant fruit species for climate change adaptation

Magdalita, Pablito M., Saludes, Ronaldo

In fruit crop production, rainfall, water stress, temperature, and wind are key variables for success, and the present changes in rainfall patterns could affect the flowering and yield of the rambutan (*Nephelium lappaceum* L.). Other fruit species like macopa (*Syzygium samarangense*), siniguelas (*Spondias purpurea*), and native santol or cotton fruit (*Sandoricum koetjape*) remain productive despite extreme climatic changes. This study assessed the influence of rainfall on rambutan yield and evaluated and selected tree genotypes of known drought-tolerant fruit species. Rambutan yield in a selected farm in Calauan, Laguna, Philippines, dropped remarkably from 152.2 kg/tree in 2008 to 8.6 kg/tree in 2009. This reduction could be attributed to the high rainfall in April 2009 at 334.4 mm, and possibly other environmental factors like temperature, relative humidity, solar radiation, and strong wind. Furthermore, wet months in 2009 also inhibited the flowering of rambutan. However, a low yield obtained in 2010 at 45.5 kg/tree could be partly attributed to the very low rainfall in May 2010 at only 9.1 mm. On the other hand, in relation to changing climate, selection of tree genotypes for use as varieties in known drought- and flood-tolerant fruit species based on important fruit qualities like sweetness, juiciness, and high edible portion was done. Among 103 macopa genotypes, Mc-13, 43, and 91 were selected and the best (i.e., Mc-13) had sweet (7.15 °Brix) and crispy fruits weighing 49.44 g, creamy white (RHCC 155 A), and had high edible portion (EP, 93.22%). Among 114 siniguelas genotypes, Sg-41, 42 and 105 were selected and the best selection (i.e., Sg-41), had sweet (12.50 °Brix) and juicy fruit weighing 20.42 g, ruby red (RHCC 59 A), and had high EP (83.27%). Among 101 native santol genotypes, Sn-47, 59, and 74 were selected and the best selection (i.e., Sn-59) had relatively sweet (5.56 °Brix) and juicy fruits weighing 51.96 g, maize yellow (RHCC 21 B), and had high EP (82.20%). These selections are recommended for planting in marginal and drought-prone areas for climate change adaptation. In addition, they can fare better in flooded areas in the face of climate change since they are very hardy, and have woody

and strong roots that can resist strong wind and increasing amount of rainfall brought about by climate change.

(Author's abstract)

Keywords: *Biology, Climate change, Rainfall, Macopa, Native santol, Rambutan, Siniguelas*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 27 Issue No. 1, 64-90

2015,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 27/1 2015

0258

Isolation and screening for cellulose degrading bacteria from forest plant litters

Pelaez, Kristine Ross T., Rebolla, Gizelle A., Enal, Maria Luisa A.

Cellulose is the most abundant renewable energy and material resource. The production of biobased products and bioenergy from less costly renewable lignocellulosic materials is important. Bioconversion of these lignocellulosic materials involves microorganisms with the ability to decompose cellulose thru the action of their enzyme. This study was conducted to isolate cellulose-degrading bacteria (CDB) from forest plant litter and to quantify and qualify their cellulolytic activity. From a total of 51

bacterial isolates, 13 exhibited cellulolytic activity in Mineral Salt Medium with carboxymethyl cellulose (MSM-CMC) as shown by the zone of clearing when flooded with Lugol's solution. The cell-free supernatant of the 13 isolates were tested for cellulose-degrading activity in varying concentration (0.10%, 0.15%, 0.20%, 0.30%) of CMC. Nine (9) out of the 13 supernatants produced clear zone in all concentrations of CMC, with diameter ranging from 1.27cm to 2.33cm. Statistically, there was no significant difference in the cellulose-degrading activity of isolates' supernatants across CMC concentrations at $p = 0.05$ except for the supernatant of isolate OC26 and isolate OC27 with $p =$ values of 0.0039 and 0.0002. The ability of the CDB to utilize sawdust as alternative source of carbon was determined. The rate of cellulose conversion was calculated using difference method. Isolate OC25 was able to degrade sawdust at rate of 32% followed by OC12 with 30% and OC10 with 28%. Morphological and physiological tests revealed that all the CDB isolates were Gram negative, non-spore forming, uncapsulated, catalase positive, motile, facultative anaerobic short to long rods which are capable of growing at temperature between 5°C and 30°C and at slightly acidic (pH 4.0) to slightly alkaline (pH 8.0) environment but with optimum growth at 20°C and pH 7.0. **(Author's abstract)**

Keywords: *Biology, Cellulose, Cellulase, Cellulose-degrading bacteria, Forest plant litter*

0259

Isolation of acidophilic micro-organisms capable of oxidizing sulfur-compounds in coal

Casareno, Erwin B., Brillante, Elena, Bigol, Mario, Conoza, Noel

Acidophilic micro-organisms isolated from an open pit mining site in Bagacay, Hinabangan, Western Samar, exhibited the capability to oxidize sulfur compounds present in the Philippine coals. Laboratory studies showed that 393 mg sulfate have been leached into the 100 ml of the solution for a 40% pulp density coal slurry in a shaking period of 12 days at room temperature. These local strains of micro-organisms displayed vigorous sulfur-oxidizing capability and are well suited for industrial applications like large scale desulfurization of coals for power generation in the Philippines.

The difficulty and economy of maintaining bacterial cultures through liquid cultures makes this finding important to interested researchers who must maintain a stock culture of the bacteria in the laboratory. The identification of a local mine site supporting these bacteria will be vital to programs utilizing microorganisms for the removal of sulfur from coal and recovery of industrial metals from low-grade ores. **(Authors' abstract)**

Keywords: *Biology, Acidophilic micro-organisms, Oxidizing sulfur-compounds, Coal, Sulfur*

0260

Laboratory culture of *Mongolodipatomus birulai* (Rylov, 1923) and *Arctodiaptomus dorsalis* (Marsh, 1907) (Calanoida: Diapatomidae)

Tordesillas, Dino T., Abaya, Nick Khryzzan P., Dayo, Moira Allyssa S., Marquez, Lou Erika B., Almario, Jelyn Faith M., Caso, Jhia R., Datungan, Carol B., Papa, Rey Donne S.

The past decade has seen a renewed interest on zooplankton studies, mostly dealing with the discovery of new species, systematics, distribution, limnology, ecology and aquaculture, Unfortunately, very little research on the life cycle and development of these animals has been done in the Philippines. This study focused on the determination of laboratory culture conditions for *Mongolodipatomus birulai* and *Arctodiaptomus dorsalis*, concentrating on the effects of temperature and food concentration, and observing the different life stages of each species. Results show that both species are able to thrive in a temperature range of 24 - 30°C on a diet of *Chlamydomonas reinhardtii*. This research is the first attempt to culture calanoid copepods in the country and will be useful in observing the life history of both species. The methods used can be further refined and used to establish standard protocol for the establishment of laboratory cultures in the future. **(Author's abstract)**

Keywords: *Biology, Copepod, Rearing, Nauplii, Temperature, Chlamydomonas*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 73

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0261

Life history and predation of ladybird beetle *Telsimia nitida* chapin (Coleoptera: Coccinellidae) on scale insect *Aspidiotus destructor* signoret (Homoptera: Diaspidae of banana)

Gahuman, Elsie A., Cahatian, Purificacion O.

A study to determine the life history of *Telsimia nitida* Chapin and its effectiveness in controlling scale insect *Aspidiotus destructor* Signoret of banana was conducted in Lapanday Research Station, Mandug, Davao City from June 2002 to March 2003.

At 29.6 C, the eggs hatched within a period of 6-7 days ($x = 6.13 \pm 0.19$) with 74.67% hatchability. The larvae passed through 4 instars separated by 3 moltings. The first stadium, 1.0-3.0 days ($x = 1.82 \pm 0.63$); second stadium, 1-4 days ($x = 2.6 \pm 0.34$); third stadium, 2-5 days ($x = 3.38 \pm 0.38$); and fourth stadium, 3-5 days ($x = 3.61 \pm 0.29$). The total larval developmental period ranged from 8-14 days ($x = 11 \pm 0.79$). The pupal period ranged from 4-6 days ($x = 5.12 \pm 0.58$) while adult longevity ranged from 23-30 days ($x = 25 \pm 2.25$). The total developmental period from egg to adult stage of *T. nitida* ranged from 43-52 days ($x = 47.3 \pm 2.02$). Each adult female lay an average of 178.86 eggs throughout its life span.

Survival rate of the first larval instar was lower than the rest of the stages. The voracity of *T. nitida* throughout its

lifetime ranged from 29-70 scale insects for both male and female.

One to three weeks after field release, the population of *T. nitida* diminished and scale insect population increased. Diminishing population may be attributed to some other environmental factors from the insectary to the field.

The adults of *T. nitida* were tolerant to some pesticides used in banana plantation during the first 4 hours of observation. From 24 to 120 hours of observation, the pesticides became extremely toxic and killed almost all adult coccinellids.

T. nitida was maintained at its low population per mat throughout the duration of the study. The population of *T. nitida* was not significantly affected by rainfall, number of rainy days, temperature, and relative humidity but it significantly increased as the scale insect infestation increased. **(Authors' abstract)**

Keywords: *Biology, Telsimia nitida, Ladybird beetle, Aspidiotus destructor, Scale insect, Banana*

USM R&D Journal, Volume No. 13 Issue No. 1, 21-42

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/1 2005

0262

Location and assessment of plus trees of some dipterocarp and premium indigenous tree species in Ilocos Norte, Philippines

Rosario, Joselito I., Samsam, Charito S., Jamias, Dionisio L., Ayson, Roseller R., Garma, Sergia P.

Populations of indigenous tree species in the country are threatened by deforestation and climate change. One of the mechanisms for the conservation of the germplasms of these species is the collection and preservation of planting materials from superior mother trees. Thus, a study was conducted to: document the location of plus trees of dipterocarps and premium indigenous tree species; characterize and assess the phenotypic quality of the plus trees; and develop data base and maps on the distribution of the plus trees in Ilocos Norte.

Potential plus trees were assessed using the protocol for hardwood species. Candidate trees were characterized and rated based on stem growth, bole form, health and branching characteristics. A total of 237 plus trees belonging to 13 species were identified, seven Dipterocarps and six premium species. These were located in six municipalities, namely: Batac, Dingras, Pagudpud, Pasuquin, Piddig and Nueva Era. Pagudpud had the most diverse species of plus trees, with seven species, closely followed by Nueva Era with five species. Plus trees of dao and all the

dipterocarp species were located in second growth natural forests, while ipil, molave, narra and supa were found in plantations.

Top five species in terms of number of selected plus trees are narra, palosapis, tanguile, white lauan and yakal. These were marked and geo-tagged. Location maps of the marked trees were developed for each species using GIS.

The results imply that good quality plus trees of dipterocarp and premium species are still growing in the province. These trees can be used in future germplasm collection and conservation activities as well as tree improvement initiatives. **(Authors' abstract)**

Keywords: *Biology, Plus trees, Dipterocarps, Premium species, Phenotypic quality, Indigenous tree species*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 65

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0263

Macroinvertebrate fauna of two freshwater bodies in Butuan City, Agusan del Norte, Philippines

Jumawan, Joycelyn C., Jumawan, Arielle Kirsten C., Patalinghug, Nonita, Jumawan, Jess H.

Macroinvertebrates have been utilized to monitor water bodies to evaluate water quality and complement physical chemical surveys. The water quality of two important water systems in Butuan City — Taguibo River and Ampayon Stream was assessed in 2014 using selected physicochemical factors (pH, Dissolved oxygen, salinity, Total dissolved solids and temperature) in combination with macro invertebrate composition, scoring and diversity indices. Results show that a total of 27 species from 19 families of macro invertebrates were collected. Taguibo River had higher species richness and abundance with 23 species compared to the Ampayon stream with 17 species. In Taguibo river, aquatic insects, particularly Taxa 1 and Taxa 2 species (mostly Ephemeroptera, Hemiptera and Odonata) make up 75 % of abundance followed by gastropods at 17.2%. In Ampayon stream however, aquatic insects were relatively few (61 %), with notable presence of pollution indicator macroinvertebrates such as midges and leech species. Taguibo river exhibit significantly better pH, DO, TDS and Conductivity compared to Ampayon stream where signs of water quality deterioration were evident. Overall, results show that Taguibo River has higher macro invertebrate composition and exemplify better physicochemical characteristics, with water quality index score indicating "good" water quality compared to Ampayon stream which was assessed to be of "poor" water quality. It is highly recommended that care for the Taguibo watershed be improved and cleanliness in Ampayon stream be

heightened

to improve water quality and increase the diversity of macro invertebrates. **(Author's abstract)**

Keywords: *Biology, Water quality, Watershed, Freshwater pollution*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 88

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0264

Mercury analysis of muscles of select bioindicator fishes and sediments in Tambis River, Barobo and the Coastal Area of Hinatuan, Surigao del Sur, Philippines

Leones, Julius Anthony, Empron, Jackie Lou, Calagui, Laurence B., Jumawan, Joycelyn C.

Mercury analyses of fish muscles of select bioindicator fish species and sediments in the Tambis River System, Barobo and Hinatuan, Surigao del Sur was determined between index seasons (dry and wet) of 2014 to trace mercury content in fishes and sediments near areas practicing artisanal small scale gold mining. Three species of bioindicator fishes were used namely *Naso hexacanthus*, *Lutjanus fulvivflamma* and *Anguilla marmorata*. Sediments where the fishes were caught were also analyzed for total mercury (tHg) concentration. Results revealed that *A. marmorata* had the highest

concentration of tHg in muscles for the two index seasons (dry= 0.153 ± 0.018 ppm; wet= 0.227 ± 0.069 ppm) and while *N. hexacanthus* had the lowest muscle tHg concentration (dry= 0.0072 ± 0.007 ppm; wet=below detection limit). The sediment tHg analysis showed that Station 3 and 2 of Tambis River System had the highest tHg concentration for the dry season while Tambis River System Station 3 and Hinatuan River Station 1 had the highest tHg for the wet season. Data analysis revealed a significant lower tHg concentration in both fish and sediment samples in the Tambis River System for the dry season. However, correlation analyses of tHg in fish and sediment samples between dry and wet season did not show significant relationship. Sediment samples with the highest tHg levels were mainly composed of coarse sand. Levels of tHg in both fish and sediment samples met the prescribed standard limits although these levels may pose potential risk of bioaccumulation in humans with constant consumption of Hg-contaminated fish in the areas studied. **(Author's abstract)**

Keywords: *Biology, Responsible mining, Mercury, Artisanal small scale gold mining, Bioindicators*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 87

(Filipiniana Analytics)

Molecular identification of *Anisakis* species in pygmy sperm whale and blainville's beaked whale from Philippine waters with preliminary evidences of local variants of *A. ziphidarum*

Quiazon, Karl Marx A., Santos, Mudjekeewis D., Yoshinaga, Tomoyoshi

Cetaceans are definitive hosts of anisakid nematodes, particularly under the genus *Anisakis* Dujardin, 1845. Strandings of Pygmy Sperm Whale and Blainville's Beaked Whale in the Philippine waters made it possible to carry out parasitological study on infecting anisakid nematodes. Briefly, anisakid worms were initially identified morphologically using light and scanning electron microscopy, whereas molecular confirmation of the species level was carried out by PCR-RFLP, followed by sequencing of the three different gene regions (ITS (ITS1–5.8s rRNA–ITS2), mtDNA COI, and mtDNA COII regions). Multiple infections of three different *Anisakis* species (*A. brevispiculata*, *A. paggiae*, and *A. typica*) were morphologically and molecularly identified in Pygmy Sperm Whale. The phylogenetic positions of the present samples on the Neighbor-Joining and Maximum Parsimony trees analyzed using three gene regions confirmed the species identities of these three *Anisakis* species. Moreover, preliminary molecular evidences, based on mtDNA COI and mtDNA COII gene regions revealed presence of local genetic variants of *A. ziphidarum* in Blainville's Beaked Whale. The absence of morphological data on these possible local variants makes it morphologically difficult to compare with *A. ziphidarum*, thereby leaving its taxonomical status as *A. ziphidarum*. Though there is no health related risks involved in the infection of adult *Anisakis* from the definitive hosts, dispersion and infection of its third-stage larvae to marine fishes and cephalopods may pose such threats to humans. However, the identified *Anisakis* species in the present study have never been reported to pose possible health risk problems to seafood consumers. **(Author's abstract)**

Keywords: *Biology, Philippine waters, Pygmy sperm whale, Blainville's beaked whale, Anisakis species*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 109

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Morphological features and herbage yield of citronella (*Cymbopogon winterianus* Jowitt) and patchouli [*Pogostemon cablin* (Blanco) Benth.]

Aragones, Jr., Eustaquio G., de Guzman, Constancio C.

Specimens of patchouli [*Pogostemon cablin* (Blanco) Benth.] and citronella (*Cymbopogon winterianus* Jowitt) collected from Indonesia and various localities in the Philippines were grown under uniform condition to represent plant accessions for morphological evaluation. The morphological features were characterized to assess similarities and differences that would help select species for breeding and greater production of essential oil. Leaf yield (herbage) of these plant accessions was likewise determined by measuring their fresh weight.

Individual characterization including herbage yield of the various accessions are discussed. **(Authors' abstract)**

Keywords: *Biology, Citronella, Patchouli, Essential oil, Herbage, Morphology*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 149-156

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0267

Natural enemies of *heteropsylla cubana* crawford (Homoptera: Psyllidae) in the Philippines

Villacarlos, L

A monthly survey on the natural enemies of *heteropsylla cubana* was conducted in Leyte from January 1986 to December 1988, and from September 1988 to January 1990 a quarterly survey was also undertaken in other parts of the Visayas and Mindanao to determine the incidence of some entomopathogenic fungi. The biology of potential predators was studied and mass production scheme was developed for their field release.

Two kinds of natural enemies were collected: one group included entomophagous arthropods that consisted of 17 species of spiders under 9 families with *Liocranum* sp. and *Misumena* sp., as the common ones, and 10 species of predatory insects under 6 families. Two of the most predominant were the mirid bugs, *Campylomma livida* and *Deraeocoris* sp. In mid-1991 an encyrtid nymphal parasitoid, *Psyllaephagus yaseeni*, was also noted. The other group consisted of entomopathogenic fungi that caused spizootics in moist areas where population of *H. cubana* was dense. These included the *hymphomycetes*: *Fusarium* sp., *Hirsutella citriformis* and *Paecilomyces fariunus*, and four new species of entomophthorales of the following genera: *Neozygites*, *Entomophaga*, *Erynia* and *Entomophthora*. *Neozygites* sp. accounted for 56% of the total number of infected insects examined.

Two potential predators were *Deraeocoris* sp. and the exotic coccinellid, *Curinus coeruleus*. With psyllid as prey, the former completed its life cycle in 16 days while the latter in 29 days. *C. coeruleus* was successfully mass produced and got established in Baybay, Leyte. VISCA is presently the source of this predator in the Visayas.

Some implications and recommendations based on the results of this research were discussed. **(Authors' abstract)**

Keywords: *Biology, Heteropsylla cubana, Liocranum sp., Campylomma livida, Misumena sp., Deraeocoris sp., Psyllaephagus yaseeni, Hymphomycetes, Fusarium sp., Hirsutella citriformis, Paecilomyces fariunosus, Neoztgites, Enbtomophaga, Erynia, Entomophthora, Neozygites sp.*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 57-75

(Filipiniana Analytics)

Fil(S) T1 N2 18/3 1993

0268

Novel antituberculosis, anti-staphylococcal, cytotoxic, anti-tyrosinase and anti-acetylcholinesterase oxidized C-6 derivatives from Philippine *Uvaria* species

Rubio, Peter Yousef M., Flores, Angeli Izza G., Letada, Arianne, Dahse, Hans-Martin, Franzblau, Scott G., Macabeo, Allan Patrick G.

The particularity of the genus *Uvaria* to elaborate a spectrum of unusual metabolites with activity against a wide range of diseases make it a promising source of drugs for therapeutic purposes. Extensive literature search show limited report on the secondary metabolites and biological activity of Philippine *Uvaria* species. In this study, the chemical constituents of *U. grandiflora* and *U. alba* were investigated for their biological activities. Activity testing was carried out using colorimetric Microplate Alamar Blue (MABA), Low-Oxygen Recovery (LORA), CellTiter Blue1, dopachrome and Ellman bioassays. A bioassay-guided isolation of the crude DCM-methanol extract afforded novel oxidized C-6 derivatives namely grandiflorenone, grandinone ether and chloralbanol along with the known compounds zeilenone and grandiuvarone. The structure of the compounds was established through extensive spectroscopic experiments such as IR, HR-ESIMS and NMR (^1H , ^{13}C , HSQC, HMBC, COSY and NOESY). Grandiflorenone, zeilenone, chloralbanol and grandiuvarone exhibited profound activity against *Mycobacterium tuberculosis* H₃₇Rv, *Staphylococcus aureus*, mushroom tyrosinase and acetylcholinesterase with low MIC₉₀ and IC₅₀ values. Our results show that *U. grandiflora* and *U. alba* are potential sources of promising antituberculosis, anti-infective, anti-cancer, anti-melanogenesis and anti-Alzheimers compounds. **(Author's abstract)**

Keywords: *Biology, Uvaria, Anti-infective, Cytotoxic, Anti-tyrosinase, Anti-cholinesterase*

Occurrence of fireflies (Coleoptera: Lampyridae) on the different elevational gradients in Mount Makiling

Zulueta, Brian Joseph S., Adorada, Jessamyn R., Yap, Sheryl A.

As a center for biodiversity and a forest reserve, Mount Makiling has a diverse array of flora and fauna with approximately 7,000 insects. Fireflies are among the commonly observed fascinating insects due to their bioluminescent flashing. Lampyrids have made a significant remark not only for habitat conservation but also for ecological tourism despite the limited information about these insects particularly in the Philippines. With their significance to the Philippine fauna, these insects have rarely been studied. Firefly specimens from Mt. Makiling were collected and identified using available published keys and literatures. Using GPS, elevations were recorded where fireflies were collected. Data show that the elevations recorded range from 50-1500 m asl. The numbers of fireflies collected and observed were highest at 50-750 m asl while lowest at 751-1500 m asl.

Furthermore, the highest number of species were recorded at elevation 50-750 m asl while the lowest at 751-1500 m asl. Nonetheless, a list of fireflies and frequency are provided. **(Author's abstract)**

Keywords: *Biology, Makiling, Lampyridae, Fireflies, Elevation, Identification*

Optimizing microwave-assisted crude butter extraction from carabao mango (*Mangifera indica*) kernels

Yaptenco, Kevin F. , Gilbuena, Arni G. , Comedia, Von Jansen G. , Casas, Edga

Carabao mangoes are among the highly produced fruit crops in the Philippines. The processing and consumption of carabao mangoes leave a significant amount of waste seeds. Mango kernel butter extracted from waste seed kernels is a

potential additive to cosmetic products or as a cocoa butter substitute. This study determined the pretreatment conditions that produce optimum yield prior to the mechanical extraction of the crude butter. Moreover, this study provided a general sensory evaluation of the finished product. Microwave power (160, 500, and 850 W), microwave exposure time (2.0, 3.5, and 5.0 min), and size levels (1.5, 3.0, and 4.5 mm) were tested for their effects on the yield of the mechanically extracted crude butter in wet basis percentage. The optimization procedures resulted to optimum pretreatment conditions of 160 W, 4.25 min, and 1.5 mm. Size level was the most significant factor in the crude butter yield. Sensory evaluation of the crude butter extracted at optimum pretreatment conditions through acceptance test by a test panel resulted to below neutral scores in visual appearance and odor, and above neutral score in texture, indicating the potential of mango butter as a good substitute to cocoa butter in cosmetic products. **(Author's abstract)**

Keywords: *Biology, Microwave-assisted crude butter extraction from Carabao mango kernels, Optimization, Mangifera indica*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 27 Issue No. 2, 41-75
2015,
(Filipiniana Analytics)
Fil(S) Q1.A3 S35 27/2 2015

0271

Performance of bivoltine silkworm eggs stored beyond required chilling period

Inumpa, Arnold M., Espiritu, Zoraida R., Sicat, Evelyn A., Bacuso, Paul M.

The extended storage of hybrid bivoltine silkworm eggs at 5°C after the termination of diapause was studied to determine its effect on the hatchability and rearing performance and to ascertain its storage duration at 5°C after the termination of its diapause and remain viable. The study tested 6 chilling periods; 2, 8, 9, 10, 11, and 12 months cold storage. It utilized a total of 1,800 JC102 hybrid silkworm eggs subjected to varying cold storage duration. The eggs were hatched and reared until cocoon formation for assessment. the 12 economic parameters employed prove that hybrid bivoltine silkworm eggs can remain stored at 5°C and relative humidity of 80 to 85% up to 11 months from egg laying or 9 months from the termination of diapause with minimal adverse effect. But on account of cocoon productivity, the study showed that hybrid silkworm eggs should be maintained in cold storage up to 9 months from egg laying or about 7 months from the termination of diapause. Further chilling of eggs up to 12 months proved detrimental.

(Author's abstract)

Keywords: *Biology, Hybrid bivoltine silkworm, Cocoon, Hydrochloric acid*

Samay Bulletin, Volume No. 2 Issue No. 1, 13-18

(Filipiniana Analytics)

Fil(S) TS1300 S42 2/1 2002

0272

Phenotypic characters of silkworm purelines LAT 2, LAT 71 and ST2

Olayo, Alfrieta B., Basaen, Adelfa M., Kimbongan, Catherine M., Sicat, Evelyn A.

This study was conducted to establish the phenotypic characters of silkworm purelines Lat 2, Lat 71 and ST2 that were evolved from foreign hybrids Japanese A, Guang Nong 3 and Su Tung, respectively. This silkworm purelines were reared five times between the period March 2000 - April 2002 to observe, verify and record distinguishable external characters that are used to describe and identify silkworm breeds. These characters shall serve as basis and guide for future silkworm breeding studies aside from providing additional database of silkworm genetic resources in the Philippine Textile Research Institute's germplasm. **(Author's abstract)**

Keywords: *Biology, Silkworm, LAT 2, LAT 71, ST2*

PTRI Samay Bulletin, Volume No. Issue No. , 32-40

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.6 2006

0273

Philippine scaly tree ferns: diversity and conservation status

Coritico, Fulgent P., Amoroso, Victor B., Lehnert, Marcus, Karger, Dirk Nikolaus, Kessler, Michael

The Scaly Tree Ferns belong to the family Cyatheaceae. The islands of New Guinea and Borneo (Indonesia, Malaysia), and the Philippines are part of the Malesian region and considered as the main center of diversity of scaly tree ferns with 250 species. This research was conducted to determine the species richness, distribution and conservation

status of the species of Cyatheaceae. Field surveys from different places in the Philippines and herbarium examinations were conducted. A total of 40 species are known which belong to three genera: *Alsophila*, *Gymnosphaera* and *Sphaeropteris*.

Twenty species of *Alsophila*, 17 species of *Sphaeropteris* and 3 species of *Gymnosphaera*. As to the species richness, Mindanao and Luzon Islands had the highest species richness with 20 species each and the least in the Visayas Islands with 8 species. Majority of the species were found in mountain ecosystems with high altitude and high relative humidity. *S. elmeri*, *S. glauca* and *S. lepifera* were the common species found in the major island in the archipelago. New distribution records of *S. robinsonii* and *S. negrosiana* in Mindanao were first documented in the study. Assessment of the species revealed 23 Philippine endemics and of these, 15 species are site endemics. Furthermore, 30 species are considered nationally threatened, with 5 species critically endangered, 13 endangered and 12 vulnerable. **(Author's abstract)**

Keywords: *Biology, Cyatheaceae, Species richness, Distribution, Threatened*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 80
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0274

**Philippine survey of nematode parasite infection and load in the giant African snail
Achatina fulica indicate *Angiostrongylus cantonensis* infection in Mindanao
Constantino-Santos, Daisy May A., Santos, Brian S., Soriano, Johanne Myrrh E., Dy, Jon Stewart H.,
Fontanilla, Ian Kendrick C.**

Achatina fulica is a ubiquitous land snail commonly found throughout the Philippines. As a generalist feeder and being able to survive in a wide range of habitat types and conditions, the snail can easily establish itself in a new area after introduction. It also acts as host to a variety of parasites, including nematodes, which may accidentally infect humans. In this study, *A. fulica* individuals from 13 areas in the Philippines were sampled and analyzed for nematode infection rate and load. Of the 393 individuals sampled, 80 (20%) were found to be infected, with 5049 nematodes isolated. The infection rates and parasite load were highly variable. Overall, the parasite load ranges from 1 to 867 per snail. Representative nematodes from *A. fulica* from Plaridel (n=8) and Davao City (n=26) in Mindanao were subjected to DNA extraction, PCR amplification, and sequencing of the SSU rRNA gene, which is the universal barcode for nematodes. Sequences successfully matched with the dog lungworm *Oslerus osleri* for the Plaridel nematodes and the rat lungworm *Angiostrongylus cantonensis* for the Davao City nematodes, respectively. The latter is

known to infect humans and can cause eosinophilic meningoencephalitis. This study presents the first report of *A. cantonensis* in *A. fulica* from Mindanao and raises a public health concern. **(Author's abstract)**

Keywords: *Biology, Achatina fulica, Nematode, Philippines, SSU rRNA, Oslerus osleri, Angiostrongylus cantonensis*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 2, 72-84

2014,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 26/2 2014

0275

Philippine wild gingers (*Zingiberaceae*): redescription from forest patches of Bislig, Surigao del Sur

Acma, Florfe M., Decrito, Regine Gazette A., Mateo, Marilag T.

Studies regarding the Zingiberaceae (wild gingers) of the Philippines are wanting. A taxonomic revision of the family is needed to understand its various aspects especially that the family is an important natural resource that provides products for food, spices, dyes and aesthetics to man. Botanical fieldworks were conducted at Bislig forest, Surigao del Sur by following forest trails. Wild gingers seen were documented. The study revealed the presence of 8 species of Zingiberaceae namely: *Alpinia flabellata* (Ridl.) *Alpinia* sp., *Etlingera philippinensis* (Ridl.) R. M. Sm., *Geocharis fusiformis*

(Ridl.) R.M. Sm., *Globba leucantha* Miq., *Plagiostachys* sp.1, *Plagiostachys* sp.2 and *Zingiber* sp. These species belong to 2 subfamilies (Alpinoideae and Zingiberoideae), 3 tribes (Alpinieae, Globbeae and Zingibereae) and 6 genera. Floral morphology varied among the different species hence was useful in the construction of taxonomic key specifically inflorescence position and shape of floral bracts. Cluster analysis of the 8 species using Bray-Curtis analysis revealed 4 groups, the *Zingiber* group, *Plagiostachys* group, *Alpinia* group, and the *Globba-Etlingera-Geocharis* group. The generated dendrogram support the generic separation of the said species.

Further *Globba leucantha* is a new record to the Philippines. **(Author's abstract)**

Keywords: *Biology, Geocharis fusiformis, Etlingera, Alpinia, Attenuate, Sinuate, Floral bracts*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 71

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Philippine wood-rotting basidiomycetes, *Lentinus tigrinus* and *Lentinus sajor-caju*, in submerged culture exhibit antioxidant properties

Dulay, Rich Milton R., Kalaw, Sofronio P., Reyes, Renato G.

Functional foods are enriched or modified foods which are consumed as normal diet to provide healthful benefits. In addition to their medicinal importance, mushrooms have also been reported to exhibit antioxidant properties. With the increasing demand of functional foods with antioxidant properties, it is necessary to establish new sources such as wild edible mushrooms which could provide beneficial effects to human health. Herein, we conducted this study to elucidate the free radical scavenging activity

and total phenolics of *Lentinus tigrinus* and *Lentinus sajor-caju* submerged culture using different indigenous culture media. Results revealed that *L. tigrinus* efficiently grew on rice bran decoction which significantly had the highest yield of mycelia (11.53 g), volume loss of the medium (24.33 ml), radical scavenging activity (18.94%) and total phenolics (26.59 mg AAE/g sample). Similarly, rice bran decoction significantly recorded the highest yield of mycelia (9.75 g), volume loss of the medium (20.95 ml), scavenging activity (16.94%) and total phenolics (25.60 mg AAE/g sample) for *L. sajor-caju*. Both species also showed considerable antioxidant properties when cultured in coconut water, corn grit decoction and potato broth. Hence, it is noteworthy that both studied *Lentinus* species hold promising antioxidants which are influenced by different culture media. **(Author's abstract)**

Keywords: *Biology, Lentinus, Antioxidant, Functional foods, Phenolics, Mycelia*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 72

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Phylogeny of the Philippine coffeeae (Rubiaceae) inferred from multiple cpDNA and morphology

Arriola, Axel H., Alejandro, Grecebio Jonathan D.

Recent molecular phylogenetic studies in Coffeeae resulted in its broader circumscription, reinstatement of *Empogona* and inclusion of *Psilanthus* within *Coffea*. As a consequence, assessing the monophyly of other members of the tribe is

needed to recognize robust phylogenies and establish major evolutionary trends in Coffeeae. In this study, the monophyly of the Philippine genera of Coffeeae (*Diplospora*, *Discospermum* and *Tricalysia*) were tested utilizing multiple cpDNA (*trnL-F*, *rpl16*, *accD-psaI* and *petD*) markers. A majority-rule consensus tree of the combined cpDNA datasets recovered a highly supported tribe Coffeeae. *Diplospora* is not monophyletic due to the inclusion of the Philippine *Tricalysia negrosensis* and the placement of *Diplospora sessilis* and *D. sorsogonensis* within *Hypobathrum* of Octotropideae. Examination of the type specimens showed that *T. negrosensis* is allied to *Diplospora* while *D. sessilis* and *D. sorsogonensis* approaches the genus *Hypobathrum*. Meanwhile, *Discospermum* is likewise not monophyletic due to the position of *Xantonnea* within the clade (PP=1.00; BS=85%). Since morphological features of our materials strongly support the molecular data we hereby proposed new combinations for the tribe. **(Author's abstract)**

Keywords: *Biology, Diplospora, Discospermum, Molecular data, Phylogenetic analysis, Tricalysia*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 107

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0278

Phytochemical, antioxidant levels and antibacterial activity of the fluids from unopened pitcher plants

Balabagno, James Drije, Cabresos, Cinderella C., Albarico, Genesis C., Batbatan, Christopher G.

Drinking the fluids from the unopened pitcher plants can alleviate digestive ailments as local people claimed. However through literature search this has no scientific basis. Here, we report some preliminary data of the potential uses of *Nepenthes ceciliae* and *Nepenthes pulchra*.

The total phenolic content of the fluid of *N. ceciliae* is 598 mg/ml and for *N. pulchra* is 395.05 mg/ml (expressed as gallic acid equivalent) as estimated by Folin- Ciocalteu method. While the total flavonoid contents (expressed as µg Quercetin equivalent/ml) is 169 µg/ml and 51 µg/ml for *N. ceciliae* and *N. pulchra* respectively. The radical-scavenging activity of the fluid as measured by 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging assay showed strong activity as 91% of the free radicals was scavenged by the anti-oxidants present in *N. ceciliae* per 50 µl fluid sample and 89% for *N. pulchra*.

N. pulchra showed antibacterial activity against *Escherichia coli* and *Staphylococcus aureus* while no activity was exhibited in *Klebsiella pneumonia* and *Pseudomonas aeruginosa*. *N. ceciliae* showed inhibition only in *E. coli*. Fluids from *N. pulchra* have higher antibacterial activity than *N. ceciliae* against *E. coli*.

Fluids from the unopened pitchers of *N. ceciliae* and *N. pulchra* do not contain any alkaloids and anthraquinones as revealed by phytochemical screening test using Thin Layer Chromatography. Though TLC the fluid of *N. ceciliae* has two fractions with the Rf values 0.25 and 0.73. *N. pulchra* has only one fraction with the Rf value 0.17. In agar diffusion bioautography only the fraction from *N. ceciliae* Rf value 0.73 exhibited antibacterial activity against *E. coli* and *S. aureus*.

It has been concluded that the fluids from unopened pitchers contain high levels of phytochemicals and possess strong antioxidant and antibacterial activity. **(Authors' abstract)**

Keywords: *Biology, Unopened pitcher plant, Phytochemicals, Anti-oxidant activity*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 96

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0279

Phytoremediation of chromium (VI) ion using hydrilla (*Hydrilla verticillata* Royle)

Caneos, Gretchen G., Binobo, Gideon D.

This study was conducted in order to assess the ability of hydrilla to phytoremediate chromium from water. Specifically this study was carried out in order to (1) determine the concentration of chromium accumulated by hydrilla from water; and (2) find out if there is a significant difference in the concentration of chromium accumulated by hydrilla plants exposed to different concentration of chromium (VI) solution. This study was conducted with three (3) treatments namely: Treatment 1 (50 mg/L), Treatment 2 (75 mg/L), Treatment 3 (100 mg/L) and with T0 (0 mg/L) as the control. The same was laid out using Complete Randomized Design (CRD) with five (5) replicates. After twenty (20) days of exposure to the chromium (VI) ion solution in different concentrations, all hydrilla plants survived. Whole plant samples were collected and were analyzed at the laboratory for evaluation of accumulation of chromium. Results of the study show that Treatment 3 yielded the highest chromium concentration at 33.90 mg, followed by Treatment 2 at 22.46 mg and Treatment 1 at 15.02 mg. Furthermore, Kruskal-Wallis Test was done to find out if there is significant difference among various treatments in terms of accumulated chromium. The results revealed that indeed there exists a significant difference among treatments in terms of accumulated chromium in hydrilla plants. **(Author's abstract)**

Keywords: *Biology, Phytoremediation, Hydrilla, Chromium, Hydrilla verticillata royle*

Phytoremediation of lead (Pb^{2+}) ions using carabao grass (*Paspalum conjugatum* L.)

Cagata, Renan A., Binobo, Gideon D.

This study was conducted to measure the ability of carabao grass (*Paspalum conjugatum* L.) to accumulate lead at different concentrations in the soil. Specifically, this study was undertaken to (1) determine the concentration of lead accumulated by carabao grass and (2) to find out if there is a significant difference in the concentration of lead accumulated by carabao grass exposed to different lead concentrations in the soil. The experiment was laid out in Complete Randomized Design (CRD) with treatments namely: T_1 (100 parts per million), T_2 (125 parts per million), T_3 (150 parts per million) and T_0 (0 part per million) being the control; and with three (3) replicates. Thirty (30) days after exposure to lead (II) nitrate, the whole plant parts of carabao grasses were collected and were brought to the laboratory for analysis using the Atomic Absorption Spectrophotometer (AAS). Results of the study show that Treatment 2 has the highest mean concentration of accumulated lead in carabao grass at 5.40 mg/kg, followed by Treatment 3 at 5.28 mg/kg and Treatment 1 at 3.12 mg/kg. Furthermore, one-way Analysis of Variance (ANOVA) of the treatment means yielded no significant difference among the concentrations of lead accumulated by carabao grass. **(Author's abstract)**

Keywords: *Biology, Phytoremediation, Carabao grass, Paspalum conjugatum L., Lead*

Polyclonal IgG response of Balb/c mice to the 23 kDa antigen of *Entamoeba histolytica*

Santos, Herbert J., Maiquilla, Sheena Marie B., Rivera, Windell L.

Entamoeba histolytica is one of the most significant protozoan pathogens found in developing countries like the Philippines. This intestinal parasite causes the disease amebiasis, which has a yearly average mortality of about 100,000 people worldwide. Thus, it is essential to develop new diagnostic markers and possible treatment against this disease. The crude cell extract of *E. histolytica*, was used to induce polyclonal antibody response in mice. Balb/c mice were given immunizations of the prepared crude *E. histolytica* antigens for a period of twelve weeks. Indirect fluorescent antibody test showed the specificity of polyclonal IgG in recognizing the cytosolic components of *E. histolytica* trophozoites. Enzyme-linked immunosorbent assay was performed to determine the antibody titers in sera collected at various time intervals. Antibody titers for the mouse serum taken 10 and 20 days after the third booster immunization were known to be 16,384 and 4,096 respectively. SDS-PAGE profile of the crude *E. histolytica* antigens revealed three bands with molecular weights of 23, 41, and 47 kDa. Western immunoblot results indicated that the polyclonal IgG produced by mice targets the potentially novel 23 kDa antigen from an axenic *E. histolytica* culture. **(Author's abstract)**

Keywords: *Biology, Amebiasis, Entamoeba histolytica, IgG, Immunoblot, Indirect fluorescent antibody test, Polyclonal antibodies*

Science Diliman: a journal of pure and applied sciences, Volume No. 20 Issue No. 1, 11-17
2008,
(Filipiniana Analytics)
Fil(S) Q1.A3 S35 20/1 2008

0282

Prevalence and antibiotic resistance of *Salmonella* spp. from chicken eggshell

Palmes, Alexa Jade E., Kahulugan, Paul Jarvin J., Enal, Maria Luisa A.

Chicken eggs constitute a big part of Filipino diet. They serve as affordable source of proteins, vitamins and minerals. But they also serve as sources of pathogens like *Salmonella*. This study was conducted to estimate the prevalence of *Salmonella* and determine the antibiotics resistance of the isolated *Salmonella* from eggshell. A total of 100 eggs from retail stores and supermarkets in Quezon province were collected and screened for eggshell contamination from December 2013 to January 2014. Using conventional biochemical detection and identification, 33% of the samples tested were found to be positive for *Salmonella*. Among the chicken eggs from retail stores and supermarkets, 44% and 22% eggshells were positive for *Salmonella*. From the contaminated eggshells, 95 *Salmonella* isolates were obtained and tested for antibiotic resistance using replica plating. Results showed high resistance to cephalixin (74.7%), amoxicillin (71.6%) and cotrimazine (51.6%) but lower level of resistance to co-amoxiclav (14.7%). Resistance to doxycycline was not detected. A total of 52

(55%)

isolates were multidrug resistant (resistant to two or more antibiotics) and 6 resistance patterns were found. Our findings demonstrated that the eggs tested were widely contaminated with multi drug-resistant *Salmonella* and such contamination may constitute a major public health concern. **(Author's abstract)**

Keywords: *Biology, Chicken eggs, Salmonella, Antibiotic resistance*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 101

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0283

Prevention of mildew formation of tikiw, bangkuang and raffia using commercially available mildewcide

Espino, Ciriaco D., Cauton, Charito P.

This short term study aimed to evaluate the formation of mildew to treated and untreated tikiw (*Rhynchospora corymbosa*), bangkuang (*Actinoscirsus grossus*) and raffia (*Corypha eleta*) under normal environmental conditions. The study also evaluated the effect of washing and drying and the applicability and effectiveness of two commercial mildewcides on the fibers. The mildewcide treated fiber showed no signs of mildew growth, while untreated tikiw fibers were 40-80% and bangkuang and raffia were 1-3% covered with mildew. The application of mildewcides was effective in preventing the growth of mildew. **(Author's abstract)**

Keywords: *Biology, Tikiw (Rhynchospora corymbosa), Bangkuang (Actinoscirsus grossus), Raffia (Corypha eleta)*

PTRI Samay Bulletin, Volume No. Issue No. , 24-31

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.6 2006

0284

Production and evaluation of alginate hydrogels as 3D scaffold for neural precursor cells

Fortes, Monica Kryzelle B., Saloma, Cynthia P.

Three-dimensional (3D) cell culture platforms such as hydrogels have been developed to allow cells to grow in an environment that resembles in vivo conditions. Alginate, a polymer consisting of varied ratio of guluronic to mannuronic acid (G/M), is a biomaterial capable of forming into hydrogels. With neural stem cell (NSC) research focusing on development of biomaterials useful for regenerative medicine, alginate hydrogels in this study were produced and evaluated as 3D scaffolds for neural precursor cells (NPC). The G/M ratio of the *Laminaria*-extracted alginate powder used was first identified. Next, hydro gels produced using increasing alginate concentrations and cross-linker solutions (calcium and barium) were characterized based on their pore size and swelling ratio, and evaluated for their suitability as 3D scaffold for NPC differentiation. Based on the FTIR spectroscopy analysis, the G/M ratio of the alginate is computed to be 1.086. Swelling ratios and pore sizes were observed to decrease with increasing concentration of alginate and/or cross-linker solutions. Neurospheres displayed more extensive neurite outgrowth when seeded into the hydrogels prepared at lower concentrations of alginate and/or cross-linkers. With the novel observation that 3D alginate hydrogels support NSC differentiation to neural and glial cells, alginate hydrogels open wide opportunities for development of NSC technologies for neurodegenerative disorders. **(Author's abstract)**

Keywords: *Biology, Alginate, Neural stem cell, 3D cell culture, Hydrogel, Biomaterial*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 98
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0285

Protection of lesser-used rattan species against molds, staining fungi and powder-post beetles

Garcia, Carlos M., Giron, Magdalena Y., San Pablo, Marciana R.

The efficacy of selected fungicides and insecticides in protecting five lesser-used rattan species (LURS), viz., arorog (*Calamus javensis* Blume), balanog (*Calamus symphysipus* Mart.), bugtong (*Calamus subinermis* H.A. Wendl. ex Becc.), labsikan [*Calamus marginatus* (Blume) Mart.] and bambotan (*Plectocomia* sp.) against staining fungi and powder-post beetle attack was determined. Laboratory test was conducted on small rattan samples treated with fungicidal or insecticidal solutions prepared at the manufacturer's recommended dosage and applied either by brushing or dipping method. Treated and untreated rattan samples were exposed to staining fungi isolated from fungi-infected rattan and to powder-post beetles. Field trials were conducted on freshly cut LURS (scraped and unscraped) that were treated prior to exposure in open and closed containers.

The staining fungi *Curvularia* sp. and *Centrosporo* spp., which were prevalent in scraped rattan, showed varied responses to the fungicidal treatments. Applying Cu-8-quinolinolate compound (PQ) at 2.5% and 5.0% and 2- thiocyanomethylthio-benzothiozole (TCMTB) at 0.10% effectively controlled discoloration on scraped and unscraped LURS for 1 week under laboratory conditions.

Dipping scraped and unscraped rattan samples in fungicidal solutions and then keeping or transporting them in open containers gave complete protection against fungal discoloration for 4-12 weeks. The samples transported in closed containers were protected only for 1 -2 weeks. Chemical treatment of labsikon may not be necessary, as it has shown natural resistance to fungal attack.

Arorog, balanog, bugtong and labsikan were found resistant, while bamboton was moderately resistant to powder-post beetle attack under laboratory and field conditions. Very slight nibbling and gnawing of the beetles on the surface of resistant LURS was observed. Chemical treatment against beetle infestation is only needed for bambotan . **(Authors' abstract)**

Keywords: *Biology, Lesser-used rattan, Staining fungi, Powder-post beetles*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 39-57

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0286

Proximate nutritive composition of the five Philippine wild specialty mushrooms

Tiniola, Reyna C., Dulay, Rich Milton R., De Castro, Ma. Ellenita G., Cabrera, Esperanza C.

The Philippines being tropical has a diverse wild mushroom species that usually found growing on lignocellulosic substrate. In Central Luzon region, a number of specialty mushrooms with nutraceutical benefits have been successfully rescued and domesticated. Though mushrooms are popular in the country based on their exotic taste, culinary properties and aroma, the important nutrients they contain is not well known which could make a very significant contribution to human nutrition. With this premise, our research team determined the proximate nutritive values of selected mushroom species. Mushrooms were produced following the required production technologies and analyzed according to the official method of analysis of the Association of Official Analytical Chemist. Results of analysis revealed that the five specialty mushrooms are highly nutritive. Crude protein was the highest nutritive composition in *L. tigrinus* (34.96%), *C. comatus* (30.4%), *S. commune* (25.57%) and *P. florida* (25.52%). *C.*

comatus contained the richest crude fiber (13.5%) and ash (15.7%), while *L. sajor-caju* recorded the highest moisture content (31.4%) and crude fats (5.2%). It was observed that the crude fat content of the five mushrooms are generally very low in a range of 1.36-5.20%. These significant results indicate that mushrooms hold a great promise of alleviating problem on nutritious food deficit since this mushroom is highly nutritional food sources. **(Author's abstract)**

Keywords: *Biology, Specialty mushrooms, Nutraceutical, Protein, Exotic food, Nutritious food deficit*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 104

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0287

Rapid biodiversity assessment of Basaw Lake Penablanca, Cagayan, Northern Philippines: basis for sustainable eco-tourism development

Catulin, Andy L., Torio, Erwin C.

Basaw Lake, with geographic location of 17° 36' 12.2" to 09.9" latitude and 121° 49' 21.1" to 50' 37.9" longitude, with lake surface area of 15.6 ha, is being eyed as the next eco-tourism site of Penabl anea, Cagayan. This study was undertaken to assess the biological status of Basaw Lake. Rapid biodiversity assessment using transects, maps, and quadrat methods were used.

Findings revealed a total of 21 faunal species - fish (6), shellfish (8), shrimp (1), crab (1), turtle (1) and birds (4) on site. Collected mollusks were classified into families Planorbidae, Ampullariidae, Cyclophoridae, and Thiaridae. Fishes were classified into families Anabantidae, Cichlidae, Clariidae, Gobiidae and Opichthyidae. Families of collected crustaceans were Palaemonidae and Potamidae while birds were Anatidae, Meropidae, Apodidae, and Accipitridae. There were also a total of 15 floral species- trees (13), palm (1), and aquatic plant (1). Trees were classified into families Dipterocarpaceae, Ebenaceae, Rubiaceae, Myrsinaceae, Euphorbiaceae, Clusiaceae, and Araliaceae; Palm under Malvaceae and aquatic plant under Nelumbonaceae.

Zooplankton findings showed 17 species belonging to 15 genera, 11 families and 5 orders. Order includes Phyllopoda (4), Calanoida (3), Cyclopoida (4), Monogononta (4), and Bdelloidea (2), respectively. Intensive survey should be continuously conducted to document all the species present including endemics within the area as basis for sustainable eco-tourism development. Conservation of the lake including all habitat types to protect many valuable populations particularly the edible species should be given priority. **(Authors' abstract)**

Keywords: *Biology, Basaw lake, Rapid biological assessment, Sustainable eco-tourism*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 59

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0288

Resistance of some forest vines to wood-destroying fungi

Giron, Magdalena Y., San Pablo, Marciana R.

The resistance of 10 forest vine species was evaluated against molds, staining fungi and decay fungi under laboratory and field conditions. The vines included albutra [*Arcangelisia flava* (L.) Merr.]' ligtang [*Anamirta cocculus* (L.) W. & A.], bulakan [*Merremia peltata* (L.) Merr.]' hanopol [*Poikilospermum acuminatum* (Trec.) Merr.]' hinggiw [*Ichnocarpus frutescens* (L.) W.T. Aiton], hinggiw kalabaw (*Streptocaulon baumii* Decne.), gugo [*Entada phaseoloides* (L.) Merr.], hagnaya [*Stenochlaena palustris* (Burm. f.) Bedd.], lukmoy (*Raphidophora monticola* Krause) and nito [*Lygodium circinnatum* (Burm.) Bedd.]. Samples were prepared from mature, defect-free and freshly cut vines, conditioned and subjected to the attack of fungi following a modified standard procedure. Materials for the field tests were exposed to the natural fungal flora at the FPRDI experimental site.

Aspergillus niger, *Penicillium* sp., *Trichoderma viride*, *Botryodiplodia theobromae*, *Lenzites striata* and *Schizophyllum* commune were isolated from fungi-infected handicraft products made of forest woody vines. The prolonged exposure of the vines at high moisture content favored the development of these fungi.

Laboratory results revealed that all the vine species were highly resistant to *Penicillium* sp. and *T. viride* attack. Generally, response to *A. niger*, *B. theobromae* and decay fungi varied under laboratory conditions. Under field conditions, all species except hinggiw were resistant to highly resistant to fungal attack when kept in the open.

Chemical treatment on hinggiw is essential to minimize fungal damage. Proper handling of freshly cut vines is needed to maintain their quality. The collected vines should be immediately dried to protect against fungal damage. **(Authors' abstract)**

Keywords: *Biology, Vine resistance, Molds, Staining fungi, Decay fungi*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 58-67

(Filipiniana Analytics)

0289

Response of Leaf lettuce (*Lactuca sativa*) to different levels of light intensity reduction using fishnet

Salang, Eriberto D. , Lacbao, Nenita B. , Cipriano, Xav

Light intensity in the tropics appears to be too much during some period of the day. Plants suffer dehydration by showing partly wilted leaves if exposed to the highest intensity. This experiment was conceptualized to determine what level of light intensity reduction would give a good response on leaf lettuce.

The experiment was laid out in a RCBD experiment with three treatments replicated three times.

The study revealed that light intensity reduction gave significant differences among treatments in plant in terms of height, number of leaves formed, weight and palatability. **(Authors' abstract)**

Keywords: *Biology, Leaf lettuce, Lactuca sativa, Intensity reduction, Fishnet*

WMSU Research Journal, Volume No. 28 Issue No. 1,

2009,

(Filipiniana Analytics)

Fil(S) AS539.5 R47 28/1 2009

0290

Response of rice cv Pusa Basmati 1 to different planting methods

A. K. Singh, Y. Singh, K. K. Singh, H. C. Sharma, K. Singh, U. N. Singh, C. S. Singh

In India, rice cultivation is becoming increasingly expensive as seedlings are raised in nurseries and transplanted manually. Rice transplanters are yet to be popularized. Manual transplanting alone accounts for nearly 20% of the total cultivation cost. In most cases, the required plant population is not maintained because laborers are not properly supervised as transplanting is done on a contractual basis. Manual transplanting takes longer to complete. Therefore, major constraints are the high cost of manual transplanting and uneven plant population. Our experiment was designed to explore other options for rice crop establishment during the 2000-03 rainy seasons (July-October). **(Author's abstract)**

Keywords: Biology, Rice cultivation, Rice cv Pusa Basmati 1, Rice seedlings

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 48-50

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0291

RP-HPLC analysis of quercetin in the extract of sambong (*Blumea balsamifera* (L) DC) leaves

Palacpac, Jocelyn SB. , Quiming, Noel S. , Toralba, Joa

Blumea balsamifera (L) DC, known in the Philippines as *sambong*, is an herb valued for its health benefits especially in the management of urolithiasis. Various phytochemicals, including flavonoids such as quercetin, have been determined in sambong leaves. A reversed-phase high-performance liquid chromatographic method (RP-HPLC) was developed for the quantitative determination of quercetin in the methanol extract of sambong leaves obtained from Leyte, Cotabato, and Nueva Ecija, Philippines. The methanol extracts of sambong were prepared by maceration followed by rotary evaporation. The solid phase extraction (SPE) for the sample cleanup involved the use of a C18 SPE packing, a 0.5-mL sample load (50 mg/mL solution), and elution with 4-mL of 80:20 Methanol:0.5% H₃PO₄. The HPLC conditions for the determination of quercetin involved the use of a C18 4.6-mm x 250-mm column maintained at 30°C, 254-nm UV detection, and a mobile phase composition of 25 parts methanol and 75 parts mixture of 0.5% H₃PO₄ and 0.2% triethylamine with a 1 mL/min flow rate in gradient elution.

A good linearity at the concentration range of 3.72–124 µg/mL of quercetin standard ($r^2=0.9989$) was observed with the limits of detection (LOD) and quantitation (LOQ) at 0.68 ng/mL and 2.28 ng/mL, respectively. The intra-day (n=5-) and inter-day (n=3) precision values were satisfactory (%RSD <2%). The recovery efficiency of the SPE sample cleanup step, which was checked by spiking sambong solution with quercetin standard, was 102.41%. The quercetin contents are 0.2337mg, 0.1350mg, and 0.2940mg per gram of the powdered dried leaves of sambong from Nueva Ecija, Cotabato, and Leyte, respectively. This is the first report of quercetin content in the leaves of sambong collected from the Philippines. **(Authors' abstract)**

Keywords: Biology, Sambong, *Blumea balsamifera*, Quercetin, HPLC, Solid phase extraction

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 27 Issue No. 1, 48-63

2015,

Screening of rice genotypes for resistance to leaffolder, *Cnaphalocrocis medinalis* Guenée, and stem borer, *Scirpophaga incertulas* Walker

Dwivedi, J. L. , Singh, R. A. , Chaudhary, R. C., Gupta,

Leaffolders (LF) and stem borers (SB) are destructive rice pests in Uttar Pradesh. LF and SB infestations occur in August and continue until crop maturity. The pests can be avoided by planting resistant varieties. We screened 30 aromatic rice genotypes for resistance to LF and SB in the field at CRS, Masodha, Faizabad, during 2001 and 2002 kharif. Each test entry was planted in 12 x 2-m plots at 20 x 15-cm spacing with four replicates. All recommended crop management practices, except for plant protection measures, were followed. Infestation was recorded by counting the total number of leaves and the number of infested leaves (for LF) and the total number of tillers and damaged tillers (for SB) from 20 randomly selected hills of each genotype. NDR6175, NDR6093, and NDR6232 were found to be resistant, 10 genotypes were moderately resistant, 15 were moderately susceptible, and two were susceptible to LF. Six genotypes were moderately resistant, 20 were moderately susceptible, and four were susceptible to SB. **(Author's abstract)**

Keywords: *Biology, Leaffolder, Cnaphalocrocis medinalis guenée, Stem borer, Scirpophaga incertulas Walker*

IRRN International Rice Research Notes, Volume No. 28 Issue No. 2, 32
2003,
(Filipiniana Analytics)
Fil(S) SB191.R5 I81 28/2 2003

Sensory qualities of coconut water-based marinated mullet *Mugil cephalus* chunks

Macachor, Corazon P.

Coconut water is often discarded in any industrial activities like virgin coconut oil production, hence can be considered be waste materials. This material can be a good source of food ingredient for some oil/fat extraction. Mullet is considered low cost fishes due to its taste which can be enhanced through pickling process. The study aimed to determine the sensory qualities of mullet chunks treated with marinade solution containing coconut water as basic

ingredient as a substitute to vinegar, the traditional basic ingredient in marinated solution. This utilized the experimental method of research employing the three treatment formulations; that is: Treatment 1, marinated solution containing 100% vinegar with seasonings; Treatment 2, marinated solution containing 50% vinegar and 50% coconut water with seasonings; and Treatment 3, marinated solution containing 100% coconut water with seasonings, based on sensory evaluation using descriptive and preference testing on color, taste and texture. Based on the Analysis of Variance at 5% level of significance, all attributes of marinated mullet chunks significantly differs. Marinated mullet chunks with marinade solution containing 100% coconut water had general acceptability rating of "**like very much**" with weighted mean score of 8.48 With flesh-like color, very tasty and firm in texture. Hence, the sensory qualities of marinated mullet chunks using coconut water as basic ingredient of marinade solution are very much preferable pickled product. Adoption of proposed recipe of coconut water-based marinated mullet chunks is recommended. **(Author's abstract)**

Keywords: *Biology, Coconut water, Mullet, Chunks, Pickled product*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 163
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0294

Seroprevalence and risk factors associated with seropositivity to *Toxoplasma gondii* among stray and domestic cats (*Felis silvestris catus*)? in Metro Manila

Talavera, Ma. Jillian P. , Garcia, Christel Bohn T., Penuliar, Gi

Toxoplasma gondii is a protozoan parasite that causes toxoplasmosis. It is widespread in the environment and infects a variety of warm-blooded animals, causing miscarriages and birth problems. Previous studies in the Philippines have determined the seropositivity of *T. gondii* in humans. However, the seroprevalence of the parasite among household pets, particularly its feline definitive host, remains insufficient. This study aimed to: (1) determine the seroprevalence of *T. gondii* antibodies among domestic and stray cats in the Philippines; and, (2) to analyze the risk factors associated with seropositivity. Blood samples from 59 domestic and stray cats were collected and tested for *T. gondii* seropositivity using a commercially available indirect ELISA kit, while pet owners and handlers were given questionnaires about their cats. Thirteen or 22.03% of the cats were seropositive to *T. gondii*, and risk factor analysis revealed a significant difference between domestic and stray cats with regard to diet ($p = 0.026$, $OR = 8.333$, $\phi_c = 0.299$) and domestication ($p = 0.039$, $OR = 5.000$, $\phi_c = 0.276$). Cats fed with table food tested 31.43% seropositive compared to the 4.35% of those fed with cat food, whereas 33.33% of the stray cats were seropositive compared to 7.69% for domestic cats. Odds ratio test

showed that the risk factors studied were associated with higher likelihood of *T. gondii* seropositivity. These results implicate diet and environment in the transmission dynamics of *T. gondii* among cats. **(Author's abstract)**

Keywords: *Biology*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 2, 49-60
2014,
(Filipiniana Analytics)
Fil(S) Q1.A3 S35 26/2 2014

0295

Silkworm egg quality as affected by coupling duration and rearing season

Ompoy, Serenita S., Ligan, Ronnie M., Bacosa, Hernando P., Sanchez, Zita L.

MO202 female moths were mated with K203 male parent breeds to determine the influence of coupling duration and rearing season in the production of F1 silkworm eggs. The study tested five coupling durations from 1 hour to 5 hours. Two trials each were carried out during the dry season and wet season. Results revealed that coupling duration does not influence the quality of laid silkworm eggs. Allowing the moths to mate once in 1 hour to 5 hours produced the same number of eggs per laying and fertilized eggs. Fecundity percentage does not vary among the five mating durations. On the other hand, dry season produced more fertilized eggs and total eggs per laying with lower fecundity, while wet season produced less fertilized and total number of eggs per laying with higher fecundity percentage. **(Author's abstract)**

Keywords: *Biology, Silkworm egg, Bombyx mori L., Eri moth, Samia cynthia ricini*

PTRI Samay Bulletin, Volume No. 4 Issue No. 1, 21-26
(Filipiniana Analytics)
Fil(S) TS1300 S42 4/1 2004

0296

Small mammal and understorey bird species diversity along elevational gradients in Mount Makiling, Philippines

de Guia, Anna Pauline O., Alviola, Phillip A., Gonzalez, Juan Carlos T., Cervancia, Cleofas R.

Under-storey bird and small mammal species diversity of mid-montane forest (760-899 masl), mossy forest (900-1100 masl), secondary lowland evergreen forest (442-665 masl), mixed grassland and agro-forest areas (261-442 masl) and secondary growth with built-up areas (148 - 261 masl) of Mt. Makiling were investigated from May 2009 – May 2010. A combination of netting and transect line method was done to record bird species. For the small mammals, a combination of cage traps and snap traps were used. A total of 63 understorey bird species was recorded for all sampling sites. Majority of birds recorded were common but endemic species. There was no particular pattern for the computed species diversity indices (H') along the various elevational gradients. However, bird species richness from ~200 masl decreased with elevation. Seven species of small non-volant mammals consisting of four endemic species and three introduced commensal species were recorded. Two of the endemic species are new records for Mt. Makiling with one possible new species (*Apomys* sp.). Species richness for small non-volant mammals from ~200 masl also decreased with elevation. Therefore, the species richness of understorey birds and small non-volant mammals decreases with elevation in these five elevational gradients of Mt. Makiling. **(Author's abstract)**

Keywords: *Biology, Montane forest, Mossy forest, Low mountain, Species richness, Endemic, Commensal, Muridae, Luzon Island*

NRCP Research Journal, Volume No. 11 Issue No. 1,
(Filipiniana Analytics)
Fil(S) Q179.9 N323 11/1 2011

0297

Spatial distribution of gymnosperms in Mt. Sinaka, North Cotabato

Leyson, Jivonte Nicklaus R., Opiso, Jennifer G., Opiso, Guiller S.

This study was conducted to provide a list of gymnosperms present; construct a distribution map; and assess local and conservation status of each gymnosperm species. Transect walk from the base to the peak on both trails located in two barangays was done. Gymnosperms were collected, identified, assessed and geotagged to generate distribution maps along elevation gradient and vegetation types. A total of 77 individuals under 7 species belonging to 5 genera and 2 families were observed including *Agathis philippinensis*, *Dacrycarpus cumingii*, *Dacrydium elatum*, *Phyllocladus hypophyllum*, *Podocarpus costalis*, *Podocarpus neriifolius* and *Podocarpus rumphii*. The seven species were found distributed at different elevations (1102-1488 masl) showing increasing altitude trend in the pattern of species abundance and elevation but showed a clear drop after 1301 masl. All species observed were assessed locally rare and one species was recorded as endangered, one vulnerable, one near threatened and the rest were classified as least Concern. It can be concluded that the species richness of gymnosperms in Mt. Sinaka is low, and that it needs to be

conserved and monitored closely to help prevent decreases in its population. Further studies is recommended. **(Author's abstract)**

Keywords: *Biology, Gymnosperms, Mt. Sinaka, Spatial distribution, Species richness, Status*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 64
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0298

Species composition and abundance of zooplankton in Pulangui Lake, Bukidnon

Selva, Eric Claire T., Gracia, Jr., Arturo G., Nietes, Aurfeli D., Baldo, Ronald R.

Pulangui Lake is a man-made lake which has a total area of 1,985 hectares and an offshoot after Pulangui River was dammed in 1985 by the National Power Corporation to generate hydroelectric power source. At the present time, Lake Pulangui's function as reservoir decline due to the erosion from cultivation of soil around the vicinity. This study aims to update the previous list of zooplankton species found in Pulangui Lake and determine their abundance and to identify water quality indicator species. The samples

were taken from three stations. Station 1 is located at mouth of the river. Station 2 is located at the central part of the lake in Dologon and Station 3 located near at RR spring resort. Sampling of zooplanktons was done using conical plankton net. Two replicates in each site were collected. The samples was immediately added with 10 ml Lugols solution and then preserved in 10% formalin. A total of 46 species of zooplanktons were found in Pulangui Lake. Ten (10) species were unidentified. Station 2 had the highest density of zooplankton with 31.44×10^3 indv/L, followed by Station 1 with 0.719×10^3 indv/L, and station 3 with 0.236×10^3 indv/L. Pulangui lake was dominated by the rotifers with 63% of the total zooplankton species. The dominant species found was *Anuraeopsis navicula*, *Trichocerca myersi*, *Brachionus caudatus*, *Calanoid sp1*, *Trichocerca elongata*, and *Calanoid naupilus*. The presence of *Brachionus angularis*, *Brachionus calyciflorus*, *Brachionus caudatus*, *Brachionus demidiatus*, *Brachionus plicatilis* and two species of *Keratella* (*Keratella Tropica* and *Keratell earlinae*) indicates the existence of organic pollution. However, the presence of *Calanoid naupilus* in the three station indicates a good water quality despite the presence of organic pollution. **(Author's abstract)**

Keywords: *Biology, Rotifers, Water quality indicator species, Zooplankton*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 82
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

Species composition and status of butterflies in the agroecosystem and forest patch of Acmonan, Tupi, South Cotabato

Mohagan, Dave P., Cano-Mangaoang, Cherie

Butterflies are good indicators of the health status of certain ecosystem because of their sensitivity to environmental alterations. Despite the fact, few studies had been conducted on this important taxon especially in the province of South Cotabato. Thus, an inventory of species composition and status of butterflies was conducted in agroecosystem and forest patch in Acmonan, Tupi, South Cotabato using transect walk sampling technique. Result of the study reveals 34 species belonging to 5 families.

Nymphalidae dominates with 16 species, followed by Lycaenidae with 7 species then Papilionidae and Peiridae with 5 and 4 species, respectively. Hesperidae is least represented with only 2 species identified. The study further reveals 4 endemic: *Celarchus archagathos archagathos*, *Ragadia melindena melindena*, *Ypthima s. stelleri*, and *Ypthima sensilis* (Mindanao endemic); 3 rare: *Euripus nyctelius nysia*, *Symbrenthia hypatia matuti* and *Ypthima sensilis*, and 5 uncommon species. One species is new record in Mindanao- *Euripus nyctelius nysia* and one site endemic - *Symbrenthia hypatia matuti*. Result implies that these habitats are home for butterflies and must be conserved to balance with livelihood development in the community. **(Author's abstract)**

Keywords: *Biology, Butterflies, Acmonan, Tupi, Agroecosystem, Forest patch*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 63
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

Species composition of harvestman (arachnida-opiliones) in agroecosystem and forest patch of Acmonan, Tupi, South Cotabato

Mohagan, Dale Joy B., Cano-Mangaoang, Cherie

Harvestman belongs to order Opiliones under class Arachnida. The group is consist of long legged arachnids which play an essential role in the process of nutrient cycling as biomass convertors and habitat quality indicator Yet, they are poorly known especially in the Philippines. Thus, the study was conducted to document species of harvestman in

agroecosystem and forest patch of Acmonan, Tupi, South Cotabato using transect walk sampling technique and sifting leaf litters. Result of the study reveals 9 species of harvestman belonging to 2 suborders - Euphnoi and Laniatores, and 7 families: Metopilio, Phalangidae, Oligophinae, Gagrellinae, Leiobuninae, Zalmoxidae, and Epidanidae. Suborder Euphnoi dominates with 7 species collected and identified. Furthermore, the data shows that only family Gagrellinae found both in agroecosystem and forest patch of the sampling area. The rest of the members of the families are discordant species. They were specific in the forest patch. The data implies that remaining forest patch in the said area must be conserved. **(Author's abstract)**

Keywords: *Biology, Harvestman, Arachnida, Acmonan, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 62

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0301

Species composition of harvestman in the forest patches in Mt. Kalasungay, Malaybalay City, Bukidnon

Dimaducot, Gerson C., Mohagan, Dale Joy B.

There are relatively little known about the habitat preferences of most species of harvestmen especially in the Philippines. We investigated the harvestman dwelling in the leaf litters in disturbed and undisturbed area of dipterocarp forest of Kalasungay, Malaybalay City, Bukidnon. A total of sixteen (16) individuals were collected. Eight (8) individuals were collected for family Zalmoxidae, five (5) for Epidanidae, two (2) for Podactidae and one (1) for Eupoinidae. These include adults of species from the families Epidanidae, Zalmoxidae and Podactidae. Our results indicate that the Zalmoxids were the most abundant species occur in the leaf litter. More population and species composition were found in the undisturbed forest. This may be due to the fact that harvestman rely in leaf litters for food. So that in the more disturbed habitat, few harvestman inhabits due to leaf litter movements by carabao and other live stocks that are moving that consequently move also the leaf litters making unstable habitat for harvestman. The data implies that harvestman can serve as model organism to indicate the history and the quality of the place and thus implies conservation measures. **(Author's abstract)**

Keywords: *Biology, Harvestman, Species composition, Mindanao, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 83

(Filipiniana Analytics)

Species richness, assessment and distribution of odonata across vegetation types in Mt. Sinaka, North Cotabato

Dador, Karen C., Opiso, Jennifer G., Opiso, Guiller S.

This study generally aimed to determine the species richness, assess the local and conservation status and record the distribution of Odonata species across vegetation types in Mt. Sinaka, North Cotabato. Field work was conducted on Agro-ecosystem, Dipterocarp forest and Montane forest using opportunistic sampling and visual searching techniques. Insect sweep nets were used for the collection of the species. Twenty six species were recorded under 17 genera and 7 families. Among these species, 14 are Zygopterans and 12 are Anisopterans. Species richness was highest in agro-ecosystem (S=21) and lowest in montane forest (S=3). Species abundance was highest in agro-ecosystem with 126 individuals followed by dipterocarp and montane forest, both with 4 individuals. Species richness and species abundance were considerably high in areas with open canopy and water bodies. The presence of oriental species suggests that the area is disturbed. Local and conservation status of Odonata recorded eleven species were endemic (4 Philippine endemic and 7 Mindanao endemic) in which 9 are Zygopterans and 2 are Anisopterans. The presence of endemic species suggests that Mt. Sinaka is of conservation importance. Most of the observed species were found in specific vegetation and only *Teinobasis annamaijiae* and *Risiocnemis tendipes* are shared by agro-ecosystem and dipterocarp, and dipterocarp and montane forests respectively. **(Author's abstract)**

Keywords: *Biology, Odonata, Species richness, Conservation status, Mt. Sinaka*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 66

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Species richness of anurans in Mt. Apo, Makalangit, New Israel, North Cotabato

Nietes, Aurfeli D., Gumban, Charissa Joy A., Abarquez, Vince R., Mangaoang, Cherie, Selpa, Eric Claire T.

Species of amphibians which mostly comprise of the anurans are highly specialised in terms of habitat and the climatic conditions they need for survival. These characteristics make them good bio-indicators since they are

susceptible to environmental disturbances. Together with the habitat degradation and the general lack of data on the ecology, distribution and population trends makes conservation strategies difficult to plan which therefore calls for an intensive overview of these important species as a first step in addressing this biodiversity concern. Inventory of anurans in the montane forest of Mt. Apo, Makalangit, New Israel, North Cotabato

has been conducted. Two stations were established, the first station is a riparian ecosystem located at N 060 56.853 and E 1250 14.360 with an elevation 1879 masl. and the second station is a terrestrial ecosystem situated at N 060 56.992 and E 1250 13.971 with an elevation of 1992 masl. A total of 6 species of frogs classified under 3 genera and 3 families were recorded. Two species (*Megophrys stejnegeri* and *Philautus acutirostris*) were assessed as endemic but are also noted to be vulnerable. The primary threat to the anurans is habitat loss in which anurans are closely associated with the tropical ecosystem since they are dependent to the canopy and

microhabitat provided by the tropical rainforest. However, tropical forests has now become susceptible to degradation due to unmanaged exploitation of these reserves caused by anthropogenic activities which puts a need to conserve and protect the forest to prevent the loss of the important anuran species'. **(Author's abstract)**

Keywords: *Biology, Amphibians, Endemic, Vulnerable, Disturbance*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 60

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0304

Species richness of birds in a lowland secondary forest in Musuan environ

Abarquez, Vince R., Baldo, Ronald R., Baguhin, Leonil Jun B., Nietes, Aurfeli D.

Avian fauna is one of the largest components of biodiversity of the tropical forests in the Philippines. However, due to the habitat loss brought by human impacts; the country ranks second in the number of threatened endemic birds in the world hence most of this threatened birds are found in Mindanao. The declining species of avifauna has become a worldwide concern in our biodiversity thus denotes the need to determine the species of birds as a first step in addressing this biodiversity issue. Inventory of birds in the secondary forest of Sawmill, Central Mindanao University, Musuan, Bukidnon has been conducted. Three stations were established within the site with a total of 147 net-days. A total of 9 species classified under 7 families and 9 genera were noted. Three species were assessed as endemic (*Phapitreron leucotis*, *Hypsipetes philippinus* and *Pycnonotus uristictus*). Based on the result most of recorded species were insectivorous and frugivorous which are susceptible due to the loss and alteration of habitat. Habitat disturbance would directly and indirectly affects the birds with regards to their food requirement since these would also change the composition of the plant and invertebrate resources that they consume. The food preferences and also the availability of

food determines the species composition of birds thriving in an area which therefore calls for the conservation and protection of the forest to avoid the loss of birds species which are subjective and dependent to their environment.

(Author's abstract)

Keywords: *Biology, Endemic, Frugivorous, Insectivorous, Disturbance*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 70

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0305

Speleological and ecological assessment of cave-roosting bats in Sumalasag Cave System, Bukidnon, Philippines

Domingo, Kim-Lee B., Buenavista, Dave P.

Sumalsag Cave System is considered as the longest cave in Northern Mindanao, Philippines. Exploration of the understudied cave system was done from December 2013 to October 2014. Speleological survey of speleothems and speleogens were performed to describe the geomorphology of the cave. Field sampling was conducted using a combination of mist netting and emergent survey method, and capture-mark and release technique. Baseline data on species richness, population density, conservation and ecological status of cave-roosting bats were determined and assessed. The fieldwork was conducted for a total of 15 netnights with a capture effort of 180 net/hours. Results of the study revealed 6 caverooting bat species belonging to 3 families and 5 genera. Two endemic species were documented viz., *Ptenochirus jadori*, a Philippine endemic species and *Ptenochirus minor*, a Mindanao endemic species. Speleological assessment showed physical damages and destruction of cave structures due to unregulated anthropogenic activities. Over-exploitation of cave resources such as guano extraction, mining, and illegal poaching for bushmeat resulted to unprecedented and significant decline in population of cave-roosting bats. With the record of threatened species *Miniopterus schreibersii* this study classifies the Sumalsag cave system into Class II category wherein geologically and biologically sensitive sections of the cave should be provisionally closed for restoration and immediate conservation measures of threatened and endemic bat species. **(Author's abstract)**

Keywords: *Biology, Speleology, Ecology, Assessment, Cave-roosting bats*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 84

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

The stability of an acid-base indicator paper from *Catharanthus roseus* (Periwinkle) flower extract

Martinez, Damiana M. , Candido, Rite

The stability of the produced acid-base indicator paper from *Catharanthus roseus* flower extract was conducted and a potentiometric titration method in four cases of titration was done to test the suitability of the extract indicator.

Extraction was done by reflux method using water as extracting solvent. The color of the extract was gray, and it turned light pink when added to an acidic solution and yellow green when added to basic solution. Potentiometric data were used to construct a plot that was pH as a function of the volume of titrant added to determine the transition error of the four (4) cases of titration. Results showed that the extract can be used as an indicator in the titration of a strong acid against a strong base which had the lowest percent minimal transition error (2.91%) with a pH range of 3.09-9.10 and volume range of 10.60-10.92 ml.

The stability of the acid-base indicator paper produced was done in terms of its effect on: the type of matrix used, temperature, and storage time. Results showed that the acid-base indicator paper that used bond paper as its matrix gave a stable color in four (4) weeks observation, and more stable when stored at lower temperature (7-10°C) compared when it was stored at room temperature (28-33°C). Furthermore, the acid-base indicator paper that used bond paper as its matrix showed lesser amount of cost per strip compared to a litmus paper (standard). From the study, the kind of matrix used, time of storage and temperature of storage really matters in the stability of an acid-base indicator paper. **(Authors' abstract)**

Keywords: *Biology, Catharanthus roseus, Periwinkle, Acid-base indicator paper*

WMSU Research Journal, Volume No. 28 Issue No. 1,
2009,
(Filipiniana Analytics)
Fil(S) AS539.5 R47 28/1 2009

Status assessment of *Clarias* species in the Philippines: insights from DNA barcodes

Jumawan, Joycelyn C. , Tan, Marc Timothy C. , Vesagas, Francis Peter C. , Quilang, Jonas P. , Santos, Br

Catfishes of the genus *Clarias* are important food fishes in aquaculture. In the Philippines, six species are documented but only three, namely *C. batrachus*, *C. macrocephalus*, and *C. gariepinus*, are found in the market today. Of these, *C. macrocephalus* is both native and near threatened. In this study, the cytochrome c oxidase I (COI) gene was amplified for 20 Agusan Marsh, Agusan del Sur specimens provisionally identified as *C. macrocephalus*. These specimens have a different morphology compared to other *C. macrocephalus* specimens previously obtained elsewhere. The COI sequences all matched the Philippine COI sequences of *C. macrocephalus*, thus confirming its identity. Reanalysis of barcode sequences was also conducted to resolve the conflicting claims regarding the status of some *Clarias* species. A total of 179 COI sequences from *Clarias* species present in GenBank were included in the analyses. The average intraspecific and interspecific Kimura-2-Parameter distances were 2.99% and 13.26%, respectively. There was very little sequence diversity observed in the Philippine samples of *C. macrocephalus*. Philippine samples of *C. batrachus* and *C. macrocephalus* formed distinct clades, while Philippine *C. gariepinus* specimens clustered with those of other countries, supporting the claim that the former two species are native and the latter was introduced to the country. The status of the other *Clarias* species in the Philippines is also discussed. **(Author's abstract)**

Keywords: *Biology, Catfish, Lariidae, COI, DNA barcoding*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 27 Issue No. 2, 21-40

2015,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 27/2 2015

0308

Subcellular localization, isolation, and partial purification of mercury-binding biomolecules in *Chromolaena odorata* (L.f.) R.M. King et H. Robinson

Rivero, Gilda C., Alcantara, Hannah Joy P.

Chromolaena odorata (L.f.) R.M. King et H. Robinson plants were grown in Hoagland's solution modified with 1.00 ppm $\text{Hg}(\text{NO}_3)_2$. Cold Vapor-Atomic Absorption Spectrophotometry (CY-AAS) analyses for Hg^{2+} contents established the presence of Hg^{2+} in 3 out of 4 of the subcellular components obtained from the leaves of the Hg-treated *C. odorata* plants. Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) analyses of the isolated protoplasts and vacuoles revealed that the ultimate localization of Hg^{2+} was in the vacuoles.

The Hg-binding, SH-containing biomolecules, which were initially detected through the 5,5'-dithiobis(2-nitrobenzoic acid) (DTNB) assay, manifested as a predominant peak in the chromatographs of both the control and Hg-treated plants, obtained through Reverse Phase- High Performance Liquid Chromatography (RP-HPLC), with their retention times falling within the ranges of reduced glutathione, metallothionein, and cysteine standards. However, the concentrations of the glutathione- and/or metallothionein- like, cysteine-containing biomolecules detected in the leaves of Hg-treated *C. odorata* plants were ten-fold higher than those detected in the control.

The findings of this study provided evidence that the enhanced production of Hg-binding biomolecules and the localization of Hg^{2+} ions are ultimately in the vacuoles of the leaves and that these are the mechanisms which bring about Hg^{2+} tolerance and homeostasis in *C. odorata* plants exposed to mercury. These results indicate that *C. odorata* is a hyperaccumulator and hence, a potentially effective phytoremediator for Hg^{2+} ions. **(Authors' abstract)**

Keywords: *Biology, Chromolaena odorata, Mercury, Phytoremediation, Phytochelatin, Glutathione, Metallothionein, Cysteine, Subcellular localization, DTNB assay, RP-HPLC*

NRCP Research Journal, Volume No. 10 Issue No. 1, 1-16

(Filipiniana Analytics)

Fil(S) Q179.9 N323 10/1 2009

0309

Surface zooplankton community composition in whale shark (*Rhincodon typus*) feeding grounds off Sogod Bay, Southern Leyte during August 2013 to March 2014

Yap-Dejeto, Leni, Muncada, Paul Mathew, Palermo, Joseph Dominic, Ponzo, Alessandra

Sampling stations in the study site off Sogod Bay, Southern Leyte was established along the feeding grounds of whale shark (*Rhincodon typus*). The whale shark season in the area is known to last from November to July. Water samples and physico-chemical parameters from three sampling stations were taken and collected once a month in August and October in year 2013 within the off whale shark season period, and March 2014 within the whale shark season. Abundance, composition, and diversity of zooplankton groups encountered were quantified. Copepods dominated by 66% (Order Calanoida 26%, copepod nauplius 16%, Order Cyclopoida 14% and Order Harpacticoida 10%) of the total zooplankton population. Samples obtained during the whale shark season, March 2014, showed the highest total zooplankton abundance at 7.7×10^3 ind./L. This month also yielded the highest zooplankton community diversity of $H'=2.53$. October 2013 had the least total density of 1.9×10^3 ind./L; while August 2014 samples had the least zooplankton diversity of $H'=1.58$. **(Author's abstract)**

Keywords: *Biology, Zooplankton, Whale shark, Rhincodon typus, Sogod Bay*

0310

Taxonomic review of some Philippine seed beetles (Coleoptera: Chrysomelidae: Bruchinae) associated with leguminosae

Adorada, Jessamyn R., Adorada, Joel L.

A review on the taxonomy of some Philippine seed beetles associated with Leguminosae was conducted. Collected and preserved specimens from depository facilities were subjected to taxonomic analysis. Four (4) species under the Tribe Bruchini from two (2) genera and a single species from a single genus under the Tribe Pachyrnerini were determined. Out of the eight (8) species recorded in the Philippines, only three (3) species were retrieved, namely, *Callosobruchus chinensis* (Linnaeus), *C.*

maculatus (Fabricius), and *C. pulcher* Pic. Two (2) new records on the Philippine fauna, *Caryedon serratus* (Olivier) and *Borowiecius siamensis* Anton were discovered. Description and a key to the species are provided. **(Authors' abstract)**

Keywords: Biology, *Caryedon serratus*, *Borowiecius siamensis*, *Callosobruchus maculatus*, *Callosobruchus pulcher*, *Callosobruchus chinensis*

0311

Taxonomy of the genus *Sargassum* (Fucales, Phaeophyceae) from Alabat Island, Quezon, Northeastern Philippines

Trono, Jr., Gavino C. , Santiañez, Wilfred J

Taxonomic observations on some *Sargassum* species in Alabat Island, Quezon are presented. These are based on collections made on the spot during an ecological survey on the *Sargassum*-dominated seaweed communities in the locality. Gross morphological characteristics of the species such as the type of holdfast, shape and nature of its branches,

vesicles, leaves, nature and distribution of cryptostomata, and nature and form of receptacles were used to discriminate the different morphotypes.

Free-hand sections of receptacles were made to ascertain the sex of the plant. Different morphotypes were identified up to species level when possible. Eight morphotypes were distinct, six of which were recognized, namely, *Sargassum crassifolium* J. Agardh, *S. cristaefolium* C. Agardh, *S. kushimotoense* Yendo, *S. gracillimum* Reinbold, *S. myriocystum* J. Agardh, and *S. polycystum* C.A. Agardh. The two other remaining materials were unidentified and are described here in detail. **(Author's abstract)**

Keywords: *Biology, Sargassum, Brown seaweed, Seaweed taxonomy, Diversity, Philippines*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 1, 29-50

2013,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 25/1 2013

0312

Use of population parameters in examining changes in the status of the short-necked clam *Paphia undulata* Born, 1778 (Mollusca, Pelecypoda: Veneridae) in Coastal Waters of Southern Negros Occidental

del Norte-Campos, Annabelle, Villarta, Karen

Growth, recruitment, mortality and exploitation rate of the short-necked clam *Paphia undulata* (Born, 1778) were studied in southern Negros Occidental waters between August 2007 and July 2008 from length-frequency data derived from catches of divers, to be able to compare with earlier data derived and analyzed 13 years ago by Agasen et al. (1998). Both sets of data were analyzed using the FiSAT software (Gayaniilo & Pauly, 1997). The asymptotic shell length ($S_{\infty} = 79$ mm) derived from the present

data proved to be smaller compared to the earlier data ($SL_{\infty} = 81.5$ mm) due to the lack of bigger sizes in the present samples. The growth constant ($K = 1.0 \text{ yr}^{-1}$) was however comparable indicating it to be a more species-characteristic parameter. Two recruitment pulses for each study were derived and were found to be correlated with the spawning pattern in the species. The value of natural mortality ($M = 1.57 \text{ yr}^{-1}$) derived from bivalve literature, is deemed more appropriate compared to the earlier estimate ($M = 2.89 \text{ yr}^{-1}$) based on Pauly's (1980) empirical equation developed for fish. Total mortality (Z) values for both studies were comparable, but a higher level of fishing mortality ($F = 4.61 \text{ yr}^{-1}$) was estimated for the present data set, thus resulting likewise in a higher exploitation rate ($E = 0.75$). These, together with fishery information from an accompanying paper (Villarta & del Norte-Campos, 2010), not only validate the earlier findings of overexploitation due to lack of management, but reveal a worsening condition of the stock, most likely as a

result of growth overfishing. Overexploitation can only be mitigated by imposing stringent restrictions in terms of the minimum size for exploitation (45 mm shell length) and closed seasons during the spawning peak (August-November).

(Author's abstract)

Keywords: *Biology, Paphia undulata, Population parameters, Negros Occidental*

Science Diliman: a journal of pure and applied sciences, Volume No. 22 Issue No. 1, 53-60

2010,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 22/1 2010

BOTANY

0313

Effect of site factors on the survival and growth rate of tiger grass

Salatan, Noel I. , San Juan, Fredel

The study sought to determine the effect of site factors on the survival and growth rate of the tiger grass. To do it, 108 suckers of tiger grass were planted in all of the 3 sites. In each site, 3 blocks were laid out with 6 suckers of tiger planted in each block with a distance of 1.5 m. between the suckers. The growth and survival of tiger grass were observed for a period of 10 months. Moreover, soil samples were collected in the study area and analyzed at the Bureau of Soils at the start and at the end of the study. Temperature and relative humidity in the study area were also recorded at least once a day for a period of 10 months. Results showed that the tiger grass planted in 3 sites did survive and grow. However, it was observed that within the study period, no panicle was developed or produced. In terms of growth performance, there were no significant differences in all of the 3 sites where the tiger grass suckers were planted. Thus, site factors were not contributory to the survival and growth of the Tiger grass. Similarly, soil conditions were almost similar in all of the 3 study sites. Finally, the study of tiger grass should be done in a longer period of time; if possible, it should be 24 months or even longer so that the production of panicle which is the source for the production of brooms can readily be observed. **(Author's abstract)**

Keywords: *Botany, Tiger grass , Site factors, Survival rate, Growth rate*

WMSU Research Journal, Volume No. 30 Issue No. 1, 108-116

2011,

(Filipiniana Analytics)

CHEMISTRY

0314

High accuracy quantification of food additive by exact matching isotope dilution liquid chromatography mass spectrometry

Cabanilla, Sharlene R., Dacuya, Aaron, Mamplata, Natividad R., Ebarvia, Benilda S.

Analytical challenges in obtaining accurate, reliable and sensitive method was approached using Exact Matching Isotope Dilution Liquid Chromatography Mass Spectrometry (ID-LC/MS/MS) in this study. The method was developed, optimized and validated for the quantification of additive like benzoic acid in mango juice. Benzoic acid is a common additive in foodstuffs and has been regulated internationally for food safety issues. Benzoic acid standard and isotope-labeled internal standard benzoic

acid (Ring D5) in approximately 1:1 ratio was used in the quantitation. The chromatographic separation used Agilent Zorbax Eclipse Plus C18 (100 μ m x 4.6 mm, 3.5 μ m). An isocratic program was used at a flow rate of 0.3 mL•min⁻¹ with acetic acid - ammonium buffer (PH 4.5). The Triple Quadrupole Mass Spectrometer was operated with electrospray ionization in the negative mode. Benzoic acid and its isotope analogue were detected by selectively monitoring the collisionally-induced dissociation channels of [M-H]⁻ → [M-CO₂H]⁻ at m/z 121.1 → 77.2 and m/z 126.1 → 82., respectively. Repeatability studies showed that the ID-LC/MS/MS for benzoic acid is a reliable and precise technique which can provide less than 1.5% relative standard deviation (rsd). The limit of detection (LOD) obtained for this method was 0.151 mg/kg. A good linearity over a range of 0.0555 – 13.795 mg/kg was demonstrated. This method is a candidate primary method and it can be a reference method that can be used in the

assignment of reference value of proficiency test samples and reference materials. The analysis of certified reference materials further support the establishment of traceability of measurement to international standards (SI). **(Author's abstract)**

Keywords: *Chemistry, Isotope dilution, Liquid chromatography mass spectrometry, Benzoic acid, Traceability, Reference method*

Antibacterial effectiveness of different brands of glutaraldehyde in different soaking time periods and its effect on carbide burs

Falia, JoyJoy Gladys, Sobrevinas, Rachelle, Tensuan, Rodolfo C., Beatriz, Reuel, Mergal, Vicky

The study analysed the bactericidal property of two different brands of Glutaraldehyde: Cidex and Deconex, in disinfecting and sterilizing dental carbide burs for 10 hours and 20 minutes. It also evaluated the change in surface dimensions of the burs when different brands of Glutaraldehyde were used for the different time periods. Six straight-fissure dental carbide burs of size FG-57 were used in the study all belonging to the same brand SSW. Six burs were evaluated under the Scanning Electron Microscope before and after soaking the bur in Cidex for 20 minutes, and 10 hours, Deconex for 20 minutes and 10 hours, water for 20 minutes and 10 hours.

Results showed that Cidex at 20 minutes does not kill all the bacteria when used for dental carbide burs possibly due to the fissures and grooves present on them. Thus it can be used as a disinfectant of dental carbide restorative burs only. Deconex at 20 minutes does not kill all the bacteria when used for dental carbide bur either thus it can be used as a disinfectant of dental carbide burs but not for sterilization. Cidex (2.2-2.7%) at 10 hours can be used as a sterilizing agent for dental carbide burs. Deconex at 10 hours also could not eliminate all the bacteria from the contaminated carbide bur. Thus it can be used as a disinfectant not a sterilant for dental carbide burs.

Cidex proved to be effective for sterilization of carbide burs at 10 hours as compared to 20 minutes which was not successful at destroying all the bacteria. Deconex at 10 hours was 2.5 times more effective in disinfecting carbide burs as compared to 20 minutes. (Author's abstract)

Keywords: *Chemistry, Antibacterial, Glutaraldehyde, Carbide burs*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 145

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Antimicrobial terpenoids from *Elephantopus mollis*

Ragasa, Consolacion Y., Alimboyoguen, Agnes B., Shen, Chien-Chang

The leaves of *Elephantopus mollis* HBK, commonly known as malatabako is reported to exhibit antimicrobial properties. The study was conducted to isolate the dichloromethane soluble constituents of the plant which may contribute to this activity. The air-dried leaves of *E. mollis* afforded molephantin (1), molephantinin (2), 2-deethoxy-2-hydroxyphantomolin (3), stigmasterol (4), α -amyrin fatty acid ester (5a), and lupeol fatty acid ester (5b). The structures

of the sesquiterpenes (1-3) were elucidated by extensive 1D and 2D NMR spectroscopy and confirmed by comparison of their ^{13}C NMR data with those found in the literature, while the structures of 4, 5a, and 5b were deduced by comparison of their ^1H and ^{13}C NMR spectral data with those reported in the literature. Antimicrobial tests on 1-3 indicated that they are moderately active against the fungus, *C. albicans* and slightly against the bacteria: *E. coli* and *P. aeruginosa* and the fungus, *T. mentagrophytes*. Compounds 1 and a mixture of 1 and 2 exhibited slight activity against *S. aureus*, while 3 and a mixture of 1 and 2 were slightly active against *B. subtilis*. All compounds were found inactive against *A. niger*.

(Author's abstract)

Keywords: Chemistry, Asteraceae, Molephantin, Molephantinin, 2-deethoxy-2-hydroxyphantomolin, Lupeol fatty acid ester, Antimicrobial

NRCP Research Journal, Volume No. 10 Issue No. 1, 33-38

(Filipiniana Analytics)

Fil(S) Q179.9 N323 10/1 2009

0317

Antimicrobial terpenoids from *Erigeron sumatrensis*

Ragasa, Consolacion Y., Tsai, Po-wei, Shen, Chien-Chang

The leaves of *Erigeron sumatrensis* Retz is reported to exhibit antimicrobial properties. The study was conducted to isolate the dichloromethane soluble constituents of the plant which may contribute to this activity. The dichloromethane extract of the air-dried leaves of *E. sumatrensis* afforded (E)- β -farnesene 1, neophytadiene 2, spathulenol 3, and spinasterol 4. The structures of 1 and 2 were elucidated by extensive 1D and 2D NMR spectroscopy, while the structures of 3 and 4 were deduced by comparison of their ^1H and ^{13}C NMR spectra with those found in the literature. Compound 1 indicated moderate antifungal activity against *C. albicans* and low activity against *E. coli*, *P. aeruginosa*, and *T. mentagrophytes*. It was inactive against *S. aureus*, *B. subtilis*, and *A. niger*. Compound 2 exhibited moderate antifungal activity against *C. albicans*, low activity against *A. niger*, *T. mentagrophytes*, *E. coli*, and *P. aeruginosa*, and was found inactive against *S. aureus* and *B. subtilis*. Compounds 3 and 4 exhibited low activity against *E. coli*, *P. aeruginosa*, *S. aureus*, *C. albicans*, and *T. mentagrophytes*. They were inactive against *B. subtilis* and *A. niger*. (Author's abstract)

Keywords: Chemistry, *Erigeron sumatrensis*, Compositae, β -farnesene, Neophytadiene, Spathulenol, Spinasterol, Antimicrobial

NRCP Research Journal, Volume No. 10 Issue No. 1, 27-32

(Filipiniana Analytics)

Cadmium and lead determination by ICPMS: method optimization and application in carabao milk samples

Rodriguez, Irene B. , Magbitang, R

A method utilizing inductively coupled plasma mass spectrometry (ICPMS) as the element-selective detector with microwave-assisted nitric acid digestion as the sample pre-treatment technique was developed for the simultaneous determination of cadmium (Cd) and lead (Pb) in milk samples. The estimated detection limits were $0.09 \mu\text{g kg}^{-1}$ and $0.33 \mu\text{g kg}^{-1}$ for Cd and Pb, respectively. The method was linear in the concentration range 0.01 to $500 \mu\text{g kg}^{-1}$ with correlation coefficients of 0.999 for both analytes. The method was validated using certified reference material BCR 150 and the determined values for Cd and Pb were $18.24 \pm 0.18 \mu\text{g kg}^{-1}$ and $807.57 \pm 7.07 \mu\text{g kg}^{-1}$, respectively. Further validation using another certified reference material, NIST 1643e, resulted in determined concentrations of $6.48 \pm 0.10 \mu\text{g L}^{-1}$ for Cd and $21.96 \pm 0.87 \mu\text{g L}^{-1}$ for Pb. These determined values agree well with the certified values in the reference materials. The method was applied to processed and raw carabao milk samples collected in Nueva Ecija, Philippines. The Cd levels determined in the samples were in the range 0.11 ± 0.07 to $5.17 \pm 0.13 \mu\text{g kg}^{-1}$ for the processed milk samples, and 0.11 ± 0.07 to $0.45 \pm 0.09 \mu\text{g kg}^{-1}$ for the raw milk samples. The concentrations of Pb were in the range 0.49 ± 0.21 to $5.82 \pm 0.17 \mu\text{g kg}^{-1}$ for the processed milk samples, and 0.72 ± 0.18 to $6.79 \pm 0.20 \mu\text{g kg}^{-1}$ for the raw milk samples. **(Author's abstract)**

Keywords: *Chemistry, Trace metal, Carabao milk, ICPMS, Microwave digestion, Food contaminant*

Science Diliman: a journal of pure and applied sciences, Volume No. 24 Issue No. 1, 1-11

2012,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 24/1 2012

Chemical remediation of high-B.O.D and dark-colored effluent: experimental and computational studies

Cacao, Eliedonna E., Hernandez, Marjorie D., Zamora, Frances Anne V., del Rosario, Ernesto J.

Melanoidin is the main color pollutant from molasses and sugar-based factories. Its remediation is hampered by the persistence of its dark color due to its polymeric structure and its recalcitrance to microbial and chemical treatments. An anionic exchange resin method was used to decolorize melanoidin, which is also an ionic color pollutant. Several anionic exchange resins (DEAE Cellulose, DEAE Sephadex, Amberlite IRA-410, Dowex 1-X8 and chitosan) were evaluated and their ability to decolorize both the natural and the synthetic melanoidin were studied. Among the five anionic exchangers examined, DEAE-Cellulose showed the best performance for melanoidin decolorization. Three of these resins (DEAE Cellulose, DEAE Sephadex and Amberlite IRA -410) were further evaluated and characterized using Hyperchem and AUTODOCK DEAE Sephadex was observed to have the lowest docking energy and Gibbs energy of binding. Furthermore, strong oxidizers such as ozone are needed in the chemical remediation of this important pollutant. The kinetics of ozonation of synthetic glucose-glycine prepared melanoidin was studied in unbuffered and buffered solutions (PH 3.5 -10). The reaction was found to obey first-order and half-order kinetics based on absorbance data at 475 nm and 280 nm, respectively. After two hours of ozonation, melanoidin decolorization was in the range 64-94%; decolorization was greater at lower pH values. Microbial decolorization was also performed. Synthetic glucose-glycine melanoidin, after partial purification by Sephadex G-100 chromatography, was ozonated and then used as culture substrate for *Bacillus subtilis*. Ozone treatment for 15, 30 and 60 minutes resulted in decolorization (reduction in absorbance at 475 nm) values of 21.4%, 41.3% and 65.3%, respectively; corresponding molecular weight (MW) values were 18.8, 15.3 and 9.0 kDa compared with a MW of 51.6 kDa for raw melanoidin. The pH of the melanoidin solution decreased from an initial value of 6.4 to 5.3, 4.9 and 4.6 after 15, 30 and 60 minutes of ozonation, respectively. The 1-hour ozonated melanoidin showed further 23% decolorization after bacterial treatment for 1 – 5 days. The final MW values after combined ozonation and bacterial treatment were 16.6, 13.2 and 7.8 kDa for 15, 30 and 60 minutes ozonation, respectively. Using computational chemistry, it showed that the melanoidin structure proposed by Yaylayan and Kaminsky (1998) had the least value (most negative) of heat of formation, both in vacuo and solvated system. Thermodynamically, this is the most stable among the Cammerer-Kroh (1995) and the Kato-Tsuchida (1981) structures of melanoidin. **(Author's abstract)**

Keywords: *Chemistry, Color pollutant, Melanoidin, Maillard reaction, Bacterial decolorization, Computational chemistry, Ozonation, Hyperchem, AUTODOCK, Docking, Solvation*

Determination of Cd and Pb in fruit juice, bottled tea, condiments and dried fish samples using ICP-MS

Rodriguez, Irene B. , Dimaya, Danica Angeline , Cervas, Lowela Lou M. , Rumbaoa, Rowena Grace , Tia, Eugene S.F. , Bucsit, Melanie A. , Magbitang, R

Metals like cadmium (Cd) and lead (Pb) are introduced in the environment through natural processes and anthropogenic activities and may end up being present in food, where these metals may pose health risks. A method suitable for the simultaneous determination of Cd and Pb in various matrices of foodstuffs was validated and applied to different samples including fruit juice, bottled iced tea, several types of condiments, and in edible tissues of dried fish locally produced in the Philippines. Fruit juice and bottled iced tea samples were filtered prior to quantification of metals using inductively coupled plasma mass spectrometry (ICP-MS). Condiments and dried fish samples were mineralized using microwave-assisted nitric acid digestion before subsequent metal detection with ICP-MS. The method was validated using certified reference materials DORM 3 and NIST 1643e, and evaluation of recovery of spiked samples. The method was linear in the concentration range 0.01 to 500 $\mu\text{g L}^{-1}$ with correlation coefficients of 0.999 for both analytes. The estimated detection limits were 0.060 $\mu\text{g L}^{-1}$ and 0.186 $\mu\text{g L}^{-1}$ for Cd and Pb, respectively. The determined levels of Cd in fruit juice were in the range 0.06 ± 0.01 to $0.67 \pm 0.01 \mu\text{g L}^{-1}$, and Pb was detected in only one sample at $0.37 \pm 0.02 \mu\text{g L}^{-1}$. For the bottled iced tea samples, Cd was detected in only one sample ($0.13 \pm 0.02 \mu\text{g L}^{-1}$) while none of the samples had detectable Pb concentration. For the condiments, the determined Cd levels were in the range 0.83 ± 0.06 to $306.13 \pm 2.52 \mu\text{g L}^{-1}$, whereas the determined Pb levels were in the range 2.14 ± 0.38 to $67.45 \pm 7.76 \mu\text{g L}^{-1}$. For the dried fish samples, the Cd levels determined were in the range 2.00 ± 0.21 to $231.67 \pm 5.32 \mu\text{g kg}^{-1}$ and that for Pb were in the range 2.38 ± 0.70 to $113.29 \pm 2.25 \mu\text{g kg}^{-1}$. These determined levels in different foodstuffs highlight the need for routine monitoring of these contaminants. **(Author's abstract)**

Keywords: *Chemistry, Trace metal, Fruit juices, Condiments, Dried fish, Microwave digestion, ICPMS*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 1, 1-14
2013,
(Filipiniana Analytics)
Fil(S) Q1.A3 S35 25/1 2013

0321

Determination of monochloroacetic acid in swimming pool water by ion chromatography-conductivity detection

Espino, Maria Pythias B., Mendoza, Jamie P.

In this study, an analytical method involving ion chromatography with conductivity detection was developed and optimized for the determination of monochloroacetic acid in swimming pool water. The ion chromatographic method has a detection limit of 0.02 mg L^{-1} and linear range of 0.05 to 1.0 mg L^{-1} with correlation coefficient of 0.9992 . The method is reproducible with percent RSD of 0.052% ($n=10$). The recovery of monochloroacetic acid spiked in different water types (bottled, tap and swimming pool water) ranged from 28 to 122% . In dilute solutions, chloride and bromide were simultaneously analyzed along with monochloroacetic acid using the optimized method. Chloride and bromide have detection limits of 0.01 to 0.05 mg L^{-1} , respectively. The usefulness of the ion chromatographic method was demonstrated in the analysis of monochloroacetic acid in swimming pool water samples. In such highly-chlorinated samples, an Ag/H cartridge was used prior to the ion chromatographic determination so as to minimize the signal due to chloride ion. Monochloroacetic acid was detected in concentrations between 0.020 and 0.093 mg L^{-1} in three of the six swimming pool water samples studied. The presence of monochloroacetic acid in the swimming pool water samples suggests the possible occurrence of other disinfection by-products in these waters. **(Author's abstract)**

Keywords: *Chemistry, Monochloroacetic acid, Chloride, Bromide, Water, Ion chromatography*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 2, 51-66

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 25/2 2013

0322

Development of chitosan-calcium carbonate composite from kitchen waste for oil spill remediation

Ongo, Emelda A., Valdecanas, Candy, Guittierrez, Bernard Jude, Capule, Mario Jose, Adan, Reymundo

Oil spill and solid waste disposal are some of the pressing environmental problems of the country. Thus, utilization of solid waste as high value sorbent material for oil spill is gaining importance. Chitosan and calcium carbonate are among the excellent candidate for the adsorption of oil spill due to their unique properties such as biocompatibility, biodegradability and intrinsic porous structure. In this study, chitosan containing calcium carbonate was synthesized from waste shrimp skin while calcium carbonate was obtained from chicken eggshells. Chitosan was dissolved in acetic acid

solution, mixed with powdered calcium carbonate and then dried to produce the composite film. The amount of chitosan and calcium carbonate were varied ($50:50$; $40:60$ and $30:70$) to determine the optimum mixture that will offer best results in the removal of oil from water. Surface characterization using optical microscope and scanning electron microscopy (SEM) exhibited the detailed morphology and uniform dispersion of the needle-shaped inorganic mineral (CaCO_3) on the

organic matrix (chitosan). XRD analysis showed sharp peaks at $2\theta = 9.40^\circ, 29.7^\circ, 37.3^\circ$ which are the characteristics of crystalline chitosan and calcite polymorph of CaCO_3 . Treatability study of oil spill remediation using chitosan-calcium carbonate composite film was carried out by preparing a simulated diesel oil contaminated water sample which was allowed to pass through the composite film by external pressure. Oil removal efficiency test of different CaCO_3 -chitosan composite films demonstrates that 50:50 composite film is the optimum ratio that yield a highest oil removal efficiency of 99%. The oil adsorption capacity of 50:50 chitosan- CaCO_3 composite film is 4.03g/g which is 4 times of its weight.

(Author's abstract)

Keywords: *Chemistry, Chitosan, Calcium carbonate, SEM, Oil removal efficiency, Adsorption capacity*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 144

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0323

Effect of ingredient loading on surface migration kinetics of additives in vulcanized natural rubber compounds

Maningding, Marienne , de Torres, Christia Angeline , Pajarito, Br

Surface migration kinetics of chemical additives in vulcanized natural rubber compounds were studied as function of ingredient loading. Rubber sheets were compounded according to a 2^{12-8} fractional factorial design of experiment, where ingredients were treated as factors varied at two levels of loading. Amount of migrated additives in surface of rubber sheets was monitored through time at ambient conditions. The maximum amount and estimated rate of additive migration were determined from weight loss kinetic curves. Attenuated total reflection-Fourier transform infrared (ATR-FTIR) spectroscopy and optical microscopy were used to characterize the chemical structure and surface morphology of sheet specimens during additive migration. ANOVA results showed that increased loading of reclaimed rubber, CaCO_3 , and paraffin wax significantly decreased the maximum amount of additive migration; by contrast, increased loading of used oil, asphalt, and mercaptobenzothiazole disulphide (MBTS) increased the maximum amount. Increased loading of sulfur, diphenylguanidine (DPG), and paraffin wax significantly decreased the additive migration rate; increased loading of used oil, asphalt, and stearic acid elicited an opposite effect. Comparison of ATR-FTIR spectra of migrated and cleaned rubber surfaces showed significant variation in intensity of specific absorbance bands that are also present in infrared spectra of migrating chemicals. Paraffin wax, used oil, stearic acid, MBTS, asphalt, and zinc stearate were identified to bloom and bleed in the rubber sheets. Optical micrographs of migrated rubber surfaces revealed formation of white precipitates due to blooming and of semi-transparent wet patches due to bleeding. **(Author's abstract)**

Keywords: *Chemistry, Rubber, Migration, Blooming, Bleeding, Vulcanizate, Ingredient loading*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 2, 21-39

2014,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 26/2 2014

0324

Effect of nitrogen and silicon levels on growth, yield attributes, and yield of rice in Alfisols

Singh, K.K. , Singh, R., Sing

A sufficient supply of silicon in the soil is required for healthy growth and higher productivity of the rice (*Oryza sativa* L.) crop. Applied Si seems to interact favorably with other nutrients (N, P, and K) and offers the potential to improve efficiency in terms of yield response. Silicon helps rice plants to resist biotic stresses (insect pests and fungal diseases) and tolerate abiotic stresses (Al, Fe, and Mn toxicities). It also helps reduce cuticular transpiration and, to some extent, crop lodging caused by excessive N supply (Savant et al 1997). It has been observed that rice plants in the most productive ecosystem of Varanasi region, which is identical to that of the northeastern plain zone of India, have started showing a tendency to lodge, even with the use of nonlodging, high-yielding, and short-duration varieties at the recommended fertilizer doses. It is therefore essential to understand the relationship between Si and N. This study aimed to determine the effects of N and Si levels on rice grown in Alfisols. **(Author's abstract)**

Keywords: *Chemistry, Nitrogen, Silicon, Yield attributes, Yield of rice*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 40-41

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0325

Effectiveness of cashew (*Anacardium occidentale* L.) nut shell liquid (CNSL) against wood-destroying organisms

Pelayo, Shirley A., Giron, Magdalena Y., Garcia, Carlos M., Carino, F. A., San Pablo, Marciana R.

The effectiveness of cashew nut shell liquid (CNSL) extracted by thermo-mechanical (TMP), mechanical-pasteurized (MPP) and chemical processes was evaluated against five wood-destroying fungi, i.e., *Lenzites* sp., *Lenzites striata*, *Fomes lividus*, *Botryodiplodia theobromae* and *Aspergillus niger*, under laboratory conditions.

Generally, growth of the five fungi was significantly reduced by the TMP, MPP and ethanol-extracted CNSL. Increasing the concentration of extracted CNSL improved the performance of the compound, with an increase in the degree of inhibition of up to 81%. The inhibitory effects of hexane (CEH)- and toluene (CET)-extracted CNSL ranged from minimal to none at all.

Mortality rates of 33-100% in drywood termites (*Cryptotermes dudleyi*) and 100% in subterranean termites (*Microcerotermes los banosensis*) were obtained upon exposing these insects to CNSL extracted through various methods. Crude CNSL extract caused 5- 100% mortality in powder-post beetles (*Dinoderus mtutus*).

TMP-CNSL, the most promising extract against wood-destroying organisms, was separated into 10 components and further evaluated against the five test fungi. A marked inhibitory effect against wood decay fungi was obtained from Components 1 and 3. On the other hand, termites suffered high mortality rates when exposed to Component 3.

(Authors' abstract)

Keywords: Chemistry, Cashew nut shell liquid (CNSL), Wood-destroying organisms, Termites, Powder-post beetles

FPRDI Journal, Volume No. 26 Issue No. 1-2, 28-38

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0326

Effects of activated and unactivated carbonized rice hull (acrh & ucrh) in organic fertilizer production

Pastor, Floramante C., Sacabin, Gemmalou P., Cuanang, Joanne C., Lazo, Donna R., Mamuad, Roselle Y., Nisperos, Saturnina F., Gonzales, Arlene L., Farinas, Honeylou F., Farinas, Antonio R., Maghirang, Ronaldo G.

Carbonized Rice Hull (CRR) is an agricultural biomass that is used as an additive for organic fertilizer production. Activation of CRH enhances its natural gas and odor absorbent properties. This study evaluated the effect of applying

activated and unactivated CRR in organic fertilizer production and compares it with the conventional method (control) with regards to gas (i.e. carbon dioxide, carbon monoxide, total volatile organic compounds, nitrogen dioxide and ammonia) and odor emissions, duration of decomposition, nutrient composition and recovery rate.

Results showed that during decomposition, ACRH is more effective than UCRR and the control in limiting gas and odor emissions. ACRH has faster decomposition period (32 days) than UCRR (45 days) and the control (55 days). The highest recovery rate (or amount of harvested compost) was observed in ACRH (65.16%), followed by UCRR (59.92%). The control has the lowest (45.81 %). However, the nutrient composition of the compost, expressed in total percent Nitrogen, Phosphorous and Potassium (NPK) content, was observed to be highest in the control (8.82%). This content passes the standard (5 to 7%) of the Fertilizer and Pesticide Authority (FPA) in order to be categorized as organic fertilizer. The total NPK content of the ACRH and UCRR did not pass the FPA standard (3.47% and 3.85%, respectively). The results indicated that ACRH and UCRR significantly regulate gas and odor emission but does not improve the nutrient content of the organic fertilizer. Appropriate amount of CRR that does not significantly affect the nutrient content must be further explored. **(Authors' abstract)**

Keywords: *Chemistry, Activated carbonized rice hull, Organic fertilizer, Gas, Odor*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 154
(Filipiniana Analytics)
Fil(S) Q149.P5 N38 37/1 2015

0327

Embryotoxicity of copper and zinc in tropical sea urchin *Tripneustes gratilla*

Galapate, Ritchelita P. , Edullantes, Br

The study determined the individual toxicity of copper (Cu) and zinc (Zn) in sea urchin *Tripneustes gratilla*. Bioassay using inhibitions on fertilization, early cleavage, mid cleavage, late cleavage and blastulation as endpoints involved exposure of viable gametes to Cu and Zn for 0.5, 3, 6, 9 and 12 h, respectively. Inhibitions increased significantly with concentration of Cu and Zn. Probit analysis estimated EC₅₀ values for Cu and Zn, respectively, at 32 and 67 µg·L⁻¹ on fertilization; 31 and 93 µg·L⁻¹ on early cleavage; 43 and 61 µg·L⁻¹ on mid cleavage; 42 and 42 µg·L⁻¹ on late cleavage; and 20 and 44 µg·L⁻¹ on blastulation. Results showed that toxicity of Cu is significantly higher (p<0.05) than that of Zn in all developmental stages, except in late cleavage. Also, the inhibitions elicited by Cu showed sensitivity to life stages. This study provided

evidence on heavy metal species-sensitive, concentration-dependent and stage-specific inhibitions on embryonic development in *T. gratilla* to Cu and Zn. **(Author's abstract)**

Keywords: *Chemistry, Embryotoxicity, Sea urchin development, Individual toxicity, Heavy metals*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 1, 25-40

2014,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 26/1 2014

0328

Extractable protein and residual powder analysis of Philippine-made natural rubber medical gloves

Bangoy, Alan Gregory S., Ocreto, Stella P.

This study was conducted to measure the total extractable proteins and residual powder content of Philippine rubber medical gloves. The extractable protein and residual powder of two selected Philippine made latex surgical gloves (Mcbride and Dunford) and two Standard Malaysian Gloves (Maxter and Universal) were determined using the RRIM (MS1392: 1998) Modified Lowry Method for the Determination of Extractable Protein in Latex Products and ASTM (D6124) Standard Method for the Determination of Residual Powder on Medical Gloves.

The total water extractable protein and residual powder content of Mcbride gloves were 7441.7ug/glove, respectively, which were found higher than the UAFDA limit (1200ug/glove for extractable protein and 0.12g/glove on residual powder). The total extractable protein content of the Dunford gloves (215.2ug/glove) was lower than the USFDA limit and comparable with the imported Standard Malaysian Glove (Maxter). However, its residual powder content (0.14g/glove) was higher than the USFDA limit. **(Authors' abstract)**

Keywords: *Chemistry, Allergens, Latex proteins, Natural rubber, Powdered gloves, Powder-free gloves*

USM R&D Journal, Volume No. 13 Issue No. 2, 211-218

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0329

Extraction and property evaluation of limonene from Manila elemi (*Canarium* spp.) oil as air freshener

Palanginan, Irma I.

Manila elemi oil, a by-product of processing Manila elemi (*Canarium* spp.) resin, was subjected to steam distillation. It yielded 27.38% essential oil distillate. Results of gas chromatography (GC) showed that the distillate contained 74.60% limonene, 17.41 % α -phellandrene and 1.72% α -pinene. An experimental air freshener was formulated consisting of 300 ml isopropyl alcohol, 640 ml propylene glycol and 60 ml of the distillate.

The experimental air freshener volatilized more slowly than the air freshener from commercial limonene (0.19 mg/min vs. 0.23 mg/min, respectively). Tenacity-wise, the experimental air freshener lasted longer on human skin and in distilled water than the one from commercial limonene (7 min vs. 5 min and 72 min vs. 61 min, respectively), but the latter was more tenacious in tissue paper than the former (8 min vs. 6 min, respectively). Both showed the same tenacity on Whatman filter paper and cotton fabric at 4 min.

The low volatility of Manila elemi oil distillate, which is attributed to its film-forming capacity, a characteristic of natural resins, and its high tenacity in water make it a suitable component of water-based air fresheners and related products. **(Authors' abstract)**

Keywords: *Chemistry, Manila elemi, Canarium spp., Manila elemi oil, Limonene*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 11-19

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0330

Fabrication and characterization of porous silicon for photonic applications

Gonzales, Rhona Olivia M. , Cabello, Neil Irvin F. , . Anguluan, Eloise P. , Saplagio, Niel Gabriel E , Somintac, Armando S. , Mabilangan, Arvin I., Salvador, Arnel

Porous silicon (PSi) thin films from p-type silicon (100) substrates were fabricated using a simple table top electrochemical etching setup with a 1:1 HF:EtOH electrolyte solution. Porous silicon films with different morphologies and optical properties were achieved by varying the etching parameters, such as HF concentration, etching time and anodization current. It was observed that the film thickness of the fabricated PSi increased with etch time and HF concentration. The etch rate increased with the applied anodization current. Reflection spectroscopy at normal incidence

was used to determine the refractive indices of the fabricated films. Using the Sellmeier equation, the chromatic dispersion of the films was obtained for different HF concentrations and anodization currents. **(Author's abstract)**

Keywords: *Chemistry, Silicon, Anodization, Porous materials, Photonic applications*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 1, 15-28

2013,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 25/1 2013

0331

Fatty acid grafted coir dust as oil spill absorbent

Briones, Annabelle V., Mallillin, Armando T., de Vera, Carlos J., Mendoza, Charlene G., Monsada, Araceli

The study is about the modification of coir dust to obtain low cost absorbent for diminishing an oil-products spill in seawater. The efficacy of surface modification of coir dust by fatty acid (stearic acid) and vegetable oil (coconut oil) were evaluated. Prior to modification, the coir dust was obtained by separating the coir from the husk of coconut. It was ground followed by screening and sieving to obtain a uniform size. The desirable grain size of the coir dust was particularly preferred to be in the range of about 0.5-3 mm with moisture content of 12.03% (± 0.06). Alkali treatment was carried out by soaking the coir dust with 0.015% sodium hydroxide overnight. The moisture content of the alkali treated coir dust was determined at 7.0% (± 0.51). The alkali treated coir dust was then analyzed for tannin content. Results showed a decrease of about 61 %. Untreated coir dust had 3.64% (± 0.02) of tannin while the treated coir dust had 1.424%

(± 0.07) of tannin. The alkali treated coir dust was then coated with stearic acid and coconut oil with a ratio of 1:3:0.1. The fatty acid grafted coir dust was subjected for IR analysis to confirm the presence of stearic acid. There was no difference observed in the spectra even at varying concentrations of stearic acid. The result is also in conformity with the spectra of the pure stearic acid. The surface structure of coir dust treated with alkali and acid were analyzed using a microscope. Untreated coir dust and treated with water gave a more compact structure than the coir dust treated with alkali. The results of the absorbency test by sorption method using seawater contaminated with diesel showed an absorbency of 33.3% for the pelletized form while the powder form is 73.0%. Using seawater contaminated with lube oil showed 63.5% absorbency in pellets and 58.0% for the powder. The pelletized grafted coir dust can absorb more lube oil than diesel while the powder form can absorb diesel oil. **(Author's abstract)**

Keywords: *Chemistry, Coir dust, Fatty acid, Oil-spill, Absorbent, Sorption method*

0332

Formation of highly antimicrobial copper nanoparticles by electroless deposition in water

Amores, Kathy Lois S. , Balela, Mary Donnabe

Metallic copper (Cu)nanoparticles (CuNPs)with mean diametersranging from 37 nm to 44 nm were synthesized by electroless deposition (chemical reduction)in an aqueous solution at 353 K. Cupric oxide (CuO) powder, which has low solubility in water, was used as the Cu(II) precursor. Gelatin and hydrazine (N₂H₄) were employed as the protective agent and reductant, respectively. Small spherical Cu nanoparticles having mean diameter of 37 nm were formed using 2.25 wt% gelatin. In the absence of gelatin, large Cu nanoparticles of 377 nm in mean diameter were produced. Both cuprous oxide (Cu₂O) and metallic Cu peaks were identified from the X-ray diffraction pattern of the samples. The results suggest that gelatin hinders the growth of Cu nanoparticles in solution and protects the nanoparticles from oxidation. Interestingly, the as-prepared

Cu nanoparticles exhibit strong antimicrobial activity against *Escherichia coli* and *Staphylococcus aureus*. **(Author's abstract)**

Keywords: *Chemistry, Copper nanoparticles, Electroless deposition, Hydrazine antimicrobial*

0333

Formulation of facial serum using semi-purified extract of *Premna odorata* blanco (Alagaw) leaves

Villarama, Maria Concepcion F., Sinon, Danica Alexis T., Parungao, Michael Eugene F., Cruz, Luzviminda G., Dungca, Julieta Z.

Facial serum was formulated using partially purified verbascoside from *Premna odorata* Blanco leaves as active component. Extraction was carried out using 80% ethanol with a yield of 46.20%. The presence of verbascoside as active component was confirmed through TLC, HPLC and FTIR. Further, the anti-oxidant activity of the semipurified extract was tested using the DPPH assay. The serum was formulated using 10% w/w of the semipurified extract. The efficacy of the formulation was evaluated using animal model (32 Sprague Dawley rats) and using 30 human volunteers as subjects (ages 25-65 years old). The human subjects applied the formulation onto their face at night time for a period of one month. Stability and safety of the product were also evaluated. The product was found to possess antioxidant property as shown by the 78.45% inhibition in the DPPH assay as compared to the 77.17% inhibition of the Vitamin C standard. The formulated facial serum was also found to be stable for 2 years at room temperature and did not produce any signs of skin irritation when applied

as confirmed in the dermal patch test. Over-all the formulated facial serum was evaluated extremely effective (mean= 4.99) by the 30 human subjects using a self-made assessment tool. The tightening of the skin as reported by the participants was confirmed by the enhanced collagen production in the dermal layer of the skin section stained with Masson's Trichrome stain for collagen. **(Author's abstract)**

Keywords: Chemistry, *Premna odorata*, Verbascoside, Semi-purified, collagen-enhancing, Anti-oxidant

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 151

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0334

Fractionation of enzymatic *Citrofortunella microcarpa* extract through supercritical carbon dioxide (SC-CO₂)

Malaluan, Roberto M., Malaluan, Lloyd Arvin M.

Calamansi, *Citrofortunella microcarpa* extract are commonly used for sauce mix together with any kind of vinegar or soy sauce in any Filipino dishes. In this study, an enzymatic extract from DA-PIU was subjected for supercritical carbon dioxide (SC-CO₂) fractionation and identifies volatile component together with fatty acid profile in different fractions. There are three fractions obtained from extraction, 10 Megapascal (MPa), 20MPa and 30MPa respectively. Ten Megapascal obtains the highest oil yield at 29.83%, followed by 20MPa at 13.13% and the least 30MPa with 7.85%, these are done in triplicates. Ten Megapascal sample was subjected for gas chromatography-mass spectrometry and obtained eleven compounds in which (+)-alpha-terpineol and geranyl acetate as major compounds. For fatty acid profiling, pure crude enzymatic, 20MPa and 30MPa sample was subjected to gas chromatography (GC) and was compared. Essential fatty acid Linoleic (C18:2) was highest in 30MPa sample followed by pure crude and 20MPa in

terms of weight by weight. Linolenic (C18:3), also an essential fatty acid was highest at 20MPa and 30MPa compared from the original sample which is the pure crude enzymatic. There are other fatty acid which was found in 20 and 30MPa sample that was not found in pure crude enzymatic sample and vice versa. **(Author's abstract)**

Keywords: *Chemistry, Supercritical carbon dioxide fractionation, Enzymatic caiamansi, Gas chromatography, Mass spectrometry, Fatty acid profiling*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 158

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0335

Geochemical characterization of copper tailings after legume revegetation

David, Carlos Primo C. , Domingo, Justine Pe

Knowledge on the geochemistry of mine tailings is important in understanding the challenges in establishing vegetation cover on tailings dumps and mined out areas. In this study, the mineralogy and trace element composition of copper tailings were examined. Two legume species, *Calopogonium mucunoides* and *Centrosema molle*, were utilized to investigate the possible effects of these plants in the geochemical development of mine tailings into soil-like material. The initial mineralogical and chemical analysis of the tailings samples indicated poor conditions for plant growth—minimal levels of major nutrients and organic matter as well as elevated copper concentrations. Despite these conditions, the two legume species exhibited good growth rates. Both legumes have likewise significantly reduced heavy metal concentrations in the tailings, indicating the possibility of metal hyperaccumulation in the plant tissue. The mineral composition has been retained even after revegetation; nevertheless, breakdown of primary minerals and subsequent formation of clay minerals were detected. These results provide insights on the transformation of toxic materials into habitable substrates for sustained plant growth. **(Author's abstract)**

Keywords: *Chemistry, Tailings characterization, Mineralogy, Heavy metals, Revegetation*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 2, 61-71

2014,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 26/2 2014

Highly convergent synthesis of chlorobenzylated chalcone-azole hybrids with anti-staphylococcal, anti-tyrosinase and anti-acetylcholinesterase activity

Garcia, Julius Adrie, Verano, Aldrick, Sorne, Ian Kenneth, Macabeo, Allan Patrick G.

Many biologically active natural products and pharmaceuticals prominently contain the chalcone substructure. The Michael system taking the form of an α,β -unsaturated carbonyl motif make it an excellent acceptor functionality to irreversibly bind to cellular nucleophiles, leading to successful inhibition of enzymes involved in biochemical pathways underlying a number of diseases. A series of chlorobenzylated chalcone-azole derivatives were prepared and probed for their inhibitory activities versus *Staphylococcus aureus*, tyrosinase and acetylcholinesterase. The compounds were obtained through a convergent approach involving Williamson etherification, iodine-promoted oxidative azole synthesis and Claisen-Schmidt reactions. Azole substructures include simple to substituted imidazolines and 2-oxazoline. All compounds were obtained in moderate to good yields and characterized using IR, MS and NMR spectroscopy. Microplate broth dilution inhibitory assays of the compounds versus *S. aureus* revealed MIC₅₀'s ranging from 8.98 to 24.04 $\mu\text{g/mL}$. Using the dopachrome colorimetric method to assess inhibitory activity against tyrosinase, IC₅₀ values ranging from 0.087 to 0.229 mg/mL were observed. For comparison, the standard drugs streptomycin (MIC₅₀ = 6.86 $\mu\text{g/mL}$) and kojic acid (IC₅₀ = 0.074 mg/mL) were used. Against acetylcholinesterase, IC₅₀ values ranging from 0.20 to 0.84 mg/mL were noted for all derivatives using the modified Elman assay (galanthamine IC₅₀ = 0.18 mg/mL). Our results indicate the potential of chalcone-azole hybrids as anti-cancer, anti-infective and anti-Alzheimer's agents. **(Author's abstract)**

Keywords: Chemistry, Chalcone-azole, Convergent synthesis, Anti-Staphylococcus, Anti-tyrosinase, Anti-cholinesterase

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 159

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Managing iron toxicity in acid sulfate rice soils by integrating genetic tolerance and nutrition

Thampatti, K.C. Manorama, Cherian, S. | Iyer,

Iron toxicity (Fe) is a major problem in acid sulfate rice soils in the tropics. It is a physiologically complex nutrient disorder and deficiency in several other nutrients-especially P, K, Mg, and Zn-has been shown to play a major role in its occurrence (Sahu 2001). Iron toxicity is caused by excess uptake of Fe and is controlled by various factors such as

genetic tolerance, active Fe content, soil nutritional status, and soil reaction rather than by total Fe content. Deficiencies in Ca, Mg, and Mn are rarely observed in lowland rice, but those in P, K, and Zn deserve special attention in order to reduce Fe toxicity (Sahwarat 2000). Hence, to manage Fe toxicity, an integrated approach involving the use of Fe-tolerant rice varieties, soil and water management, and plant nutrition is more appropriate. This study aimed to determine the effects of the integration of genetic tolerance (by selecting varieties that vary in tolerance) with nutrition (through different levels of fertilizers and lime) on iron toxicity and its influence on rice yield in low-lying acid sulfate rice soils of Kuttanad, Kerala, India. **(Author's abstract)**

Keywords: *Chemistry, Iron toxicity, Genetic tolerance, Nutrition*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 37-39

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0338

A modeling approach to optimize nitrogen dose for drum-seeded wet rice

Kailasam, C. , James Martin, G. , Subramani

Nitrogen is critical in any fertilizer management program for rice as it plays an important role in realizing the yield potential of high-yielding varieties (Budhar and Palaniappan 1996). As a cereal, rice is highly responsive to N application. In India, transplanting has been the traditional system of crop establishment, but cultivation of wet-seeded rice is gaining momentum because of high demand for labor during peak seasons for transplanting and availability of water for shorter periods. The N dose for wet-seeded rice is currently the same as that applied in transplanted rice. Our investigation was conducted to find the optimum N dose for drum-seeded wet rice. **(Author's abstract)**

Keywords: *Chemistry, Nitrogen, Rice, Cultivation*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 41-42

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0339

Nitrogen management for direct wet-seeded rice

Thilagavathi, T. , Ramanath

Direct seeding is generally practiced under semidry conditions in Tamil Nadu, India. However, the use of direct-seeded rice for lowland areas is gaining importance because of water scarcity, failure of monsoon, paucity of labor, and escalating labor cost. Proper nutrient and irrigation management strategies need to be developed for direct wet-seeded rice. An experiment was carried out to study the effect of time and rate of N application on yield of direct wet-seeded rice under lowland conditions. **(Author's abstract)**

Keywords: *Chemistry, Nitrogen, Water scarcity, Direct wet-seeded rice, Irrigation management*

IRRN International Rice Research Notes, Volume No. 30 Issue No. 1, 44-45

2005,

(Filipiniana Analytics)

Fil(S) SB191.R5 I81 30/1 2005

0340

Phytochemical screening and preliminary analysis of the anti-oxidant activity of *Sargassum crassifolium* J.G. Agardh

Madigal, James Paul T., Agngarayngay, Zenaida M.

Healthy diet is often associated with lower risks of dreadful diseases. This principle has been attributed to the presence of various forms of phytochemicals and antioxidants present in the foods. The present investigation deals with the characterization of the phytoconstituents and evaluation of the antioxidant activity of *S. crassifolium*. There were five different extractants used in the phytochemical screening i.e. ethanol, methanol, hexane, ether and 1 % hydrochloric acid and three different

solvents i.e. aqueous, ethanol and methanol were used for the antioxidant assays Forty five tests were conducted for the presence or absence of phytoconstituents in the seaweed extracts. Thus, out of 45 tests, 19 gave positive results and the other extracts gave negative results. The 19 positive results showed the presence of varying degrees of alkaloids, coumarins, flavonoids, tannins and terpenoids. The antioxidant activity of *S. crassifolium* extracts was evaluated by using DPPH (2, 2-diphenyl-1-1 picrylhydrazyl) assay and Total phenolic content assay. The tested extracts exhibited a dose-dependent free radical scavenging action against DPPH radical. The decreasing of purplish visible color of DPPH compound when mixed with the different concentrations of the seaweed extracts was evident. This reaction indicates that *S. crassifolium* contains free radical chain formation mechanism making it possible as antioxidant agent. Total phenolic content was evaluated following Folin-Ciocalteu method. Result suggests

that phenolic content and antioxidant activity are highly correlated with a correlation coefficient (R^2) of 0.963. The antioxidant activity of *S.*

crassifolium might be related to its phenolic substrates. The results of the present study indicate that *S. crassifolium* has the potential as ingredient for functional food or medicinal agent in pharmaceutical industry. **(Author's abstract)**

Keywords: *Chemistry, Sargassum, Phytochemical screening, Anti-oxidant activity, DPPH assay, Total phenolic content assay*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 162

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0341

Preparation and characterization of a novel wound dressing based on silver nanoparticle-impregnated bacterial cellulose-aloe vera

Ventigan, Sarla V., Santiago, Karen S., Balitaan, Jolleen Natalie I.

Ideal wound dressings stimulate wound healing, control unpleasant odors, and provide antimicrobial action in wounds. However, most traditional wound dressings exhibit exudate leaking which increases the risk of infection and delayed wound healing of tissues. This study aims to develop and characterize a bio-composite of bacterial cellulose and aloe vera having the ideal features of a wound dressing from *Acetobacter xylinum*-activated culture medium supplemented with various aloe vera concentrations and the film which exhibits the most uniform results is used for the incorporation of silver nanoparticle as an antibacterial agent.

The biopolymer composites of bacterial cellulose and aloe vera were developed by adding 0-50% aloe vera in the *A. xylinum*-activated coconut water during biosynthesis in static cultivation for 7 days. The films obtained after drying the membranes were named as bacterial cellulose-aloe vera (BC-A) films. The moisture content of the films reached 99% which indicates that the films may be suitable for providing a moist environment to facilitate wound healing fast. With the addition of aloe vera up to 30%

(v/v) during BC synthesis, it resulted in a significant improvement in the water absorption capacity of the films showing a WAC ratio of 36.46 (r.s.d.= 12.17%, n=3) compared to the unmodified film having a ratio of 9.03 (r.s.d.= 13.95%, n=3). However, the addition of aloe vera at a concentration greater than 30% (v/v) resulted in a decrease in pellicle formation which can be observed from the very weak properties of the films.

The BC-A (30%) displayed significantly improved properties in comparison to the unmodified BC film. Also, it is

capable of absorbing high amount of water than its weight and can act as a potential wound dressing which reduces irritation and inflammation. **(Authors' abstract)**

Keywords: *Chemistry, Bacterial cellulose, Aloe vera, Biopolymer composite*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 150

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0342

Preparation, characterization, and performance evaluation of pulse electrodeposited PtSn electrocatalyst on pedot/graphene-based electrode for direct ethanol fuel cell

Mendoza, Maria Krisandra L., Tongol, Bernard John V.

Fuel cell technology is one of the most remarkable fields of research due to its promising developments in the area of alternative energy sources. Improvement of the catalyst is one of the major difficulties faced in the feasibility of fuel cells. In this research, a method was optimized for the synthesis of PtSn nanocatalyst on PEDOT-modified graphene based electrodes for direct ethanol fuel cells. Pulse electrodeposited PtSn nanocatalyst on PEDOT-modified electrochemically exfoliated graphene was performed. The preparation of electrode was done in three steps.

First, a 20 μ L electrochemically exfoliated graphene (0.5 mg/mL) was drop-casted on the surface of glassy carbon electrode and the electrode was dried at 60°C. Second, potentiodynamic electropolymerization of 3,4-ethylenedioxythiophene (EDOT) was done using 0.01 M EDOT and 0.10 M HClO₄ on a graphene-based electrode at a potential range from 0 to 1.10 V (vs. Ag/AgCl) for 20 cycles at a scan rate of 50 mV•s⁻¹. Lastly, pulse deposition of PtSn on the PEDOT/graphene electrode was done using 10 mM H₂PtCl₆•6H₂O in 0.10 M H₂SO₄ solution and 10 mM SnCl₂•2H₂O in 0.10 M HCl. Pulse deposition of PtSn nanoparticles was carried out using the following optimized parameters: -1.235 V of pulse potential for Pt and 0.362 V of pulse potential for Sn, with 0.1 s on-time and 5 s off-time at 700 pulses. Electrocatalytic activity of the prepared nanocomposites was evaluated and compared towards ethanol oxidation using 1.0 M ethanol in 0.10 M H₂SO₄ electrolyte solution from E = 0.0 V to E = 0.90 V (vs. Ag/AgCl) at a scan rate of 100 mV•s⁻¹. **(Author's abstract)**

Keywords: *Chemistry, Graphene, Electropolymerization, Pulse deposition, Direct ethanol fuel cell, PtSn electrocatalyst*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 148

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

A rapid method for simultaneous determination of arsenic, cadmium and lead in drinking water by inductively coupled plasma mass spectrometry

Torres, Joshua Rey P., Banaag, Ma. Krystell G. , Rodriguez, Irene B

The raw water source of drinking water in most areas in the Philippines is typically river water and in some cases groundwater. These sources are prone to elevated levels of metals and metalloids that may cause exposure of the general population when the treatment of the water is inadequate. This work presents a simple method based on EPA Method 200.8 for the determination of total concentrations of arsenic (As), cadmium (Cd) and lead (Pb) in drinking water using inductively coupled plasma-mass spectrometry (ICP-MS) as the element-selective detector. This was applied in the determination of these elements in the water supply in Metro Manila, Philippines. The method detection limits were $0.095 \mu\text{g L}^{-1}$, $0.043 \mu\text{g L}^{-1}$, and $0.114 \mu\text{g L}^{-1}$ for total As, Cd and Pb, respectively.

The method was validated using National Institute of Standards and Technology (NIST) 1643e certified reference material for trace elements in water and determined values were $60.4 \pm 0.5 \mu\text{g L}^{-1}$, $6.7 \pm 0.1 \mu\text{g L}^{-1}$, and $19.6 \pm 0.5 \mu\text{g L}^{-1}$ for As, Cd and Pb, respectively. These determined values were in good agreement with the certified values in the reference material. Analysis of actual drinking water samples showed that most samples did not exceed the limit of the Philippine drinking water standard for the elements. **(Authors' abstract)**

Keywords: *Chemistry, Arsenic (As), Cadmium (Cd), Lead (Pb), Inductively coupled plasma-mass spectrometry (ICP-MS), Metro Manila, Drinking water*

Science Diliman: a journal of pure and applied sciences, Volume No. 22 Issue No. 1, 1-8
2010,
(Filipiniana Analytics)
Fil(S) Q1.A3 S35 22/1 2010

Studies on the structure and biological activity of the chemical constituents of the leaves of *Ipil*, *Handalamay* and *Lipang aso*

Uy, Mylene M., Rivera, Anita P.

Purification of the respective crude chloroform fractions of *Ipil*, *Handalamay* and *Lipang aso* through silica gravity column chromatography employing appropriate solvent systems have yielded a number of sub-fractions.

Brine shrimp lethality tests of selected sub-fractions revealed some of them to have very remarkable cytotoxicities against the brine shrimp *Artemia salina*. The highest cytotoxicity was exhibited by the *Ipil* sub-fraction **IBC4.4** which has acute LC₅₀ range value of 59.43-61.93 ppm followed by the *Handalamay* sub-fraction **PAC4.3** (acute LC₅₀ range=277.58-280.02 ppm) indicating that it only took six hours for these samples to kill 50% of the test animals. The next highest activities were showed by the *Ipil* sub-fraction **IBC4.2** (chronic LC₅₀ range value=146.94-149.42 ppm) followed by the *Handalamay* sub-fractions **PAC 4.3**, **PAC4.4** and **PAC4.8** (chronic LC₅₀ range values=277.58.42-280.02, 412.77-414.83 and 415.17-417.23 ppm, respectively) signifying that the samples took twenty-four hours to kill 50% of the test animals.

The HPLC purification of a *Lipang aso* sub-fraction has lead to the isolation of **24-ethylcholesterol** whose structure was determined from the NMR spectral data.

Almost all of the sub-fractions obtained exhibited radical-scavenging activity against the free-radical 2,2-diphenyl-1-picrylhydrazine (DPPH) indicating that the samples possess antioxidant potentials.

Infrared spectroscopic measurements revealed the presence of vinyl, carboxyl, hydroxyl, nitro and ether functionalities in the samples.

Phytochemical tests showed that saponins, flavonoids and alkaloids are found in all three medicinal plants. However, tannins are found only in *Ipil* and *Handalamay* while terpenoids are present only in *Ipil* and *Lipang aso*. (**Authors' abstract**)

Keywords: *Chemistry, Ipil, Handalamay, Lipang aso, Saponins, Alkaloids, Flavonoids*

NRCP Research Journal, Volume No. 11 Issue No. 1,
(Filipiniana Analytics)
Fil(S) Q179.9 N323 11/1 2011

0345

Synthesis of blue light-emitting polymers via transition-metal catalyzed hydrosilylation polymerization

Yamashita³, Dr. Hiroshi, De Leon, Mari

The hydrosilylation polymerization of diynes with dihydrosilanes proceeded smoothly with Palladium tricyclohexylphosphine (Pd-PCy₃), a combination of Tris-dibenzylidene acetone palladium (II) [Pd₂-(dba)₃] and Tris-cyclohexylphosphine [PCy₃], catalyst to give the corresponding poly(silylenedivinylenes) in good yields. The Polymer structures were characterized by Nuclear Magnetic Resonance (NMR) and Fourier higher molecular weights than those derived from meta-substituted diynes. Regardless of the substituents on the silicaon atom, similar absorption profiles were observed for polymers with para-linkage which absorb at 295-308 nm wavelength. The same is true for polymers with meta-linkage, however, absorption was detected at lower wavelengths. In dilute solutions, the polymers exhibited strong fluorescence emission in the blue region of the spectrum at λ_{max} 350-500 nm. Results of thermal analysis showed similar decomposition behavior for all the polymers (**Author's abstract**)

Keywords: Hydrosilytion polymerization, Blue light emitting polymers, Polymers, Chemistry

Samay Bulletin, Volume No. Issue No. , 21-32

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.1 2001

0346

Terpenoids from *Taraxacum officinale*

Ragasa, Consolacion Y., Apuada, Mary Jane, Rideout, John A.

Taraxacum officinale, commonly known as dandelion is reported to exhibit antimicrobial properties. The study was conducted to isolate the dichloromethane soluble constituents of the plant which may contribute to this property. The dichloromethane extract of the leaves of *Taraxacum officinale* afforded taraxasteryl acetate (1a), lupeol acetate (1b), taraxinic acid (2a), 11,13-dihydrotaraxinic acid (2b), phytol fatty acid ester (3), and squalene (4). The structures of 2a and 2b were elucidated by extensive 1D and 2D NMR spectroscopy, while 1a, 1b, 3, and 4 were identified by comparison of their ¹H and ¹³C NMR data with those found in the literature. The mixture of 1a and 1b indicated low activities against the bacteria: *E. coli*, *S. aureus*, *P. aeruginosa* and fungi: *C. albicans* and *T. mentagrophytes*. It was inactive against *B. subtilis* and *A. Niger*. (**Author's abstract**)

Keywords: Chemistry, *Taraxacum officinale*, Asteraceae, Taraxasteryl acetate, Lupeol acetate, Taraxinic acid, 11,13-dihydrotaraxinic acid, Squalene, Phytol fatty acid ester

NRCP Research Journal, Volume No. 10 Issue No. 1, 17-26

(Filipiniana Analytics)

Fil(S) Q179.9 N323 10/1 2009

Treatment of FPRDI's paper mill effluent in aerated charcoal beds

Mari, Erlinda L., Moran, Maria Salome R., Estudillo, Calvin P.

The colored effluent discharged by the Forest Products Research and Development Institute (FPROI) paper mill was treated by coagulating and aerating the resulting supernatant liquid in charcoal. Coagulation led to settling within 40 min and reduced the total suspended solids (TSS) of a pink effluent by 91 % to 55 mg/li, but biochemical oxygen demand (BOD) and chemical oxygen demand (COD) were still beyond standard limits for discharge to Class C waters. Treatment of the supernatant liquid in either wood or coconut (*Cocos nucifera* L.) shell charcoal bed at 100 g and 200 g charcoal, respectively, per liter of effluent for 7 days further reduced COD to 40-76 mg/ li, and BOD to 15-38 mg/ li. Color was not measured but the samples were almost as clear as tap water. **(Author's abstract)**

Keywords: *Chemistry, Effluent, Color, Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), pH, Coconut shell charcoal*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 20-27

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

X-ray diffraction analysis of strained InGaAs/GaAs superlattices grown on GaAs (001) substrates via molecular beam epitaxy

Somintac, Armando S. , Fernando, J

Strained In_xGa_{1-x}As/GaAs superlattices grown on GaAs(100) substrates via Molecular Beam Epitaxy (MBE) are studied. The samples are characterized using non-destructive X-ray diffraction (XRD) measurements and photoluminescence (PL) spectroscopy. The Indium mole fractions and the period thicknesses of the samples are determined using XRD analysis along with standard elasticity theory. Discrepancies in the values of the period thickness and In mole fraction are observed in one sample and are attributed to the generation of misfit dislocations and strain relaxation. XRD short-angle scans, carried out in four azimuthal angles to assess the quality of the superlattices, show that the quality of the samples grown with high In content is inferior compared to samples with low In mole fraction. Using the conventional finite square well model, the theoretical PL energy emissions are computed and compared with the

experimental PL emissions. The PL energy emissions of samples grown with higher indium content deviate significantly from theoretical PL emissions. These indicate that indeed the strains are relaxed in these samples. In addition, samples with high indium mole fraction show low-grade optical properties, e.g., low PL intensities and large full width at half maximum (FWHM). **(Author's abstract)**

Keywords: *Chemistry, X-ray diffraction analysis, InGaAs/GaAs superlattices, GaAs substrates, Molecular beam epitaxy*

WMSU Research Journal, Volume No. 30 Issue No. 1, 117-129

2011,

(Filipiniana Analytics)

Fil(S) AS539.5 R47 30/1 2011

EDUCATION

0349

Agri-based rural women entrepreneurs in the provinces of Batangas, Laguna, and Romblon, Philippines

Domingo, Lorna P. , Sulabo, Evangel

Entrepreneurial ventures have provided women in agri-based communities resource capabilities to cope with rising social and economic pressures on their families. Rural women entrepreneurs, mostly married and with college education, gleaned their entrepreneurial ideas outside their formal education, i.e. inclinations, needs, exposure, experiences, and influence of other people. Although a significant portion of them inherited their business from their parents, most of them decided to engage in business after consultation with their husbands and other people in the same business. Proprietorship was the most common type of business ownership. Trading, particularly selling of fresh, cooked or processed agri-based food items was the most popular type of business engaged in. The use of feasibility study or other form of written business plan was not commonly practiced and they determined the business feasibility of an enterprise “mentally.” Business earnings were determined mostly on the basis of expenses and sales of the business or on the mark-up for the items bought. The ambulant peddlers or vendors did not register their businesses because they considered these petty or “small time” businesses where income was only meant to meet the daily basic needs of their families. Lack of capital was considered the major impediment to their business growth. Majority of the rural women entrepreneurs were not aware of government units providing support or other forms of services to small entrepreneurs like them.

The rural women entrepreneurs viewed women as better business people than men contending that women possess

qualities favorable to business. They were moderate risk-takers, “imitative” type of entrepreneurs, and democratic in their style of business management. **(Authors' abstract)**

Keywords: *Education, Women - in agriculture, Business, Development,, Rural employment, Underground economy, Poverty, As change agents, Business managers, Vendors*

USM R&D Journal, Volume No. 16 Issue No. 2, 115-125

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

0350

An analysis of the personal entrepreneurial competencies of students: implications to curriculum designing of entrepreneurship program

Sulabo, Evangeline C. , Bumatay, Ernesto Laforteza, Ragus, O

A study on the personal entrepreneurial competencies of students highlighted the entrepreneurial skills, technical skills, and business management skills. The top outstanding strengths or abilities identified were human skills, tenacity, management

competency, knowledge/ education, being motivated/ driven, and intellect/ wisdom as well as skills in persistence, systematic planning/ monitoring, and opportunity sensing.

The proposed entrepreneurship program has the structure of economics (3 courses), finance (2 courses), marketing (3 courses), accounting (2 courses), management (4 courses), business law (1 course), information technology (3 courses), business math (2 courses) and other related courses (5 courses).

Business management skills that have to be enhanced by the program comprised planning and goal setting, human relations, decision making, management, control, negotiation, finance, marketing, managing growth, accounting and venture launch. Entrepreneurial skills include inner control/ disciplined, innovative, visionary leader, persistent, change oriented and being a risk taker. **(Authors' abstract)**

Keywords: *Education, Business management, Entrepreneurial competencies, Entrepreneurship curriculum, Skills*

USM R&D Journal, Volume No. 16 Issue No. 2, 127-134

2008,

The attitudes of the Iraya-Mangyans towards the sloping agricultural land technology (SALT)

Mendoza, Yolanda Benedicta D.

The study primarily investigated the attitudes of the Iraya-Mangyans of Sitio Banabaan, Occidental Mindoro toward the Sloping Agricultural Land Technology (SALT), a component of the Department of Environment and Natural Resources' (DENR) Low-Income Upland Communities Project (LIUCP). Likewise, it identified both the factors for its adoption and/or non-adoption, and the Iraya-Mangyans' responses toward other farming technology. Various feedbacks and suggestions about LIUCP and future development project or program were also solicited.

Though the said package technology on farming had been tested and accepted in similar upland communities, it had on the contrary, received unfavorable feedbacks and setbacks among the Iraya household heads in Sitio Banabaan, Occidental Mindoro.

The discontinuance among SALT adopters and non-adoption of other Irayas could be summarized into the following four intertwining factors: socio-cultural, technical, economic, and production calendar.

To achieve successful implementation of the LIUCP vis-à-vis SALT, a convergence of the traditional agricultural practices and the innovative system (like SALT) has to be established. Hence, modifications in the features and system of SALT must be made to accommodate the local people's knowledge and practices in respect to their needs, socio-cultural values, resources and capacity. **(Authors' abstract)**

Keywords: *Education, Farming practices, Indigenous people, Kaingin-farming, Shifting cultivation, Sustainable development, Upland communities*

E-learning courseware application and its impact on student learning domains

Quimbo, Maria

Using a combination of quantitative and qualitative research methods, the study highlights how the utilization and application of an internet-based e-learning courseware has made an impact on student achievement. Specifically, student achievement in this study is taken to mean student performance in the three learning domains, namely: cognitive, affective, and psychomotor domains. Overall, the courseware was been found to have the greatest impact on learner's psychomotor domain and least on cognitive domain. There was also a significant difference in the courseware's impact on the cognitive domain of students in Science. Specifically, low and average achievers appeared to have benefited the most with regard to the courseware's impact on student thinking skills in Science as compared with those of high achievers. The poorer academic performance of low and average achievers explained their greater need for supplementary learning material, hence, making it more beneficial for them to use the courseware for educational purpose. **(Author's abstract)**

Keywords: *Education, Academic performance, E-learning, Instructional technology, Learning domains (cognitive, affective, psychomotor), Student achievement*

USM R&D Journal, Volume No. 16 Issue No. 2, 155-163

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

Evaluation of the home economics education graduate programs in Central and Northern Mindanao

Viloria, Tessie Garagan

This study evaluated the Home Economics Education (HEED) graduate programs of State Colleges and Universities (SCUs) in Central and Northern Mindanao based on Context, Input, Process and Product (CIPP). Different questionnaires respective of factors of evaluation were administered to: 21 students, 13 graduates, eight faculty, 16 Immediate Supervisors and 28 graduates' peers for a total of 86 respondents. The programs' philosophy, feedback from students and graduates were drawn for the context evaluation. Input evaluation made use of AACCUP and CHED Standards with 10 and six areas of concerns, respectively. The faculty work performance and program management performance level were determined for process evaluation. Product evaluation dealt on the work performance and

involvement in various functions of graduates. Documentary analysis was done and was supplemented by observations and interviews. Through the Statistical Package for Social Sciences (SPSS), data were processed using T-test and Analysis of Variance (ANOVA) to measure differences on perceptions and Chi Square Test to measure relationship among variables. Findings showed that programs have philosophies anchored on HEED, students' and graduates' feedback showed that programs are still wanting of improvement though generally, findings revealed that all factors of the programs were described "Very Good." No difference was found in terms of input as to types of respondents and institutions, regardless of standards used but an association manifested as to type of institution with the perceived work performance of faculty and graduates on process and products, respectively. **(Author's abstract)**

Keywords: *Education, State Colleges and Universities, Context evaluation, Input evaluation, Process evaluation, Product evaluation*

USM R&D Journal, Volume No. 13 Issue No. 2, 134-146

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/2 2005

0354

The integration of sustainable agriculture in the BSA curriculum of selected agricultural colleges and universities

Cubelo, Jose Edwin C., Sumayao, Blanda R.

The study sought to find out the triggering factors to and extent of SA integration in the BSA curriculum of selected schools in the Visayas and Mindanao. Results show that the impetus for SA integration in the curriculum stemmed from influences from institutions advocating SA, coupled with the administrators' and faculty's concerns about issues affecting the long-term viability of agriculture's resource base. To a certain extent, the institutions have clearly initiated the integration of the SA philosophy in the BSA curriculum as evidenced by the refocusing of program goals to articulate the SA philosophy in six (6)

schools, the revision of course outline to incorporate SA concepts, the infusion of SA concepts in the actual teaching of fundamental agriculture courses, and by the institutionalization of a course on SA within the BSA curriculum in one school. However, the extent of SA integration in the curriculum is constrained by some factors. **(Author's abstract)**

Keywords: *Education, Curriculum change, Learning resources, Societal imperatives*

USM R&D Journal, Volume No. 13 Issue No. 2, 178-191

(Filipiniana Analytics)

Language use and transfer in mathematical problem solving: revisiting the whorfian hypothesis and apprising the medium of instruction issue

Bernardo, Allan B. I.

A research approach is suggested to investigate the medium of instruction issue. The approach is based on the weak version of Whorf's linguistic determinism which states that variations in lexical, semantic, syntactic, and pragmatic aspects of language influence thought. The approach is used to study the observation that people have a difficult time expressing in Filipino material that they have learned in English. This paper looks into the role of language use in the transfer of information in problem solving in math. Earlier studies have shown that language-based representations of problems affect performance in math word problems and that problem-specific information plays an important function in transfer. Based on these studies, it was predicted that transfer of information would be better when the language use to study the problems is the same as that used in the transfer test. The results of one experiment support the hypothesis and are discussed in terms of the Whorfian hypothesis and the medium of instruction issue.

It would be an understatement to say that there is currently a disagreement about which language to use as the medium of instruction in our country. Del Pilar (1990) pointed out that this disagreement is readily seen in the divergent language policies of two important educational institutions-- the DECS and the University of the Philippines. While the DECS maintains a National Bilingual Policy (English as medium for Science and Math), the UP is now deep in the implementation of its Filipino Language Policy (Filipino as medium for all subjects at all levels of education). Pascasio (1992), however, observed that while there has been a lot of opinion and debate on the issue, these are often not supported by data. She pressed for the need for more research that will bear on the issue.

This paper is one attempt to present data that will hopefully bear on one aspect of the issue. The study reported in this paper addresses the phenomenon of transfer of problem solving information in mathematics within and across languages. The cognitive psychological approach to the Whorfian hypothesis is used as the general theoretical frame, and a "representational" model of transfer in math word problem solving is used as the specific frame. **(Authors' abstract)**

Keywords: *Education, Medium of instruction, Whorfian, Hypothesis, Lexical, Semantic, Syntactic, Pragmatic*

**Teaching methods preferred by the College of Education tertiary faculty at USM,
Kabacan, Cotabato, SY 2007-08**

***Tomelden, Kif V. , Cabiao, Alicia C. , Tayco, Glory Jean N. , Gallaza, Lucille Gay R. , Pacheca, Medely G. ,
Creer, Rhea***

This research endeavor was conducted to determine the teaching methods preferred by the College of Education tertiary faculty at the USM in Kabacan, Cotabato for the SY 2007-2008.

Of the 25 CED faculty respondents, 75% were taken as respondents. Data gathered from the group were collated, tabulated, and subjected to statistical analysis and interpretation, which led to the following findings:

1. The courses handled by the faculty respondents were categorized into five, namely: all courses, Professional, Basic, Major, and General Education.

Considering all the courses handled by the CED tertiary faculty respondents, the top 5 teaching methods employed by them in order were: panel discussion, lecture-demonstration, reporting, lecture, modular, respectively. In teaching the Professional Education courses, on the other hand, the 5 most popularly used teaching methods by the faculty were as follows: reporting, lecture-demonstration, brainstorming, demonstration, and problem-solving, panel-discussion, and modular, respectively. The top 5 most preferred teaching methods used by the faculty in teaching Basic courses were: reporting, lecture, lecture-demonstration, tri-question, and brainstorming, while in teaching Major Courses, Discussion, problem-solving, panel discussion, lecture-demonstration, and semantic webbing, respectively. In teaching Education Courses, the top 5 mostly chosen methods were the: panel discussion, modular, reporting, lecture demonstration, oral discussion and lecture, and socialized classroom discussion, respectively, thus, rejecting the null hypothesis stating that: the teaching methods preferred by the tertiary faculty at the College of Education do not differ in their teaching methods by subject area or category.

2. The correlation analysis made found out that the teaching methods preferred by the CED tertiary faculty had “moderate” to “weak” relationship with the number of sections handled.

Data on the relationship between the number of students and teaching methods preferred by the CED tertiary faculty revealed “moderate” to “weak” relationships in the following: reporting, moderate; brainstorming, moderate; lecture, weak, tri-question, weak, and demonstration, weak, respectively.

On the number of students per class handled by the CED tertiary faculty, “strong” to “moderate” and 1 “weak” relationships were found. Those which showed “strong relationship were: reporting, drill, lecture, lecture-discussion, dramatization, textbook, and oral, respectively, while those with moderate relationships were: tri-question, - demonstration, research, lecture-demonstration, debate, role-playing, small group discussion, laboratory, case study, modular, direct instruction, recitation, socialized classroom discussion, and brainstorming, respectively. Moreover, only the project method yielded a weak relationship with the CED tertiary faculty member respondents’ number of preparation/s and their teaching methods preferred.

Hypothesis number 2 which stated that “there was no relationship that exist between the choice of teaching methods and the educational-related variables,” is rejected. **(Authors' abstract)**

Keywords: *Education, Teaching-learning strategies, Teacher education, Teaching methods*

USM R&D Journal, Volume No. 16 Issue No. 2, 165-172

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

ENGINEERING

0357

Academic building energy conservation opportunities

Manegdeg, Ferdinand G.

A framework for determining academic building energy consumption was developed, energy audits on selected academic buildings at the University of the Philippines Diliman were conducted, the different influencing factors to electricity consumption were identified, and energy policy options to ensure effective energy management in the next 5 years are suggested. The electricity consumption is primarily due to air-conditioning and lighting loads or data processing. The energy intensity for lecture rooms, conference rooms, libraries, administration offices and auditoriums were established. Policies for future and existing buildings were formulated. It is recommended that a thorough profiling of student usage and technical usage of laboratories be conducted. **(Author's abstract)**

Keywords: *Engineering, Academe energy consumption, Building energy conservation, Data processing, Lighting loads*

Adsorption of disperse miketon blue, reactive procion blue and basic blue grl dyes from synthetic textile mill effluent using charred and activated carbon from rice hull

Valencia, S. A., Movillon, J. L., Alcanzare, R. J. C., Alvarez, Ma. L. R.

Rice hull is a potential material for activated carbon. Rice hull, the covering structure of the rice grain, constitutes about 15 to 25% of the rough rice weight.

The general objective of the study was to compare the percent dye removal of rice hull, in its charred and activated form.

The experiment investigated the kinetics of adsorption and adsorption isotherms of Disperse Miketon Blue (DMB), Reactive Procion Blue (RPB) and Basic Blue GRL (BB) on charred and activated carbon (AC) from rice hulls. The adsorptive capacity of charred and AC from rice hulls was also determined. Results revealed that the order of adsorption using charred and activated carbon (at 800°C) from rice hull for DMB, RPB and BB were 1.14, 0.93, 1.40, 2.10, 2.33 and 2.37 respectively. The adsorptive capacity of charred and AC as adsorbent for DMB, RPB and BB were 141.71, 117.33, 128.25, 273.14, 246.67, and 145.01 mg/g: respectively. The adsorption isotherm of the dyes fitted the Freundlich isotherm model.

Statistical analysis using analysis of variance (ANOVA) showed that adsorptive capacity and percent of removal of the three dyes on charred and activated carbon was significant at 5 % level of confidence. **(Author's abstract)**

Keywords: *Engineering, Rice hull, Adsorptive capacity, Adsorption kinetics, Adsorption isotherms, Activated charcoal*

Analysis of the movement of trolling depressors with different sizes

Ebata, Keigo, Fuwa, Shigeru, Fujita Shinji, Matsumura, Kazuhiro, Murata, Masataka

The purpose of this study is to clarify the relationship between size and movement of the trolling depressor. Both circular tank and field experiments were conducted. Four kinds of similar trolling depressors of different sizes were used for the experiments. The lengths of trolling depressors A, B, C and D were 66.0 cm, 38.5 cm, 31.5 cm and 30.0 cm, respectively. The tension on the leader was measured to investigate the moving performance of trolling depressor. The averages of tension on the leader were proportional to the square ratio of the length of the trolling depressor. It was suggested that the trolling depressor moves according to Reynold's law of similitude. The movement of trolling depressor was recorded from top and side using two video cameras in the circular tank experiment. The trolling depressor glided from side to side in the circular tank. The periods and distances of the right side and left side movements were measured by analyzing video images using a personal computer. The movement of the trolling depressor changed periodically. The periods of movement of the trolling depressor changed with varying sizes, but they were constantly independent of the flow of speed. As the size of the trolling depressor increased, the distance of the right side and left side movement also increased. **(Author's abstract)**

Keywords: *Engineering, Trolling depressors, Length, Tension, Average of tension, Movement*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 69-76

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

Applicability and implications of the use of real time kinematic GNSS for property surveys in the Philippines

Balicanta, Louie P.

Property Survey is the use of surveying techniques and procedures to obtain the location, size and shape of a land parcel that is owned or claimed by individual or group entities. It is both technical and legal in nature. Real Time Kinematic (RTK) Global Navigation Satellite System (GNSS) method is the use of dual-frequency GNSS to obtain the position of an object/entity in real time. Presently, this is widely used in the conduct of surveying tasks such as topographic surveys and stake-out activities in construction surveying. Its use in property survey is not a straightforward application and must consider different situations, problems and limitations. Factors to consider includes coordinate systems used in the country, concepts of common point, azimuths and distances, and limitations such as multipath and

obstructions. Methodologies and tests include azimuth determination, survey under tree canopy and use for old and new surveys. The results of the experiments show that RTK-GNSS is applicable for parcel corner position determination with consideration to limitations such as obstructions, level of accuracy, systematic error from projection, different coordinate systems used in the country and poor identification of common points. **(Author's abstract)**

Keywords: *Engineering, RTK-GNSS, Rapid static GNSS, Property survey, PRS92, Technical descriptions*

Philippine Engineering Journal, Volume No. 36 Issue No. 2, 1-20

(Filipiniana Analytics)

Fil(S) TA4 P532 36/2 2015

0361

Comparative mechanical properties of selected bamboo species

Acma, Leoncio Mariano C., Guillermo, Lloyd Anthony P., Maribojoc, Janilyn R., Berayon, Eramson G., Calayca, Brillene Rio, Marapao, Ruby Gems S., Vargas, Jr., Edgardo P.

This study aimed to evaluate some basic mechanical properties of selected bamboo species that are applicable to structural applications. Six bamboo species planted inside the Central Mindanao University Campus were tested, namely: *Dendrocalamus merrillanus*, Elmer; *Gigantochloa alter*, Hassk; *Bambusa vulgaris* Var. Schrad; *Dendrocalamus asper*, Schultes. F; *Dendrocalamus latiflorus*, Rehm.; and *Bambusa blumeana*, Schultes were subjected to four-point bending test, compression parallel to grain test and shear strength parallel to grain test. Data were taken from bottom, middle and top portion of the bamboos.

Result showed that *Dendrocalamus asper*, Schultes. has the stronger compressive strength at an average of 104.02 MPa, *Dendrocalamus latiflorus*, Rehm. has the stronger shearing strength at an average value of 12.65 MPa, while *Dendrocalamus latiflorus*, Rehm. has the stronger flexural strength with an average value of 188.39 MPa. All six bamboo species tested is 2-6 times stronger than 80% stress graded *Vitex parviflora* Juss. (Molave) in compressive strength, 1.7-4.4 times stronger in shearing strength and 1.4 - 7.85 times stronger in flexural strength. **(Authors' abstract)**

Keywords: *Engineering, Bamboo culms, Four-point load set-up, Compression parallel to*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 123

(Filipiniana Analytics)

Design and development of anaerobic seeder for direct seeding of rice

Borlagdan, P. C., Yamauchi, M., Quick, G. R., Aragonas, D. V.

Direct seeding is a labor-saving technology of rice crop establishment and is being rapidly adopted by farmers in Southeast Asia. Direct seeding, however have some inherent problems including unstable crop establishment, weed infestation, rats, birds and snail damage, and the crop is prone to lodging resulting to inconsistent grain yield. These problems could be overcome by anaerobic seeding i.e., sowing the seeds under the surface of a flooded or water-saturated soil. This technology requires a seeder that could place the pre-germinated seeds under the soil surface.

An interdisciplinary study between agricultural engineering and plant physiology developed "anaerobic seeder", a simple and low cost direct seeder that can deliver pre-germinated seeds in rows and into the soil. It is a modification of the IRRI drum seeder with the provision of a floatation wheel (to avert sinking in relatively soft paddy fields) and spring-loaded furrow openers and furrow closers.

A comparative test was conducted. The anaerobic seeder performed as well as the commercial seeder on percentage of crop establishment and seedling growth. Use of anaerobic seeder would ease most of the problems of direct seeding. The four-row anaerobic seeder cost US\$150 (manufacturer's price) whereas the two row commercial seeder (OH-192, Mukai Kogyo Co., Osaka, Japan) which was developed for sow calper (oxygen release chemical) coated seeds, cost US\$400. Both are manually operated. **(Authors' abstract)**

Keywords: *Engineering, Anaerobic seeder, Rice, Weed infestation*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 77-95

(Filipiniana Analytics)

Fil(S) T1 N2 18/3 1993

Design and development of charcoal briquetting machine

Handa, Sugar Ray A. , Manaay, Johnyver A. , Pineda, Razel Mae A. , Martin, Jorelyn F., Ocreto, Arnulfo

November 2006. Percentage of binder solution was determined to test the firmness of charcoal briquettes. Charcoal briquettes produced from carbonized rice hull and saw dust were also tested through their compaction ratios and also to get the value of utilized heat produced.

The study focused on the design of briquetting machine and development of charcoal briquettes produced from carbonized rice hull and sawdust. A production level type of briquetting machine design but in low cost price is efficient could be developed to transformed agro-waste into fuel briquettes. The % of binder to attain the excellent firmness if briquettes to complete the utilized eat, getting the compaction ratio of the raw material must be consider to produce a good and usable charcoal briquettes. (**Authors' abstract**)

Keywords: *Engineering, Agricultural machineries, Agricultural wastes, Energy-saving devices*

USM R&D Journal, Volume No. 16 Issue No. 2, 85-90

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

0364

Development of a low cost android-based home security system

Melly, Ezra K., Lagade, Hulk Hogan B., Garrino, Melquiades, Zapanta, Paola

The study was to develop, implement and evaluate a low cost android based Home Security System (HSS). Specifically, to establish a circuitry that will allow the signal inputs from sensors to be processed through a gizduino micro controller paired with GSM module to a handheld device which operates in android software and vice versa for interfacing of the actual system setup, monitoring and control. Development was at four modules: a) signal processing module comprised of sensors for tilt/direction detector based on Rohm RPI-1031 sensor which detects x-y tilt or motion in 4 quadrants direction, smoke detector MQ2 which was used to detect smoke and gas leakage in homes and PIR motion detector which was used to detect up to 7 meters of movements. The Gizduino ATmega1281 Microcontroller processes the signals detected by these sensors and triggers the communication module for sending notification to the home owner; b) communication module composed of SIM900D GSM shield with SIM card, which was interfaced with the microcontroller, capable of communicating wirelessly via the GSM network by sending or receiving SMS messages; c) alarms module composed of sound alarms which provide sonic disturbance to call the attention of the home owner and; d) application module that provides status updates of the HSS and control capability to the system. Evaluation results showed that the tilt sensor, motion sensor, and smoke sensor operates accurately within 2 minutes, 5 minutes and 9 minutes interval of triggering

respectively. Time delay for activation update was 8.49 seconds and for deactivation 9.85 seconds. Notification delay for glass breakage via tilt detection was 10.059 seconds, motion detection was 14.021 seconds and smoke detection was 9.319 seconds. The notification speed was affected by GSM signal strength and the performance of the MCU in processing every updates through GSM shield. HSS production cost at Php 5800.00 is low cost and comparable to like gadgets. **(Author's abstract)**

Keywords: *Engineering, Android, Home security, Gizduino micro controller, Sensors*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 127

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0365

Dynamic programming optimization of multi-rate multicast video-streaming services

Xavier, JoÃ£o Manuel F. , Nunes, MÃ¡rio Serafim S. , Grilo, AntÃ³nio Manuel R. C. , Monteiro, JÃ¡cio Miguel E.F. , Tiglao, Nestor Mich

In large scale IP Television (IPTV) and Mobile TV distributions, the video signal is typically encoded and transmitted using several quality streams, over IP Multicast channels, to several groups of receivers, which are classified in terms of their reception rate. As the number of video streams is usually constrained by both the number of TV channels and the maximum capacity of the content distribution network, it is necessary to find the selection of video stream transmission rates that maximizes the overall user satisfaction. In order to efficiently solve this problem, this paper proposes the Dynamic Programming Multi-rate Optimization (DPMO) algorithm. The latter was comparatively evaluated considering several user distributions, featuring different access rate patterns. The experimental results reveal that DPMO is significantly more efficient than exhaustive search, while presenting slightly higher execution times than the non-optimal Multi-rate Step Search (MSS) algorithm. **(Author's abstract)**

Keywords: *Engineering, Quality of experience (QoE), Dynamic programming, Quality of service (QoS), Internet protocol television (IPTV), Multi-rate*

Science Diliman: a journal of pure and applied sciences, Volume No. 22 Issue No. 1, 33-42

2010,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 22/1 2010

Effect of manufacturing parameters on the properties of cement-bonded boards using agri-forest residues. I. Sugarcane bagasse

Eusebio, Dwight A., Romanillos, Emerson L., Dionglay, Carlos V.

Cement-bonded boards (CBBs) were manufactured from sugar cane bagasse, general-purpose Portland cement and aluminum sulfate [$\text{Al}_2(\text{SO}_4)_3$]. The effects of bagasse:cement ratio (1:1, 1:2, 1:3 by weight), soaking time (24, 48, 72 hrs) and particle size (retained 8, 4, 2 mm and passing 2-mm screen) at different board densities (0.60, 0.80, 1.00 g/cm³) were determined .

The highest values for modulus of rupture (MOR) and nail-head-pull through (NHPT) were obtained from boards with a density of 1.00 g/cm³ containing bagasse particles retained at 2-mm screen and bagasse:cement ratios of 1:2 and 1:1, respectively. Similarly, the lowest values for thickness swelling (TS) and water absorption (WA) were obtained from the same particle size but with board densities of 0.60 g/cm³ and 1.00 g/cm³, respectively. **(Authors' abstract)**

Keywords: *Engineering, Cement-bonded boards, Sugarcane bagasse utilization, Bagasse:cement ratio*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 81-93

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

Effect of manufacturing parameters on the properties of cement-bonded boards using agri-forest residues. II. rattan shavings

Eusebio, Dwight A., Romanillos, Emerson L., Dionglay, Carlos V.

Cement-bonded boards (CBBs) were manufactured from rattan shavings, general-purpose Portland cement and aluminum sulfate [$\text{Al}_2(\text{SO}_4)_3$]. The effects of rattan:cement ratio (1:1, 1:2, 1:3 by weight), soaking time (8, 16, 24 hrs) and particle size (retained 8, 4, 2 mm and passing 2-mm screen) at different board densities (0.60, 0.80, 1.00 g/cm³) were determined.

Results revealed that increasing the board density also increased the MOR and NHPT values . The highest MOR

value was obtained from boards with rattan :cement ratio of 1:1 containing rattan particles retained at 2-mm screen and soaked for 24 hrs. On the other hand, the highest NHPT value was obtained from boards with a rattan:cement ratio of 1:1 containing rattan particles retained at 8-mm screen and soaked for 8 hrs. For TS, there was no definite trend that increasing the board density or extending the soaking time from 8 to 24 hrs would lessen the TS of the boards. However, TS generally improved as the particles became smaller. WA values decreased as the board density increased, with the lowest values obtained from boards containing particles that passed 2-mm screen. There was no definite trend that WA would improve when soaking time was extended from 8 to 24 hrs. **(Authors' abstract)**

Keywords: *Engineering, Cement-bonded boards, Rattan shaving utilization, Rattan:cement ratio*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 94-105

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0368

Effects of curing temperature on compressive strength of ordinary portland cement paste

Dejeto, Rodrigo V., Kurumisawa, Kiyofumi

Different curing temperatures and curing times were done to assess its effect on compressive strength of Ordinary Portland Cement (OPC) paste. OPC from Japan was used in forming the cement paste. This was mixed with deionized water in water/cement ratio (w/c) of 0.40. This was then hardened and cured at 20 and 40°C temperatures in water bath for 3 and 28 days and subjected to compressive strength test.

Results showed that cement cured at 40°C developed much stronger compressive strength recorded at an average of 54.043N/mm² compared to 34.43N/mm² strength of cement cured at 20°C at early stage hardening period. However, the compressive strength of cement cured at different temperatures begun to equalize when cured for a longer period of 28 days. Cement cured at 40°C had strength of an average of 90.47N/mm², nearly the same strength as that cured at 20°C with strength of 84.70N/mm². **(Authors' abstract)**

Keywords: *Engineering, Ordinary portland cement, Curing temperature, Compressive strength*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 121

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Effects on the microstructure of commercial bricks in Ilocos Norte using different firing methods

Dejeto, Rodrigo V.

A JSM-35C Scanning Electron Microscope was employed to determine the morphology of commercial structural clay bricks (SCB) in Ilocos Norte.

Bulk commercial SCB was prepared and formed using the existing traditional way of manufacturing process with clay sand Composition ratio of 100% clay and 85%: 15% clay sand ratio respectively.

The commercial SCB sample was fired inside the kiln in controlled temperature on set at 950°C. The same sample was fired but in an open field firing (Open firing). The effect on the microstructure of commercial SCB using different firing methods was evaluated.

Results show that the presence of open pores and microcracks at varying locations in the system are evident in an open field firing (open firing) at both 100% clay and 85%: 15% clay-sand ratio. More compact, dense, uniform texture and even distribution of particles are evident in commercial SCB fired in controlled temperature at 950°C was both 100% and 85%: 15% Clay Sand ratio. **(Author's abstract)**

Keywords: *Engineering, Microstructure, Commercial bricks, Open firing, Controlled temperature*

Transactions of the National Academy of Science and Technology, Volume No. 25 Issue No. 1, 134

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 25/1 2003

Evaluation of the operational characteristics of vermicomposting beds at the USM-based Regional Vermicompost and Vermimeal Production Center XII

Ele, Julius Jerome G. , Gamido, Joy Sharon B. , Saliling, Willie Jones B. , Organas, Maricar Rose , Lumansoc, Teresa , Griengo,

This research tried to assess the physical characteristics of the vermicomposting beds at USM as well as to evaluate the performance of beds under these operational regimes. Assessments were determined as basis for optimization of the physico-chemical properties. Composting process designs consider the following parameters for optimal composting: temperature, pH, and moisture content.

Three beds at the Regional Vermicompost and Vermimeal Production Center (RVVPC XII) were evaluated. Approximately, two kg of worms were introduced in each bed. The dimensions of the beds were: 5m x 2m x 0.2m. A ratio of 20% manure and 80% grass by volume were introduced in the beds. Two sacks of manure per 8 sacks of grass were introduced in Bed 1 and Bed 2 while 3 sacks of manure per 12 sacks of grass were mixed in Bed 3. The study was not meant to compare effects of different substrates or mixtures. Observations were taken to ascertain conditions under normal operations of the facility.

Significant differences were observed with regards to the performance of the three beds in terms of specific worm yield, worm to vermicast ratio, and specific vermicast yield. Also, the result showed that moisture and temperature were the limiting factors for optimal production of vermicomposting. **(Authors' abstract)**

Keywords: *Engineering, African night crawler, Agricultural wastes, Bioengineering, Compost pH, Moisture content, Temperature*

USM R&D Journal, Volume No. 16 Issue No. 2, 105-112

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

0371

Experimental study on the seakeeping performance of traditional outrigger craft

Kuroda, Takako, Katayama, Toru, Shigehiro, Ritsuo, Aguilar, Glenn D.

The characteristics of ship motions and bending stress acting on supporting arms are experimentally and theoretically investigated in order to clarify dangerous sea conditions for outrigger craft. The outriggers increase transverse static stability significantly and decrease heaving, pitching, and rolling amplitudes in beam seas. The bending stress acting on the supporting arms in head seas are the largest of all and have the remarkable peak in the region of $L_{pp}/L = 1.0$. A computer program to calculate motion of outrigger craft has been developed, and the calculated results are in good agreement with the measured ones. **(Author's abstract)**

Keywords: *Engineering, Seakeeping, Outrigger craft, Stability*

Haze optimized transform on Landsat 8 imagery for thin cloud detection and removal

Tupas, Mark Edwin A.

Landsat images, being optically captured, contain one of the most fundamental remote sensing issues-- cloud and haze contamination. Various algorithms have been developed through the years to correct haze contamination and maximize the use of archived Landsat images since its launch in 1972. One such algorithm is the Haze Optimized Transform (HOT). HOT identifies spatially varying haze thickness on the premise that clear sky conditions can be characterized from the regression of highly correlated blue and red bands; and features diverging from this relation indicate thickness of haze using their orthogonal distance (HOT values) from clear sky function. A modified Dark Object Subtraction is then performed based on histogram matching per HOT value versus the clear sky case.

This paper presents modifications in applying the HOT algorithm considering the effects of increased radiometric resolution and new coastal blue band in Landsat 8 were tested on two separate images with different dates of acquisition from a test site in the Davao Oriental province of southern Philippines, which was selected due to its prevalent cloud cover condition throughout the year. The effects of the increased radiometric resolution and new coastal blue band in Landsat 8 were tested on two separate images with different dates of acquisition. Haze correction using the coastal blue band demonstrates noticeable difference in adjustment for certain land cover types. On the other hand, the increase in radiometric resolution shows exponential effects to HOT value ranges which translates to finer haze depth estimation but at the expense of performance. Moreover, applying the algorithm demonstrates a higher rate of over correction, which is then compensated by applying a clear aerosols fraction adjustment.

The corrected images are then further processed to compute Normalized Difference Vegetation Index and Supervised Classification to show the effectiveness of the HOT correction algorithm. This study shows that the HOT algorithm with the presented modifications can be efficiently and effectively implemented on Landsat 8 images, and obtain the desired results. **(Authors' abstract)**

Keywords: *Engineering, Remote sensing, Relative radiometric correction, Haze removal, Landsat 8, Haze optimized transform*

0373

Improvement of a portable abaca stripping machine

Tolentino, Nemesio M. , Pulvera, Rey L. , Odiaman,

An improved abaca stripping machine was designed and developed. The machine was made from locally available materials. This can be transferred from one farm to another with the use of an animal-drawn sledge or trailer. Otherwise, it can be dismantled into some parts and there is no harm to carry because it is bolted.

Based from the results of the study, highest recovery of fibers at 53.73% was realized using a 1.0 cm thick blade with sharpness inclination of 150 and with a stripping block pressure of 4.1 kPa, the machine ran at a medium engine speed of 350 rpm. The combined effects of the pressure of the stripping block and the engine speed however can affect the amount of fibers recovered. **(Authors' abstract)**

Keywords: *Engineering, Agricultural machineries, Fiber extractor, Philippine fiber industry*

0374

An integrated system of numerical simulation and visualization of wave penetration in harbors

Cruz, Eric C.

An integrated system of numerical simulation and graphic visualization of penetration by waves in harbors has been developed for use in Windows-based personal computers. This paper discusses the wave transformation model behind the computational engine, its numerical implementation, the design and integration of a

graphical rendering sub-system, and the application of the system to both theoretical and practical wave penetration problems. The system is capable of simulating in space and time the three-dimensional wave field based on a set of vertically-integrated, phase-resolving equations accounting for wave nonlinearity and frequency dispersion in the shallow water region around a harbor, as well as in the deep water region in the offshore area. The visualization component has been designed to provide quick and meaningful representation of both input and transient variables, with diagnostic capability for the rendering of input parameters and post-processing capability for the synthesis of wave field statistics. The system is validated by applying it to fundamental wave propagation problems where analytical or measured data are available for comparison. The computational and visualization capabilities of the system are demonstrated by its application to wave penetration studies of actual harbors. **(Author's abstract)**

Keywords: *Engineering, Numerical simulation, Graphic visualization, Wave penetration*

Philippine Engineering Journal, Volume No. 23 Issue No. 1, 1-26

(Filipiniana Analytics)

Fil(S) TA4 P532 23/1 2002

0375

Life-cycle environmental benefits of using bioethanol as a gasoline additive

Tan, Raymond R. , Culaba, Alvin B.

Ethanol can be blended with gasoline as a fuel extender, an oxygenating agent, and octane enhancer. Blends containing up to 10% ethanol by volume (E10) can be used in unmodified spark-ignition engines without significant changes in vehicle performance, while yielding reductions in over-all tailpipe emissions. Enzyme-based processing technology is expected to allow ethanol to be produced commercially from cellulosic biomass such as municipal and agricultural waste as early as 2005. Ethyl alcohol produced in this manner is called bioethanol; this production technology promises to be an effective open-loop recycling ("waste-to-energy") pathway which simultaneously gives significant benefits of reduced fossil fuel consumption and air emissions. This paper presents results of simulations using a modified version of the GREET 1.5a fuel cycle model to estimate the relative benefits of using E10 instead of conventional gasoline. In addition to obvious savings in petroleum usage, reductions in life-cycle hydrocarbon, carbon monoxide, sulfur dioxide and carbon dioxide emissions are predicted by the model. Cumulative emissions of particulates and nitrogen oxides, on the other hand, are expected to increase. **(Author's abstract)**

Keywords: *Engineering, Bioethanol, E10, Life cycle assessment (LCA)*

Modeling of delay-insensitive circuit building-blocks using the hamburg design system

Sacayanan, Jesse M. , Noche, Joel R.

The operation of delay-insensitive circuits, a class of asynchronous logic circuits, is difficult to visualize. Models of delay-insensitive circuit building-blocks are created using the Hamburg Design System (HADES), a pure-Java framework for object-oriented component-based simulation. These models help designers and students visualize the operation of delay-insensitive circuits. **(Author's abstract)**

Keywords: *Engineering, Hamburg design system (HADES), Delay-insensitive circuit, Asynchronous logic circuits*

Multi commodity heat pump drying (MCHPD) of cacao bean (*Theobroma cacao*) husk

Taclan, Lorcelie B., Vinluan, Mara, Imperio, Kevin, Tams, Novielle

Cacao bean husks are considered environmental waste in the chocolate industry if not managed wisely. Cacao farmers discovered incidentally its use for oral hygiene and other medicinal uses by decoction, however there are no scientific studies done yet, hence this undertaking. Generally, to establish the drying characteristics of cacao bean husk. Specifically, to establish the drying time and moisture reduction per hour (MRH), to determine the initial and final moisture content of the product needed to hygienically dehydrate the material using the MCHPD. Cacao bean husks were gathered; washed; air dried; cut to desired size and dehydrated at 50.0 0C and 10.0% relative humidity using the MCHPD. Dried product, were further processed by grinding using a heavy duty grinder, packed in sealed plastic containers and stored in a cool, dry place. Results revealed the following drying characteristics: drying time -12.0 hours; reduction per hour (MRH)-20.04g/h; initial % moisture content (MC) ≈ 80.0%

and final MC- 6.7%. Base from the results; cacao bean husk is hygienically dried us in? the MCHPD at 12.0 hours with least supervision on the drying process; with a final % MC that is within the recommended % MC of > 18.0 % for agricultural products (Adapa, et al, 2002). Base from the results of the study, using the MCHPD in the primary processing

of cacao bean husks is doable. Further research on product development, such as a natural mouth rinse using the dried and ground cacao bean husk is recommendatory as the next activity. **(Author's abstract)**

Keywords: *Engineering, Multi commodity heat pump dryer, Cacao bean, Theobroma cacao*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 128

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0378

NPK-based soil fertility mapping using GIS in selected USMARC rice fields

Gutierrez, Herminigildo M. , Painagan, Marilyn S. , Villanueva, Allen

A study on the NPK-based soil fertility mapping using GIS of selected USMARC rice fields was conducted at USMARC rice field, USM compound, Barangay Osias, Kabacan Cotabato from June to October, 2006.

This study was conducted to evaluate the effectiveness of NPK map on rice farming, through soil testing and map making. Soil NPK, main point altitude, latitude and longitude, fertilizer cost last cropping, and fertilizer cost with the used of NPK map were gathered and evaluated through multiple linear regression and comparison of sum.

The result revealed that some parts of USMARC soil contained medium amount of nitrogen and the other part contained low amount of nitrogen in ppm. The soil is in uniformly low phosphorus and also in uniformly high potassium in ppm.

Based on the result of the study, NPK map was effective and useful in rice farming because of the high fertilizer savings and profitable cost. Also, proper application of fertilizer monitored and waste use of fertilizer could be avoided.

(Authors' abstract)

Keywords: *Engineering, Precision farming, Map making, Soil nutrition, Soil test, Rice farming, Rice productivity*

Numerical analysis of a solar chimney

Balbarona, Juvy A.

Passive ventilation is among the widely used means of reducing power consumption in residential as well as commercial establishments because of its cost and energy effectiveness. One method of passive cooling that has been around for many years is the use of solar chimneys. Solar chimney is essentially a thermosyphon utilizing the energy from the sun. The energy coming from the sun heats up the air occupying the chimney cavity to create stack effect that in turn provides natural ventilation. In this study, two-dimensional numerical analysis of a vertical solar chimney is performed to determine the effect of air gap on air flow rate at a given range of solar radiation intensity of 200W/m^2 to 400 W/m^2 . RNG k-epsilon turbulence model used was validated by comparing the results to experimental data, and is found to have good agreement with experiment data for air gap of 0.4. Equivalent air changes per hour (ACH) is then computed for a 59.27 m^3 container house to be 5.4 for the vertical solar chimney model, with a chimney gap of 0.4 m at solar radiation intensity of 400 W/m^2 . **(Author's abstract)**

Keywords: *Engineering, Numerical analysis, Solar chimney, Thermosyphon*

A numerical model on salt migration in a closed unsaturated fine sand column with temperature gradients

Resurreccion, Augustus C.

Solute transport in the unsaturated zone in nonisothermal conditions has its important applications in the field of agriculture and groundwater quality modeling. In this research, the phenomena of simultaneous transport of moisture,

heat and solute in the unsaturated porous media are formulated by three partial differential conservation equations. Numerical simulation and experimental study on salt migration is carried out in a closed unsaturated fine sand (Toyourra sand in Japan) column. Numerical discretization and solution are performed on the experimental domain with appropriate boundary conditions by iterative Picard technique Galerkin Finite Element Method. Results show that salt, in initial uniform water content and solute concentration, accumulates at the bottom due to heat source by salt precipitation and moisture convection. The characterization of the identified hydraulic parameters with temperature is also discussed.

(Author's abstract)

Keywords: *Engineering, Salt migration, Unsaturated zone, Nonisothermal conditions*

Philippine Engineering Journal, Volume No. 23 Issue No. 1, 27-44

(Filipiniana Analytics)

Fil(S) TA4 P532 23/1 2002

0381

Parametric and kinetic study of silicon nitride film deposition on silicon wafer by low pressure chemical vapor deposition (LPCVD) method

Velasco, Angelito A.

Silicon nitride films were deposited on silicon wafers by Low-Pressure Chemical Vapor Deposition (LPCVD) method. Reaction gases were ammonia and 20% silane in nitrogen. The effects of (A) deposition temperature, (B) chamber pressure, (C) $\text{NH}_3\text{-SiH}_4$ flowrate ratio and (D) deposition time on the thickness of the film produced were studied using a full 2^k factorial design. The film thickness was found to increase proportionally with temperature, pressure and time, and inversely with $\text{NH}_3\text{-SiH}_4$ flowrate ratio. Analysis of variance (ANOVA) shows that all main effects and interactions AC, AD, and CD were statistically significant at 99% confidence level. An interactive first order model was fitted to the experimental data:

$$Y = 158.46 + 70.39X_1 + 26.86X_2 - 66.44X_3 + 74.45X_4 - 29.3X_1X_3 + 33.35X_1X_4 - 30.68X_3X_4$$

A kinetic study was also conducted in order to determine the rate equation for the growth of silicon nitride on silicon. The computed activation energy was 21.454 kcal/mol, which indicates that the surface reaction is rate limiting. The rate equation was:

$$\text{Deposition rate, nm/min} = 37661.7 \exp (-4578.5/T).$$

Scanning electron micrographs show that the silicon nitride deposits appear as spherical-cap shaped clusters. Energy dispersive x-ray (EDX) and x-ray diffraction (XRD) analyses confirm the formation of silicon nitride. **(Author's abstract)**

Keywords: *Engineering, Low pressure chemical vapor deposition (LPCVD) method, Parametric, Kinetic, Analysis of variance (ANOVA), Energy dispersive x-ray (EDX), X-ray diffraction (XRD)*

Philippine Engineering Journal, Volume No. 23 Issue No. 1, 59-76

(Filipiniana Analytics)

Fil(S) TA4 P532 23/1 2002

0382

Price modeling of the non-load bearing concrete hollow blocks (CHBs) manufactured in Ilocos Sur

Esguerra, Norma A. , Amistad, Franklin

In this study, non-load bearing CHBs were bought as samples from sixteen (16) towns chosen at random from manufacturers, eight (8) of which were selected from the First District and another eight (8) from the Second District of Ilocos Sur. The findings are: the samples were smaller than the recommended standard; from the variables compared, only the thickness and strength parameters were significant in influencing the price of the commodity being studied; the strength of the samples were lower than the minimum specified strength of 2.07 MPa; no significant difference between and among the sizes, strengths and distance of the quarry site from the place of production exist; CHBs are more frequently sold on delivery mode; and strength and price have significant relationship.

A linear mathematical model, $Y = 3.836 + 0.748fc' + 0.92t$ was developed to calculate the price of concrete hollow blocks resulting from a regression analysis, where: Y is the delivery price of the CHB, fc' is the compressive strength of the CHB produced, t is the thickness.

In conclusion, CHB manufacturers set a uniform price for their products to be competitive, without considering the quarry site distance and strength. Only 41.1% of the variance were identified in this study.

Future researches may explore the remaining 58.9% of the variance for a rational pricing of CHB products; adherence

by manufacturers to the prescribed sizes and strength of CHBs and more strict monitoring by concerned agency to the identified concerns be addressed. **(Authors' abstract)**

Keywords: Engineering, Price model, Concrete hollow blocks (CHB), Cement-gypsumum

Philippine Engineering Journal, Volume No. 36 Issue No. 2, 21-37

(Filipiniana Analytics)

Fil(S) TA4 P532 36/2 2015

0383

Response of *Acacia mangium* Willd. and *Eucalyptus pellita* F. Muell. to accelerators used in the manufacture of wood wool cement boards

Cabangon, Rico J., Eusebio, Dwight A., Soriano, Florence P., Cunningham, Ross B., Evans, Philip D.

The efficacy of cement-setting accelerators is dependent on the species used in the manufacture of wood-cement composites. In this study, the effects of various accelerators on the hydration characteristics and properties of wood wool cement boards (WWCBs) from *Acacia mangium* and *Eucalyptus pellita* were examined .

WWCBs from *A. mangium* and *E. pellita* were manufactured in the laboratory and their hydration characteristics and board properties compared with boards made from *Populus x euramericana* (Dode) Guinier. Hydration exotherms were expressed as maximum heat of hydration (T_{\max} °C), time to reach T_{\max} (H-time, h) and hydration rate (H -rate, °C/h) . Board properties evaluated were dry and wet modulus of elasticity and modulus of rupture (MOE/MOR) and thickness swelling (TS) .

A. mangium WWCBs containing ferrous chloride (FeCl_3) exhibited the highest H-rate, but boards containing aluminum sulfate [$\text{Al}_2(\text{SO}_4)_3$] attained the highest T_{\max} and shortest H-time. In *E. pellita* WWCBs, the accelerators did not enhance their hydration properties except for the H-rates of boards containing either calcium chloride (CaCl_2) or $\text{Al}_2(\text{SO}_4)_3$. CaCl_2 , FeCl_3 and $\text{Al}_2(\text{SO}_4)_3$ accelerators were effective in improving the flexural strength of *A. mangium* WWCB, while $\text{Al}_2(\text{SO}_4)_3$ was ineffective in enhancing the strength of WWCB from *E. pellita*. Boards made from *P. x euramericana* exhibited high flexural strength and were not selective to the range of accelerators used in this study. All the accelerators improved the TS of the WWCBs, but none enhanced their wet flexural strength. **(Authors' abstract)**

Keywords: Engineering, Accelerators, Wood wool cement board, Hydration, *Acacia mangium*, *Eucalyptus pellita*

The sequential geodetic numbers of graphs

Aniversario, Imelda S., Bugo, Lucille M., Canoy, Jr., Sergio R.

Given two vertices u and v of a connected graph G , the closed interval $I_G[u, v]$ is the set of all vertices lying in some u - v geodesic in G . If $S \subseteq V(G)$, then $I_G[S] = \bigcup \{ I_G[u, v] : u, v \in S \}$. Let $v_i \in V(G)$ for $i=1, 2, \dots, n$. We select vertices of G as follows: select v_1 and let $S_1 = \{v_1\}$. Select another vertex $v_2 \neq v_1$ and let $S_2 = \{v_1, v_2\}$. Then successively select vertex $v_k \notin S'_{k-1}$ and let $S_k = S'_{k-1} \cup \{v_k\} \cup \{u \in V(G) : u \in I_G[v_k, w] \text{ for some } w \in S'_{k-1}\}$. The sequential geodetic number of G , denoted by $\text{sgn}(G)$ is the smallest k such that there is a sequence $\langle v_1, v_2, \dots, v_k \rangle$ for which $S_k = V(G)$. The set $S = S'_k = \{v_1, v_2, \dots, v_k\}$ with $v_1, v_2, \dots, v_k \in S'_k$ for which $S_k = V(G)$ is a sequential geodetic cover of G . The sequential geodetic number is again inspired by the achievement and avoidance games. In this paper, the graphs $G = K_1 + \cup K_n$ with $\text{sgn}(G)$ equals $|V(G)| - 1$ and those graphs $G = K_n$ with $\text{sgn}(G)$ equal to $|V(G)|$ are characterized. It is shown that the geodetic number (gn), closed geodetic number (cgn) and the sequential geodetic number (sgn) coincide for some particular graphs. Further, for the complete bipartite graph $K_{m, n}$ these three graph invariants are determined. Furthermore, the sequential geodetic numbers of graphs obtained from the join and corona of graphs are determined. (Author's abstract)

Keywords: *Engineering, Geodesic, Sequential geodetic sequence, Sequential geodetic cover, Sequential geodetic number*

Strength and depormation characteristics of re-deposited lahar from Mt. Pinatubo

Orense, Rolando P. , Zapanta, Jr., Andrew

The 1991 eruption of Mt. Pinatubo caused extensive damage, with subsequent lahar flows covering widespread areas. Rehabilitation and reconstruction activities are currently being undertaken, with new buildings and other civil engineering structures being built over lahar-covered areas and roadway/river embankments being constructed using lahar materials. However, there is insufficient knowledge regarding the geotechnical properties of these volcanic deposits, especially their strength and deformation characteristics. To address this issue, an extensive research program was performed in order to investigate the geotechnical characteristics of freshly re-deposited lahar deposits from Mt. Pinatubo and to understand their behavior as materials for geotechnical construction. Freshly re-deposited samples were obtained at two locations: one upstream and another downstream from the volcano. In addition to engineering properties, permeability and compaction characteristics, the strength and deformation behavior in drained condition were investigated using the hollow torsional shear apparatus, with emphasis on the effects of relative density and confining pressure on the shear stress and volumetric change behavior. Moreover, the response of Pinatubo lahar during seismic loading was investigated by determining their cyclic deformation properties and liquefaction resistance. The findings obtained in this study can be used to formulate appropriate design methodology on the use of re-deposited lahar as geotechnical materials. **(Author's abstract)**

Keywords: *Engineering, Lahar, Strength, Depormation, Mt. Pinatubo*

Philippine Engineering Journal, Volume No. 23 Issue No. 1, 77-100

(Filipiniana Analytics)

Fil(S) TA4 P532 23/1 2002

0386

Structural joints for a typhoon-resistant bamboo house

Soriano, Florence P., Rondero, Thomas Rolan E.

An exhaustive review of bamboo traditional and new bamboo jointing configurations developed in various countries is presented. Design considerations such as design wind load, the properties of bamboo that affect the stability of joints, and functional requirements of bamboo joints are briefly discussed. **(Author's abstract)**

Keywords: *Engineering, Bamboo structural joints, Typhoon-resistant bamboo house, Bamboo*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 106-121

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

A study of three communal irrigation systems in Maguindanao

Atong, J.S., Bayotlang, E.L., Gutierrez, H.M., Oberez, A.T.

Three communal irrigation system (CIS) were compared: Brar CIS in Talayan, Kauran CIS in Ampatuan, and MSU CIS in Datu Odin Sinsuat, all in the province of Maguindanao. All CIS were run-of-the-river type with soil types that varied from sandy loam to clay loam. MSU CIS had the most adequate water supply and also the highest canal density followed by Brar CIS and the least was Kauran CIS. Furthermore, Brar and Kauran CIS were rated "extensive participation" in terms of operation of the systems while MSU CIS rated "some participation". As to maintenance, the three CIS scored "moderate" or "extensive" as to participation of users. This suggests most water users were doing their duties and responsibilities as members of the Irrigation Association. The two common problems noted were inadequate supply of water to farms and unavailability of water when needed. They resorted thus to rotational irrigation and writing resolutions to NIA personnel and asked assistance in repair of damaged structures which affect flow of water. **(Author's abstract)**

Keywords: *Engineering, Communal irrigation systems, Lowland rice farming, Brar CIS, Kauran CIS, MSU CIS*

USM R&D Journal, Volume No. 13 Issue No. 1, 107-119

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/1 2005

Synthesis and characterization of RPET/Organo-montmorillonite nanocomposites

Basilia, Blessie A. , Mendoza, Herman D., Cada, Leonorina G.

Recycled polyethylene terephthalate (RPET)/organo-montmorillonite nanocomposites were synthesized by direct melt intercalation method. The effect of this processing technique in the nanomorphology, thermal stability and mechanical behavior of the intercalated products were characterized by X-ray diffraction (XRD), high resolution transmission electron microscopy (HRTEM), small angle x-ray scattering (SAXS), differential scanning calorimetry (DSC), thermogravimetric analysis (TGA) and mechanical analysis. The difference of using recycled PET (RPET) vis-à-vis virgin PET (VPET) as matrix in the polymer nanocomposites, using synthesized Philippine organo-montmorillonite or commercial organoclay as the layered-silicate, was evaluated. Results showed that direct melt intercalation by twin-

screw extrusion method gave generally exfoliated structures especially at <5% clay loading, based on powder XRD patterns. SAXS patterns and HRTEM micrographs revealed laminated structures at the basal (001) reflections resulting to a d-spacing of 14nm in localized areas not observed by powder diffraction. Higher levels of orientation of the layered silicates were obtained with commercial organoclay compared with the synthesized clay. Thermal degradation has been decreased and tensile strength increased with the increase in clay loading. RPET resin was intercalated in a similar manner with VPET in the layered silicates of Philippine organo-montmorillonite. **(Author's abstract)**

Keywords: *Engineering, Recycled polyethylene terephthalate (RPET), Organo-montmorillonite nanocomposites, X-ray scattering (SAXS), Differential scanning calorimetry (DSC), Thermogravimetric analysis (TGA)*

Philippine Engineering Journal, Volume No. 23 Issue No. 2, 19-34

(Filipiniana Analytics)

Fil(S) TA4 P532 23/2 2002

0389

Synthesis of Pb-free Bi-2223 from Bi-2212 using partial melting

Herrera, M.U. , Sarmago, R.V.

Synthesis of Pb-free Bi-2223 has been made possible by partial melting. Partial melting was done by sintering the samples below the melting point of Bi-2212 thus allowing the dissociation of the weak bonds of BiO layer to exhibit fluid-like planar movements. Volume fraction of Bi-2223 increases with temperature which was attributed to the increase in fluid-like movements. Also, the samples sintered at long sintering time of 50hrs and 100hrs show larger volume fraction of Bi-2223 as compared with those sintered at 25hrs. The involvement of fluid-like planar movements during the partial melting process was supported by the presence of fused-grain boundaries, layered structure, and hole-like features seen in the Scanning Electron Microscopy images. **(Author's abstract)**

Keywords: *Engineering, Synthesis of Pb-free Bi-2223, Bi-2212, Partial melting process, Scanning electron microscopy images*

Philippine Engineering Journal, Volume No. 23 Issue No. 2, 35-48

(Filipiniana Analytics)

Fil(S) TA4 P532 23/2 2002

Thermal stability study on titanium disilicide (TiSi₂) thin films with titanium nitride (TiN) capping using atomic force microscopy

Venezuela, Jeffrey DG., Amorsolo, Jr., Alberto V.

Titanium disilicide (TiSi₂) has largely been used as gates and interconnects in semiconductor devices due to its low resistivity and good thermal stability. This work aimed to study the thermal stability of titanium disilicide thin film capped with titanium nitride based on measurements using the atomic force microscope (AFM) and four-point probe apparatus. Capped and uncapped silicide thin film samples, produced from the same initial thickness of Ti film (60 nm) on (111)-Si substrate but subjected to different rapid thermal processing schemes to form the silicide, were annealed at 950°C at varying annealing times (10, 20, 30, 40, 50 and 120 minutes). Morphological changes associated with thermal degradation were determined using both the AFM and scanning electron microscope (SEM). The changes in both the film's surface roughness and sheet resistance were also monitored over these annealing times. Results indicate significantly higher root mean square (RMS) surface roughness and sheet resistance in the uncapped sample after 120 minutes annealing implying better thermal stability in the capped than in the uncapped sample. The efficacy of TiN in increasing the thermal stability of TiSi₂ is attributed to originate from a retardation of material diffusion in the silicide layer. Also, atomic force microscopy was successfully applied to understand the thermal stability of the TiN-capped silicide. **(Author's abstract)**

Keywords: *Engineering, Titanium disilicide, Titanium nitride, Atomic force microscope (AFM), Scanning electron microscope (SEM), Root mean square (RMS)*

Philippine Engineering Journal, Volume No. 23 Issue No. 2, 49-62

(Filipiniana Analytics)

Fil(S) TA4 P532 23/2 2002

Third-point load effect on bending moment of slotted ferrocement beam

Acma, Leoncio Mariano C.

This study aimed to determine the bending moment of slotted ferrocement beams subjected to four-point loading. The study was conducted using a single-factor experiment with six levels of factors being employed. The experiments used six treatments with six replications. The treatment were as follows: S1 – Four - 10mm deformed bars on each corner of a single wire mesh reinforcements and provided with 3.2 mm diameter galvanized iron wire spaced at 100 mm on centers; S2 – One layer of welded wire mesh reinforcements; S3 – Two layers of wire mesh reinforcements; S4 –

Three layers of wire mesh reinforcements; S5 – Four layers of wire mesh reinforcement; and S6 – Five layers of wire mesh reinforcements.

Results of the tests showed that an empirical equation for the determination of bending moment at failure and empirical equation for the flexural strength at failure can be developed, however, the equation still needs to be verified by continuing a research that analyze further the third-point load effect on bending moment for slotted ferrocement beam considering increased number of wire mesh layers. The study found out that: the provision of two or more layers of wire mesh reinforcement will lead to an increase of the flexural strength of the section; the reinforcing bars has a significant contribution to the flexural strength of the section, however, the capacity of the deformed bar reinforced ferrocement beam to carry load is limited to the reinforcement that can be provided and such type of beam has limited cross sectional area; and increasing the number of layers of wire mesh reinforcement could allow the beam to exhibit ductile behavior. The number of cracks in the beam will increase and the distance of such spacing will decrease. This behavior of cracking can effectively delay the occurrence of failure in the specimen. **(Authors' abstract)**

Keywords: *Engineering, Third-point loading, Ferrocement, Modulus of rupture (MOR), Ductility, Micro cracks*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 124

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0392

Transitive perfect colorings of 2-uniform tilings

Felix, Rene P., Eclarin, Lawrence

In this work, a method to determine the nontrivial colorings of perfect and transitive 2-uniform tilings is presented. This method has been applied to determine all nontrivial transitive perfect colorings of 2-uniform tilings that use the least number of colors. In addition, the equivalence of the colorings obtained was also ascertained. **(Author's abstract)**

Keywords: *Engineering, Perfect colorings, 2-uniform tilings, Equivalent colorings*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 2, 1-20

2014,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 26/2 2014

Utilization of rice hull ash and solsona white clay for the manufacture of ceramic water filters

Franco, Samuel S., Salamangkit, Emie A.

Various types of filter elements ranging from organic materials, to metals and to ceramics are used to make water potable. Ceramics are preferred because these materials are inert, heat resistant, lightweight and porous. Its porosity can be designed to different sizes; hence, it can be used for various applications.

The use of locally available raw materials has been evaluated in the manufacture of ceramic filters. The materials were the following: calcined rice hull ash, which is highly siliceous and used as the primary raw material; beneficiated Solsona white clay, used to increase the plasticity and workability of the mixture; and coconut shell charcoal as a pore forming agent. The materials were mixed at different combinations. The formulations were pressed using a hydraulic press and dried in an oven for 110°C. The formed filters were fired at 1000°C to 1200°C.

Results of the evaluation indicate the filters have higher water absorption and lower apparent porosity (60.65 to 64.89%) compared to diatoms and the commercial filters. The bulk density (0.55 to 0.56 g/cc) was also lower. These physical properties of the locally formulated filters are in accordance with the properties of a workable water filter. The utilization of indigenous local materials such as rice hull ash, Solsona white clay and charcoal were found to be promising for the manufacture of ceramic filters. **(Author's abstract)**

Keywords: *Engineering, Ceramic, Clay, Coconut shell charcoal, Filters, Porous, Rice hull ash, Water*

Transactions of the National Academy of Science and Technology, Volume No. 25 Issue No. 1, 133

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 25/1 2003

Utilization of rice hull ash for paving blocks

Oberez, Arnel T., Gevero, Mary Ann B., Bantiling, Anthony Ryan B.

This study aimed at using rice hull ash as a component of paving blocks and at evaluating the potential engineering properties when mixed with Portland cement. It was found that the rice hull ash used in this study had a silica content of 84.57%. Consequently, given this high silica content rice hull ash is an active artificial pozzolana.

The properties of various mixtures of Portland cement with rice hull ash were analyzed using cement to ash ratios: 100:0, 90:10, 80:20, 70:30, 60:40, and 50:50 by volume. Pure cement served as control. After 28 days of curing, the specimens were put through the load bearing capacity test to find out the compressive strength value and through the absorption test to find out the water absorption value. The results obtained were analyzed using the Univariate Analysis of Variance Technique in a complete randomized design (CRD) with six treatments and three replications for the compressive strength test and two replications for the porosity test.

It was found that the compressive strength was increased from that of Portland cement alone. The experiment showed that at 20% of mixing rice hull ash, compressive strength became maximum and the ability of water absorption decreased due to rice hull ash properties. **(Authors' abstract)**

Keywords: *Engineering, Silica content, Pozzolana, Paving blocks, Cement*

USM R&D Journal, Volume No. 13 Issue No. 1, 120-122

(Filipiniana Analytics)

Fil(S) Q179.9 U31 13/1 2005

0395

Utilization of river red gum (*Eucalyptus camaldulensis* Dehnh.) for wood wool cement board

Eusebio, Dwight A., Villena, Edgardo M., Funtanilla, Edgardo F.

Laboratory size (30 x 30 cm) wood wool cement boards (WWCB) at three density levels (0.60, 0.80 and 1.00 g/cm³) and thickness of 12 mm were produced using river red gum (*Eucalyptus camaldulensis* Dehnh.) wood as raw material. The effects of soaking the wood excelsior in water prior to mixing with cement, wood/cement ratio and accelerator on board properties were determined. The boards' modulus of rupture (MOR), modulus of elasticity (MOE) and nail-head-pull through (NHPT), as well as thickness swelling (TS) and water absorption (WA) after 24-hr water immersion, were likewise determined.

MOR, MOE and NHPT increased with increasing board density. The highest MOR and MOE were obtained from boards with the most cement, i.e., wood/cement ratio of 30/70 while the opposite was observed for NHPT. As expected,

WA and TS decreased as cement content increased. Boards with unsoaked excelsior exhibited higher WA and TS properties, meaning poorer dimensional stability, than boards with soaked excelsior at 50/50 and 40/60 wood/cement ratios. **(Authors' abstract)**

Keywords: *Engineering, Eucalyptus camaldulensis Dehnh, Board density, Wood/cement ratio, Soaking time, Cement accelerators*

FPRDI Journal, Volume No. 27 Issue No. 1-2, 1-14

(Filipiniana Analytics)

Fil(S) SD339 F76 27/1-2 2001

ENVIRONMENTAL SCIENCE

0396

Asexual propagation and performance of indigenous tree species on various growing media/substrates

Barre, Ardel S., Diamantem, Cecil

The interactions between five (5) indigenous tree species with commercial value and five (5) growing media/substrates were evaluated using a 5x5 factorial under a Randomized Complete Block Design (RCBD). Five species with commercial importance and abundantly growing in the Western Mindanao State University experimental forest were identified. Sixty wildlings for each species were collected and grown in five growing media prepared by using locally available materials. The growth performance of the wildlings in terms of basal diameter and apical height were observed, recorded, monitored and evaluated. Among the five identified indigenous species, Almaciga (*Agathisphilippensis*) emerged as the most commercially important species while Bagtikan (*Parashoreamalaanonan*) and Mala-almaciga (*Podocarpusblumei*) came in next. Ulaian (*Lithocarpuspruinosa*) and Malaruh-at-pula (*Syzygiumdecipiens*) were considered important for construction purposes of upland farmers. Generally, Ulaian exhibited the highest growth in basal diameter and apical height and followed by Bagtikan. The growth performance of the five indigenous species was highly significant at $p < .01$, but it was only significant at $p < .05$ when compared with the different growing media/substrates. There was, however, no significant difference in the growth performance when observed in combination with species and growing medium/substrate. Ulaian and Bagtikan are good reforestation species. Malaruh-at-pula maybe a potential reforestation species due to its robust leaf formation capability while Almaciga may be used provided appropriate field maintenance will be applied. Mala-almaciga is not recommended for reforestation activities. **(Author's abstract)**

Keywords: *Environmental science, Asexual propagation, Indigenous tree species, Performance on growing media*

**Assessment of mercury exposure among residents of a mining community in Itogon,
Benguet through hair analysis**

Bernadas, Philip Joshua C., Espiritu, Emilyn Q.

Mercury (Hg) exposure from the processing of gold in small-scale mining has been given minimal attention despite numerous studies showing its significant threat to the environment and human health. Unfortunately, except for occupation, little is known about the determinants of Hg exposure with sources of samples mostly limited to blood and urine. This study aimed to measure the extent and nature of mercury contamination through analysis of hair samples among the residents of a mining community in Itogon, Benguet. .

A structured questionnaire was administered to the volunteers prior to hair sampling. The analytical methods included: Cold Vapor Atomic Absorption Spectroscopy (CVAAS) for analysis of Total mercury (% recovery = 98.35% - 101.38%); Gas Chromatography - Electron Capture Detector (GC-ECD) for methyl mercury (% recovery = 105%). For inorganic mercury determination, Toluene Extraction Method for removing organic mercury was used before using CVAAS (% recovery = 36%) using a certified hair reference material from the National Institute for Environmental Studies of Japan.

Results showed that age and sex are the most significant determinant of Total mercury exposure. Males (1.277 ± 0.446 ng/ μ g) were found to have significantly higher mercury concentration than women (0.6501 ± 0.163 ng/ μ g). Those who belong to the 41-50 age group (3.129 ± 2.33 ng/ μ g) contained a significantly higher mercury concentration in their hair. The total mercury concentration in hair samples was mostly inorganic in nature compared to methyl mercury. The presence of mercury, albeit within the safe limits, highlights the need for strict implementation of policies to stop its use in the processing of gold ores to prevent further deterioration in the health of the community and their environment.

(Authors' abstract)

Keywords: *Environmental science, Total, Methyl, Inorganic mercury, Small-scale mining, Hair analysis*

**Contrasting patterns of changes in root biomass and organic matter content in mangroves
damaged by super typhoon Haiyan**

Reyes, Margarita Alexandra D., Uson, Kayla Marie I., Salmo, III, Severino G.

We investigated the relationships of post-typhoon changes in both vegetation and soil characteristics with root biomass and carbon content in mangroves damaged by Super Typhoon Haiyan. Both sites (located in Isabel and Ormoc, Leyte) are within the 20-km radius of the typhoon path. Three replicate transects were randomly assessed in each site. Three plots were assessed per transect representing different tidal inundation (low vs. mid vs. high). The vegetation and soil pore water physico-chemical parameters from each plot at low tide. In each plot, core samples were collected at 20-cm depth and were sectioned every 5-cm for the analyses of root biomass and organic matter (OM) content. Results showed significant difference between sites with zones and soil depths and are correlated with the canopy cover (in the vegetation) and with temperature and redox (in the soil). Isabel has higher OM content and higher root biomass than Ormoc. Plots that are highly inundated and are within the upper 0-10 cm. depths have at least 30-50% higher OM and root biomass than that of highly inundated and deeper depths. Our findings showed a contrasting pattern of post-typhoon regeneration (with habitat conditions) that will be important in evaluating potential recovery trajectory from a catastrophic disturbance. **(Author's abstract)**

Keywords: *Environmental science, Mangroves, Vegetation, Soil, Super typhoon Haiyan, Regeneration, Trajectory*

**Distribution of bats, across various habitat types in the small-scale gold mining site of
Masabong, Rosario, Agusan del Sur, Philippines**

Ibarra, Marian G., Valeroso, Gloria R., Olor, Rosalinda L., Paz, Sherryl L.

Caraga is one of the richest regions in Mindanao in terms of mineral deposits where mining operations proliferate. Although mining is known to be economically rewarding, it is also thought to be destructive to biodiversity in the region where wildlife studies are scarce. This research employed mist netting to determine the richness, diversity, trophic guilds, conservation status and geospatial distribution of bats across different habitat types (cultivated, mixed cultivated and forested and early secondary forest) within the small-scale gold mine site in Masabong, Rosario, Agusan del Sur. Ten Megachiropteran bat species were found in the area with a diversity of $H'=1.55$. Early secondary forest had the highest richness (9) and diversity (1.79). Bat community structure was represented by 70% frugivores and 30% nectarivores. The low relative abundance of the vulnerable *Megaerops wetmorei* (0.02) and the near-threatened *Eonycteris robusta* (0.19) and the presence of six endemic species *Eonycteris robusta*, *Eonycteris spelea*, *Haplonycteris fischeri*, *Harpyionecterus whiteheadi*, *Ptenochirus jagori* and *Ptenochirus minor* implied conservation value of the area. The results suggest that such small-scale gold mine area needs conservation attention to mitigate further destruction of potential habitats for bats especially for the endemics and threatened species caused by mining, logging, land-use change and bat hunting. A thorough ecological study on bats and habitat relationships will yield more information and insights about the possible effects of mining on bat community dynamics and thus a scientific basis for the formulation of ordinances and policies that would mitigate the adverse impacts of mining on bat fauna. **(Author's abstract)**

Keywords: *Environmental science, Bats, Small-scale, Mining, Diversity, Distribution*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 68

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0400

Dolphin watching in the Southern Tañon strait protected seascape, Philippines

Aragones, Lemnuel V., Talaue-McManus, Liana , Roque-Borigas, Mary Anne A. , Amor, Apple Kristine S., Keith, Edward O.

Dolphin watching is a growing economic activity in the southern Tañon Strait Protected Seascape (TSPS), the Philippines, an area that is also heavily exploited by fisheries . In order to examine the issues and challenges in this growing industry, we monitored relevant information regarding cetacean watching , conducted focus group discussions (FGDs) and educational seminar-workshops for various local stakeholders from 2004 to 2006, and followed these up from 2008-2012. From 9 May to 16 August 2004, we conducted structured interviews to determine the perceptions of cetacean-watching tourists (CWTs) and assess the level of local knowledge of fishers and non -fishers (NFs) regarding marine mammals and environmental management in this area . Ninety five (95) CWTs, 100 local fishers, and 64 NFs were interviewed. Sixty seven percent (n=64) of the CWTs believed that the overall quality of tours was impressive

primarily because they were able to watch, at reasonable costs , large groups of dolphins in close proximity and in an almost pristine environment. The majority of CWTs (-91%) felt that there is a need to develop a 'Special Management Plan' (SMP) for the southern TSPS focusing on cetaceans and their habitats. The increasing number of dolphin watching boats, heavy exploitation of fishing ground , misperception of local fishers that cetaceans are competitors with fisheries, and lack of a SMP or a Management Plan *per se* for TSPS warranted the facilitation of a participatory management process to protect the cetaceans and their habitats. This study has shown that even with only preliminary results, survey interviews of key stakeholders in combination with FGDs and seminar-workshop could be critical in facilitating a participatory management process. In the case of the TSPS, this participatory approach Led to the formation of the Tañon Strait Association of Dolphin and Whale Watching Operators, Inc. (TaSADoWWI), and eventual development of cetacean watching protocols for the area. All of these highlight the importance of following a participatory process, empowering stakeholders , and monitoring relevant information (e .g., numbers of cetacean watching tourists, cetacean watching boats and its impacts, fisheries, dolphin behaviour and abundance) to ensure the Long term sustainability of dolphin watching and fisheries in southern TSPS area. **(Author's abstract)**

Keywords: *Environmental science, Dolphin watching, Cetacean watching, Dolphins, Whales, Perception, Participatory management process, Fisheries, Tarion Strait, Philippines*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 2, 1-33
(Filipiniana Analytics)
Fil(S) Q1.A3 S35 25/2 2013

0401

Fish kill investigation through water quality assessment in Lake Buhi, Camarines Sur, Philippines

Quintana, Carissa

The Food and Agriculture Organization (FAO) of the United Nations defined aquaculture as the fanning of aquatic organisms, indicating that some sort of intrusion to the rearing process and aquatic environment is done to enhance production. The intensity of fish farming production causes the water quality to deteriorate since there is a significant increase in organic deposition brought about by uneaten fish feed and faecal discharge from fish. An extreme consequence of this deterioration in water quality is the phenomenon of fish kills. Fish kills occurring to cultured fish represent potentially huge economic losses and indicate a severe environmental problem where they occur. An important lake where a disturbing trend of fish kills have occurred is Lake Buhi in Camarines Sur. Determining whether it is the unsustainable aquaculture practices of the fish cage operators in

Lake Buhi causing the massive fish kills is the most pressing question that stakeholders have nowadays. The investigation necessitated an analysis of eleven water quality parameters: depth, light penetration, pH, conductivity, turbidity, dissolved oxygen, temperature, total suspended solids, phosphates, nitrates, and sulphates. Eight sampling stations were chosen based on their associated land and water uses and sampling was undertaken on September and November 2013 and April and August 2014. The water quality analysis was combined with fish cage distribution mapping using Integrated Land and Water Information Systems (ILWIS) and a 100 respondent survey on aquaculture practices. Descriptive statistics showed the overall water quality of Lake Buhi unable to meet standards set by DAO 34 for its official classification: Class B. Assuming normality, two way anova showed that most parameters were significant among the eight stations and four sampling periods with a p value of 0.000 for most parameters. Fish cage distribution revealed unrestrained proliferation of fish cages in that quadrant of the lake. This investigation revealed that fish kills were strongly induced by a deteriorated water quality brought about by intensive aquaculture. This data helps the local government of Buhi in developing a community based action plan to fix the fish kill problem and save Lake Buhi.

(Author's abstract)

Keywords: *Environmental science, Aquaculture, Fish kill, Lake Buhi, Water quality*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 78

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0402

Lake Pulangi: assessment on fishery and its productivity

Gracia, Jr., Arturo G., Selpa, Eric Claire T., Abarquez, Vince R., Jacalan, Diana Rose Y., Salolog, Mary Cor S., Caminero, Hidvard O., Quimpang, Victoria T.

This study was conducted to update the current status of fisheries and fish production in Lake Pulangui in Bukidnon. Ten percent (40) of the total fishermen (respondents) in different age brackets were interviewed; and supplementary questionnaires were given as well to obtain information on lakes status and production. Results revealed that there was a gradual decreased in the total number of fisherrnen (326) in this study as compared to the retrieved data from the years 2011 (379) and 2005 (390). Gill-nets, cast-nets, and fish-pots are the commonly used fishing gears. However, 6 illegal fishing gears (gill-net #7, mosquito net, electric fishing, chemical poisoning, drag-net, and *tikbong*) were occasionally reported in the area. Twelve faunal species composed of 8 fishes, 2 gastropods, 1 bivalve, and 1 crustacean were recorded in the lake. On the other hand, the average CPUE (Catch Per Unit Effort) is 6 kilograms which means that the lake has a fish production of 713 tons in a year. The CPUE is 42 % lesser as compared to the year 2011; this is attributed to the high rate of sedimentation in the lake which makes the area

fragmented and less productive. Among the species, two fish species (*Oreochromis niloticus* and *Cyprinus carpio*) and 1 crustacean (*Macrobrachium rosenbergii*) were the commonly harvested and sold in different price brackets (P 25-60/kilo for *O. niloticus* and P 35-60/kilo for *C. carpio*). The average kilogram of fish sold per day/person is 3 kilograms with a price of P35/kilo, thus, revealing total annual revenue of P 12,493,950.00. The results indicate that there is indeed a decreased in the fish production due to the alteration of lake's physical property. **(Author's abstract)**

Keywords: *Environmental science, Fish production, Catch per unit effort (CPUE), Fishing gears, Oreochromis niloticus, Cyprinus carpio*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 79

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0403

National patterns of Philippine reef fish diversity and its implications on the current municipal-level management

Madrid, Ryan Gabriel S. , Ongsypping, Stevenson S. , Go, Kevin Thomas B. , Anticamara, Jonathan A., Valdecañas, Francesco Antonio

Recent national-level assessments of Philippine reef fish diversity have been mainly based on species richness surveys, but generally do not account for reef fish abundance and biomass—metrics that better describe fish community assemblages. Given that the Philippines is considered a major biodiversity hotspot and is heavily reliant on coastal resources, there is a great need to quantify the current status of its reef fish diversity using standardized methods. Here, standardized Underwater Visual Census (UVC) belt transect sampling methods were used to quantify current levels of reef fish species richness, relative abundance, and relative biomass throughout the Philippines. Results showed that most surveyed municipalities were still species-rich (22.2 ± 0.8 reef fish species per 100 m²), but appeared depleted in terms of reef fish abundance and biomass. Partitioning analysis revealed significant differences in reef fish species richness patterns across municipalities, suggesting the presence of a few restricted-range and rare species per site. However, partitioning analysis accounting for relative abundance showed that reef fish diversity was generally homogenous across study sites, suggesting the dominance of a few highly-abundant species. SIMPER analysis revealed that Philippine reefs were generally dominated by small and medium-bodied species, rather than large-bodied species—the latter of which are especially vulnerable to fishing due to certain life history traits (e.g. , late age at maturity and slow growth rate) and commercial exploitation. While current municipal-level management may be sufficient for restricted-range fish species, large-scale conservation efforts (i.e., in the form of collaborative marine reserve networks) are needed for wide-range and large-bodied species that are not confined to politically-defined municipal boundaries. In addition, long-term and

nationwide efforts to systematically monitor Philippine reef diversity are needed to provide up-to-date knowledge of the status of Philippine reef diversity that will help support science-based reef management and recovery efforts throughout the country. **(Author's abstract)**

Keywords: *Environmental science, Conservation, Coastal management, Marine reserves, Philippine reefs, Reef fisheries*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 27 Issue No. 1, 1-47

2015,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 27/1 2015

0404

Population, motorized vehicles, respiratory diseases and ambient air total suspended particulates concentrations

Laping, Lizamyl R., Deloria, Ild

This study determined the relationship of ambient air total suspended particulates concentrations with population, motorized vehicles and respiratory diseases in Zamboanga City. The results showed that the ambient air TSP concentrations from 2003 to 2009 improved and can be classified within the acceptable level for a fair environment, however, exceeded the annual allowable concentrations of 90 $\mu\text{g}/\text{Ncm}$. The correlation of ambient air TSP concentrations using linear regression was high with urban population ($R = 0.742$ to 0.906) and very high with motorized vehicles ($R = 0.781$ to 0.894); both were significant at $p < .05$ for all the three stations but low or slightly correlated with morbidity ($R = 0.20$ to 0.316) and negligibly correlated with mortality cases due to respiratory diseases ($R = 0.141$ to 0.20). Multiple regression analysis showed high correlation ($R = 0.736$ to 0.771) of ambient air TSP concentrations to two variables only – urban population and motorized vehicles but only significant at $p < .05$ for stations 1 and 2. Adding one or more variables did not significantly improve the relationships of ambient air TSP concentrations with other independent variables. The study recommended for the conduct of a detailed monitoring analysis by measuring ambient air TSP using particle size 2.5 (PM 2.5) with traffic count, considering the age, gender and respiratory diseases in health centers and hospitals within the urban barangays. Part of the recommendation was to examine other major air pollutants which may have adverse health effects and other factors which may influence ambient air TSP concentrations. **(Author's abstract)**

Keywords: *Environmental science, Population, Motorized vehicles, Respiratory diseases, Ambient air total suspended particulates concentrations*

Purification and chemical and spectroscopic properties of soil hydrophilic fulvic acid

Navarrete, Ian A.

Despite the perceived view that the dynamics of soil hydrophilic fulvic acid (HiFA) regulate the fate of plant nutrients, movement and transport of metals and hydrophobic organic chemicals in soils, HiFA have been largely overlooked in biogeochemical studies. The lack of research interest on HiFA can be attributed to the complexity in its purification because FA is soluble in alkaline and in acidic conditions and that the obtained HiFA solution is contaminated by salts that is extremely difficult to remove in solution. I address this purification problem by purifying HiFA by tangential flow ultrafiltration (TFU), which is versatile in any ligands used in extracting FA in soils. This present paper is intended as an initial step with the aim to characterize soil HiFA by elemental (C, H, O, N, S) and isotope (^{13}C , ^{15}N) analyses, Fourier transform infrared (FT-IR), fluorescence spectroscopy and neutral sugars analysis. To obtain supplementary information, characteristics of soil HiFA were then compared to soil hydrophobic FA (HoFA). Results revealed marked differences between HiFA and HoFA in terms of chemical (elemental, isotopic and neutral sugar compositions) and spectroscopic properties (FT-IR, fluorescence spectra). The HiFA carbon accounted for 46 to 80% of the total FA carbon. Neutral sugar contents in HiFA is 2-fold larger than in HoFA and are mostly dominated by rhamnose, galactose and fucose, whereas in HoFA, mannose was the most abundant neutral sugars, indicating that not only the quantity, but also quality of neutral sugars varies between HiFA and HoFA. To further enhance the understanding of the characteristics and composition of soil HiFA, it is indispensable to isolate and purify HiFA. Thus, purification of soil HiFA by TFU is satisfactory for such purpose. **(Author's abstract)**

Keywords: *Environmental science, Elemental analysis, Ultrafiltration, ^{13}C , Neutral sugars*

Rapid habitat assessment of flood prone areas of selected critical rivers in Mindanao, Philippines

Opiso, Einstine M., Puno, George R., Quimpang, Victoria T., Cipriano, Jorge A., Labadan, Abigail J., Bonghanoy, Aljem O., Amper, Rose Angelica, Ledres, Melea Louiese C.

Ledres

Ten selected critical rivers in Mindanao were rapidly assessed to determine the current status and degree of impairment as basis in recommending intervention and rehabilitation plans. In-situ measurement of water quality parameters, interview questionnaires and secondary data, geostatistical analysis, and some geomorphic characterization were employed in the study.

Tago River in Surigao del Sur was the most deteriorated with severely scoured banks and channelized stream with high risk to population. The ranks of increasing degree of impairment of rivers follow the order: Padada, < Tanda, < Dipolog, < Mandulog, < Iponan, < Cabadbaran, < Surigao, < Tago. Several stressors were identified to have influenced each river's integrity which includes major economic activities along the river such as unregulated physical resource extraction like mining and quarrying and intensive agricultural cultivation. Upstream areas of the watersheds and riparian zones lack vegetation which makes surrounding built up and residential areas more vulnerable to flooding. It is recommended that greenbelt establishment and environmental protection ordinances by the LGU must be implemented. Hydrologic analysis is recommended, moreover, comprehensive watershed assessment studies must be employed for holistic rehabilitation strategies and remedial activities. An institutional governing board be created for effective coordination of government policies. **(Author's abstract)**

Keywords: *Environmental science, Watershed, Assessment, Characterization*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 81

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0407

Spatial patterns of bird diversity and abundance in an urban tropical landscape: The University of the Philippines (UP) Diliman Campus

Villasper, Jonathan , Tamino, Annette , Ong, Perry , Aloya, Alexander , Vallejo Jr., Be

An analytical biogeographic analysis of urban bird diversity and abundance was conducted in the University of the Philippines Diliman campus from February to April 2005. Using the Jokimäki urban bird census technique on four different land use subplots we observed 36 species of birds and 4036 cumulative counts individuals of these species. The open field area had the highest number of species (23) while the residential area had the lowest species number (14). The residential area has the highest bird counts and the College of Science complex had the lowest number of counts. Linear regression analysis of landscape features on bird abundances reveals that the number of trees and buildings are most significant predictors of abundances. Spatial features and the trophic characteristics of the bird species are not significant factors to account for abundance. Trees and buildings affect the distribution and abundance of urban exploiting species *Passer montanus* and *Pycnonotus goiavier* with the former favoring built spaces and the latter favoring trees. Analysis of species area curves suggests that the bird community of the campus is not homogenized and that certain habitats allow uncommon species to persist. We recommend that in order to increase bird biodiversity existing green spaces must be preserved, fruit trees planted and in areas reserved for building development, pocket gardens and rooftop gardens be included in the landscape architectural design. **(Author's abstract)**

Keywords: *Environmental science, Birds, Biogeography, Urban ecosystems, University of the Philippines, Metro Manila*

Science Diliman: a journal of pure and applied sciences, Volume No. 20 Issue No. 1, 1-10

2008,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 20/1 2008

0408

Status of harvestman in the vicinity of Busay Spring Resort, Mt. Malambo, Datu Salumay, Philippines

Mohagan, Dustin Kean B., Naig, Francis, Tanamal, Byorn, Tanamal, Ivy C., Mohagan, Dale Joy B., Mohagan, Alma B.

Harvestmen are the less studied group Arachnids. Their presence and diversity indicates the history and quality of the environment but their biology, ecology and taxonomy are still undocumented here in the Philippines. Studies on arthropod fauna here in Mindanao is so scanty. Thus, this paper aimed to contribute data on the species composition and status on harvestmen in the vicinity of Busay Spring, Mt. Malambo, Datu Salumay, Davao District. Three study stations were sampled: Eastern side, Western and the Southern side of Busay spring. The site is a dipterocarp forest with a little degree of disturbance due to ecotourism. A total of twelve species of harvestman were listed. These belong to 3 suborders and 5 families. Six of the species were possibly new to Science for possible classification, identification and description. They are more abundant in a less disturbed habitat. The Busay Spring of Mt. Malambo is the home of 12 rare species of harvestman that are possibly endemic to the Philippines. **(Author's abstract)**

Keywords: *Environmental science, Harvestman, Endemic, Mindanao, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 85

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0409

Using local ecological knowledge and environmental education in resource management of abalone in Carot, Anda, Pangasinan

Capinpin, Jr., Emman

The objectives of the present study were to (1) determine the local ecological knowledge (LEK) of abalone gatherers through interviews and mentoring, and assess the correspondence between scientific information and LEK, so that areas where local knowledge may be most useful in resource management could be identified, and (2) to empower selected gatherers/farmers with knowledge and technical skills through environmental education to help develop or build their capacity to become sustainable resource managers. The LEK of abalone fishers was determined using three complementary approaches – group interview, individual interview, and mentoring sessions.

Local fishers possess a wealth of knowledge about the interactions of species gained through many years of observations, and this knowledge may be useful in guiding biologists in ecological restoration or management regimes. Additionally, the fishers' LEK, validated by modern scientific ecological findings, could be a source of important and effective ideas in resource management. The knowledge of the abalone gatherers about important abalone fishing grounds should help in pinpointing critical areas that need to be managed. Abalone mariculture in cages should be set up in these areas to routinely create dense breeding populations which can help in enhancing recovery and in providing fishers with a source of additional income. The continued enforcement of marine protected areas and the periodic release or reseeding of abalone in sanctuaries could also be considered viable resource management options. Other recommendations for resource management based on gathered local knowledge and lessons learned from the environmental education (EE) seminars are also presented. **(Authors' abstract)**

Keywords: *Environmental science, Abalone, Local ecological knowledge, Environmental education, Resource management*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 24 Issue No. 1, 43-55

2012,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 24/1 2012

FISHERIES

0410

An analysis of technical factors affecting gillnet fisheries in Muara Angke: a fishing landing site in North Jakarta

Haluan, John

This study was conducted to be able to analyze the factors such as vessel gross tonnage (X1), engine HP (X2), total fisher (X3), total operating days (X4), gillnet length (X5), and drifting time (X6) that possibly influence the total fish catch (Y) by using the Cobb-Douglas production function. Results show that all the six factors simultaneously influence the total fish catch. However, results of the student's T-test indicate that of the six factors the total operating days (X4) and drifting time (X6) have the strongest influence on total fish catch (Y). **(Author's abstract)**

Keywords: *Fisheries, Gillnet fisheries, *Rastrelliger sp.*, Ikan kembung*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 34-38

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0411

The biology of shipjack, *Katsuwonus pelamis*, and the yellowfin, *Thunnus albacares*, collected from the landing sites in Northwestern Coast of Luzon

Mamhot, Jinnie R.

Tuna samples were collected monthly from different landing sites in Northwestern Luzon. Six hundred and fifty samples comprising 306 skipjacks (*Katsuwonus pelamis*), and 350 yellowfins, *Thunnus albacares*, were analyzed as to their age and growth, sex ratios, maturation and fecundity, and food preference.

The fork lengths (FL) of skipjacks ranged from 21.0 to 73.0 cm while that of yellow fins ranged from 19.5 to 90.0 cm. Skipjacks from Bolinao, Pangasinan shared faster growth together but these were heavier in the Ilocos area. The growth of yellowfins was generally slower but these were heavier. The males dominated for both species. The number of ova varied and was not correlated with size. Three major food items were identified. The prey preference and composition differed between the two species. **(Authors' abstract)**

Keywords: Fisheries, *Katsuwonus pelamis*, *Thunnus albacares*, Shipjack

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 146-156

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0412

Catch and release efficiency of juvenile and trash excluder devices (JTEDs)

Chokesanguan, Bundit, Ananpongsuk, Suppacahi, Shiriraksophon, Somboon

The SEAFDEC Training Department, in cooperation with the Brunei Darussalam Department of Fisheries conducted experiments on Juvenile and Trash Excluder Devices (JTEDs) during the year 2000 in Brunei Darussalam waters. The objective was to study the catch and release efficiency of juvenile and trash fish devices using differences in the escape opening of JTEDs. Two types of JTEDs namely a rigid sorting grid (bar spacing 3 cm) and a two cod-end type (50/35 mm cod-end mesh size) were designed and made. Five operations were carried out using the rigid sorting grid JTED and two cod-end types, respectively. Separation efficiency by size among the same species between a body length i in the cod-end and body length j in the cover net is defined as $\frac{y_i}{y_j} + \frac{y_j}{y_i} - 1$, where y_i is the recovery ratio in the cod-end, and y_j is the recovery ratio in the cover net, that is, the proportion of the catch retained in the cod-end. Results indicate that the separation performance of the sieving grid of the JTED depends on the design of the releasing device, grid bar spacing, and cod-end mesh size as well as the swimming ability of each species in the net. **(Author's abstract)**

Keywords: Fisheries, Juvenile and trash excluder devices (JTEDs), Rigid sorting grid, Two-cod end type

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 39-45

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

Crab trap fisheries: capture process and an attempt on bait improvement

Anraku, Kazuhiko, Archdale, Miguel Vazquez, Mendez, Benjamin C., Espinosa, Rommel A.

This study consists of three phases: 1) the behavior of crabs towards baited traps was observed in the field and the behavior sequence was analyzed; 2) the olfactory responses of *Portunus pelagicus* to saccharides and amino acids were recorded electrophysiologically; 3) experimental fishing operations at three fishing grounds were conducted using traps with different types of bait; fish, sugarcane, and fish-sugarcane combination. Results show that crabs approached the traps, move around and eventually entered the traps after a few attempts. They approached the traps mainly from downstream. It appears that this behavior is mediated by their chemical sense of olfaction. Stimulation of the aesthetase in the antennule of *P. pelagicus* with saccharides and amino acids elicited electrical impulses across the antennular nerves. The order of relative stimulatory effectiveness (RSE) of the stimulants was as follows: Ala>Gly>Glu>Tau>galactose>glucose. This electrophysiological experiment showed, for the first time, that crabs can respond to saccharides. During the field experiments seven species of crabs were caught, *Portunus pelagicus*, *Portunus sanguinolentus*, *Charybdis cruciata*, *Thalamita sp.*, *Karanpaiya sp.* and 2 unidentified species. Statistical analysis was performed to compare the bait effect on catch efficiency for the first 5 species, as they were commercially important. The total number of crabs captured by using baits consisting of fish, sugarcane, and fish-sugarcane combination was 28, 9 and 40, respectively. There was a significant difference among the bait types. Apparently, sugar enhanced the catch efficiency of the trap if mixed with fish, while sugarcane by itself was less effective than the fish bait. **(Author's abstract)**

Keywords: Fisheries, *Portunus pelagicus*, Saccharides, Amino acids, Relative stimulatory effectiveness (RSE)

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 121-129

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

A diffusion-advection model for the propagation of odor plumes from stationary baits

Espinosa, Rommel A., Anraku, Kazuhiko

This study attempts to provide an analytical tool that will aid in predicting the odor concentration distribution around a bait setup at any instant within a typical soaking period after the system is deployed. Results of the model indicate that the nature of odor propagation is such that reduction of its concentration by two orders of magnitude occurs within the first 50 m away from the source. However, concentration values remain essentially within the same order of magnitude even at larger distances of as much as 200 m. A significant output of the model is a map of relative concentration values that can be combined with actual values of initial attractant concentration at the source to produce possible estimates of the active area around the bait. **(Author's abstract)**

Keywords: Fisheries, Diffusion-advection, Odor plumes, Stationary baits

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 130-145

(Filipiniana Analytics)

The diversity of catch between set-net (fish corral) and small type stationary trap net

Yamane, Takeshi, Babaran, Ricardo P.

The effect of lunar cycle on the diversity of catch between set-net and small type stationary trap net was studied. A series of samplings was done between November 27, 2000 and June 30, 2001 for set-net (fish corral) in the Philippines, and for small stationary trap nets in Japan over one fishing period, from July 13 to November 18, 1998. The catch data were analyzed. Although there were differences in species composition, the results suggest that the diversity of catch in each region, was closely related with the lunar cycle. **(Author's abstract)**

Keywords: *Fisheries, Small type stationary trap net, Set-net, Fish corral*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 179-183

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

Effects of current directions on the approaching process in a baited pot of the mantis shrimp *Oratosquilla oratoria*

Yamaguchi, Yasuhiro, Kawazu, I., Samson, R.

The study was conducted at the fishing ground of Togitsu Town, southwest of Omura Bay, Nagasaki Prefecture, northwest of Kyushu in Japan. Sampling was conducted 11 times from July to October 2000 during the fishing season of the mantis shrimp. The study tried to explain the effects of current direction in relation to the behavioral patterns of mantis shrimps towards a baited pot. Underwater TV camera observations revealed that mantis shrimps are not actually attracted to the bait during the approaching process. Findings suggest that the reaction of mantis shrimp to pots is stimulated by a combination of several components such as water current and the form and size of the different parts of the pot. The reaction of the target animals usually fluctuates as the form and size of pot changes. Hence, these factors together with current direction play a significant role in the approaching process of mantis shrimp to the pot as well as making them stay in the pot until they are captured. **(Author's abstract)**

Keywords: *Fisheries, Mantis shrimp, Oratosquilla oratoria, Baited pot*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 24-33

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

Electrophysiological taste responses of fishes: an indicator of environmental quality

Yacoob, Syed Yahiya, Anraku, Kazuhiko, Matsuoka, Tatsuro, Archdale, Miguel Vazquez

An electrophysiological method for determining the effect of toxicants on taste responses of the Nile Tilapia, *Oreochromis niloticus*, is described. Chloramine-T, a widely used disinfectant, was used as the model toxicant. Taste responses were recorded from a branch of the facial nerve innervating the taste receptors of the upper lip and the anterior part of the oral cavity. The effect of the toxicant was determined by comparing the magnitude of the responses to the same stimuli before and during exposure of the taste receptors to the toxicant. Within 15 minutes of the exposure to chloramine-T (10.0mg/L), the responses to 1 mM solutions of L-methionine, L-arginine and quinine-HCl (QHCl) were reduced to 57.9 ± 6.9 , 50.2 ± 6.0 and 29.1 ± 9.2 percentages (mean \pm SD) of those before exposure, respectively. No further suppressions were observed after 15 minutes. The suppressions were reversible after rinsing the receptors with chloramine-T free water, indicating that chloramine-T does not cause any permanent damage to the physiological features of the taste receptors but interferes only with their normal functioning. The possible mechanisms of suppressions and their consequences on feeding behavior are discussed. The electrophysiological assay reported in this study is rapid and accurate. Also, the long-term impacts of taste suppression on the individuals and population are easily discernible. Hence the method can be used for monitoring the environmental quality and for assessing the impacts of pollutants. **(Author's abstract)**

Keywords: Fisheries, *Oreochromis niloticus*, Chloramine-T, L-methionine, L-arginine, Quinine-HCl (QHCl)

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 111-120

(Filipiniana Analytics)

Fi(S) QH81 U3 6/1-2 2001

Environmental-friendly aquatic technologies

Garcia, Jr., Manuel P.

Environmental-friendly aquatic technologies are sustainable and supportive of the fishery industry. They are of three types, namely: indigenous, improved and introduced. **(Author's abstract)**

Keywords: Fisheries, Aquatic technologies, Indigenous, Improved, Introduced

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 1-3

(Filipiniana Analytics)

Fi(S) T1 N2 18/3 1993

Evaluation of the major tuna fisheries along the Northwestern Coast of Luzon, Philippines

Prado, Valentino V.

Purse seine and handline landings along the Northwestern Luzon coasts were evaluated from July 1996 to May 1997 as to catch, composition, seasonality and catch rates. Sampling was undertaken weekly for purse seine, and every third day for handline, regardless of holidays. The tunas comprised more than 77% and 81 % of the total landings of purse seine and handlines in the waters respectively. The roundscad, an associated species usually caught by purse seine, comprised a significant portion of the landings. Among the tunas, the skipjack was the primary catch of purse seine while yellowfin was the dominant species for handline. The highest catch rate of these species with respect to the methods of capture was in February and November for purse seine and variable for handline with respect to landing areas. The catch rate of pure seine was estimated at 3.5 mt/set during the period. For handline it varied according to season and

landing area with the least mean CPUE obtained for Darigayos handline fishermen. **(Author's abstract)**

Keywords: Fisheries, Northwestern Coast of Luzon, Philippines , Tuna fisheries, Yellowfin

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 228-238

(Filipiniana Analytics)

Fi(S) QH81 U3 6/1-2 2001

The gustatory response of the Nile tilapia (*Oreochromis niloticus*) to saponin determined electrophysiologically

Kawamura, Gunzo, Yacoob, Syed Yahia, Anraku, Kazuhiko, Armada, Nygiel

The gustatory response of the Nile tilapia, *Oreochromis nilotica*, to saponin was studied through electrophysiology. The fish samples (18.3 ± 0.5 cm) were obtained from a fish farmer and were tested for the stimulatory effectiveness of L-methionine (1 mM) and saponin (1- 500 ppm). The stimulant solutions were prepared by using artificial pond water (APW, pH 6.8 - 7.1). The gustatory responses were recorded from a branch of the facial (VII)-trigeminal (V) nerve complex innervating the gustatory receptors of the anterior part of the oral cavity and the upper lip. The responses to saponin were measured three times for each concentration and the response magnitudes were expressed as percentages of the responses to L-methionine. The responses to L-methionine were measured before and after each exposure to the different concentrations of saponin and at the end of experiment.

The Nile tilapia did not respond to saponin at concentrations of 1 ppm and 10 ppm but showed measurable responses at 25 ppm and above. This implies that Nile tilapia can taste saponin and the threshold is at 25 ppm. The gustatory sensitivity of the Nile tilapia to the L-methionine was not influenced by the repeated application of saponin to the lip. The exposure of the taste buds to saponin for short periods does not seem to have any suppressive effect on the gustatory sensitivity and feeding of Nile tilapia. **(Authors' abstract)**

Keywords: Fisheries, *Oreochromis niloticus*, Nile tilapia, Saponin, L-methionine, Electrophysiology

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 106-110

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0421

Influence of lunar cycle on set-net catch

Babaran, Ricardo P., Yamane, Takeshi T.

Small-scale nets are usually utilized in tropical coastal waters that are strongly influenced by tidal currents. In this study, the daily catch of tropical set-net, which is set in Iloilo Strait in Central Philippines and operated by a subsistence fisherman, was regularly monitored and analyzed to evaluate the influence of lunar cycle.

The monitoring period of daily catch data was from 27 November 2000 to 30 June 2001. Two types of data were gathered. One is simply a record of the total daily catch for the period of the study. The other data set includes a more detailed analysis in relation to the lunar cycle. The samples were sorted and analyzed to determine the catch composition of the gear. Individuals for each species were also measured to characterize the size distribution of the dominant fish species. The influence of lunar phase on set-net catch was then determined by statistically treating similar data sets, which were categorized, according to lunar phase.

Plans for subsequent studies toward responsible management of coastal fishery resources are presented and discussed. **(Authors' abstract)**

Keywords: Fisheries, Set-net, Lunar cycle, Small-scale net

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 86-91

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0422

Measurement of a model lift-net

Ishizaki, Munechika, Nishi, Takaaki, Babaran, Ricardo

To make these data useful for the control of fisheries resources, we developed a measuring system for a model lift-net and measured in a flume tank the tension of the pulling lines and changes in the cross section of 4 models of lift-nets, where the only difference was mesh size. The pulling lines were pulled at a speed of 4 cm/s, which was the same as that used in actual

fisheries and the tension was measured by using a load cell. The shape of the net, which changed with time, was recorded by a digital formatted video camera. The inflection points of the net were detected by a points-analyzer which we developed. Although the tension of the pulling line in smaller mesh-size was comparatively bigger than that in larger mesh-size, the difference was still smaller than expected. The angles of each part in relation to the horizontal line, the angles of the moving direction, and the angle of attack, which is defined as the difference between two previous angles, were calculated. The estimation of the attack angle considering the moving direction of the nets seemed to be lower than that which did not consider the moving direction of the net. **(Author's abstract)**

Keywords: Fisheries, Lift-net, Flume tank, Load cell

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 15-23

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0423

Methods of assessing impacts of fisheries on coral reefs in the Philippines

Ingles, Jose, Flores, Jimely, Matsuoka, Tatsuro

SCUBA diving was undertaken in the coral reefs of northern Palawan, Guimaras Island, Tingalan, Aklan and Davao Gulf between 1999 to 2001 to assess the possible physical impacts of fishing gears and the resulting ecological impacts brought about by fishing. Impacts of fisheries on coral reefs were categorized into physical and ecological impacts. The former includes physical damage to coral organisms brought about by the use of fishing gears and accessories. The latter include the decimation of target fish populations hence bringing with it changes in the composition and assemblage of fish communities.

To quantify physical damage on the reefs, we are proposing a set of factors to be determined or measured along a plot transect set both in the reef slope and reef flat. To quantify ecological damage, we are proposing the use of fish target index. This is the estimate of the fish density of a fish species that is the target of a particular fishing gear, e.g. (groupers, octopus, lobster). The set parameters introduced here have one great advantage of being used in all reefs and would be ideal in assessing whether protective management or recovery of reefs really works. **(Authors' abstract)**

Keywords: Fisheries, Coral reefs, Physical impacts, Ecological impacts

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 184-195

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0424

Reforestation and management of mangrove swamp in Taklong Island, Guimaras. Mass Planting, Soil characterization and fish recruitment pattern.

Baldevarona, Rodolfo B.

This study underwent the mass planting of bakhaw propagules, soil characterization and identification of the fish recruitment pattern in the mangrove swamp at Taklong Island, Guimaras. The total number of *Rhizophora sp.* propagules planted was 14,165 covering an area of 20 ha. The survival rate was 94.28% and the young trees were growing at the rate of 42.09 cm/year. The three species of bakhaw had their respective preference for growth. The *bakhaw bangkaw* preferred the sandy-rocky portion of the beach while the bakhaw lalake was found more abundant on the sandy-muddy portion of the tidal Oat and the *bakhaw babae* preferred the muddy-deep water portion of the shoreline. The fish samples collected revealed that there were 23 species of finfishes caught together with some crustaceans and mollusks. They were found to move to the shoreline areas on the onset of February and were most abundant in April. After this, sampling data showed a continuous decline towards the end of the experiment.

Lectures on coastal resource management and the role of mangroves in the ecosystem were conducted on Grades IV, V and VI pupils of the Salvacion Elementary School, all students of the Salvacion Barangay High School and the Grades IV, V and VI pupils of the Lapaz Elementary School all of the municipality of Nueva Valencia. The importance of nature conservancy, wise use and proper management available resources were stressed. **(Authors abstract)**

Keywords: Fisheries, Reforestation, Mangrove, Taklong Island, Guimaras, *Rhizophora sp.*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 5-14

(Filipiniana Analytics)

Fil(S) T1 N2 18/3 1993

0425

Resistance characteristics of Philippine outrigger fishing crafts

Aguilar, Glenn D., Shigehiro, Ritsuo, Kuroda, Takako

A ¼ scale model of an outrigger craft was built in the Philippines by a traditional boatbuilder using exactly the same materials and construction method as the actual crafts. The hull was shipped to Japan for testing at the National Research Institute of Fisheries Engineering for various experiments including resistance, seakeeping, determination of metacentric height and maneuvering. Resistance experiments at calm water included test runs from Froude Nos. of 0.12 to 1.40 corresponding to model velocities of 0.52m/s to 7.24m/s. Experiments on resistance of the hull only and the hull with outrigger was also conducted to determine how much of an effect the outriggers would have on the total resistance. Results of resistance experiments were also compared with earlier model tests conducted at the test tank laboratory of the

University of the Philippines in the Visayas. Available data on existing crafts were also used to compare the results of the experiments with actual crafts. Results show that outriggers add to resistance and hence, powering requirements of the craft as compared to the same main hull without the outriggers. This means that it is much easier to drive the hull through the water without an outrigger. From the results of the experiments, enough information is available to recommend the engine rating given a particular length and assuming that the hull forms are similar. The guesswork in selecting engines for similar forms of different lengths is eliminated because the owner

or builder can readily be provided with what engine horsepower to install for a craft of a given length. Instead of going through a process of trial and error to determine the actual engine to be installed, it would only be necessary to provide the length of craft to know the engine. **(Author's abstract)**

Keywords: *Fisheries, Outrigger fishing crafts, Hull, Resistance*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 46-54

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0426

Revision of research cooperation toward responsible capture fisheries in tropical waters

Matsuoka, Tatsuro

The Code of Conduct for Responsible Fisheries was produced by FAO in 1995. It plays the principal role as the international paradigm to ensure conservation, management and development of living aquatic resources in world fisheries. The research needs in capture fisheries are clear in the Code: biodiversity of aquatic habitat and ecosystems should be conserved, adverse impacts on the resources and habitats by fishing should be avoided, and wastage in fishing should be minimized. Fishing gear selectivity is the single most important issue. Accordingly, evaluation of size and species selectivity of, in particular, gillnets and trawl nets, assessment of by catch and discards and technical countermeasures for their reduction, and assessment of derelict fishing gear and ghost fishing have been actively studied in capture fishery science and technology in Japan. However, studies on negative impacts of fishing to habitat, excess fishing capacity and survival of excluded organisms are inadequate. There are examples of improper consideration on the character of tropical waters such as over-estimation of global discards, misunderstanding of a wide range of trammel-net selectivity, introduction of longline gear to rich fishing grounds which may provoke unharvested injury and mortality in many technical assistance projects. Over-emphasis of global standardization in capture fisheries development and management may be reflected in the problem hence the multi-species and multi-sector character of capture fisheries in tropical waters must be taken into consideration in researches. Technical cooperation must not be a simple technical transfer from high latitude countries, but in situ research cooperation under local conditions is important.

Research cooperation to establish appropriate capture fishing technology applicable to develop and manage fishery resources and aquatic environment in tropical and sub-tropical Asian countries is encouraged. **(Author's abstract)**

Keywords: *Fisheries, Code of conduct, Tropical waters, Biodiversity of aquatic habitat, Ecosystem*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 1-14

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0427

Socioeconomic analysis of the marine fishing industry in Ilocos Norte, Philippines

Asia, Facundo B., Pascua, Edna C., Grande, Veronica O.

In 2000, we conducted a survey of the most common fishing gears in the coastal towns of Ilocos Norte, and determined level of fish production and profitability. The socioeconomic characteristics of the fishermen and other related factors affecting fishery resources management and exploitation were also assessed. Of all the fishing gear used, the bottom set gillnet was the most popular. While the drift gill net, tuna drift gillnet, and beach seine posted high mean catches and were profitable, the bottom set gillnet and spear gun were the most profitable. The respondents were at their prime years of life and had enough fishing experience but with low educational attainment. The income derived from fishing is not enough to meet the family's basic needs; this was supplemented with other means of livelihood. Most of the respondents were constrained with capital investment for their fishing investment. Income derived from fishing is significantly correlated ($p < 0.001$) with capital investment. Non-fishing income is significantly correlated with both household size ($p < 0.001$) and the number of dependents ($p < 0.001$). Illegal fishing practices, declining catch, lack of technical and financial/credit assistance, among others, were the problems identified. **(Author's abstract)**

Keywords: Fisheries, Marine fishing industry, Socioeconomic analysis, Ilocos Norte, Philippines

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 249-263

(Filipiniana Analytics)

Fi(S) QH81 U3 6/1-2 2001

0428

Spatial distribution and habitat selection of setnet-caught greasyback shrimp (*Metapenaeus ensis*) and banana prawn (*Penaeus merguensis*) in Batan Bay Estuary, Philippines

Anasco, Nathaniel, Babaran, Ricardo P.

Spatial distribution and habitat selection of setnet-caught commercial shrimps in Batan Bay Estuary, Philippines were investigated from February to October 1998. Water quality parameters from 20 stations were measured to identify habitats existing within the estuary. Results show that conductivity was the most variable environmental parameter and consequently the only one used in the categorization of habitats. Four habitats were identified as follows: *the Lagatik-Pinamucan Rivers sector, Batan Bay sector, Upper-river tributaries sector, and Banga Bay sector*. Fisheries catch data from 259 fish corral stations were also utilized to determine patterns of spatial distribution. Habitat selections of the two important commercial shrimps in the estuary were examined. *Metapenaeus ensis* were more frequent and abundant in sectors of Lagatik-Pinamucan rivers, upper-river tributaries and Banga Bay while *Penaeus merguensis* were more frequent and abundant in Banga Bay sector compared to the other three sectors. **(Author's abstract)**

Keywords: Fisheries, Greasyback shrimp, *Metapenaeus ensis*, Banana prawn, *Penaeus merguensis*

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 196-217

(Filipiniana Analytics)

Fi(S) QH81 U3 6/1-2 2001

Status of abalone fishery and experiential mariculture as a resource conservation strategy in Carot, Anda, Pangasinan

Capinpin, Jr., Emman

The study describes the abalone fishery in Carot, Anda, Pangasinan to develop mariculture and to reseed a part of the harvest as a resource conservation strategy. The abalone fishery of Anda is artisanal or small-scale, typified by fishers gleaning or free-diving on shallow rocky areas which are the typical habitat of abalone. Low densities of 1.67 to 8 individuals per 250 m² were observed. Local fishers have knowledge of productive fishing areas. Hence, cage culture of abalone in these areas could be a viable resource conservation strategy as they serve as reproductive reserves to supply larvae for continued productivity of the fishing grounds. Abalone mariculture following the Farmer Field School (FFS) concept was explored to address both resource management and economic needs. As a resource enhancement activity, mariculture guarantees that cultured abalone are allowed to grow to maturity before harvested, while some are retained to restock a marine sanctuary. Since mariculture makes possible the aggregation of individuals, the probability that fertilization would take place is increased. As supplemental source of livelihood, abalone is a high-value commodity and its culture can help augment the income of fishers. Small abalone (3-4 cm) can be cultured further for 3-4 months to increase their size and weight. Mariculture should be done from November to May to avoid the rainy season and improve survivorship. The experiential activity was successful because it became a means for the fishers to experience resource management. Under the FFS, the researcher became a facilitator and mentored the cooperators in learning from their experience. The lessons sharpened the fishers' skills in observation, problem-solving, decision-making, and critical thinking. This enabled them to gain an appreciation of their resource. **(Author's abstract)**

Keywords: Fisheries, Abalone fishery, Mariculture, Farmer field school, Conservation, Resource management, Experiential activity

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 1, 51-70

2013,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 25/1 2013

Transplantation and culture en masse of green mussel *perna viridis* from a stable community to Taklong Island, Guimaras

Baldevarona, Rodolfo B.

This study dealt with the transplantation and culture of green mussel, *Perna viridis* at different stocking densities in Taklong Island, Guimaras, taken from Sapien Bay, Capiz. The culture rafts were situated at the V.P. Channel between Taklong Island and the main island of Guimaras. There were four treatments at four replicates each in four culture rafts. Treatment I (25 pc/bag); Treatment II (50 pc/bag); Treatment III (75 pc/bag) and Treatment IV (100 pc/bag). Analysis of variance conducted on the length and weight increments of mussel revealed that there was no significant difference among the length increments of the

mussel at different stocking densities. Treatment I and II had significantly higher weight increments than Treatments III and IV. Survival rates very 100%in Treatments I and II; 79.3 in Treatment III; and, 86.4% in Treatment IV. The final finding in this study is that, the culture of green mussel in Taklong Island is highly feasible as exhibited by the growth and survival rates. Oceanographic parameters were found to be on the optimal levels. **(Author's abstract)**

Keywords: Fisheries, Green mussel, *Perna viridis*, Taklong Island, Guimaras

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 18 Issue No. 3, 21-36

(Filipiniana Analytics)

Fi(S) T1 N2 18/3 1993

0431

Turning performance of outrigger craft in the Philippines

Shigehiro, Ritsuo, Aguilar, Glenn , Kuroda, Takako

The maneuverability of outrigger craft has been drawing a great deal of attention concerning both the navigation safety and the handling of fishing nets in the Philippines. Since the hull of the craft is slender, its course keeping ability is adequate for fishing. Accordingly, the authors focused on the turning performance of the craft. Model tests were conducted to investigate the influence of the beam length of outriggers on their turning ability. Meanwhile, simulation studies were run to predict the maneuverability of the craft both qualitatively and quantitatively. From the simulation studies, the conclusion is reached that a safer and more efficient craft could be designed. **(Author's abstract)**

Keywords: Fisheries, Outrigger craft, Turning performance, Maneuverability

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 55-68

(Filipiniana Analytics)

Fi(S) QH81 U3 6/1-2 2001

0432

Using acceleration data logger for estimating activities of free-ranging fish

Kawabe, Ryo, Nashimoto, Katsuaki, Hiraishi, Tomonori, Kawano. Takafumi, Naito, Yasuhiko

A data-logger with an acceleration sensor was used to monitor tail beat and behavior of four Japanese flounders and one rainbow trout in a seawater aquarium or aquaculture net cage. About 15 - 20 hr of continuous swimming speeds, depth and two acceleration signals were collected. In addition, the images of swimming locomotion and behavior were recorded by using three video cameras. Owing to several characteristic waveforms of acceleration signals, we could distinguish between swimming and gliding. Thus using the waveform of acceleration and other data (speed and depth), we could determine four behavior

patterns among flatfish as 'active' (swimming and burying) or 'inactive' (gliding and lying on the bottom). In addition, the profile of acceleration indicated the tail beat frequency during swimming. The tail beat frequency in flatfishes ranged from 1.65 ± 0.47 Hz to 2.04 ± 0.25 Hz (mean \pm S.D., N=4). The tail beat frequency in trout was 1.27 ± 0.43 Hz (mean \pm S.D., N=1). Trout rarely swam at frequencies in excess of 3.0 BL/s.

Our study indicates that the acceleration data-logger provides a useful and reliable system for accurately recording the tail beat of free-ranging fishes and automatically determines four distinct behaviors of flatfishes. Because of the simplicity of the logger design, a more compact electronic module would allow experimentation with smaller fishes. Acceleration data-loggers allow us to measure not only the behavior of aquatic animals, such as flatfish, but also the activity rate and energy consumption of active fishes in the fields. **(Authors' abstract)**

Keywords: Fisheries, Acceleration data logger, Acceleration signal, Video cameras

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 157-170

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

0433

Visual acuity and spectral sensitivity of the pacific ribbed sculpin *Pleurogrammus azonus*

Torisawa, Shinsuke, Nashimoto, Katsuaki, Hiraishi, Tomonori, Yamamoto, Katsutaro

Understanding the visual effect of fishing gears and techniques is important, and requires determination of visual sensitivity. In the present study, we measured the visual acuity, visual accommodation, and spectral sensitivity of the pacific ribbed sculpin *Pleurogrammus azonus*. Visual acuities were calculated from the maximum cone densities in the retinas. The calculated mean values of the minimum resolving angles and visual acuities were 10.4 minutes and 0.096, respectively. The measurement of lens movement for visual accommodation indicated that the focal distance was 1.31 times the total length in the nearest point of infinity. We also determined the spectral sensitivity electrophysiologically by recording S-potentials. We obtained two types of responses: L-response that shows hyper-polarization at all wavelengths of stimulating light and C-response that shows wavelength-dependent hyper-polarization and depolarization. Based on our results, the pacific ribbed sculpin obtains color vision and the most acute sensitivity at 522 nm wavelength light. **(Author's abstract)**

Keywords: Fisheries, *Pleurogrammus azonus*, Pacific ribbed sculpin, S-potentials, L-response, C-response

UPV Journal of Natural Sciences, Volume No. 6 Issue No. 1-2, 171-178

(Filipiniana Analytics)

Fil(S) QH81 U3 6/1-2 2001

Efficacy of clove essential oil (*Syzygium aromaticum*) infused in gelatin-based films extracted from goat (*Capra hircus*) skin as an active component for packaging

Pestano, Hannah Grace, Umali, Kline Paulo, Zhang, Ana Marie

A study which focused on the efficacy of clove essential oil as an active component in gelatin-based films extracted from goat skin for the production of an active packaging was conducted. The film forming solutions (FS) were formulated at 6% (stable state), infused with varying concentrations (0.5%, 1.0%, and 1.5%) of Clove essential oil (CEO) and subjected to various analyses which were all made with three replications. The antibacterial property of the film solutions was tested against *Staphylococcus aureus* and showed negative results on all concentrations. The antifungal effect of the films against *Aspergillus* sp. was also tested and showed inhibitory effects. Treatments 2 and 3 showed ++, weak inhibitions revealing a significant difference from treatment 1 on all test runs. DPPH Radical scavenging test revealed that the films are capable of protecting the food system from oxidation. The results on the light permeability test suggested that upon the addition of the extract, regardless of the assigned concentrations, the penetration of UV light has been significantly decreased compared to that of a film without the extract. The films were also subjected to a water vapor permeability test and showed that the films were significantly capable of retarding moisture migration into and from the system. Based on the results, FFS from goat skin collagen has a potential to be an effective active packaging. (Author's abstract)

Keywords: Food science and technology, Clove essential oil, Goat skin collagen, Active packaging

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 160

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Food security and safety through science and technology

Lorenzo, Jr., Luis P.

The uncontrolled growth of population has resulted in increased demand for food and conversion of agricultural lands for industrial use. The potentials of science and technology are being tapped in addressing these problems.

In this paper, four major technology transfer concerns from the developed to the developing countries were presented. These are: (i) the steep decline of international funding and aid for agricultural R&D and Extension; (ii) the impassable roadblocks against developing countries in a bid to catch up with developed countries in scientific innovations; (iii) the failure of developing countries to sustain the adoption of the Green Revolution; and (iv) the need to establish a partnership of technology transfer between developed countries and developing countries.

As a result, the Department of Agriculture identified priority commodities such as rice, corn and livestock, fisheries and seaweeds, sugar, coconut and intercrops. Roadmaps were also developed to help the country achieve improved levels of food security, and confidence building among the greater number of farmers and fisher folks.

Scientists were challenged to help strengthen the agricultural sector of the country to enable it to compete internationally. **(Author's abstract)**

Keywords: *Food science and technology, Food security, Technology transfer, Biotechnology*

Transactions of the National Academy of Science and Technology, Volume No. 25 Issue No. 2, 194-208

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 25/2 2003

0436

Food security of households in marginalized Philippine communities

Castaneda, Catherine Q., Bacos, Felicitas F., Galang, Marilou R., Zarate, Jr., Roman V., Molano, Wilma L.

The study was conducted to characterize the households in marginalized communities, which are at-risk to household food insecurity; to explore and analyze the coping behavior towards food security of households, and to determine the association of selected socio-economic characteristics with coping responses of households. A total of 210 households in two selected marginalized communities each in the Cities of Baguio, Damaged, and Davao were randomly selected, interviewed and observed on their coping behaviors towards household food security. Results revealed that low household income and unemployment were the main threats to food security. Age and number of years of schooling of mother, and the household income were significantly associated with food security. In order to offset the economic shortfalls, the household displayed a variety of food-related and non-food related coping behaviors. Food related coping behaviors included elimination of some food items that were ordinarily served by the households reduction on the quantity of food served to the members, or skipping of meals by one or all members of the households. Households spent first on food before non-food items. Even if the household did not have regular income, they still spent Php 679.00 for food, which is obtained through borrowing. Non-food coping responses included reduction on household expenses for new clothes, cut-down on electric consumption, and decrease in children's school expenses. Although seeking alternative ways to cut spending assured food on the table among the poor, the presence of nutritional and psychological problems associated with either parent working overseas were also reported. Household income was found to be negatively associated with the coping behaviors of the households. The results of the study depict the resilient character of the Filipino households in times of social and economic difficulties, particularly towards ensuring food is available on the table for consumption of household members. The data, particularly on the characteristics of the households likely to be at-risk to food insecurity, should be useful to social workers and nutritionists in the communities in identifying target households for nutrition and any relevant socio-economic intervention programs to protect them from against food insecurity and its consequences. The coping strategies mentioned in the study were not different from those that have been identified from previous studies. There is an urgent need for research on the health and nutritional consequences of coping behavior, by type of households, to serve as basis for promoting positive coping behaviors among target households. **(Author's abstract)**

Keywords: *Food science and technology, Coping responses, Food insecurity, Meal patterns, Purchasing patterns, Poor households, Food behavior*

NRCP Research Journal, Volume No. 8 Issue No. 9, 53-62

(Filipiniana Analytics)

Fil(S) Q179.9 N323 8/9 2006

Stability of bioactive-enhanced peanut bars

Sales, Jocelyn M., Resurreccion, Anna V. A.

Peanuts contain bioactive compounds including resveratrol and phenolic compounds with antioxidant properties which delay aging, and reduce the risk of cancer and cardiovascular and Alzheimer's diseases. Previously, we reported that combined ultrasound (US)-UV processes enhanced *trans*-resveratrol in peanuts, better than US or UV alone, to levels 2.8 times more than red wines. This study used roasted resveratrol enhanced peanuts (REP) in preparing peanut bars to investigate the stability of resveratrol, total phenolics (TP), and trolox equivalent antioxidant capacity (TEAC) during storage, and determine the shelf life of the product.

Bioactive-enhanced peanut bars were prepared by mixing REP (exposed to 70 mW/cm³ US power density for 10 min and at 40 cm distance from UV light, 254 nm for 50 min, and incubated for 36h at 25°C) while stirring and heating with syrup up to 170°C, forming into rectangular bars, cooling, and packing in PE bags. Control samples were also prepared. Packaged peanut bars were stored at 25°C and 40°C. At pre-determined intervals, samples were withdrawn from storage, for a total of six sampling times at each temperature, and analyzed for resveratrol, TP, TEAC, hexanal, descriptive sensory properties, and overall acceptance.

Application of REP, previously reported to have shelf life of 52 days at 25°C and 19 days at 40°C, resulted in increased shelf life up to 146 days at 25°C and 46 days at 40°C in peanuts bars. This suggests the protective effect of sugar on each kernel from exposure to oxygen which slowed down the lipid oxidation, and/or masking effect on off-flavors. At the end of shelf life, 71 % resveratrol, 82% TP and 89% TEAC were retained in peanut bars. On a per serving basis, about 3½ bioactive-enhanced peanut bars with 30g peanuts/bar would provide as much resveratrol as in a 140 mL serving of red wine. Bioactive-enhanced peanut bars will provide increased value and profitability for the food industry while providing health benefits to consumers. **(Authors' abstract)**

Keywords: Food science and technology, Bioactive compounds, Peanuts, Ultrasound, UV, Shelf life

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 135

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

FORESTRY

Current marketing strategies for selected industrial tree plantation species (ITPS) in the Philippines

Centeno, Vivian A., Oliva, Araceli T., Razal, Ramon A.

A survey was conducted to analyze the current marketing strategies of selected industrial tree plantation species (ITPS) in the Philippines. Primary data were gathered using two sets of pre-tested questionnaires: one for the plantation owners and another for wood users. Convenience sampling was adopted. A total of 20 plantation owners and 64 wood users responded to the survey. The 64 wood using firms were involved in processing timber into furniture (49) lumber (10), veneer and plywood (4), and poles and piles (1) .

Many plantation owners had limited capital, which hindered their access to technology. They employed a distribution strategy that appeared to be inefficient. At present, most plantation owners could only supply the raw material needs of wood users within their locality. Effective marketing intermediaries are therefore needed.

Plantation owners practiced poor marketing of their products, which in turn resulted in an elusive market and low prices for their products. Neither would they apply proper silvicultural practices nor engage in value-added activities.

Despite the availability of many technologies on the utilization of ITPS, the plantation owners were not aware of their existence. This could be traced to poor information and technology transfer activities by agencies mandated to carry out these tasks. The plantation owners' remote location in relation to the source of developments in technology could be the greatest contributory factor to this situation.

Processors generally preferred sourcing their log requirements from large tracts of contiguous plantations. Small farmers could organize themselves into cooperatives to be able to supply the raw material requirement of the wood based industry. **(Authors' abstract)**

Keywords: *Forestry, Industrial tree plantation species, Marketing intermediaries, Marketing strategies, Target market*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 157-169

(Filipiniana Analytics)

Fil(S) SD339 F76 26/1-2 2000

0439

Stakeholders' participation in the sustainable management of the kaliwa watershed

Dizon, Josefina T., Pulhin, Juan M.

Stakeholders' participation in the management of the Kaliwa Watershed in Tanay, Rizal, Philippine was done through focus group discussions with the local government units (LGUs) at the barangay, municipal, and provincial levels. The study aimed to assess and recommend potential mechanisms that will enhance the long-term participation of various stakeholders in the sustainable management of the Kaliwa Watershed, with the LGUs taking the lead role. Specifically, the study identified and characterized the existing stakeholders and their extent and mechanisms of participation in the current management of the Kaliwa Watershed. Some of the recommendations to enhance the stakeholders' long-term participation include the following: organizing and strengthening of local user groups, delineation of clear property rights, promotion of an appropriate incentive system, discovery and harnessing of IKS, capacitating of LGUs, and forging of appropriate institutional mechanisms for partnership among the stakeholders. **(Author's abstract)**

Keywords: *Forestry, Watershed, Local government units (LGUs), Stakeholders, Communities*

Suitability of possible substitute wood species for stringed musical instruments

Carandang, Josephine P.

Five Philippine wood species were tested as possible substitutes for the traditionally-used species for the manufacture of guitar. These were: malakauayan (*Podocarpus rhumpii* Blume), antipolo (*Artocarpus blancoi* (Elm.)), pahutan (*Mangifera altissima* 81 co.), maniknik (*Palaquium tenuipetiolatum* Merr.), and mayapis (*Shorea palosapips* (Blco.) Merr.).

Thirteen prototype guitars were fabricated using combinations of the five species and the traditionally-used species. Tonal quality was evaluated using the responses of selected persons to the sound produced by each guitar.

Results of the Kruskal Wallis one-way analysis of variance (ANOVA) by ranks showed that the guitar coded 8-2 (maniknik for the face, tangile for the neck and anti polo for the sides and back) ranked the best among the 13 prototype guitars. **(Authors' abstract)**

Keywords: Forestry, Wood, Musical instruments, Malakauayan (*Podocarpus rhumpii* Blume), Antipolo (*Artocarpus blancoi* (Elm.)), Pahutan (*Mangifera altissima* 81 co.), Maniknik (*Palaquium tenuipetio/atum* Merr.), Mayapis (*Shorea palosapips* (Blco.) Merr.).

GEOLOGY

Analysis of damage reports from different information and data sources of the 2013 M_w 7.2 Bohol earthquake

Villamil, Charmaine V., Perez, Jeffrey S., Decierdo, Princess Dianne Kris S., Cayabyab, Felomina F., Martinez-Villegas, Ma. Mylene

Succeeding the M_w 7.2 Bohol Earthquake that affected the Visayas region on 15 October 2013, media coverage on the earthquake damage in Bohol province and Metro Cebu was abundant. Television and radio stations broadcasted significant effects including the collapse of century-old churches. National and local newspapers published 427 articles up to March

2014. Situational report of the National Disaster Risk Reduction and Management Council (NDRRMC) indicated number of casualties, affected population and cost of damages. Damage assessment reports of local government units summarized affected sectors in the provincial and municipal levels. PHIVOLCS Quick Response Team (QRT) documented geologic impacts. Lastly, we gathered and evaluated 732 macroseismic intensity survey forms. Available damage reports from different information and data sources are compiled and analyzed to determine the intensity distribution per municipality and city in Bohol province and Metro Cebu using the PHIVOLCS Earthquake Intensity Scale (PEIS). An isoseismal map is generated to display the spatial distribution and further relate it to the local geology of the area. The map may be utilized by engineers for earthquake-resilient structural design; serve as tool for planners to mainstream disaster risk reduction and management (DRRM) in land use and development plans; and as support to enact DRRM-related laws, policies and ordinances. **(Author's abstract)**

Keywords: *Geology, 2013 Bohol earthquake, Earthquake intensity survey, Isoseismal map, PHIVOLCS Earthquake Intensity Scale (PEIS), Disaster risk reduction and management (DRRM)*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 175

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0442

Arsenic accumulator *Pityrogramma calomelanos* in the Lepanto Enargite Mine, Benguet, Philippines

Claveria, Rene Juna R., Robles, Patricia Q., Perez, Teresita R., Perez, Rubee Ellaine C.

The Lepanto Enargite Mine is a major copper-gold mine in northern Luzon with an ore deposit characterized by copper-arsenic-gold assemblage. With arsenic (As) enriched Cu-Au ores, it is expected by natural dispersion and disposal of processed ores that certain areas around the mine are contaminated with As. This study looks into the existence of certain pioneering plants that thrive in these contaminated areas. There are a number of fern species distinctively occurring within the abandoned old tailings ponds and around the Japanese Tunnel. Most common are *Nephrolepis hirsutula*, *Histiopteris incise*, *Pteris sp.*, and *Pityrogramma calomelanos*. The study focused on *P. calomelanos*, being the most abundant species, determining the As accumulation capabilities of the plant. Both soil and plant samples were prepared for arsenic analysis using flame atomic absorption spectroscopy (FAAS) and protocols adopted from the Association of Analytical Communities (AOAC). Plant samples of *P. calomelanos* and the soils they thrive in were collected and analyzed for As content. The average As content in the soil samples collected from the Japanese Tunnel area is about 6.40ppm. The As content of the above ground and below ground components of *P. calomelanos* is about 1,050ppm and 1,165ppm respectively. The translocation factor (TF) is 0.90 and the phytoextraction coefficient (PC) is 177.34. With the computed TF and PC values *P. calomelanos* is identified to be an As accumulator that can tolerate (and absorb) As in the soil thus making it a potential plant species for mine remediation and rehabilitation. **(Author's abstract)**

Keywords: *Geology, Pityrogramma calomelanos, Arsenic, Lepanto Enargite Mine*

0443

The cladoceran and diatom assemblages of sediment cores from Lakes Mohicap and Paoay: their utilization for a comparative paleolimnological analysis

Legaspi, Kenoses L., Baldia, Susana F., Papa, Rey Donne S., Taylor, David Mark

Sediments have now become a promising tool in determining ecological changes. due to its very particular sensitivity to anthropogenic activities, and its ability to integrate millions of biological and geochemical. In this study, diatom and cladoceran analyses was used to investigate two lakes with different geological and limnological origins (Lakes Mohicap and Paoay) located m the Island of Luzon which are known to be vulnerable to eutrophication due to existing pressures from anthropogenic activities. Our objective is to determine the change in the cladoceran and diatom assemblages in order to reconstruct the past ecological conditions of the lakes mentioned. In our results, the cladoceran assemblages for Lake Mohicap was dominated by ephippia of *Ceriodaphnia* sp. and *Bosmina* sp., while Lake Paoay was dominated by *Chydorus* sp. suggesting high frequency of environmental stressors in Lake Mohicap compared to Lake Paoay. Diatom assemblages for both lakes were dominated by *Nitzschia* sp. and *Diademsis* sp. which are usually found in high nutrient lakes indicating eutrophication. The distribution of diatom and cladoceran taxa in the sedimentary profile reflect the high trophic condition and vulnerability of both lakes to elevated anthropogenic activities, thus lake conservation and mitigation approaches have to be implemented as ill-effects of human disturbances continue to affect and threaten our freshwater ecosystems. This, also suggest the potential of Paleolimnology to be integrated in the Philippines as a tool for efficient lake restoration and management. **(Author's abstract)**

Keywords: *Geology, Sediments, Eutrophication, Ephippia, Chydoridus sp., Nitzschia sp.*

0444

Conceptual design of a conveyor system for the Philippine multipurpose cobalt-60 gamma irradiation facility

Borras, Alan M.

The Multipurpose Cobalt-60 Gamma Irradiation Facility at the PNRI presently utilizes the batch irradiation method using turntables to rotate the product boxes. The target materials or products are being carried manually or with the use of a pushcart through the personnel maze.

This paper presents a conceptual design for the best suitable product-handling or conveyor system for the Philippine Multipurpose Cobalt-60 Gamma Irradiation Facility. The main irradiation conveyor line shall be a 55 cm x 200 cm slat-type conveyor made of SUS 304 material that could be operated in a semi-batch continuous flow and/or shuffle-dwell method with a tact time range of 10 min to 7 h. The products can be irradiated in a single direction, two-pass, two-sided method. **(Authors' abstract)**

Keywords: *Geology, Cobalt-60 gamma irradiation, Irradiation conveyor, Slat-type conveyor*

Philippine Nuclear Journal, Volume No. Issue No. , 63-74

(Filipiniana Analytics)

Fil(S) QC173 P55 v9 1992

0445

Development of information system for tsunami-prone areas in the Philippines: quantifying population at risk based on existing tsunami inundation maps

Beliran, Joan M., Del Monte, Lucille Rose C., Pidlaon, Abigail C.

A tsunami, although it is rare to happen, has a capability to cause extensive destruction and widespread casualties. Through the DOST-GIA Tsunami Risk Mitigation Program, PHIVOLCS have produced 1:50000 scale tsunami hazard maps for the Philippines. Using these hazard maps, the barangay demographic population information from National Statistics Office, and Geographic Information System (GIS), we have determined the number of population in each barangay that will be affected when a tsunami strikes in a specific area. Quantifying population at risk is important and useful when developing disaster risk reduction strategies such as planning an intervention and resource allocation. The developed information system is composed of an offline web-based visualization tool containing the available tsunami hazard maps of the Philippines, list of affected barangays and demographic data. This is a quick way to access information immediately after a tsunami-generating earthquake. It can be installed to computers as it uses an HTML code. This tool can be used to have initial assessment of the affected areas, and aid responders to effectively manage emergency situations and humanitarian needs. **(Author's abstract)**

Keywords: *Geology, Tsunami hazard map, Population exposure, Tsunami risk*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 122

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0446

A geochemical approach on the provenance signatures of the klondyke and zigzag formations and its implication on the oceanic to island-arc setting evolution of the Baguio Mineral District, Philippines

Dirnalanta, Carla B., Yumul, Jr., Graciano P.

To resolve the question on the tectonic evolution of Baguio and its vicinity, the source geology of the sedimentary formations and their correlatives are investigated. Petrographic examination and geochemical analyses of sedimentary samples are carried out to address this problem. Whole rock major and trace element compositions of the sampled sedimentary units were analyzed using an X-Ray Fluorescence spectrometer and an inductively-coupled plasma mass spectrometer. Petrographic examination of selected samples shows a distinction between the Zigzag samples vis-a-vis the Klondyke. Amlang, Cataguintingan and Damortis samples. The Zigzag sandstones contain more quartz whereas the sandstones from the other formations are dominated by feldspars and lithic fragments. The geochemical signatures of the Zigzag samples are also distinct from the other sedimentary units. When plotted on various major oxides and trace element ratio diagrams, the Klondyke, Arnlang and Cataguintingan samples are shown to have been derived from mafic igneous rocks. Geochemical data from the Zigzag samples suggest intermediate to felsic igneous rock sources. In terms of the tectonic setting, the Zigzag samples are inferred to be derived from a more evolved arc or an active margin based on their high K_2O/Na_2O values. Sediments that make up the other sedimentary units (Klondyke, Amlang, Cataguintingan) originated in an oceanic island arc setting. These information further constrains the recognized evolution of the Baguio Mineral District from an oceanic to an island arc environment. **(Author's abstract)**

Keywords: *Geology, Sediment petrography, Sedimentary geochemistry, Provenance, Tectonic setting, Baguio District*

NRCP Research Journal, Volume No. 10 Issue No. 1, 55-76

(Filipiniana Analytics)

File(S) Q179.9 N323 10/1 2009

0447

Geology of Southern Leyte: contribution to the understanding of the evolution of central Philippines

Dirnalanta, Carla B., Yumul, Jr., Graciano P., Suerte, Leilanie O., Tamayo, Jr., Rodolfo A.

Geologic mapping was carried out in Southern Leyte which led to the recognition of a complete ophiolite sequence, the Malitbog Ophiolite Complex. A Late Cretaceous conglomerate unit containing clasts of basalt, gabbro and chert caps the ophiolite sequence. This suggests that the ophiolite was emplaced, exposed and eroded by Late Cretaceous. Pre-Late Oligocene to Quaternary sedimentary sequences also cap the ophiolite complex in some localities. The sedimentary deposits were formed in fluvial to shallow marine environments. The characterization of the lithologic units in Southern Leyte as presented here offer clues on the processes in the evolution of Southern Leyte and the environments where the different rock units formed. This, in return, helps in deciphering the geologic history of Central Philippines. **(Author's abstract)**

Keywords: *Geology, Ophiolite, Crust-mantle sequence, Geologic evolution, Central Philippines*

NRCP Research Journal, Volume No. 10 Issue No. 1, 39-54

(Filipiniana Analytics)

File(S) Q179.9 N323 10/1 2009

Heavy mineral survey for rare earths in the northern part of Palawan

Reyes, Rolando Y., Santos, Jr., Gabriel P., Magsambol, Wilfred N., Ramos, Angelito F., Petrache, Christina A., Tabora, Estrellita U.

A reconnaissance geochemical survey for rare earths was carried out over the northern half of Palawan with considerable success. The survey represents the first systematic geochemical exploration effort to look for indigenous rare earth resources in the Philippines. Total area covered was about 5,000 sq km. The survey entailed the systematic collection of 740 heavy mineral panned concentrate and stream sediment samples along streams and rivers. The average sampling density was about one set of sample per 2-15 sq km. A total of 218 heavy mineral samples were analyzed for lanthanum, cerium, praseodymium, neodymium and yttrium. Analysis of stream sediments for rare earth was discontinued due to the high detection limit of the x-ray fluorescence spectrometer.

Results of the survey clearly indicated the effectiveness of heavy mineral sampling for rare earths at the reconnaissance level of exploration. Six anomalous and well-defined areas of interest were delineated for possible rare earth mineralization. Three priority zones were further outlined from the six prospective areas for possible follow-up surveys. Mineralogical examination of heavy minerals revealed the presence of major allanite and minor monazite as the potential hosts of rare earths in the priority zone number one. Gray monazite was identified in the priority zone number two as the rare earth mineral. Minute specks and grains of gold were visibly present in some of the heavy mineral samples taken in this area. A combined mineralization of rare earths and gold in this area is a possibility. The discovery of the first gray nodular monazite in Palawan may extend the age of the oldest rocks in the Philippines to Lower Paleozoic. A separate study to establish the age of the oldest rocks in the country is likewise necessary. **(Author's abstract)**

Keywords: *Geology, X-ray fluorescence, Lanthanum, Cerium, Praseodymium, Neodymium, Yttrium*

Philippine Nuclear Journal, Volume No. Issue No. , 25-44

(Filipiniana Analytics)

File(S) QC173 P55 v9 1992

Influence of potassium solubilizing bacteria on growth and radiocesium accumulation of komatsuna (*Brassica rapa* L. var. *perviridis*) grown in cesium-contaminated Fukushima soil

Rallos, Roland V., Yokoyama, Tadashi

Potassium (K) supply exerts the greatest influence on plant radiocesium (Cs) uptake from soil solution. The presence of potassium solubilizing bacteria (KSB) increases the availability of K⁺ in the rhizosphere, thus enhancing the cationic interaction between K and Cs. In this study, five KSB isolates were obtained from soybean rhizosphere on modified Aleksandrov medium containing mica as K source. Based on biochemical and 16S rRNA gene sequence analysis, the bacteria were identified as *Bacillus megaterium* strain CCMM B583, *Pseudomonas putida* strain ATCC 17527, *P. frederiksborgensis* strain M60, *Burkholderia sabiae* strain Br3407, and *P. mandelii* JR-1. The KSB isolates were evaluated for

plant growth promotion, potassium (K) uptake and radiocesium accumulation of komatsuna in three different cesium-contaminated Fukushima soils. Inoculation with KSB showed beneficial effects on plant

growth and increased the overall plant biomass production ($\approx 40\%$). KSB inoculation also significantly increased the radiocesium accumulation, with much greater magnitude in roots than in shoots. The results indicated that KSB inoculation may be essential in managing cesium-contaminated soils and manipulating radiocesium transfer from soils to plants. **(Author's abstract)**

Keywords: *Geology, Potassium solubilizing bacteria, 16S rRNA, Radiocesium, Aleksandrov medium, Cesium-contaminated soils*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 93

(Filipiniana Analytics)

File(S) Q149.P5 N38 37/1 2015

0450

A manifestation of climate change: a look at typhoon Yolanda in relation to the historical tropical cyclone archive

David, Carlos Primo C., Racoma, Bernard Alan B., Gonzales, Jonathan, Clutario, Mark Vincent

The IBTRACS world database of tropical cyclone (TC) tracks was analysed to determine potential historical trends in TC characteristics for the west Pacific basin. Trends are then related to the characteristics of Typhoon Yolanda to see if this individual event constitutes as a data outlier or is part of a trend that can be related to climate change. In terms of TC frequency, it is deduced that there is a decreasing pattern in tropical cyclone formation starting in 1970. It is also noted that while there is no trend observed in the annual mean maximum wind speed, a decrease in the number of high wind speed TCs is measured for the months of November and December. The location of TC formation has also been changing towards a higher latitude but closer to the Philippines in terms of longitude. Lastly, typhoons making landfall in the Visayas and

Mindanao region have also become slightly more frequent in the last decade. Except for the last finding, the 2013 typhoon season does not fit in these general trends. This year may be the start of a new trend or shift in TC characteristics (which we will only know after a few more years) but is most likely part of the inherent annual variability of typhoon characteristics. Yolanda goes against perceived trends but its occurrence signifies that there is still much to learn about tropical cyclones and the impending impacts of climate change in general. **(Author's abstract)**

Keywords: *Geology, Climate change, Tropical cyclone, IBTRACS world database*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 2, 78-85

(Filipiniana Analytics)

File(S) Q1.A3 S35 25/2 2013

0451

Natural radio activity in volcanic ash from Mt. Pinatubo eruption

Duran, Emerenciana B., de Vera, Cecilia M., Garcia, Teofilo Y., dela Cruz, Fe M., Esguerra, Luz V., Castaneda, Soledad S.

Last June 15, 1991, a major pyroclastic eruption occurred from Mt. Pinatubo volcano located in Zambales, Central Luzon. The radiological impact of this eruption was assessed based on the concentrations of the principal naturally occurring radionuclides observed in volcanic ash. The volcanic ash samples were collected from locations which are within 50-km radius of Mt. Pinatubo at various times after the eruption. The mean activity concentrations in Bq/kg wet weight of the natural radionuclides in volcanic ash were as follows: 12.6 for ^{238}U , 14.0 for ^{232}Th and 330 for ^{40}K . These values are significantly higher than the mean activity concentrations of these radionuclides observed in topsoil in the same provinces before the eruption. This suggests that with the deposition of large quantities of volcanic ash and lahar in Central Luzon and concomitant topographic changes, the distribution and quantities of radionuclides which give rise to terrestrial radiation may have also changed. Outdoor radon concentrations measured three days and later after the eruption were within normal background values. **(Author's abstract)**

Keywords: *Geology, Volcanic ash, Pyroclastic eruption, Radionuclides, Radiation*

Philippine Nuclear Journal, Volume No. Issue No. , 3-10

(Filipiniana Analytics)

File(S) QC173 P55 v9 1992

0452

The occurrences of smectite in the different rock formations underlying the Marikina Watershed and their implications to landslide vulnerabilities

Claveria, Rene Juna R., Lara, Joseph Benedict V.

Landslides are natural disasters that have affected the Marikina Watershed, threatening the safety of communities and the integrity of the area. One of the causes of this complex event is the nature of the underlying soil and rock formation. The presence of expansive clays that under the Smectite Group have changed the physical properties of the underlying soil and rocks making them unstable because of the shrink and swell behaviour or repeated expansion and contraction of clays with the presence of water. This study looked into the relationship between presence of smectite, rock type and landslide occurrence in the watershed. Landslide-prone and landslide affected areas were visited and rock, soil and sediment samples were taken for analysis. The rocks that were characterized belong to the Kinabuan Angat and Guadalupe Formations. The presence of clay was determined through X-Ray Diffraction Analysis through bulk, random, orientation and glycolation tests were done using an X'Pert PRO PANalytical machine. Smectite was found to occur in rocks of andesitic to basaltic composition as well as in sedimentary rock formations dominated by shale-clay layers. The areas underlain by these types of rocks have experienced landslides in the past thus are vulnerable to future landslide events. It is therefore important that in the study of landslides, the various occurrences of smectite should be determined and they could either be as weathering products of volcanic rocks or as significant clay components in sedimentary layers. With the presence of smectite and with other landslide inducing factors like climate, fractures, slope angle and others coming into play, mass movements would eventually happen. **(Author's abstract)**

Keywords: *Geology, Smectite, Marikina Watershed, Landslide*

0453

Reporting natural disasters: a content analysis of the local print media coverage of the 2013 Bohol earthquake

Decierdo, Princess Dianne Kris S.

After the occurrence of the 2013 magnitude-7.2 Bohol Earthquake that devastated the islands of Bohol and Cebu, the media reported the event with earthquake information gathered from disaster-related agencies. To look into the accuracy of the local media presentation of the 2013 Bohol Earthquake, a content analysis was conducted. This method is used for studying a type of communication or news articles in the case of this study, to make inferences about the authors' biases and the correctness of their reporting. Identifying the evolution of subjects discussed in media reports for the first month after the event, the researcher gathered published articles from October 16 to November 10, 2013 from four local newspapers. A total of 225 articles from *Sun Star Cebu*, *The Freeman*, *The Bohol Chronicle* and *Bohol Sunday Post* were examined and broken down into manageable categories and levels. The study found that most of the reporters from the local media of Bohol and Cebu did not have sufficient understanding on earthquakes considering the instances that important terminologies were misused and other misconceptions reflected in the articles. Interviews with some authors of the collated articles were also conducted to further evaluate the reporting process. With this, it was deduced that some lapses in their coverage were due to lack of prior information about earthquakes. **(Author's abstract)**

Keywords: *Geology, 2013 Bohol earthquake, Content analysis, Print media*

0454

A revisit to the 1879 M_w 7.4 Surigao earthquake, its impacts and future earthquake scenario in Northeastern Mindanao

Perez, Jeffrey S., Tsutsumi, Hiroyuki, Cahulogan, Mabelle, Cabanlit, Desiderio P.

The 1879 M_w 7.4 Surigao earthquake affected northeastern Mindanao and was considered as one of the largest and damaging earthquake in the area. Based on written historical records, this earthquake generated strong ground shaking causing significant damages to infrastructures such as churches and buildings near the epicentral area. Widespread liquefaction and landslides were also described. An important account of this earthquake is a detailed description of the surface rupture. Aerial photograph interpretation, field mapping and paleoseismic studies conducted in the area revealed a 100-km-long surface rupture during the 1879 Surigao earthquake. The source of this earthquake is the Surigao segment of the Philippine fault, capable of generating a magnitude higher than 7 in the future. The structural damages and geologic impacts by this earthquake have been evaluated to come up with future earthquake scenario for northeastern Mindanao. Result of this evaluation can be used for medium to long term earthquake risk assessment and mitigation plans for the local

government units and other

stakeholders. **(Author's abstract)**

Keywords: *Geology, Philippine fault, 1879 Surigao earthquake, Earthquake scenario, Disaster risk reduction and mitigation (DRRM)*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 176

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0455

Uranium geochemical survey in northwestern Leyte

Santos, Jr., Gabriel P., Magsambol, Wilfred N., Ramos, Angelito F., Seguis, Julietta E., Castillo, Marilyn K., Petrache, Christina A.

Stream sediment uranium geochemical survey was undertaken in Calubian peninsula in northwest Leyte Island. A total of 174 stream sediment samples and 110 heavy mineral panned concentrates were collected along the streams draining about 540 sq km area. The minus 80 mesh fractions of the sediments and non-magnetic mineral concentrates were analyzed for total uranium employing instrumental delayed neutron activation analysis (DNAA) technique. The results indicated that the uranium concentrations in the stream sediments ranged from 0.8 ppm to 5.2 ppm while that of the heavy minerals ranged from 0.2 ppm to 65.3 ppm U. The background and threshold values for the stream sediments were 1.7 ppm U and 2.9 ppm U, respectively, while the corresponding concentrations for the heavy minerals were 2.6 ppm U and 26.2 ppm U, respectively. Based from these results, two prospective heavy mineral anomalies

were detected in Villaba (Cebongaga) and Palompon (Kampisao). The Villaba and Palompon anomalies are related to the Lower Miocene Taog Formation. Other geochemical anomalies were also found but these were mostly point anomalies and were not considered encouraging signs of possible uranium mineralization. **(Author's abstract)**

Keywords: *Geology, Uranium, Geochemical survey, Delayed neutron activation analysis (DNAA), Stream sediment*

Philippine Nuclear Journal, Volume No. Issue No. , 53-62

(Filipiniana Analytics)

Fil(S) QC173 P55 v9 1992

HEALTH AND WELLNESS

0456

Effects of breastfeeding promotion on awareness, efficacy expectations, perceived barriers and intentions

Amo-Kyemereh, Esther, Castilo, Eleanor C.

This study is a quasi-experimental design, with the purpose of determining the effects of breast feeding promotion on awareness, efficacy expectations, perceived barriers and intentions among the study group. At baseline, participants from both the experimental and control groups had *average* level on breastfeeding awareness, high-self efficacy, high-outcome efficacy, and *low* perceived barriers to breastfeeding. In regards to breastfeeding intentions for the groups, 78.1% of the participants from the experimental group, and 93.8% from the control group intended to breastfeed their babies. The experimental group participants had very *high* level of awareness, *high* self-efficacy, very *high* outcome-efficacy, very *low* barriers and very *high* intentions to breastfeed and exclusively breastfeed their babies. The control group participants on the other hand showed no significant difference, except for perceived barriers ($t=2.06, p<.05$). The gain scores of the experimental and control groups in terms of all the variables were also found to be statistically different ($p<.01$) with the gain scores found to be constantly higher in the experimental group, except intentions to exclusively breastfeed which was not found to be statistically significant ($p>.05$). It was concluded that breastfeeding promotion program was considered effective in enhancing the level of all the variables as well as reducing the perceived barriers to breastfeeding among those exposed to this program, as manifested by significant increase in the level of all the variables, and decrease in perceived barriers to breastfeeding of the experimental group at endline. **(Author's abstract)**

Keywords: *Health and wellness, Breastfeeding promotion, Breastfeed, Babies*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 189

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0457

Effects of patients education on knowledge, beliefs, attitudes, and practices among pulmonary tuberculosis patients

Wamalika, Bethel Magana, Estrada, Miriam R.

This study determined effect of patient education on knowledge, beliefs, attitude, and practices (KBAP) of Pulmonary Tuberculosis (PTB) patients. The researcher chose quasi-experimental design, and utilized purposive sampling to obtain sample. Experimental group, composed of 40 patients, was from Caingin, Santa Rosa, while control group, composed also of 40 patients, was from Aplaya, Santa Rosa. Pretest was given to both groups, and then three weeks lectures were given to the experimental group followed by home visitations for seven weeks. Afterwards, a posttest was given to both groups. Difference between pretest and posttest was significant in knowledge and practice of control group and KBAP of experimental group. Furthermore, increase in knowledge in experimental group from category of high to 'very high', while control group remained in category of 'high', indicated that, PTB program can have effect of increasing PTB patient's knowledge on PTB. There was also significant difference in gain scores of KBAP between both groups, also rejecting null hypothesis. There were no significant gain scores in KBAP of both groups when age, gender and marital status were considered, approving null hypothesis. When educational attainment was considered, there were no significant gain scores in KBAP of control group, also approving null hypothesis, but there was a significant gain score in practice of experimental group, rejecting null hypothesis. Therefore, patient education should be tailored to accommodate educational attainment of PTB patients'. **(Author's abstract)**

Keywords: *Health and wellness, Pulmonary tuberculosis, Patients education, Knowledge, Beliefs, Attitudes*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 190

(Filipiniana Analytics)

Proficiency testing on proximates in infant formula milk powder

Portugal, Teresita R., Parcon, Ma. Rachel V., Castillo, Leah N., Soriano, Ma. Geneveve B.

A proficiency testing (PT) Scheme on proximates (moisture, fat, protein, ash) was organized by the Food and Nutrition Research Institute. The Scheme was aimed at evaluating the performance of local and foreign testing laboratories in the analysis of proximates in an infant formula milk powder through an interlaboratory comparison.

A sufficiently homogeneous and stable infant formula milk powder PT material was distributed to thirty-five (35) laboratories registered to the Scheme. The standard deviations for proficiency assessment, σ_p , were derived by perception based on the coefficient of variation (CV) of a Thailand Laboratory Performance Study. The assigned values (i.e., consensus values) were derived as the robust averages using Algorithm

A of ISO 13528:2005. Performance of the participant laboratories was evaluated based on z-score.

The assigned values for fat and ash have negligible uncertainties. For moisture and protein, the assigned value were given for information only due to wide variability of results. The assigned values (in g/100g) and the percentage of laboratories that obtained "Satisfactory" performance (i.e., $|z\text{-score}| \leq 2.0$) are: moisture-2.32 (79%), fat-22.09 (80%), protein-9.70 (71%), and ash-2.51 (88%).

Laboratories that did not obtain "Satisfactory" performance were encouraged to conduct investigation and perform corrective and preventive actions. **(Authors' abstract)**

Keywords: *Health and wellness, Assigned value, Proficiency testing, Standard deviation for proficiency assessment, Uncertainty, Z-score*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 131

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

A study on the use of herbal decoction for tooth socket extraction wound and periodontal disease

Timog-Corpus, Benilda M., Posadas, Virginia B., Alberto, Alexander L.

A double blind study was conducted to determine the healing efficacy of guava leaves decoction on tooth socket extraction wound and the laas roots boiled water preparation for

periodontal disease treatment. One hundred eighty children of Metro Manila's orphanages or charitable institutions aged 7 to 14 participated in the study of guava decoction. The subjects were assigned into A & B study groups according to age and type of tooth extracted. For laas decoction study, 135 high school children (15-19 years old) and 45 barangay residents (20-35 years old) in Tacloban City were selected as subjects. Significant results were seen for both decoctions (guava and laas) in healing tooth socket extraction wound and periodontal disease, respectively. **(Author's abstract)**

Keywords: *Herbal decoction, Health and wellness, Periodontal disease, Tooth*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 19 Issue No. 4, 65-96

(Filipiniana Analytics)

Fil(S) T1 N2 19/4 1994

INDUSTRY

0460

Double sley picker for upright handloom

Cuchon, Caridad M., Hayin, Jovita A.

The Philippine handloom weaving industry, which falls under the micro, small and medium enterprises (MSMEs), has reminded a significant contributor in providing economic activities in the remote and rural areas of the country. Handloom woven products are among the non-traditional export contributors of the country's foreign earnings. Today, handloom weaving still stands to be a major occupation not only of the indigenous people but also of the rural folks. **(Author's abstract)**

Keywords: *Industry, Double sley picker, Upright handloom, Micro, small and medium enterprises (MSMEs)*

PTRI Samay Bulletin, Volume No. Issue No. , 15-17

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.6 2006

0461

The Philippine Textile Research Institute:: small and medium enterprises and large companies' partner for quality assurance toward global competitiveness

Alvarez, Virnila B., Pico, Mirasol D., Bawasanta, Mila L., Forcadela, Marilou C., Mallari, Ma. Yehsa G., Rafols, Rocelia A.

The paper articulated the relevance of the Philippine Textile Research Institute (PTRI), through the PTRI testing Laboratory (PTL), to the Small and Medium Enterprise (SMEs) and large companies as they face the challenge and threats of globalization. The testing services provided by PTL translated to the companies' quality assurance, which is instrumental to gain wider market acceptance, even without maintaining costly testing laboratory of their own, that redounds to saving in the companies' operating costs. **(Author's abstract)**

Keywords: *Industry, Small and medium enterprises (SMEs), Quality assurance, Global competitiveness*

PTRI Samay Bulletin, Volume No. Issue No. , 1-8

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.6 2006

0462

Textile potential of different banana fiber varieties

de Leon, Marites S.

Six varieties of banana (*Musa*) plant namely Bongolan, Lakatan, Pakil, Saba, Siksik and Tordan were used in this study. The decorticated banana fibers exhibited gum content ranging from 40%-48%, tensile strength of 23-26 kgf-m/g and fineness of 67-93 denier.

The decorticated fibers were subjected to degumming treatment to render them spinnable into yarns. The residual gum content, tensile strength and fineness of the degummed fibers were compared to the previously studied Cavendish variety which served as the standard. All the varieties showed similar behavior towards degumming with about 80% of the gums effectively removed. Marked reduction in the tensile strength was observed but the values were still within the acceptable range for textile processing. While improvement in the fiber fineness was observed as evidence by 8%-30% reduction, all the varieties were still coarser compared to Cavendish. Summarizing the results, the potential of the banana fiber varieties for textile processing can be ranked from high to low as follows: Saba, Lakatan, Bongolon, Pakil, Saksik, Tordan. **(Authors' abstract)**

Keywords: *Industry, Banana, Musa, Bongolan, Pakil, Saksik, Tordan, Lakatan, Saba*

PTRI Samay Bulletin, Volume No. Issue No. , 18-23

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.6 2006

INFORMATION AND COMMUNICATIONS TECHNOLOGY

0463

Direct data transfer over the host controller interface of the bluez bluetooth® protocol stack in bayanihan linux v2.0

Cheung, William R. , Fallorina, Joel T. , Ballesteros, Janice M.

The Bluetooth specification defines a whole protocol stack necessary for a standardized interface of different Bluetooth devices. One of the layers in the stack is the Host Controller Interface (HCI). It serves a vital role in interfacing the higher and the lower parts of the stack. This paper discusses the implementation, setup, and testing processes involved in directly utilizing the HCI layer in sending and receiving data. An application was developed on top of Bayanihan Linux v2.0 which has built-in BlueZ, the official Linux Bluetooth protocol stack. The application shows the operations and functions of the HCI layers in transferring data. Accessing the HCI layer directly will have several advantages, one of which is the reduced overhead from higher layers. The setup was tested with a 3COM USB Adapter and a 3COM PCMCIA Card. **(Author's abstract)**

Keywords: *Information and Communications Technology, Bluetooth, Bayanihan linux, BlueZ, Host controller interface*

Philippine Engineering Journal, Volume No. 23 Issue No. 2, 1-10

(Filipiniana Analytics)

Fil(S) TA4 P532 23/2 2002

LIVELIHOOD

0464

A case study on the impact of S & T intervention on the competitiveness of a traditional weaving enterprise in the Philippines

Tomboc, Carlos C., Delfin, Rita G.

The case of a small province-based handweaving company demonstrated the strategy of the government through the Philippine Textile Research Institute (PTRI) in assisting the development of small and medium enterprise (SMEs).

The enterprise adopted the PTRI developed technologies on handloom weaving and dyeing using natural dyes. From an initial facility consisting of 3 units of 2-harness conventional looms with 3 part time workers, capable of producing 50 yd/month plain piña and piña/silk fabrics in 1995, it now employs 87 weaver producing at least 2,500 yds/month of plain or with designs piña and piña/silk fabrics. **(Author's abstract)**

Keywords: *Livelihood, Small and medium enterprise (SMEs), Weaving, S & T intervention*

Samay Bulletin, Volume No. 2 Issue No. 1, 7-12

(Filipiniana Analytics)

Fil(S) TS1300 S42 2/1 2002

Sustainability factors of yakan weaving for community economic development

Salang, Bre

The study was conducted in High Land Village, Upper Calarian, Zamboanga City to analyze the sustainability of Yakan weaving for the economic development of the community. To do it, survey research method was used with a total of 52 household respondents. An FGD with 15 weavers residing in the village was conducted. Data were processed and analyzed using Statistical Package for Social Science (SPSS) software. Results of the study revealed that the continuous weaving activities of the local people developed the trait of the next generation. The activities developed a shared responsibility of maintaining the knowledge and preserving the endogenous craft in the Yakan tribe. Marketing strategies to promote the Yakan products were very low since each member separately worked for his/her own economic survival. The managerial skills to run the cooperative, production and management of the resources were relatively poor. Linkages with government agencies and private entities turned out to be selective and non-participative. The tribe in Basilan where the bulk of the products came from did not take off from its traditional state of being backward as shown by its values and practices. The industry cannot make it alone. The government should recognize the values and potentials of the tribe and use this as focus for sustained development planning. The tribe must have a major role in the development of its community. Hence, further support is needed to provide a self-sustaining community and enhance the potentials and growth of the Yakan handicraft industry. **(Author's abstract)**

Keywords: *Livelihood, Sustainability factors, Yakan weaving, Community economic development*

WMSU Research Journal, Volume No. 30 Issue No. 1, 67-80

2011,

(Filipiniana Analytics)

File(S) AS539.5 R47 30/1 2011

Technological development of small and medium enterprises (SMEs) in the garments and textile industry in the Philippines

Tomboc, Carlos C, Rico, May S.

The garments and textile industry in the Philippines was reviewed with emphasis on the small and medium enterprises (SMEs). The paper presented the technological development of the SMEs was also discussed giving emphasis on the role of the Department of Science and Technology (DOST) and the Philippine Textile Research Institute (PTRI) which is the only government agency that is mandated to conduct research and development projects for the textile industry sector, render technical services and provide training program. The paper also reflected the investment opportunities and competitive advantage of the industry, its strength, policy environment for SMEs, and financing. Finally, the paper discussed on promoting SMEs business linkages and partnerships internally and externally. **(Author's abstract)**

Keywords: *Livelihood, Small and medium enterprises (SMEs), Garment and textile export board (GTEB), Technological development*

More than skills training

Llorico, Cora P.

A story of how the Philippine Textile Research Institute (PTRI) through its technology transfer program was able to help improve the quality of life and economic status of the beneficiaries of the Development Action for Women Network (DAWN), a non-government organization partner of the Institute in creating livelihood opportunities in the country. **(Author's abstract)**

Keywords: *Livelihood, Development action for women network (DAWN), Small and medium scale industries, Entrepreneurs*

MARINE SCIENCE

Body girth of fish caught by gillnets of different twine thickness

Yokota, Kosuke, Tokai, Tadashi, Hu, Fuxiang, Fujimori, Yasuzumi

We conducted a series of fishing experiments using gillnet of four twine thickness (no. 0.8, 3, 5 and 7 of 0.16, 0.28, 0.38 and 0.45 mm twine diameter, respectively) and one nominal mesh size (46 mm) in outdoor water tanks containing a rainbow trout *Oncorhynchus mykiss* population of known size frequency. From the experimental data, gillnet capture process was examined in terms of maximum girth and girth at the capture position of fish caught by gillnet when analyzing the effect of twine thickness on gillnet capture. The value of the ratio of girth at the capture position to mesh perimeter and that of maximum girth to mesh perimeter plotted against fork length were obtained to avoid the direct effect of changes in mesh openings due to twine thickness. It was demonstrated that gillnet capture depended more strongly on fish body girth than on fish length. Hence, it would be better to measure both maximum girth and girth at capture position for analyzing selectivity against the ratio of girths to mesh perimeter, especially, when examining secondary factors such as twine thickness which affects gillnet capture. The newly developed girth measurement device was useful for quickly measuring fish girth. **(Author's abstract)**

Keywords: *Marine science, Gillnets, Body girth, Oncorhynchus mykiss, Fish*

MATHEMATICS

0469

The amalgamation number of graphs involving wheels and fans

Montero-Galliguez, Thelma C.

Let $G = (V(G), E(G))$ and $H = (V(H), E(H))$ be finite, connected, simple graphs, such that $V(G)$ and $V(H)$ are disjoint sets. A ***k*-amalgamation** of G and H , denoted by $G \hat{\sim} \dots \hat{\sim} k H$, is the graph obtained by identifying k distinct vertices of G with k distinct vertices of H such that no adjacent vertices of one graph are identified with adjacent vertices of the other. The **amalgamation number** of G and H , denoted by $a(G, H)$, is the maximum k such that a k -amalgamation $G \hat{\sim} \dots \hat{\sim} k H$ is possible. Let a wheel and a fan be denoted by $W_m = K_m + C_n$ and $F_n = K_l + P_m$, respectively, where $m \geq 3$ and $n \geq 2$. Results on the amalgamation number of wheels and fans and of two wheels will be presented. **(Author's abstract)**

Keywords: *Mathematics, k-amalgamation, Amalgamation number, Simple graphs*

0470

Construction of an infinite family of 2-designs over the integers modulo a prime-power

Carrascal, Alexander S.

Let $Z_p = \{0, 1, \dots, p-1\}$ and $Z_{p^{m+1}} = \{0, 1, \dots, p^{m+1}-1\}$, be the sets of integers modulo prime and prime-power, p^{m+1} , respectively. Define the set $V = \{i(p+1)j \pmod{p^{m+1}} : 0 \leq i \leq m, 0 \leq j \leq p^{m-1}\}$, of cardinality $s = \frac{p^{m+1}-1}{p-1}$. Form the row vector, $\mathbf{u}_{p-1} = (1, 2, \dots, p-1)$, of length $p-1$ and let \mathbf{e}_{p-1} be the all-ones vector of the same length.

If we form the set of vectors, $U_h = \{v_h \mathbf{u}_{p-1} + l \mathbf{e}_{p-1} : l \in Z_{p^{m+1}}\}$ for each $v_h \in V$, where addition and multiplication are done modulo p^{m+1} , then, with $Z_{p^{m+1}}$ as the point-set and the collection, $U = \cup_h U_h = 1 \cup_h$, as the block-set, a 2-design or balanced incomplete block design (BIBD) with (v, b, r, k, λ) parameters $(p^{m+1}, s p^{m+1}, p^{m+1}-1, p-1, p-2)$ can be

constructed. Moreover, with $= 0, 1, \dots, pm+1-1$, we can partition the block-set U into $pm+1$ near-parallel classes C_l , each containing s blocks and missing the point $l \in Z_p^{m+1}$, where

$$C_l = \{v_h + le_{p-l} : h = 1, \dots, s\}.$$

For each prime number, $p \geq 3$, and positive integer, $m \geq 1$, a balanced incomplete block design of this type always exists. Thus, Its totality constitutes an infinite family of 2-designs.

(Author's abstract)

Keywords: *Mathematics, 2-design or balanced incomplete block design, Integers modulo n, Near-parallel class, Partition, Prime-power*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 167

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0471

The first and second-order shape derivatives of an objective functional using non-autonomous velocity fields

Bacani, Jerico B., Rabago, Julius Fergy T.

The exterior Bernoulli free boundary problem studied in this paper is formulated as follows: Given a bounded and connected domain A that is a subset of the plane R^2 with a fixed boundary Γ , one needs to find a bounded connected domain B with a free boundary Σ and contains the closure of A . Also, one needs to find an associated real-valued function u defined on Ω , where Ω is the annulus formed by B and A , and satisfies the following: $-\Delta u = 0$ in Ω ; $u = 1$ on Γ ; and on Σ , $u = 0$ and the normal derivative of u is $\lambda < 0$.

In this paper, we study this problem via shape optimization technique. We focus on minimizing the Kohn-Vogelius-type cost functional over a class of admissible domains subject to two boundary value problems. To minimize, we compute the first-and second-order shape derivatives of the cost functional by using velocity method, wherein we use non-autonomous velocity fields. The results will be compared to the ones obtained using the perturbation of identity technique. **(Authors' abstract)**

Keywords: *Mathematics, Bernoulli problem, Boundary value problem, Shape derivative, Velocity method*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 170

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0472

Fission and fusion schemes and the action of the diagonal group $D(T, n)$

Kazanidis, Priscila Ale

This paper is a closer look at associate classes of an association scheme. The orbitals of a subgroup $D(T, n)$ of the full automorphism group of the association schemes served as building blocks for the fusion schemes. **(Author's abstract)**

Keywords: Mathematics, Association scheme, Fusion and fission schemes, Orbital, Intersection number, Permutation, Group action

Science Diliman: a journal of pure and applied sciences, Volume No. 20 Issue No. 1, 18-23

2008,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 20/1 2008

0473

Fixed-point theorem and the nishida-nirenberg method in solving certain nonlinear singular partial differential equations

Lope, Jose Ernie C., Caga-anan, Randy L.

In their 2012 work, Lope, Roque, and Tahara considered singular nonlinear partial differential equations of the form $t u_t = F(t, x, u, u_x)$, where the function F is assumed to be continuous in t and holomorphic in the other variables. They have shown that under some growth conditions on the coefficients of the partial Taylor expansion of F as $t \rightarrow 0$, the equation has a unique solution $u(t, x)$ with the same growth order as that of $F(t, x, 0, 0)$. Koike considered systems of partial differential equations using the Banach fixed point theorem and the iterative method of Nishida and Nirenberg (1995). In this paper, we prove the result obtained by Lope and others using the method of Koike, thereby avoiding the repetitive step of differentiating a recursive equation with respect to x as was done by the aforementioned authors. **(Author's abstract)**

Keywords: Mathematics, Singular partial differential equations, Nonlinear, Fixed point

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 25 Issue No. 2, 34-50

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 25/2 2013

0474

The inertia of the Hermitian H corresponding to H unitary matrices

Gueco, Edna N., Merino, Dennis I., Paras, Agnes T

Let $H \in M_n(\mathbb{C})$ be Hermitian and nonsingular. An $A \in M_n(\mathbb{C})$ is called H unitary if $A^* H A = H$. The Jordan Canonical Form (JCF) of A is a direct sum of only two types: (i) $J_k(\lambda)$ with $|\lambda| > 1$ or (ii) $J_k(e^{i\theta})$ with $\theta \in \mathbb{R}$. If the JCF of A contains blocks of only type (i), then we show that $n = 2p$ is even and the inertia of H is $(p, p, 0)$. If the JCF of A is

a single block of type (ii) and if $n = 2p$ is even, then we show that the inertia of H is $(p, p, 0)$. If the JCF of A is a single block of type (ii) and if $n = 2p + 1$ is odd, then we show that the inertia of H is either $(p + 1, p, 0)$ or $(p, p + 1, 0)$. **(Author's abstract)**

Keywords: *Mathematics, Lorentz matrices, AH orthogonal matrices, AMS Classification: 15A21, 15A23*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 27 Issue No. 1, 91-101

2015,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 27/1 2015

0475

Numerical computations for parameter estimation in a smart beam structure

Briones, Rex R. , del Rosario, Ricardo C.H.

We present a method to estimate the parameters of a smart beam structure. The data consists of beam displacements taken at different time instances but due to unavailability of an actual experimental setup, we will use numerically simulated data. The model used is the Euler-Bernoulli equation modified to include internal damping and passive actuator contributions. Piezoceramic patches were used as the smart materials. The parameters we estimate are the density, stiffness and damping of both the beam and patches, and also the dielectric constant of the patches. The first step is to numerically discretize the PDE describing the vibrations of the beam. The Galerkin approximation method using cubic splines as basis functions is used. Then, numerically simulated data is collected by simulating the PDE and recording numerical displacements at one point on the beam and at different time instances. The parameters used in simulating data will be the "true" parameters of the system. Then we formulate the cost function that returns the difference between data and numerical displacements. Finally, the Neider-Mead optimization algorithm is used to obtain the minimizer of the cost function. Numerical results show that the method can obtain the "true" or "estimated" parameters of the system even if noise is added onto the data. We were also able to determine that the initial guess supplied to the numerical optimizer can have an error (i.e., difference from the "true" parameters) of up to 10% and still the method can obtain the optimal parameters. We will present the true and estimated parameters for different data noise and different initial guess. **(Author's abstract)**

Keywords: *Mathematics, Smart materials, Parameter estimation, Optimization*

Transactions of the National Academy of Science and Technology, Volume No. 25 Issue No. 1, 101-102

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 25/1 2003

0476

Periodicity and solutions of higher order recursive sequences

Rabago, Julius Fergy T.

Rational difference equations appear simple in form but the difficulty in dealing with these types of equations lies entirely in the global behavior of its solutions. So we believe that the study of these equations is quite challenging and rewarding. Recently, there has been a growing interest in the study of qualitative analysis of nonlinear difference equations. This growing interest is due to the fact that these equations have a lot of applications in life sciences, natural sciences, physical sciences, and many other various fields.

In this study, we generalize a recent result of T. F. Ibrahim on nonlinear recursive sequences, i.e., given a positive even integer k , we investigate in this work the solution of the difference equation

$$x_{n+1} = (a + Ax_n x_{n-2} \cdots x_{n-(k-2)}) / (b + Bx_{n-1} x_{n-3} \cdots x_{n-(k-1)}),$$

where $A, B, x_{-(k-1)}, \dots, x_{-1}$, and x_0 are arbitrary real numbers with $b + Bx_{n-1} x_{n-3} \cdots x_{n-(k-1)} \neq 0$. In particular, we study the periodicity and local stability of its solutions. We also consider several special cases and derive an explicit form of solutions for the case $a = b = 0$. Furthermore, we provide numerical examples for illustrations and validation of our results.

(Authors' abstract)

Keywords: *Mathematics, Recursive sequences, Solutions of difference equations, Periodicity, Stability, Boundedness of solutions*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 172

(Filipiniana Analytics)

Fi(S) Q149.P5 N38 37/1 2015

0477

The self-amalgamation of coronas and generalized crowns

Montero-Galliguez, Thelma C.

Let $G = (V(G), E(G))$ be a finite, connected, simple graph. Let u and v be two vertices of G such that the distance between u and v is at least 3. A **self-amalgamation** of G , denoted by G^* with $*$ with $*$ $= (u, v)$, is the graph obtained by identifying u and v . A **k th self-amalgamation** of G , denoted by G^{*k} , is a self-amalgamation of a $(k-1)$ st self-amalgamation of G , that is, $G^{*k} = (G^{*(k-1)})^*$. A graph G is **self-amalgamation stable** (or **amalgamation-stable**) if a G^* is not possible. If G is not amalgamation-stable, then the **stability number** of G is the minimum positive integer k such that there exists a G^{*k} which is amalgamation-stable. The **self-amalgamation number** of G , denoted by $s(G)$, is the minimum positive integer k such that all the k th self-amalgamations of G are amalgamation-stable. Results on the stability number and self-amalgamation number of coronas and generalized crowns are presented.

(Author's abstract)

Keywords: *Mathematics, Self-amalgamation, Coronas, Stability number, Generalized crowns*

Solving a multi-objective transportation problem in a group decision-making setting

Talaue, Cherryl O., Tapia, Cesa

In solving transportation problems, recent developments have seen interest in including several kinds of attribute (other than the classical cost and profit attributes) that may even be incommensurate with one another. There exist several approaches in solving a transportation problem with multiple attributes/objectives. Some of the approaches allow a decision maker to input his/her preferences with respect to the

multiple number of objectives that need to be concurrently optimized in a compromised way. The literature, however, seems to lack solution techniques that would deal with a real life decision-making situation wherein a group of decision makers is involved but would probably have different (even conflicting) preferences in solving a transportation problem with multiple objectives. In this research, we propose to utilize a fuzzy programming formulation and binary search technique (adopted from Tapia and Murtagh 1992) as a methodology to solve multi-objective transportation problem as a group decision-making concern. Fuzzy programming allows the decision makers to vary at any given iteration their fuzzy aspiration levels in terms of preference criteria and underachievement tolerance values. Since conflict in aspiration levels usually results in an infeasible situation, binary search is applied until a feasible and acceptable compromise solution is achieved. The main objective of this paper is to propose a valid and new methodology. Inasmuch as comparing existing methodologies is not our primary aim, we believe this is another major and serious research undertaking. **(Author's abstract)**

Keywords: *Mathematics, Transportation problem, Group decision-making, Fuzzy programming*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 1, 1-24

2014,

(Filipiniana Analytics)

Fi(S) Q1.A3 S35 26/1 2014

Spectrophotometric determination of coenzyme Q10 using polyaniline film as optical sensor

Portilla, Ma. Cristina B., Monlinong, Jason Paul C., Cariaga, Fiona Gee V., Pascual, Cherrie B.

Coenzyme Q10 (CoQ10) is an antioxidant which protects the body from damage caused by harmful molecules and has a vital role in cellular energy production. Low CoQ10 levels have been linked to a number of cardiac disorders and other diseases.

In this study, the spectrophotometric analysis of CoQ10 was done by monitoring the change in absorbance of fabricated polyaniline (PANI) film. PANI was chemically synthesized and physically added into acetate film. The change in absorbance (ΔA) that accompanies the switching of PANI from emeraldine form to pernigraniline form was utilized in the quantitative determination of CoQ10 in pharmaceutical formulations and human plasma.

Results showed that ΔA is linear over both low concentrations (0.30-2.00 ppm) and high concentrations of CoQ10 (25.0-150 ppm) studied. The limit of detection (LOD) and limit of quantification (LOQ) were 0.10 ppm and 0.33 ppm. The measurements were found to have acceptable repeatability with coefficient of variation ranging from 7.3-13.2% for intrabatch and 12.7-14.6% for interbatch repeatability. Percent recoveries of spiked standard solutions ranged from 87.3-104.2 %.

CoQ10 was analyzed in pharmaceutical formulations containing 30 mg CoQ10/ capsule using the fabricated PANI films. Average values ranged from 25.7 to 30.5 mg CoQ10/ capsule which are 85.7-101.8% of the label claim suggesting good agreement. Human plasma samples were analyzed and were found to be within normal range of 0.6-1.0 ppm.

The fabricated PANI film was found useful as an optical sensor for CoQ10 in pharmaceutical formulations and human plasma. **(Authors' abstract)**

Keywords: *Mathematics, CoQ10, Polyaniline, PANI films, Optical sensor, Pharmaceutical formulation*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 173

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0480

On tests of multivariate hypotheses based on the roots of certain determinantal equations

Mijares, Tito A.

Multivariate tests in normal samples based on the roots of its associated matrix sometimes result in different tests. Quite a number of tests of hypothesis using maximum likelihood estimation (m.l.e.) and Union-Intersection (UI) approaches often result to the same test, but there are cases when they lead to different tests. From the nature of the determinantal equations resulting from both approaches, it is clear that functions of the roots of these equations are being used to represent the univariate analogue of variance 2: that is, $\det(*)$ and $\text{tr} (*)$, the determinant and trace of the associated matrix (*). The difference thus arises due to the difference in the invariant measures of the matrix "structure" or configuration under test. In addition, both tests would be inadequate or insufficient in completely describing the structure. This paper proposes the use of the set of e.s.f (or trace statistics) tests to complete the structural tests on the associated matrix. Relevant distributional issues are discussed. **(Author's abstract)**

Keywords: *Mathematics, Multivariate test, Associated matrix, Determinantal equations*

0481

Trace invariance for quaternion matrices

de la Cruz, Ralph

Let F be a field. It is a classical result in linear algebra that for each $A, P \in M_n(F)$ such that P is nonsingular, $\text{tr } A = \text{tr } (PAP^{-1})$. We show in this paper that the preceding property does not hold true if F is the division ring of real quaternions. We show that the only quaternion matrices that have their trace invariant under unitary similarity are Hermitian matrices, and that the only matrices that have their trace invariant under similarity are real scalar matrices. **(Author's abstract)**

Keywords: *Mathematics, Trace, Quaternion, Unitary matrices, Hermitian matrices*

0482

Working memory components as predictor of mathematical word problem solving accuracy among school-age children

Ruiz, Wawie DG.

This study was conducted to determine what working memory components (central executive, phonological loop, visuospatial sketchpad) are uniquely related to mathematical word problem solving accuracy among fourth, fifth, and sixth-grade ($N=120$). It also aimed to examine what working memory component(s) best predict the mathematical word problem solving accuracy performance among the three age groups.

A battery of tests was individually administered to assess word problem solving accuracy and working memory capacity. Pearson Moment Correlation Coefficient indicated that the three working memory components were related to children's mathematical word problem solving accuracy, central executive ($r=.224, p=.014$), phonological loop ($r=.421, p=.000$) and visuospatial sketchpad ($r=.405, p=.000$). However, using Linear Regression Analysis, only two working memory components played significant roles in predicting the children's ability to solve mathematical word problem solving. These components were the phonological loop and visuospatial sketchpad. In addition, the three age groups differed in terms of employing the working

memory components. For fourth-grader, phonological loop and visuospatial sketchpad were the best predictor, however, visuospatial sketchpad appeared for fifth-grade and phonological

loop for sixth-grade. The results do not support the notion that all components of working memory play a major role in predicting the problem solving accuracy among school age children. The result also suggested that increases in the chronological age were related to increase in working memory performance except for visuospatial sketchpad.

This study provides applications to theory. The findings were able to establish that working memory components uniquely contributed independent variance to problem-solving accuracy among Filipino school-age children. It may aid teachers and parents to enhance the performance of the children in the area of word problem solving on which students find it hard. **(Authors' abstract)**

Keywords: *Mathematics, Working memory, Problem solving accuracy, Pearson moment correlation coefficient*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 171

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

MEDICINE

0483

Analysis of policy options in addressing nursing surplus and globalization effects in the Philippines

Vales, Karen D., Lorenzo, F Marilyn E., Corcega, Thelma F., Yabes, Julita I., De la Merced, Bennette B.

This paper was the second phase of a nurse demand and supply study conducted to address the problems of nursing employment in the Philippines. This policy analysis phase was aimed to define the policy context in order to identify alternative policy options to provide possible solutions to the nursing dilemma.

Methods used to generate needed information were: review of literature, review of records and official government documents, focus group discussions, round table discussion, and survey results from the first phase of the study.

There were numerous policies gathered. These were classified into the following: policies affecting domestic nursing education and training, policies affecting domestic nursing professional practice, and policies on external and international demand for nursing services.

Policy alternatives were viewed necessary to solve the nursing employment problems. Policy options were grouped into three possible situations or assumptions: (1) with the low demand situation, there will be a mandatory high reduction in supply (2) with the medium demand situation, a medium supply requirement needs to be maintained; and (3) with a high demand situation, low reduction in supply is needed. **(Author's abstract)**

Keywords: *Medicine, Nursing policy, Nursing employment, Domestic and global market*

0484

Anti-diabetic potential of *Glochidion cagayanense* leaf extract

Co-Natividad, Florence, Cortel, Ma. Ruth P., Villaflores, Oliver B.

A number of herbal medicines have been discovered for their anti-diabetic activity. This is the first report on the anti-diabetic activity of the *Glochidion cagayanense* leaf extract. This study determined the changes in the hematological and biochemical indices in alloxan-induced diabetic rats and the ability of the plant extract to improve hematological indices. Female Sprague-Dawley rats were divided into nine groups. Diabetes mellitus was induced via intraperitoneal injection of alloxan monohydrate.

Induction of diabetes led to increased levels of blood urea nitrogen, creatinine, cholesterol, low-density lipoprotein, triglycerides and decrease level of high-density lipoprotein, hemoglobin and hematocrit. Blood urea nitrogen, cholesterol, triglycerides, high-density lipoprotein, hemoglobin and hematocrit levels were significantly reversed after the treatment with *G. cagayanense* semi-crude extract. Compared to metformin treatment with the *G. cagayanense* semi-crude extracts lowered significantly ($P < 0.05$)

the serum glucose, blood urea nitrogen, creatinine, total cholesterol, low density

lipoprotein, and triglycerides of the diabetic rats. On the other hand, the high-density lipoprotein, hemoglobin and hematocrit were increased significantly ($P < 0.05$) post-treatment with the semi-crude extracts of *G. cagayanense*. Results obtained showed the anti-diabetic potential of *G. cagayanense* leaf extract. **(Author's abstract)**

Keywords: *Medicine, Glochidion cagayanense, Diabetes, Alloxan*

0485

Anti-hyperuricemic activity of *Antidesma bunius* (L.) spreng

Aguinaldo, Henedine A., Villamayor, Elizabeth U.

Gout is a painful inflammatory arthritis caused by elevated concentration of uric acid in the blood stream called hyperuricemia. Case of hyperuricemia have increased in recent years, This increase is likely due to an aging population, dietary and lifestyle changes, and greater use of medicines such as diuretics,

Colchicine is commonly used in the therapeutic and clinical management of hyperuricemia but exhibits serious adverse effects and is identified as a toxic natural product. The use of botanical extracts as alternative treatment to hyperuricemia and as alternative to colchicine exhibiting lesser side effects is a trend in research and development.

In this study, *Antidesma bunius* (L.) Spreng. (AB), commonly known as bignay was phytochemically analyzed. The fruits and leaves contain carbohydrates, reducing sugars, phytosterols, phenolics, flavonoids and proteins, Spectrophotometric analysis gave higher Total Flavonoid Content (TFC) of 56 QE/g in AB tea leaf compared to 51 QE/g of AB fruit which positively suggested that they are promising sources of potential hyperuricemic agent. Antihyperuricemic potential was evaluated on hydrochlorothiazide-induced male and female mice which were rendered hyperuricemic, AB tea leaf significantly inhibited hyperuricemic activity with 7.67, 6.57 and 6.07 mg/dL in male mice and 14.07, 5.37 and 5.13 mg/dL in female mice at 3rd, 5th and 7th day, respectively. AB fruit also significantly inhibited hyperuricemia with 11.17, 7.37 and 6.5 mg/dL in male mice and 14.93, 9.4 and 7.8 mg/dL in female mice on the 3rd, 5th and 7th day, respectively. Moreover, colchicine reduced the uric acid level to 13.67, 7.2 and 6.3 mg/dL. Statistical analysis revealed that AB tea leaf and fruit are comparable to colchicine in lowering uric acid level giving *A. bunius* leaf and fruit considerable potential for clinical application. (Authors' abstract)

Keywords: *Medicine, Antidesma buhius, Bignay, Hyperuricemia, Gout, Anti-hyperuricemia*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 134

(Filipiniana Analytics)

File(S) Q149.P5 N38 37/1 2015

0486

Assessing the effects of EWR™ on safety climate attitudes in the operating room (OR) setting

Chua, Michael E., Sapno, Lorelei D., Luna, Jr., Saturnino L.

Background: Ten years have passed since Executive WalkRounds began as a means for health care organizations to promote safer patient care delivery. But there have only been a few studies done to assess its effectiveness, especially in the Philippine setting. This study was done to measure the impact of Executive WalkRounds (EWR) on Safety Climate Attitudes in the SLMC Operating Room Setting by comparing Pre and Post EWR Safety Quality Survey Results.

Design: Randomized control trial of EWRs in the operating rooms of two tertiary care hospital was conducted. Urology and Anesthesia consultants, Urology and Anesthesia residents, OR nurses, and Clinical pharmacists participated. EWRs were conducted by one of six hospital executives once every four weeks for two visits. Provider attitudes about safety climate before and after EWRs were measured using Safety Attitudes Questionnaire developed by Sexton (2005). Mean scores, pre- and post-EWR, were reported and compared with the use of Analysis of Variance (ANOVA) and two-tailed T-test.

Results: Post EWRs, mean scores were significantly different compared to the baseline mean scores in three domains: teamwork climate (66.7938, 76.6970; $p=0.005$), safety climate (72.0660, 80.4230; $p=0.008$) and perception of management (50.7789, 66.4352; $p=0.010$). No significant change of mean scores was noted in the control group except for domain of job satisfaction (81.6667, 73.3333; $p=0.028$).

Conclusion: EWRs have a positive effect on safety climate attitudes on the following domains: safety climate, teamwork climate, and perception of management. (Authors' abstract)

Keywords: *Medicine, Executive WalkRounds, Safety culture, Safety climate*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 49-54

(Filipiniana Analytics)

Fi(S) R97 S75 9/1 2014

0487

Association of pre-natal exposure to alcohol or maternal obesity with orofacial clefts in children 5 years old and below: a case-control study

Mendoza, Catherine Denise L

Introduction: Orofacial clefts (OFCs) are among the common congenital disorders in the Philippines. This study sought to determine if there is an association between prenatal exposure to alcohol and pre-pregnancy maternal obesity and the development of OFCs.

Methods: A case-control study design was employed. Cases were recruited from a nongovernmental organization and controls, from the Pediatric Outpatient Department. Interviews were done and alcohol consumption was categorized as drank or did not drink alcohol. BMI was computed from mother's prenatal height and weight. Obesity was defined as BMI ≥ 30 as classified by WHO. Data were analyzed using SPSS. Odds ratio with 95% CI was calculated to assess the association between orofacial clefts and maternal obesity and with maternal exposure to alcohol. Fisher's exact test was used to determine statistical significance.

Results: The odds ratios for first trimester alcohol intake and obesity were 2.08 ($p = 0.340$, Fisher's exact) and 0.59 ($p = 0.435$, Fisher's exact), respectively.

Conclusion: There may be an association between alcohol ingestion by mothers and development of OFCs in their offspring. There may be no association between pre-pregnant obesity and development of OFCs. **(Authors' abstract)**

Keywords: *Medicine, Orofacial clefts, Cleft lip and/or palate, Maternal obesity, Alcohol*

UERM Health Science Journal Volume No. 2 Issue No. 1, 26-29

January to June 2013

(Filipiniana Analytics)

Fi(S) R97.4 U37 2/1 2013

0488

Atypical presentation of bullous pemphigoid in a young adult male: a case report

Lim, Julie Mae T., Chua, Natividad Sandra D.

Introduction: Bullous pemphigoid (BP) is one of the most common autoimmune blistering diseases worldwide. It is primarily a disease of the elderly with a peak incidence in the 80s. There is no ethnic, racial, or sexual predilection. BP results from an immune response against adhesion molecules of the epidermis and basement membrane zone. Two BP antigens are identified, namely BP Ag1 and BP Ag2. BP lesions are large tense blisters that may occur anywhere on the body. Diagnosis is made clinically, histopathologically and by immunofluorescence. Corticosteroid is the mainstay of treatment. The disease generally has a good prognosis except among those associated with comorbidities.

Case summary: A 34-year-old male presented with an 8-month history of multiple discrete and grouped tense vesicles and bullae, some grouped annularly, on an erythematous base on the nape, trunk and extremities. Prior intake of low-dose oral steroids and antihistamine only led to slight improvement of lesions. Progression of lesions prompted consult at this institution, where the initial impression was linear IgA bullous dermatosis (LABD) versus bullous pemphigoid. Skin punch biopsy with direct immunofluorescence was performed showing results consistent with BP. Patient was started with oral prednisone 60mg daily in tapering doses and topical steroids. Follow-up after 1 week showed marked decrease in number of lesions. Appropriate management and advise was given. Unfortunately, patient was eventually lost to follow-up.

Conclusion: BP may occur in young patients and can manifest with atypical features. For patients with a long history of blister formation, autoimmune diseases should be considered and proper referral to specialists should be done. Prompt diagnosis and early institution of treatment is vital to improve quality of life of patient and to rule out other more serious causes of blistering diseases. **(Authors' abstract)**

Keywords: *Medicine, Atypical bullous pemphigoid, BP Ag1, BP Ag2, Corticosteroid*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 79-84

(Filipiniana Analytics)

Fil(S) R97 S75 9/1 2014

0489

Awareness, attitudes and practices of Filipino fathers in artificial family planning: a descriptive study

Aquino, Justin S. , Aquino, Erika M. , AA±over, Frances Andrea A. , Angulo, Pamela C. , Ang, Cynric S. , Andrade, Liwayway R. , Andal, Ma. Carmela A. , Anchores, Anna Romina A. , Amparado, Kristel Mae F. , Amit, Jansil Marie L. , Amante, Jeaness Marie G., Juangco, Jose Ronilo

Background: The contribution of fathers in artificial family planning practices is pivotal to the actual implementation of these methods within individual households. However, there is a scarcity of literature regarding male involvement in artificial family planning, especially within the Philippines. This cross-sectional study describes the awareness, attitudes and practices of Filipino fathers from a selected barangay in Quezon City to artificial family planning.

Methods: A one-on-one questionnaire-guided interview was conducted on 88 respondents selected through convenience sampling, using a standardized survey questionnaire. Descriptive

analysis of data was carried out using Microsoft Excel and STATA® 12 software.

Results: This study showed that the most familiar artificial family planning method among fathers was the condom (96.59%); that artificial family planning methods were deemed less acceptable than natural family planning methods; and that the fathers who used artificial family planning methods outnumbered those that did not (51.14% vs 48.86%).

Discussion: Filipino fathers have limited awareness with regard to artificial family planning. However, their attitudes and practices towards these methods are generally favorable and positive. **(Authors' abstract)**

Keywords: *Medicine, Filipino fathers, Reproductive health, Artificial family planning, Male involvement, Artificial contraceptives*

UERM Health Science Journal, Volume No. 2 Issue No. 1, 12-17

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/1 2013

0490

A case-control study of smoking and alcohol intake as preconception and prenatal risk factors for autism spectrum disorder (ASD) among Filipino children

Jacoba, Kristine Anne P. , Isaac-Lim, Maria Anna T. , Ilao, Christian Raymond C. , Ibana, Aisler S. , Hwang, Edmund E. , Joaquin, John Marquis K. , Jimenez, Margaret Stephanie L. , Jordan, Stephanie Patricia A. , Jimenez, Sarah Jane A., Jacinto, Raffiel L. , Javier, Kim D. , Javier, Denise Alison R. , Jinio, John Jewe

Background: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that causes impaired intellectual, communicative and behavioral development. Current research shows that the etiology of autism is multifactorial, consisting of both genetic and environmental factors. The objective of this study was to determine the association of exposure to preconception and prenatal risk factors, specifically smoking and alcohol intake, in developing ASD among Filipino children.

Methods: Using a case-control design, this paper determined the association between smoking and alcohol exposure during the preconception and prenatal periods with the development of ASD among Filipino children. Thirty five mothers of patients with autism from the Autism Society of the Philippines, and two private schools were compared with 70 control mothers in terms of smoking and alcohol intake. Data were analyzed using odds ratios.

Results: The odds ratios of having a mother who was exposed to smoking or alcohol were higher for children with ASD compared with those of controls but the difference was not statistically significant.

Discussion: Exposure to smoking and alcohol during the preconception and prenatal periods may be risk factors in the development of ASD among Filipino children. **(Authors' abstract)**

Keywords: *Medicine, Autism spectrum disorder (ASD), Smoking, Alcoholism*

Clinical outcomes in radiation oncology at St. Luke's Medical Center: are we at par or even better?

Calaguas, Miriam Joy C.

Studies on clinical outcomes aim to provide evidence on which interventions work best for each patient in order to deliver the proper treatments and to identify ways to improve the quality and value of care and reduce costs. This compilation of research work aims to report clinical outcomes in St. Luke's Medical Center, Department of Radiation Oncology (SLMC-DRO) on prostate cancer, breast cancer, arteriovenous malformation, pancreatic cancer and recurrent glioma. We compared these clinical outcomes with those of institutions abroad.

(Author's abstract)

Keywords: *Medicine, Clinical outcome, Radiation oncology, St. Luke's Medical Center*

Colorectal cancer imaging

Villorente-Los Banos, Florence F.

Colorectal cancer remains a leading cancer with high mortality worldwide. The disease is both preventable and curable. This article reviews the variety of diagnostic tests and imaging procedures available to detect premalignant polyps and colorectal cancer. The critical role of the radiologist in the accurate assessment of the tumor extent and the detection of metastasis is also discussed. Staging with CT, MR imaging, endorectal ultrasound, and positron emission tomography are of importance in determining appropriate therapy and the risk of tumor recurrence as well as overall prognosis. **(Author's abstract)**

Keywords: *Medicine, Colorectal cancer, CT scan, Magnetic resonance imaging (MRI)*

0493

Comparative in-vitro effect of bevacizumab, mitomycin C, 5-fluorouracil and triamcinolone acetodine on human tenon's fibroblast primary culture

Ocampo, Pius Jonas, Lat-Luna, Ma. Margarita, Tumbocon, Joseph Anthony, Chao-Po, Polly, Martin, Andrei, Enriquez, Ma. Luisa, Cabral, Loraine Kay, Hangod, John Timothy

Glaucoma is the second leading cause of irreversible blindness in the world and the leading cause in the Philippines. To manage glaucoma, trabeculectomy is commonly performed. However, development of scar brought by fibroblast proliferation and collagen deposition is a common challenge in trabeculectomy that most ophthalmologists encounter in the clinics. Anti-fibrotic agents such as mitomycin C and 5-fluorouracil have been reported to improve incomplete healing but negative reports on its postoperative complications are also noted. This study wants to compare in-vitro effects of 4 drugs namely: Bevacizumab, Mitomycin C (MMC), 5-Fluorouracil (5-FU) and Triamcinolone Acetodine (TAA) on primary culture of human tenon's fibroblasts. Explants were cultured from human tenon's fibroblasts collected from a patient without previous history of ocular surgery. A 3-fold decrease in concentration was done in each of the drug being tested. The resazurin fluorometric assay showed significant decrease in fibroblasts in the MMC group as compared to 5-FU, Bevacizumab, TAA and control group. The effect of MMC was dose dependent and the half-maximum inhibitory concentration (IC₅₀) computed was at 12.16 µg. Findings of this study provide further basic evidence supporting the effectiveness of mitomycin c as an anti-fibrotic agent. The generated IC₅₀ may be of value as to guide clinicians in the minimum amount of intraoperative exposure required to achieve a significant effect on target cells. **(Author's abstract)**

Keywords: *Medicine*

0494

A comparison between local wound exploration and focused assessment with sonography for trauma in the diagnosis of injury secondary to abdominal gunshots and stab wounds

Oandasan, Darwin U. , Acosta, Hannah Angela L., Ampil II, Isaac David E. , Bondoc, Renat

Introduction: The objective of this study was to compare the accuracy of Focused Assessment with Sonography for Trauma (FAST) with Local Wound Exploration (LWE) in detecting intra-abdominal injuries for patients with abdominal gunshot and stab wounds by calculating the sensitivity, specificity, predictive values and likelihood ratios of each diagnostic modality.

Methods: This is a cross-sectional study conducted from June 2009 to June 2011 at a tertiary government level II trauma center in Manila. Included in the study were the medical records of all patients treated for abdominal gunshot and/or stab wounds. The following data were obtained from the records: demographic profile; mechanism of injury, whether gunshot or stab; location of injury, whether anterior, posterior abdomen (back); diagnostic procedures and results, whether FAST, local wound exploration, or both; management, whether surgical or conservative; and intraoperative findings, including organ/s injured, if any. For the gold standard, the subjects were categorized as positive or negative injury based on the laparotomy findings or, in the absence of surgical intervention, recovery without sequelae. The results of FAST and LWE were compared to the results of the gold standard by calculating the sensitivity, specificity, positive predictive value, negative predictive value and likelihood ratio with 95% confidence interval, for each modality.

Results: The study included 95 subjects with a mean age of 31 years. Sixty eight (68) patients (71.6%) underwent FAST while 62 (65.3%) underwent LWE. There were 35 patients (36.8%) who underwent both the FAST and LWE. A total of 78 patients had anterior abdominal stab and gunshot wounds. FAST was more specific (97%) than sensitive (36.5%); LWE, however, was more sensitive (95%) than specific (50%). The positive predictive value of FAST was 100% while that of LWE was 77.6%. FAST had a low negative predictive value at 32.7% while LWE had a high negative predictive value of 84.6%. FAST had a higher positive likelihood ratio than that of negative likelihood ratio (12 versus 0.635). LWE, on the other hand, had a lower positive likelihood ratio of 1.9 but a high negative likelihood ratio of 0.1. The confidence intervals of the accuracy estimates were moderately precise.

Conclusion: This study showed that LWE is an accurate diagnostic procedure in detecting traumatic injuries, while FAST is accurate in ruling out significant injury in patients with abdominal stab and gunshot wounds. For patients with suspected intra-abdominal injury, LWE should be done first as a screening test followed by FAST as a confirmatory test.

(Authors' abstract)

Keywords: *Medicine, Abdominal injuries, Wounds, Penetrating, Ultrasonography*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 83-87

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/2 2013

0495

Comparison of laryngoscopic view and ease of intubation with the use of Truview EVO2™ System (Truphatek®), and Macintosh blade in adult patients with predicted difficult intubation

Nagtalon, Eric V. , Umandap, Sharon Rose , Flores, Oli

Introduction: The timely management of a difficult airway is a critical skill for any anesthesiologist. This includes proficiency in the use of different devices to aid in securing the airway. One such device is the Truview EVO2 laryngoscope as an alternative to the conventional laryngoscope to intubate patients with anticipated or unrecognized difficult airway.

Methods: This study compared the Cormack-Lehane laryngoscopic view and ease of intubation in forty patients randomized to be intubated using the Truview EVO2 or the Macintosh blade. Changes in mean arterial pressure and heart rate were also noted.

Results: Patients intubated with the Truview had a significantly better laryngoscopic view, fewer attempts to put in the tube, and shorter time to successful intubation. Subjects in this group were also noted to have lower mean arterial pressure after intubation.

Conclusion: The Truview laryngoscope afforded better laryngoscopic view and optimal conditions for intubation in patients predicted to have difficult airways. The reduced hemodynamic stimulation also presented an added benefit. **(Authors' abstract)**

Keywords: *Medicine, Laryngoscopic view, Intubation, Difficult intubation, Macintosh blade, Truview EVO2*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 60-64

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/2 2013

0496

Comparison of oxycodone iv and fentanyl iv in the attenuation of sympathetic responses to tracheal intubation: a randomized controlled trial

Nacario, Frank C. , Mariñas, Glenn D. , Sanvictores, Ma

Background: This study was undertaken to compare the effect of oxycodone with that of fentanyl in attenuating sympathetic responses induced by tracheal intubation.

Methods: Sixty-six ASA physical status I-II patients scheduled for elective surgery requiring general endotracheal anesthesia, were randomly allocated in a blinded fashion to receive an intravenous bolus of either fentanyl 1 mcg/kg or oxycodone 0.1 mg/kg. The systolic blood pressure, diastolic blood pressure, mean arterial pressure and heart rate were measured before induction of anesthesia, before intubation and at 1, 3, 5, and 7 minutes respectively after tracheal intubation.

Results: There were statistically significant differences in the results of blood pressures and heart rate in both groups indicating sympathetic response during laryngoscopy and tracheal intubation. However, blood pressures and heart rates significantly increased in Group F compared with those of Group O.

Conclusion: Oxycodone caused less variation in arterial pressures and increases in heart rate than fentanyl. It can provide an effective control of the inotropic response induced by laryngoscopy and tracheal intubation. **(Authors' abstract)**

Keywords: *Medicine, Tracheal intubation, Sympathetic response, Oxycodone*

Construct validation study of the Filipino-translated shoulder rating questionnaire among Filipino patients in the national capital region

Rufa, Maria Kathrina M. , Reyes, Jonathan Kevin M. , Bernardo, Kristine Bernadette R. , Mendoza, Jorrel R. , Pereira, Karen Z

Background: A number of instruments have been developed to measure the quality of life in patients with various conditions of the shoulder. This study aimed to construct validate a Filipino translation of the Shoulder Rating Questionnaire (SRQ) to provide physical therapists a reliable assessment tool on the functional status of patients diagnosed with shoulder conditions.

Methods: This study used construct validation to test the Filipino-Translated Shoulder Rating Questionnaire among Filipino patients medically diagnosed with shoulder conditions in rehabilitation centers in NCR. Eligible participants who were diagnosed with any type of shoulder condition were included. The English version of Shoulder Rating Questionnaire was translated to Filipino and was again re-translated to English to ensure validity of each of the items cited in the questionnaire.

Results: A high significance was observed between each factor after revealing Bartlett's Test of Sphericity of .000. However, when the sum of squared loading is rotated it gives a lower percentage results.

Conclusion: This study aimed to construct validate the SRQ to provide Filipino physical therapists a reliable assessment tool on the functional status of patients diagnosed with shoulder conditions. **(Authors' abstract)**

Keywords: *Medicine, Original shoulder rating questionnaire (ORSQ), Filipino-translated shoulder rating questionnaire (FTSRQ), Patients with shoulder condition*

The correlates of anal intercourse among male sex workers in the cities of Quezon and Manila, Philippines

Van Bao, Ho

This is a secondary analysis of a survey on the HIV/AIDS related risk profile of Filipino male sex workers composed of 679 male sex workers from the cities of Quezon and Manila. The major outcome was the practice of anal intercourse. Three exposure variables including sexual orientation, number of clients and types of nonpaying sexual partner were determined in their association with the practice of anal intercourse.

Thirty eight percent (37.7%) reported having anal intercourse during the last two weeks. Of these, 31.4% had engaged in insertive anal intercourse and only 1.8% in the receptive role. The subjects were mostly self-identified as heterosexual (80.2%) and had a median of three clients per week. Majority (61.1%) had no sexual partners and 28.1% had only female partners. The inferential analysis has shown the association between anal intercourse and sexual orientation and the number of clients. Homosexuals/bisexuals who had no nonpaying sexual partners were more likely to engage in anal intercourse than heterosexuals (OR = 2.27; 95% CI = 1.35 - 3.81). Among those who were self-identified as heterosexuals, those who had nonpaying male sexual partners, were more prone to engage in anal intercourse (OR = 4.58; 95% CI = 1.71 - 12.22).

Among the non-drinkers of alcohol, those who had more than two clients per week were more likely to engage in anal intercourse.

Prevention strategies should be strengthened to reduce this high-risk sexual behavior. The subpopulation of homosexual/bisexuals among male sex workers should be targeted for the prevention of anal intercourse. Further, education programs need to emphasize this behavior practiced by male sex workers who tend to have many clients. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Homosexuals, Bisexuals, Heterosexuals*

The UPManila Journal, Volume No. 5 Issue No. 1, 58

(Filipiniana Analytics)

Fil(S) RA421 U3 5/1 2000

0499

Correlation of internship grades and physical therapy and occupational therapy licensure examination passing rate among physical therapy graduates of a private college in Metro Manila

Tolentino, Marion Mae M. , Poquiz, Myca D. , Elizaga, Marianne A. , Geronimo, Rochelle K. , Constantino, Mark Francis D., Espinosa, Jennife

Background: The study is a retrospective correlation between final internship grades and the Physical Therapy and Occupational Therapy Licensure Examination results of BS Physical Therapy graduates. The study aimed to determine the probability of physical therapy graduates passing the board examination based on their performance in internship.

Methods: Seventy two physical therapy graduates from a college in Metro Manila covering three batches from 2010 to 2012 were included. The final internship grades and the Physical Therapy and Occupational Therapy Licensure Examination results were correlated by the use of the Pearson Product Moment Correlation. Odds ratio was used to provide additional information about the passing rates of the examinees.

Results: Only 2% of graduates who passed their internship failed in the board examination while 32% of those who failed their internship failed their first attempt in the board examination. This led to a moderate positive correlation of 0.530 ($P = 0.001$). In addition, odds ratio predicted that students who passed their internship were nearly 23 times more likely to pass the board examination.

Conclusion: The study showed that there was positive correlation between final internship grades and Physical Therapy and Occupational Therapy Licensure Examination results. Based on the findings, a physical therapy graduate obtaining a passing grade in the internship academics may predict a positive performance the board examination. **(Authors' abstract)**

Keywords: *Medicine, Internship grades, Physical therapy licensure examination, Occupational therapy licensure examination*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 22-25

2014,

(Filipiniana Analytics)

Fit(S) R97.4 U37 3/1 2014

0500

A cross sectional study to determine the risk factors of work-related musculoskeletal disorders among physical therapists in Metro Manila

Rivera, II, Esminio L., Santos, Honielet Diane M., Saddi, Jermaine I., Ruiz, Jane Kathrine B., de Guzman, Athena Jean M., Caoili, Gerald Lester A.

Objective: This study aimed to determine the factors that contribute to the occurrence of the work related musculoskeletal disorders among physical therapists in Metro Manila.

Methods: This cross-sectional study was done in selected hospitals in Metro Manila with the approval of the Ethics Review Committee. Licensed physical therapists were recruited using a purposive sampling technique. The Personal Demographic Sheet, Ovako Work Posture Analyzing System, MM040 Questionnaire were used to determine, assess and describe the participants' demographic profile, working conditions and environment, respectively. The Standard Nordic Musculoskeletal Questionnaire was used to determine the presence of work-related musculoskeletal disorders among the respondents. A Marascuilo table of statistics was used to determine the person-tasks-environment relationship to work-related musculoskeletal disorders.

Results: Twenty-eight physical therapists participated in the study. Subjects perceived their working environment as good to very good in terms of temperature, cleanliness, noise and light. The common work-related musculoskeletal disorders involved the upper extremities and back. Gender, number of co-workers, years of service, BMI, and category 2 and 4 postures were associated with work-related musculoskeletal disorders among the subjects in the last 12 months. Years of service, number of co-workers and cleanliness were associated with symptoms in the last 7 days. Gender, BMI, temperature, and category 2 and 4 postures prevented the subjects from working.

Conclusion: The factors commonly associated with work-related musculoskeletal disorders involving mostly the upper extremities and back are gender, BMI, number of co-workers and years of service. Work-related musculoskeletal disorders involving the neck, shoulder, upper and lower back prevented the therapists from doing their work. **(Authors' abstract)**

Keywords: *Medicine, Ergonomics, Nordic musculoskeletal questionnaire, Physical therapy, Work-related musculoskeletal disorders*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 43-48

(Filipiniana Analytics)

Fi(S) R97.4 U37 3/1 2014

0501

A cross-sectional study of the association between prenatal consultation and low birth weight in Barangay Doña Imelda, Quezon City

Paredes, Georgina T. , Narva, Kisha , Naval, Dennis , Narag, Jemie Rose Maria Theresa , Nacorda, Paulo , Morales, Karen Loura Mae , Marquez, Klarizza Mae , Mariano, Patricia Mae , Mariano, Anna Carissa , Maravilla, Laurin Franchesca , Mamaril, Maxinne Erica , Malubay, John Jerome , Malimban,

Introduction: The incidence of low birth weight infants remains high despite the measures such as prenatal consultation implemented by the Department of Health to prevent its occurrence. The purpose of this study was to determine the association of adequate prenatal consultation with low birth weight infants.

Methods: This cross-sectional study was conducted in Barangay Doña Imelda, Quezon City among 20-34 year old women who were permanent residents of the barangay and gave birth in 2010. Subjects were selected by convenience sampling from those women who fulfilled the inclusion and exclusion criteria.

Results: Of the 152 respondents, 26 (17.1%) women did not have prenatal consult. Of these 26 respondents, 16 delivered low birth weight infants (62%). Of 126 respondents who consulted, 8 of them delivered low birth weight infants (6.3%). The Prevalence Odds (PO) of 0.36 indicated that attending prenatal consultation among mothers is negatively related to the incidence of having low birth weight infants.

Conclusion: The results show the importance of having prenatal consultation to prevent the occurrence of delivery of a low birth weight infant. The researchers recommend that the causality of the relationship be identified. **(Authors' abstract)**

Keywords: *Medicine, Low birth weight, Prenatal consult, Department of Health*

UERM Health Science Journal, Volume No. 2 Issue No. 1, 1-3

2013,

(Filipiniana Analytics)

Fi(S) R97.4 U37 2/1 2013

0502

CT dose audit and evaluation of CT scan protocols in a large private hospital in the Philippines

Kintanar, Irma D., Laya, Bernard F., Solis, Rafael C., De Vera, Nathaniel B., Caraan, Janet O., Melchor, Joyce N.

Introduction: The study aimed to evaluate the scan protocols and radiation doses from the 64- and 256-slice CT scanners of the hospital. It further aimed to establish local Dose Reference Levels (DRLs) for the selected CT procedures.

Methods: The study included adult abdomen, brain and chest CT examinations performed in the two CT scanners of the hospital from October 2009 to 2012. The patients were grouped into five weight ranges: 40-50, 51-60, 61-70, 71-80 and >80 kgs. Data were obtained from at least 10 patients for each procedure and weight range per CT scanner. To establish local dose reference levels, the average values were taken for each procedure per patient weight range.

Results: The overall average volumetric CT dose index (CT-DIvol) values for head, chest and abdomen are: 30, 10, 10 mGy and 33, 14, 16 mGy for the 64-slice and 256-slice CT scanners, respectively. The dose length product (DLP) values are: 641, 398 and 484 mGy-cm for the 64-slice scanner and 646, 586 and 903 mGy-cm for the 256-slice CT unit.

Conclusions: Current CT patient doses are comparable with, and even lower than, other internationally published levels. The current overall mean values may be set as the local DRLs and the present scan protocols may be adopted as the standard protocols for the hospital. **(Authors' abstract)**

Keywords: *Medicine, CT dose audit, CT scan protocols, Local Dose Reference Levels (DRLs), CT dose index (CT DIvol)*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 33-40

(Filipiniana Analytics)

File(S) R97 S75 9/1 2014

0503

Current imaging recommendations for lung cancer screening and detection as applied to the local setting

Pasia, Nelson V., Nava, Regina C., Vizcarra, Roy P.

Lung cancer has always been and still is one of the primary cancers worldwide. Although survival rate is very poor for cases diagnosed in the advanced stage, lung cancer detected in the early stages has a very good prognosis. There has been, therefore, a constant search for the best and most feasible screening program for the early diagnosis of lung cancer. This article primarily aims to summarize the latest recommendations for lung cancer screening, particularly patient selection and follow-up of solitary pulmonary nodules in high risk patients. An additional objective is to present a suggested algorithm to aid the clinician rule out tuberculosis (TB) or infection as the source of the pulmonary nodules. Taken into consideration is the incidence and prevalence of TB in the Philippines. **(Author's abstract)**

Keywords: *Medicine, Lung cancer, Tuberculosis (TB), Pulmonary nodules*

Current trends in nuclear endocrinology-SLMC setting

Andres-Barrenechea, Emerita

Theranostics, a concept which has been there for the past twenty years, is the combination of a diagnostic tool that helps define the right therapeutic tool for a specific disease, mostly in oncology. The high value of imaging diagnostics for the assistance to cancer therapy in terms of early detection, staging, therapy selection and planning as well as follow-up is now recognized.

Most of my works in research, published and not published dwell with nuclear imaging procedures and success in radionuclide therapy mostly in endocrine diseases.

A good example is thyroid cancer wherein we image the patient with I-131 by giving a diagnostic dose of 2mCi. When there is a remnant, we know that these residuals can be ablated by the same I-131 (100mCi) which is a much bigger therapeutic dose.

Likewise a paper on the utility of Positron Emission Tomography (PET/CT) to stage malignant disease, assess recurrent malignant disease, evaluate therapeutic response, locate unknown primaries and determine the malignant potential of unknown masses makes it a very useful ancillary tool in the diagnosis and treatment of cancer patients.

Other works in neuroendocrine tumors, Graves disease, radiosynovectomy are included in this lecture. **(Authors' abstract)**

Keywords: *Medicine, Theranostics, Nuclear endocrinology, Thyroid cancer, Radionuclide therapy*

Dermatological applications of green tea (*Camellia sinensis*) in the Philippines: a systematic review of randomized clinical trials

Sabido, Pearl Weena Marie E., Encarnacion, Lonabel A., Chua, Natividad Sandra D., Asuncion, Eleonor B., Nisce-Anisco, Katrina Carmina Y., Danga, Mary Elizabeth S., Hernandez, Lei Anne R., Valbuena, Nicola N.

Background: Green tea, from the leaves of *Camellia sinensis*, is a rich source of polyphenols. especially (-)-epigallocatechin-3- gallate (EGCG). It has antioxidant, anti-inflammatory, antimicrobial, and anti-tumor properties, and is believed to have potential for various dermatological applications.

Objectives: This paper aims to assess the effects of green tea or its components on the prevention or treatment of dermatologic conditions among Filipinos.

Methods: This is a systematic review of randomized controlled trials involving any form of green tea or its components as prevention or treatment of any dermatologic condition among Filipinos. Searching through electronic databases, reference lists of previous studies or reviews, and physical archives was done. At least two review authors independently applied the study criteria, extracted data and assessed methodological quality of studies. Discrepancies were resolved by discussion or by consulting a third review author. Study authors were contacted for missing information.

Results: Three published and 1 unpublished study with 252 participants, completed from 2003 to 2009, were reviewed. Each investigated the effects of green tea on different dermatological applications: namely, photoprotection, molluscum contagiosum, seborrheic dermatitis, and acne vulgaris. Each of these studies was of high methodological quality. As each of them investigated different dermatological conditions, results were summarized descriptively according to dermatological condition.

Conclusion: There is limited to moderate evidence regarding the effects of green tea on the prevention or treatment of the above conditions. This is primarily because only one study per dermatological condition was reviewed. However, as there is generally a trend to benefit with its topical use, and because it has thus far proven to be generally safe and well tolerated, its use as an adjunct in the prevention or treatment of the above conditions may be recommended. **(Authors' abstract)**

Keywords: *Medicine, Green tea, Camellia sinensis, Polyphenols, (-)-epigallocatechin-3- gallate (EGCG)*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 63-72

(Filipiniana Analytics)

File(S) R97 S75 9/1 2014

0506

Descriptive histopathologic animal study of ethambutol toxic optic neuropathy in the rat model

Valera, E.G. , Cloma, L.D. , Tamesis, Jr, J.M. , Bernardo, III, E.M., Sy,

Objective: This study aims to describe and characterize histopathologic changes in the retinal ganglion cell layer and optic nerve of adult albino rats secondary to the administration of the so called safe doses of Ethambutol.

Method: A total of four treatment groups were used with the following dosing regimens: placebo, 15 mg/kg, 25 mg/kg and 50 mg/kg. After four weeks of Ethambutol treatment, the rats were sacrificed and the globe and proximal 4 mm of optic nerve was harvested. Histopathologic examination of the optic nerve-pupil section and cross sections of the proximal 2mm of optic nerve was done.

Results: All groups given variable doses of ethambutol did not show any observable decrease in the retinal ganglion cell density; neither did any treatment group exhibit any observable optic nerve changes. However, changes in the outer nuclear layer (ONL) were noted as either a decrease in cell density, an increase in cell density or a complete absence of the ONL.

Conclusion: No observable changes in the retinal ganglion cell layer nor the proximal 2mm of the optic nerve were observed among the treatment groups. Changes in the ONL were noted among those rats given ethambutol at doses as low as 15mg/kg/day. **(Authors' abstract)**

Keywords: *Medicine, Histopathologic animal, Ethambutol toxic optic neuropathy, Retinal ganglion cell, Optic nerve*

UERMMMC Journal of Health Sciences, Volume No. 10 Issue No. 1, 46-48

2007,

(Filipiniana Analytics)

Fi(S) R97.4 U37 10/1 2007

0507

Development of an instructional video on basic antenatal care for mothers' classes

Festin, Mario R.

Giving antenatal care advice and instruction is one of the recommendations for improvement of the mother's knowledge, skills, and attitudes on the proper care and nutrition during pregnancy. It is one of the important components of antenatal care recommended by the Department of Health. The video format has many advantages as an instructional medium, including standardized content, relative availability, repeatability, and familiarity with the format. This can be used by the health professional as one of the materials in educating his patients in an obstetric care setting.

The main objective of the project is to prepare and evaluate a video-based instructional program on the proper care and nutrition during pregnancy for patients attending a mothers' class in an obstetrics out-patient clinic.

This involved three phases, (1) the Research and Preparation Phase, (2) the Production Phase, and (3) the Evaluation Phase. The Research and Preparation Phase included a survey for the basis of the Instructional Material, the selection of the material, preparation of the Video Planning Guide, and the Instructional Design. The Production Phase covered the preparation of the script, the graphics, the video, and the taping, dubbing and editing. The Evaluation Phase comprised pre- and post-tests on patients at the Out-patient clinic and wards of the Department of Obstetrics and Gynecology of the Philippine General Hospital. A survey on the impressions and preferences of the attending health professionals on the video material was also conducted. The latter utilized the video as material in their instruction of patients in mothers' Classes.

The contents of the instructional material came from lecture notes and textbooks on Nutrition in Obstetrics and Gynecology. A survey of patients' beliefs and perceptions on pregnancy showed that topics on nutrition and development of the baby were the areas of patient knowledge that needed clarification. Based on these materials, a presentation composed of a script, photos, illustrations, and video images was prepared using Microsoft Powerpoint 97. This presentation was later transformed to the video format, intended to be used by doctors in an

training hospital who conduct mothers' classes as part of an antenatal care education program. The video on "Ang Wastong Pangangalaga sa Pagdadalangtao" lasts for 25 minutes in VHS format. It was presented to the intended users for comments and suggestions for improvement. After revision, it was tested on 129 patients in the out-patient clinic consulting for antenatal care. From a baseline mean pretest score of 8.93, there was an improvement in the mean post-test score of 9.34 on the common questions.

A video-based instructional program on the proper care and nutrition during pregnancy can be used as part of an antenatal care educational program for patients. Other educational materials using the video format may be used to standardize the content and format for the instruction. **(Author's abstract)**

Keywords: *Medicine, Antenatal care, Department of Health, Obstetric care setting*

The UPManila Journal, Volume No. 5 Issue No. 1, 57

(Filipiniana Analytics)

Fi(S) RA421 U3 5/1 2000

0508

A double-blind randomized controlled trial on the effectiveness and safety of focused low frequency ultrasound waves in decreasing the abdominal circumference among healthy adults

Angeles, Camille Vanessa B. , Arcilla, Bernadette B. , Ching-Chua,

Introduction: Non-invasive focused low-frequency ultrasonic waves that reduce the circumference and volumes of areas with localized fat have become more popular. This study aimed to determine the effectiveness and safety of focused low-frequency ultrasonic waves in reducing localized abdominal fat deposits.

Methods: This was a randomized, double-blind, placebo-controlled trial. Included in the study were Filipino adults with localized abdominal fat deposits. The primary outcome measure was mean change in abdominal circumference after 4 weeks of treatment, and secondary outcome measures were mean change in abdominal fat thickness, weight, serum lipid profile, as well as frequency of adverse events.

Results: There was a significant reduction in the mean abdominal circumference and fat thickness among patients who received focused low-frequency ultrasonic waves compared to those in the placebo group. There were no significant differences in weight, total cholesterol, HDL, LDL, triglycerides, VLDL levels, and adverse events between the two groups.

Conclusion: Focused low-frequency ultrasonic waves are effective in reducing abdominal circumference and fat thickness. **(Authors' abstract)**

Keywords: *Medicine, Focused low frequency ultrasonic waves, Abdominal circumference, Localized abdominal fats*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 65-70

2013,

(Filipiniana Analytics)

EEG findings in infarcts and hemorrhagic post-stroke seizures: a cross-sectional study

San Luis, Amado M. , Soto, Maria Felicidad A. , Zialcita, Ma. Katrina Margar

Background: There is a paucity of literature dealing with post-stroke seizure EEG abnormalities and perhaps none that compares them between infarcts and hemorrhagic strokes. In this study, we aimed to find out whether EEG abnormalities were associated with the type, location and interval of stroke.

Methods: In this cross-sectional study from 2008 to 2012, the EEG findings (normal, abnormal significance I-III) of post-stroke patients who had seizures were compared with the type (infarct or hemorrhage) and location (cortical, subcortical, brainstem or cerebellar) of stroke, and with the interval of stroke ictus to EEG. The location was based on neuro-imaging studies; other data were retrieved from the EEG requests and clinical records of the patients.

Results: Ninety-eight patients with a mean age of 63.9 years, majority of which were females, who had infarcts, and had abnormal EEG findings, were included. Hemorrhagic strokes were significantly associated with more severe abnormalities (abnormal significance III) on EEG ($P = 0.04$). The location of the stroke did not show any statistically significant correlation with EEG abnormalities in our study. The time elapsed between stroke and the EEG was not significant ($P = 0.09$).

Conclusion: The most common EEG abnormality seen on in the EEGs of post-stroke patients was intermittent focal or generalized slowing of the background and most severe EEG abnormalities were noted on EEGs of hemorrhagic stroke patients rather than infarctions. In this study, the EEG abnormality did not appear to correlate well with the location of the stroke. **(Authors' abstract)**

Keywords: *Medicine, Electroencephalogram, Stroke, Infarct*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 55-59

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/2 2013

The effect of aerobic exercise on the cognitive ability of physical therapy students

Wee, Josef Joaison , Pamittan, Ralph , Ilustre, Nikki , Gonzales, Yoni Benjamin , Carlos, Raymond, Nicolas, Ester Melody R

Introduction: Exercise maintains or enhances physical fitness and overall health and wellness. The purpose of this study was to determine if cognitive ability could be improved with regular aerobic exercise.

Methods: This experimental study was conducted among first year Physical Therapy students at UERMMMCI. Students who had low levels of physical activity or none at all based on a questionnaire, who passed a medical check-up and were willing to participate were included. Twelve students were assigned to the aerobic exercise group and 11 students to the control group. The exercise group underwent 30-minute sessions of tae bo three times a week for six weeks. Cognitive ability was measured before and after the six week study period in both groups using a Raven's Standard Progressive Matrices evaluation. The test scores were compared using paired and independent T-test.

Results: Twelve students in the tae bo group and 11 in the control group completed the study. There was a significant increase in the mean Raven's scores in the tae bo group after the 18 sessions while a decrease was noted in the mean post-test scores of the control group. The mean Raven's scores were significantly higher in the tae bo group compared with those of the control group. The men in the tae bo group had higher scores than the women.

Conclusion: Aerobic exercise was effective in increasing the cognitive ability of first year Physical Therapy students. Gender may be a factor in cognitive ability. **(Authors' abstract)**

Keywords: *Medicine, Aerobic exercise, Cognitive ability, Physical therapy*

UERM Health Science Journal, Volume No. 2 Issue No. 1, 4-6

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/1 2013

0511

Effect of auricular acupressure in smoking cessation among young adults

Viguilla, Estella Gr

Introduction: Auricular acupressure is one of the alternative modalities used for relieving withdrawal symptoms caused by substance abuse and addiction. However, its efficacy remains inconclusive due to scarcity of evidence and further exploration of its effect is needed. This study aimed to determine the effect of auricular acupressure in smoking cessation among young adults.

Methods: This was a quasi-experimental study involving adults aged 18 to 45 years at the College of Allied Rehabilitation Sciences. Thirty eligible participants were recruited and included in the study. The Brief Questionnaire of Smoking Urges was used to assess the cravings to smoke and the Fagerstrom Test for Nicotine Dependence, to measure the level of nicotine dependence. The secondary outcome measured was the number of cigarettes smoked per day.

Results: Repeated Measures ANOVA showed a significant decrease in the level of craving, cigarette consumption and nicotine dependence at the end of the three-week intervention that remained consistent until the fourth week.

Conclusion: This study suggests that auricular acupressure may be an effective intervention for smoking cessation by decreasing the level of cravings to smoke, consumption of cigarette and nicotine dependence that may lead to complete abstinence. **(Authors' abstract)**

Keywords: *Medicine, Auricular acupressure, Smoking cessation, ANOVA*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 1-7

2014,

(Filipiniana Analytics)

Fi(S) R97.4 U37 3/1 2014

0512

Effect of zinc supplementation as an adjunct in treatment of pneumonia in children: a meta-analysis

Doctor-Bernabe, Jacqueline, Ampil, II, Isaac David E., Bibera, Gyneth Lourdes G.

Introduction: This meta-analysis was done to evaluate the efficacy of zinc supplementation as adjunct to antibiotics in decreasing the duration of resolution of tachypnea, time to recovery, and length of hospital stay of pneumonia in children 2 to 59 months.

Methods: This was a meta-analysis of randomized, blinded, placebo-controlled intervention trials. The studies for inclusion were identified from several international and local search engines and journal hand search. Included studies were appraised for validity. Statistical analysis of the data was done using Review Manager Version 5.2. Summary of mean difference and 95% confidence interval for each outcome variable were estimated using a random-effects model in the presence of significant heterogeneity. Tests for heterogeneity were computed using tau-square and chi-square.

Results: There was no difference in children who received elemental zinc as adjunct to antibiotics in terms of decreasing the duration of resolution of tachypnea ($P = 0.48$, 95% CI -13.76, 6.41), time to recovery ($P = 0.11$, 95% CI -10.18, 1.00) and length of hospital stay ($P = 0.05$, 95% CI -11.54, 0.04).

Conclusion: This study showed that there was no significant evidence for the efficacy of zinc supplementation as an adjunct in the treatment of pneumonia in children despite including newer studies for analysis. **(Authors' abstract)**

Keywords: *Medicine, Pneumonia, Zinc, Heterogeneity*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 36-42

(Filipiniana Analytics)

Fi(S) R97.4 U37 3/1 2014

Effectiveness of *Cananga odorata* (ylang-ylang) vapor aromatherapy in chemotherapy-induced state anxiety reduction among breast cancer patients: a randomized controlled trial

San Juan, Michael Nicole C., San Andres, Jocyn S., Sanchez, Elene May V., Sanchez, Gabriel Francisco S., Sales, Mariz Kaye A., Salud, Sarah Patricia M., Salvame, Eryll O., Sambile, John Alfred S., Sangalang, Mary Claire M., Santiago, Lariela Dianne S., Santiago, Ma. Shenny Joy A., Santos, Elaine Diane G., Naites, Jennifer M.

Introduction: Vapor aromatherapy is one of the complementary therapies offered to address anxiety, the most common psychological effect of chemotherapy. It has been consistently reported to reduce anxiety among cancer patients and as such, vapor aromatherapy using the indigenous plant *Cananga odorata* (ylang-ylang) was investigated for its short-term, immediate effect in reducing chemotherapy-induced state anxiety.

Methods: Thirty four stage II and III female breast cancer patients aged 25 years and above with low to moderate trait anxiety were randomly allocated to receive vapor aromatherapy using either *Cananga odorata* (experimental group) or virgin coconut oil (control group), given once for 30 minutes after their chemotherapy session. State anxiety was measured using the State-Trait Anxiety Inventory Form Y before and after vapor aromatherapy.

Results: No significant anxiety reduction was observed after vapor aromatherapy among participants with low and moderate anxiety in both treatment groups. However, the state anxiety scores were significantly lower in the experimental group when the low and moderate anxiety groups were combined. The difference in anxiety reduction between the treatment and control arms was significant in the moderate anxiety group but not in the low anxiety group.

Conclusion: *Cananga odorata* VA conferred state anxiety reduction among Stage II and III breast cancer patients undergoing chemotherapy who had moderate anxiety. (Authors' abstract)

Keywords: *Medicine, Anxiety reduction, Vapor aromatherapy, Breast cancer, Cananga odorata, Ylang-ylang*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 31-35

(Filipiniana Analytics)

Fil(S) R97.4 U37 3/1 2014

The effectiveness of music therapy in the reduction of low back pain due to musculoskeletal disorders

Santos, Fria Rose R., Medina, Ma. Fatima N., Fontamillas, Trisha Marie E., Edquiban, Hazel A., Cacnio, Maria Ka

Introduction: This study aimed to compare the effectiveness of classical music therapy as an adjunct in treating patients with low back pain secondary to musculoskeletal disorders.

Methods: This randomized controlled trial utilized 30 participants randomly assigned to either experimental group who listened to classical music by Mozart or control group. Both groups underwent the same exercises for 14 days. The pain scores were determined using a Visual Analogue Scale at the start of the study and before and after each session. Levene's test for equality of variances and an independent sample t-test were used to analyze the difference between the means of the music and control groups.

Results: The difference of the means of the music and control groups at baseline and during the treatment sessions were not significantly different based on the Levene's test and t-test. The experimental group reported that they felt calm and relaxed, and that the pain seemed more bearable and even lesser in intensity when they listened to music.

Conclusion: Classical music therapy may not be an effective adjunct in the treatment of low back pain. This may be due to differences in music taste. The authors recommend exploring or type of music in future studies. **(Authors' abstract)**

Keywords: *Medicine, Music therapy, Musculoskeletal disorders, Classical music*

UERM Health Science Journal, Volume No. 2 Issue No. 1, 23-25

2013,

(Filipiniana Analytics)

Fi(S) R97.4 U37 2/I 2013

0515

Experience with the use of sulodexide (*Vessel Due F*) and pentoxifylline (*Trental*) in patients with vasculopathic cranial nerve palsies

Cloma, L. D. , Guevara, G. V. , Bernardo, III, E.M., Tamesis, J. M. , Villalon,

Objective: This study aims to review possible treatment modalities for patients with vasculopathic cranial nerve palsies, specifically, sulodexide and pentoxifylline which could hasten recovery from debilitating diplopia.

Method: All charts of patients with cranial nerve palsies from January 2002 - October 2006 from a private clinic were reviewed. A total of 41 patients were included in this study: 27 patients with CN VI palsy, 10 patients with CN III palsy and 4 patients with CN IV palsy.

Results: Mean age for the population reviewed was 67.0 years. Mean duration for diabetes mellitus was 6.6 years; mean duration for hypertension was 7.4 years. Improvement was noted in both groups in two weeks. For most patients treated with sulodexide, complete resolution was evident by a month. For most patients treated with pentoxifylline, complete resolution was seen by 1 112 months.

Conclusion: Pentoxifylline and Sulodexide treatment shortened the duration of debilitating diplopia in patients suffering from vasculopathic cranial nerve palsies. **(Authors' abstract)**

Keywords: *Medicine, Sulodexide (Vessel Due F), Pentoxifyline (Trental), Vasculopathic cranial nerve daisies*

UERMMMC Journal of Health Sciences, Volume No. 10 Issue No. 1, 14-16

2007,

(Filipiniana Analytics)

Fil(S) R97.4 U37 10/1 2007

0516

Focused group discussion on the use of *Euphorbia hirta* Linn (tawa-tawa) in the treatment of dengue fever

Davila, Federico A., Tungol-Paredes, Georgina B., Brizuela, Grace E., Carlos, Josefina C.

Introduction: *Euphorbia hirta* Linn has been used as a folk remedy for dengue. Despite numerous anecdotal reports, there is a lack of precise documented information regarding its actual use, perceptions of effectiveness and safety. This study aimed to elucidate the use of *Euphorbia hirta* Linn in the treatment of dengue.

Methods: Previously confined pediatric patients and their parents were invited to attend focused group discussions on their use of *Euphorbia hirta*. The discussions centered on sources of information, sourcing, preparation and dosing, the effects of treatment and willingness to endorse its use.

Results: Eight volunteers participated. The common source of information was word-of-mouth endorsement. They used commercial preparations and administered it as an infusion. *Euphorbia hirta* was given at various doses and durations. Respondents claimed that it made their patients feel better and that they were willing to recommend its use.

Conclusion: The study showed the potential value of *Euphorbia hirta* for the treatment of dengue, as perceived by the care givers. **(Authors' abstract)**

Keywords: *Medicine, Euphorbia hirta, Dengue, Tawa-tawa*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 15-18

(Filipiniana Analytics)

Fil(S) R97.4 U37 3/1 2014

0517

Genome-wide association studies in nephrology: are we there yet?

Bacig, Michael O.

Genome-wide association studies (GWAS) have emerged as a novel and powerful genotyping technique to identify risk variants for complex traits.

The objective of this article is to provide an overview of GWAS and summarize the recent discoveries identified by GWAS for various kidney diseases.

The human genome project is a coordinated international work that led to the consensus sequence of the genome. In 2001, the draft sequence of the human genome was published in Science and Nature. According to Francis Collins "As striking as these images were, they could be seen as more art than science, because genome-wide sequencing had yet to be applied to individuals for medical purposes" (Collins 2011) ¹. A year later, the International HapMap Project, which aims to catalog common genetic variations in humans was initiated. In 2005, millions of single nucleotide polymorphisms (SNPs) were deposited in SNP database (dbSNP) through the National Center for Biotechnology Information. Also in 2005, high-throughput genotyping technologies were developed. These advances in genomics set the stage of the year of GWAS in 2007. Furthermore, whole genome resequencing of 1,000 individuals was initiated in 2008. In 2011, the Pan-Asian Population Genomes was initiated.

We must therefore find out the answers to the following questions: What is GWAS? What's in it for me? Has the revolution arrived or are we there yet? What are the challenges ahead, and what have we learned? (**Authors' abstract**)

Keywords: *Medicine, Genome-wide association studies (GWAS), Genotyping technique, Kidney diseases, Single nucleotide polymorphisms (SNPs)*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 73-78

(Filipiniana Analytics)

File(S) R97 S75 9/1 2014

0518

Identification of the major igeimmunoreactive proteins in penaeus merguensis

Dela Luna, Jonathan, Balingit, Jaime, Banzagalez, Jay, Barba, Denise, Betonio, Katherine, Cheng, Jaymi Therese, de la Paz, Aizel, de la Paz, Tala, Duque, Kim Nancy, Garcia, Jerald, Hipolito, Cheryl, Licuanan, Lloyd, Lingao, Michelle, Martinez, Emmanuel Owen, Mendoza, Vinia Madonna, Mortel, Kristine, Moti, Merenisa, Opina, Louricha, Otadoy, Jenifer, Rubin, Evelyn, Santiago, Patrick, Tanchangco, Tiffany, Tomas, Ma. Dulce Regina, Ramirez, Bernadette L.

Shrimp is an important food allergen. In the Philippines, confirmation of diagnosis of shrimp allergy is done using several tests which include a skin-scratch test based on a commercially available nonindigenous shrimp derived extract. The possibility that these commercially available reagents may not be the most appropriate for use in the Philippine setting cannot be altogether discounted.

In this study, the local shrimp species, *Penaeus merguensis* or "suwaheng puti" was investigated to determine the major IgE-immunoreactive protein from soluble extracts of cooked *P. merguensis*. A Triton-X detergent extract containing Shrimp Soluble Antigen (SSA) was electrophoresed on a 12% SDS-PAGE gel under denaturing conditions following determination of total protein content using the Lowry Method. Several bands were observed after staining the gel with 0.025% Coomassie Blue R-250. The bands were classified into major and minor electrophoretic bands based on the staining density of the protein. There were three major bands and seven minor bands observed. The major bands were on the ~24 kDa,

~37kDa, and ~38kDa molecular weights.

To determine which of the bands were significant to the IgE isotype-specific immune response to Philippine *P. merguensis*, an immunoblot was performed. After obtaining informed consent, whole blood was collected from human subjects (6 males, 4 females; aged 19-24) with a known history of allergic reaction upon ingestion of shrimp. Prior to performing the immunoblots, specific reaction to shrimp allergen was also determined for these subjects by a skin-scratch test performed at the Allergy Section of the UP-PGH. A similar number of human subjects (5 males, 5 females; aged 19-24) without a known negative history of shrimp allergy served as negative controls for the study. When a 1:20 dilution of serum from the shrimp allergy-positive group was reacted with SSA transblotted onto strips of nitrocellulose paper, a positive reaction with SSA was demonstrated in 90% (9/10) of the samples. A ~37kDa protein (designated σ H1) in the SSA was recognized by 78% (7/9) of serum from the shrimp allergy-positive group, while a ~51 kDa protein (designated σ H2) was recognized by 67% (6/9). None of the 10 negative control sera reacted with the SSA. This study demonstrated that the major IgE-immunoreactive proteins in Philippine *P. merguensis* are the σ H1 and σ H2 proteins. These are important allergens to consider in future efforts leading to preparation of standardized reagents for use in diagnosis and immunotherapy of shrimp allergy in the Philippines. **(Author's abstract)**

Keywords: *Medicine, Penaeus merguensis, IgE-immunoreactive, Shrimp Soluble Antigen (SSA), Lowry method*

The UPManila Journal, Volume No. 5 Issue No. 1, 39-56

(Filipiniana Analytics)

Fil(S) RA421 U3 5/1 2000

0519

Imaging breast cancer

Buenaflor, Ma. Theresa S., Perez, Barbara Helen E., Gaddi, Jason Paul B.

Breast cancer is a heterogeneous disease and has a progressive nature. However, with the advances made in breast cancer imaging as well as the breakthroughs in other fields of medicine that specialize in breast cancer treatment, it is possible to curtail its progression. This article aims to present the current modes of detection of common breast carcinomas and the refinement in image-based biopsy in our local setting. **(Author's abstract)**

Keywords: *Medicine, Breast cancer, Heterogeneous disease, Biopsy*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 55-64

(Filipiniana Analytics)

Fil(S) R97 S75 9/4 2014

Imaging of brain tumor in adults

Kintanar, Irma D., Dizon, Mercedes D., Pilotin, Ron C., Pacpaco, Christina Paola B.

Primary brain tumors are commonly encountered neoplasms, with a worldwide annual incidence of ≥ 3 per 100,000. The gold standard in the diagnosis of brain tumors is a histopathological evaluation, but biopsy and surgery may be too invasive and expensive. In contrast, neuroimaging is a noninvasive examination for the diagnosis of brain tumors. However, the challenge lies in the differential diagnosis of a solitary parenchymal brain tumor. The issue pertaining to this challenge is whether the tumor is benign or malignant, primary or metastatic, or if a lesion is low or high grade tumor.

The overarching goal of this article is to present the commonly encountered malignant CNS neoplasms in adults at St. Luke's Medical Center, focusing primarily on the strengths and limitations of various imaging modalities utilized in its detection. The typical imaging features of glioblastoma multiforme (GBM), lymphoma, and brain metastasis are discussed.

(Authors' abstract)

Keywords: *Medicine, Brain tumor, Neoplasms, CNS neoplasms, Parenchymal brain tumor*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 23-32

(Filipiniana Analytics)

Fit(S) R97 S75 9/4 2014

Imaging of common head and neck cancers in adults

Prakash, Tessy, Rosario, Annie A.

This literature review presents the imaging of head and neck cancer (HNC), the world's sixth most common neoplasm. Statistics on incidence and prevalence of HNC Worldwide as well as in Philippines for the year 2012 was extracted from GLOBOCAN

electronic data sources. Literature review analysis of HNC published in English between the year 1988 and 2013 were obtained from electronic data source. Additional studies were identified manually from bibliographies of retrieved articles. Study characteristics and findings were analyzed. We identified 28 studies that reported etiology, presentation, techniques of imaging, and imaging features of HNC. Most of these were regarding the imaging appearance of common HNC. These articles also included the imaging modality of choice for specific diagnostic characteristics of HNC. A few gauged the advances in the newer modes of imaging like PET scan in assessing the aggressiveness of tumor. Cross sectional imaging, clinicopathological assessment, and careful search for recurrences or residual tumors have improved the management of HNC resulting in better patient survival rates than before.

(Author's abstract)

Keywords: *Medicine, Head and neck cancer, GLOBOCAN electronic data sources, PET scan*

0522

Imaging of common malignant abdominal tumors in children

Concepcion, Nathan David P., De Leon, Miriam C., Laya, Bernard F.

Abdominal masses in children are diverse in etiology and origin. They comprise various organ systems such as the gastrointestinal, genitourinary, and endocrine system among others. The patient's age is very important in differentiating the potential cause of abdominal masses. In neonates, most abdominal masses are benign. The incidence of malignancy increases in older children and adolescents. Patients with underlying abdominal malignancy present with constitutional symptoms such as fever, weight loss, and a palpable abdominal mass, but some present with nonspecific signs especially in the early stage of disease. An organized approach to the diagnosis of abdominal malignancies includes accurate localization and characterization of the tumor. Medical imaging plays a very crucial role in the initial assessment, localization, diagnosis, and follow-up of these neoplasms. This article aims to provide an overview of the common primary malignant abdominal tumors in children encountered at St. Luke's Medical Center. It discusses the value of the different imaging modalities and emphasizes the typical imaging characteristics of these tumors. The epidemiology of these tumors are also presented. **(Author's abstract)**

Keywords: *Medicine, Abdominal tumors, Hepatoblastoma, CT scan, Magnetic resonance imaging (MRI), ALARA (as low as reasonably achievable)*

0523

Imaging of hepatocellular carcinoma

Vizcarra, Roy P., Egwolf, Anna Lyn C., Tan, Lourdes T., Santos, Maria Margarita M., Nicandro, Maria Angeline D., Sequito, Justin Karlo Y., Carino, Margaret Mary G.

Hepatocellular Carcinoma (HCC) is the third most common cause of death from cancer worldwide, and ranks second in cancer related deaths in the Philippines. When diagnosed at an advanced stage, the five-year survival rate of HCC is <5%. Imaging modalities that are crucial in the screening and diagnosis of HCC include ultrasound, CT and MRI. It is with contrast-enhanced CT and MR imaging that HCC can be diagnosed with certainty without the need for biopsy. However, there is currently no structured reporting system for HCC lesions. In lieu of this predicament, the American College of Radiologists (ACR) developed the Liver Imaging Reporting and Data System or LI-RADS in order to standardize the terminology and criteria in reporting such radiologic examinations. The LI-

RADS is a dynamic document that continues to evolve with input from its multi-disciplinary committee. The LI-RADS algorithm is based on 5 major features: 1) arterial phase features, 2) diameter, 3) washout appearance, 4) capsule, and 5) threshold growth. The characteristics favoring an HCC lesion are arterial enhancement, diameter of at least 20mm, washout at the portovenous or delayed phase, smooth hyper-enhancing peripheral rim, and threshold growth by a minimum of 5mm with a size Increase of 50% (in a 6-month interval between examinations) or 100% (for more than 6 months). This article recommends adapting the LI-RADS in order to establish a standardized reporting and, most importantly, to guide clinicians in improving patient care. **(Author's abstract)**

Keywords: *Medicine, Hepatocellular carcinoma (HCC), CT scan, Magnetic resonance imaging (MRI), Biopsy, LI-RADS algorithm*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 77-84

(Filipiniana Analytics)

Fil(S) R97 S75 9/4 2014

0524

Imaging of prostate cancer

Pineda-Paner, Bryan C.

Prostate cancer is a global health problem, with an increasing incidence in the aging population. Prostate cancer is a slow growing tumor. Early detection is advocated in order to improve the quality of life and even achieve the possibility of cure. Imaging modalities are employed to: 1) assist in the diagnosis, 2) for local staging, 3) to detect metastasis, and 4) to plan treatment and post treatment surveillance. Transrectal ultrasound, CT scan, radiography and MRI play specific roles in prostate cancer imaging. Screening through digital rectal exam, prostate specific antigen, and ultrasound facilitates early detection. **(Author's abstract)**

Keywords: *Medicine, Prostate cancer, Transrectal ultrasound, CT scan, Magnetic resonance imaging (MRI), Radiography*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 125-130

(Filipiniana Analytics)

Fil(S) R97 S75 9/4 2014

0525

Imaging of renal and urothelial malignancy in adults

Paguia, Maricar R., Brillo, Khristine Grace P.

Renal Cell Carcinoma (RCC) is the most common malignant tumor of the kidneys. The most common signs and symptoms of renal cancer are palpable mass and hematuria, but in many instances RCC remains asymptomatic until the late stages of the disease. Urothelial cell carcinoma (UCC) or transitional cell carcinoma (TCC) originates from kidney collecting

systems, ureters, the bladder, and the urethra. Approaches to the diagnosis and treatment are quite different from those of parenchymal tumors of the kidney. Medical Imaging plays an important role not only in the detection and eventual diagnosis of these renal and urothelial cancers but also in staging, assessment of complications, and follow-up during and after therapy. The goal of this review article is to present an overview of RCC and UCC, with special emphasis on their typical imaging manifestations. **(Author's abstract)**

Keywords: *Medicine, Renal cell carcinoma (RCC), Kidney, Urothelial cell carcinoma (UCC), Transitional cell carcinoma (TCC)*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 85-94

(Filipiniana Analytics)

Fil(S) R97 S75 9/4 2014

0526

Improving motor performance of hemiparetic upper extremity among patients with chronic stroke using constraint-induced movement therapy

Callejo, Archelle Jane C.

Introduction: The study aimed to determine the effectiveness of constraint-induced movement therapy compared to conventional therapy in improving the motor performance of a hemiparetic upper extremity among patients with chronic stroke.

Methods: This was a single-blind randomized controlled trial conducted at the University of the East Ramon Magsaysay Memorial Medical Center, with pre-treatment and post-treatment assessment. Eligible participants were randomly assigned to either constraint-induced movement therapy or conventional therapy groups and underwent treatment for two weeks. The outcome measures included the Wolf Motor Function Test, which evaluated the speed in performing a functional task and the Functional Ability Scale, which assessed the quality of motion in performing a functional task.

Results: Twelve participants were randomly assigned to either constraint-induced movement therapy or conventional therapy groups. Compared to the conventional therapy group, the constraint induced movement therapy group had higher Wolf Motor Function Test and Functional Ability Scale scores after two weeks.

Conclusion: Constraint-induced movement therapy may improve speed and quality of movement of the hemiparetic upper extremity among patients with chronic stroke. **(Authors' abstract)**

Keywords: *Medicine, Constraint-induced movement therapy (CIMT), Stroke, Upper extremity, Stroke rehabilitation, Hemiplegia*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 8-15

2014,

(Filipiniana Analytics)

Fil(S) R97.4 U37 3/1 2014

Industrial hygiene and occupational health surveillance of industries at the export processing zone on health and safety among women workers

Lu, Jinky Leilanie D.P.

In the Philippines, there is an increasing rate of women entering labor force, and consequently are confronted with serious problems of occupational and environmental hazards exposures. Adverse health effects are associated with female dominated jobs, and this can have several implications to women's physical and reproductive health.

The objectives of the study include: 1) to identify the occupational hazard exposures through industrial hygiene measurements of selected industries in an export processing zone which employ predominantly women workers; 2) to identify the most prevalent hazard exposure of women workers; and 3) to identify the deviations or violations of industries with regards workplace environmental measurement.

The study is mainly an observational and descriptive study in selected industries in an export processing zone. The industrial hygiene and workplace measurement was done using instruments that measures illumination, the amount of noise, exposure to organic solvents, and ventilation as well as the effectiveness of exhaust ventilation at the workplace. A thorough workplace measurement was done in all workstations. The most common physical hazard was noise followed by vibration then extremes of temperatures. For chemical exposures, the most prevalent form was particulate matter such as dust/fibers, and fumes. Ergonomic hazard is topped by repetitive motion, then awkward posture and then prolonged working hours. As for control measures, medium scale industries did not provide any rotation of workers, safe work practices nor equipment monitoring. Poor usage of personal protective equipment is noted among small-scale and medium-scale industries. For this paper, selected workstations were presented for measurements of noise, illumination, chemicals and ventilation. The data show that there is prevalent violation of standards among these industries, which predominantly employ women workers. Low illumination can lead to poor eyesight, eye fatigue and other eye-related problems. Noise can cause hearing impairments. There is also varied use of chemicals specifically organic solvents. Workers were not provided with efficient gas masks or respirators, no local exhaust ventilation at the soldering area and workers were breathing directly the fumes from soldering lead, which is very toxic.

This research project hopes to elucidates data on women's hazard exposures in the Philippine setting. This will have policy implication for the Department of Labor and Employment as well as in the specific program implementation for control of hazards and associated health problems in identified industries. **(Author's abstract)**

Keywords: *Medicine, Occupational health, Women's hazard exposures, Industrial hygiene, Exportzone*

The UPManila Journal, Volume No. 5 Issue No. 2, 24-38

(Filipiniana Analytics)

Fi(S) RA421 U3 5/2 2000

Knowledge about common pediatric infections and antibiotic therapy in parents of children seen at a tertiary hospital ER for outpatient consultations

Claudio-Bautista, Michelle Elain, Valdes, Florianne

OBJECTIVES: To assess parental knowledge and behavior regarding common infections and antibiotic use.

DESIGN: A prospective study involving questionnaires given to parents of children seen as outpatient in the ER. A z-test and logistic regression test were the used to analyze the data.

SETTING: Respondents were from the Pediatric ER of a private tertiary hospital.

PARTICIPANTS: Respondents were parents of children seen in the ER outpatient for mild infections. Their children had no indications for admission and were not admitted. Thirty-seven patients consented to fill up the questionnaire.

RESULTS: Majority of the respondents knew viruses cause most common infections however, 58% believed antibiotics were needed to kill viruses. As much as 77% have started antibiotics at home at one time or another. Fifty percent admitted having asked for an antibiotic prescription and 25% for their physicians were reported to give in.

CONCLUSION: There exists disturbing parental behavior regarding antibiotic use because of their lack of knowledge. Educational campaigns should include parents, caregivers and even physicians as well. This would curb indiscriminate antibiotic used and would be a step at preventing antibiotic resistance in our country. **(Author's abstract)**

Keywords: *Medicine, Z-test, Amoxicillin, Clavulanic, Chloramphenicol*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 27-31

(Filipiniana Analytics)

Fil(S) RJi P54 50/1 2001

0529

Laboratory observation on the use of *Diplonychus rusticus* as a potential biological control agent for Japanese encephalitis vector

Fontanilla, Benida A., Salazar, Nelia P.

Introduction: This study explored the practical use of the local aquatic bug *Diplonychus rusticus* in the laboratory as a potential biological control agent for the larvae of the vectors of Japanese encephalitis, *Culex tritaeniorhynchus* and *Culex vishnui*, which are commonly found in rice fields.

Methods: *Diplonychus rusticus* was reared in the laboratory and its reproductive behavior and longevity were observed. Single predators consisting of III instar and adult female, respectively, were each placed in two containers with 100 *Culex vishnui* instars each as prey. The water bugs' feeding patterns were observed for 24 hours.

Results: *Diplonychus rusticus* underwent five nymphal instar stages with an average developmental period of 50 days from egg to adult. The adult female laid six egg batches with 30 to 65 eggs per batch. The adult female lived up to 80 days while the adult male lasted 103 days. With 100 III instar and IV instar larvae of *Culex vishnui* given as prey, the III instar nymph of *Diplonychus rusticus* consumed 98% of the prey in 24 hours while the adult female consumed 96% of the prey in 12 hours and 100% at the end of 24 hours.

Conclusion: *Diplonychus rusticus* is a potential biological control agent for the mosquito vector of Japanese encephalitis *Culex vishnui*. (Authors' abstract)

Keywords: Medicine, *Diplonychus rusticus*, *Culex vishnui*, Mosquito, Instar, Larvae

UERM Health Science Journal, Volume No. 3 Issue No. 1, 19-24

(Filipiniana Analytics)

Fil(S) R97.4 U37 3/1 2014

0530

Malignant soft tissue tumors

Del mindo, Al Joannes G., Gestani, Melodia B., Laya, Bernard F.

Magnetic resonance imaging has evolved and emerged as the ideal modality for evaluating soft-tissue tumors by delivering superior soft-tissue contrast and providing multi planar image acquisition without the ionizing radiation of computed tomography scan. This article offers the characteristic imaging features of the most common types of soft tissue sarcoma with emphasis on MRI. Also included are the updates and important facts that every radiologist should know in interpreting these particular soft tissue sarcomas. (Author's abstract)

Keywords: Medicine, Soft-tissue tumors, Malignant fibrous histiocytoma (MFH), Liposarcoma, Malignant Fibrous

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 107-112

(Filipiniana Analytics)

Fil(S) R97 S75 9/4 2014

0531

A multi-phase study on the impact of a psychiatry learning module on knowledge about common psychiatric disorders and their treatment for residents under training at the University of the East Ramon Magsaysay Memorial Medical Center

Mariano, Melissa Paulita V., Busuego, Mary Agnes, Sundiang, Luis

Problems: Their capacity to identify, diagnose, and manage psychiatric illnesses are often undermined by inadequate knowledge regarding psychiatry. The study aimed to develop a psychiatric learning module and evaluate its efficacy in increasing the knowledge of common psychiatric illnesses and their management among residents.

Methods: In phase I, a review of records of patients admitted in the service hospital who were referred to Psychiatry was done. Participants for phases II to IV included residents from the departments which had the most number of referrals. In phases II and III, a focus group discussion and a survey, respectively, were done to identify residents' perceived needs regarding psychiatry. Based on phases I-III, a psychiatry learning module was developed. In Phase IV, a pre-and post-intervention study design was utilized, with the intervention being the administration of the learning module. Participants' knowledge regarding common psychiatric conditions was measured using a written examination at baseline, immediately after the module, and 3 months after the module.

Results: There were 60 referrals to the Department of Psychiatry in 2011, mostly from Internal Medicine, Clinical Neurosciences, Ophthalmology-Otorhinolaryngology, and Obstetrics-Gynecology; the most common reason for referral was for evaluation and management of a primary psychiatric condition. Phases II and III identified the most common perceived reason for referral to be management of acute behavioral changes and the most common preferred topic for the learning module to be assessment and screening for psychiatric conditions. In phase IV, the participants' knowledge significantly increased from baseline both in the immediate and delayed post-module examination.

Conclusion: The development and administration of a psychiatry learning module was found to be efficacious in significantly increasing the residents' knowledge regarding common psychiatric illnesses and their management. **(Authors' abstract)**

Keywords: *Medicine, Psychiatric disorders, Psychiatric learning module, Written examination*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 35-43

2013,

(Filipiniana Analytics)

Fi(S) R97.4 U37 2/2 2013

0532

Non-carcinogenic health risks of heavy metal in mudfish from Laguna Lake

Molina, Victo

This paper examines the potential risks to human health associated with exposure to heavy metal that have bioaccumulated in Mudfish (*Ophicephalus striatus*) from Laguna Lake. Fish samples were collected in eight sampling stations in three major areas of the lake during the dry and wet seasons. Dry season samples were collected from May to June 2010 and wet season samples, from September to November 2010. Coordinates of sampling site locations were recorded using Global Positioning System (GPS) and plotted in Geographic Information System (GIS) digital maps. Heavy metal analyses for cadmium (Cd), lead (Pb), mercury (Hg), arsenic (As), and chromium (Cr) were conducted using Atomic Absorption Spectrophotometer (AAS) and a Mercury Analyzer (Mercur-Duo). Estimates of health risks associated with mudfish consumption were summarized according to non-carcinogenic effects. Non-carcinogenic Hazard Quotient (NHQ) values of five heavy metal showed that lead is the most urgent pollutant of concern in terms of adverse health effects from risks associated with mudfish consumption from all sampling locations in the lake. From the point of view of human health protection and disease prevention, mudfish from Laguna Lake is not fit for long-term human consumption primarily due to lead and mercury contamination. **(Author's abstract)**

Keywords: *Medicine, Bioaccumulation, Health risk assessment, Heavy metal, Laguna Lake, Mudfish*

A non-concurrent cohort study on the use of *Euphorbia hirta* Linn (tawa-tawa) in dengue: patients' platelet response

Tungol-Paredes, Georgina B., Brizuela, Grace E., Carlos, Josefina C., Davila, Federico A.

Introduction: This study aimed to document the manner by which *Euphorbia hirta* is used among hospitalized dengue patients and to determine differences in platelet levels between dengue patients who had taken *Euphorbia hirta* and the control group.

Methods: A non-concurrent cohort design was used. The cohort group comprised 46 verified dengue patients who had taken *Euphorbia hirta* during the course of the illness and 47 subjects in the control group who did not. Subjects in the cohort group were interviewed regarding the use of *Euphorbia hirta*. Platelet counts were compared within and between the cohort and control groups.

Results: The use of *Euphorbia hirta* in the cohort group varied in terms of its preparation, dosage, frequency and duration of intake. Controlling for day of illness, the mean platelet counts did not show significant differences between the groups. However percentage change of platelet counts at each day of illness was favorable among the *Euphorbia hirta* subjects compared to the control group. The initial drop in platelet during the first 4 days of illness was greater in the control group. The rise beginning day 5 to 6 was twice greater in the *Euphorbia hirta* group compared to the control group.

Conclusion: The beneficial effect of *Euphorbia hirta* may be on the degree of change in platelet levels experienced by the cohort group. The expected decline during the initial days of illness was less precipitous and the rise in platelet levels was twice greater compared to the control group. **(Authors' abstract)**

Keywords: *Medicine, Euphorbia hirta, Dengue, Platelet count, Tawa-tawa*

Nurse supply and demand in the Philippines

Lorenzo, F Marilyn E., Corcega, Thelma F., Yabes, Julita I., De la Merced, Bennette B., Vales, Karen D.

This study on the supply and demand of nurses was undertaken to provide information for policymakers on the extent of the unemployment problem of nurses in the country so as to be able to determine policy options to properly address the situation. The last available data on unemployment was taken in 1991 which already showed an estimated surplus of 30,992 nurses. These included those without a job and those employed in non-nursing positions.

To gather the necessary data, researchers utilized primary and secondary sources. Supply data were generated from the Professional Regulations Commission and Commission on Higher Education and through a survey on enrollment and graduation where 66 colleges of nursing participated. Demand data, on the other hand, came primarily from the Department of Health, Department of Education, Culture, and Sports, Department of Labor and Employment, Philippine Overseas Employment Association, several nurses associations and 19 hospitals.

In 1998, there was as estimated 323,490 registered nurses but the reported demand for nurses was only 178,045, 84.75% of which was demand from international markets. At present, there is an estimated surplus of 128,065 nurses. It was further found out during focus group discussions that economic, political, social, and professional factors affect the supply and demand of nurses in the country. **(Author's abstract)**

Keywords: *Medicine, Department of Health, Commission on Higher Education, Professional Regulations Commission, Department of Education, Culture, and Sports, Department of Labor and Employment, Philippine Overseas Employment Association, Nursing, Employment*

The UPManila Journal, Volume No. 5 Issue No. 1, 1-7

(Filipiniana Analytics)

Fil(S) RA421 U3 5/1 2000

0535

Obesity among adolescent Filipino children a correlation with fasting serum insulin concentration

Mata, Marvin, Parungao-Crisostomo, Virginia

OBJECTIVES: To determine the correlation of clinical parameters among Obese and Non-Obese Filipino adolescents (10-20 years) with Fasting Serum Insulin concentration.

DESIGN: Hybrid designs, follow up prevalence study.

SETTING: De La Salle University Medical Center.

PATIENTS: The population includes adolescent pediatric patients aged 10-20 years of age both obese and non-obese seen as on outpatient basis either private or services as well as referrals from other departments. Excluded were patients with evidence of endocrine or metabolic disease other than obesity, patients with rapid change in weight (increase or decrease) for at least three months before the study.

METHODS: The subjects were divided into two groups: obese and non-obese. Demographic and anthropometric measurements between them were compared by means of student's T-test and Chi-square. The same was done with the mean laboratory variables. The relation between serum insulin and BMI was then further evaluated by linear regression whereas that

between serum insulin and acanthosis nigricans was done through Spearman Rank correlation test.

RESULTS: There was significantly higher mean weight, percent ideal body weight, BMI, baseline systolic and diastolic blood pressure, striae, serum insulin concentration and fasting blood glucose. Those with family history of obesity were 7x at risk to become obese. There was significant difference in the appearance of striae and acanthosis nigricans between the two groups. Using linear regression, serum insulin was determined to have a linear relation with BMI. On Spearman correlation test, serum insulin concentration was significantly correlated with the degree of severity of acanthosis nigricans.

CONCLUSION: Our data suggest that the obesity has significant correlation with hyperrinsulinism. **(Author's abstract)**

Keywords: *Medicine, T-test, BMI, Chi-square*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 36-42

(Filipiniana Analytics)

Fil(S) RJi P54 50/1 2001

0536

Optimization of growth conditions of the wild-type and mutant strains of the pleuromutilin-producing *Clitopilus passeckerianus* (Pilat) sing.nrri 3100

Vicente, Mark A., Raymundo, Asuncion K., Quimio, Tricita H.

The most suitable substrates for the growth of *C. passeckerianus* wild-type and mutant strain HP76 were found to be similar for both strains based on the extent of mycelial growth. Mycological agar (MA) was selected as a suitable agar medium while wheat bran was determined to be a suitable supplement for mycelial growth. Vegetative growth was also most vigorous on sawdust compared to the other solid substrates tested. The optimum physical conditions, in terms of temperature and lighting condition, were also similar for both strains when grown on wheat bran-supplemented sorghum grains. Air-conditioned temperature (24°C) was found to support better growth in both strains compared to room temperature (29-30°C). Lighting condition did not affect mycelial growth. Hyphal strands were the only structures noted in the growth of the wild type and HP76 when microscopically observed for five weeks. Oidia formation was observed on two other mutant strains, LP1 and LP2, grown using previously selected substrates and conditions. **(Author's abstract)**

Keywords: *Medicine, Clitopilus passeckerianus, Mycological agar (MA), Mycelial growth*

NRCP Research Journal, Volume No. 8 Issue No. 9, 20-27

(Filipiniana Analytics)

Fil(S) Q179.9 N323 8/9 2006

0537

Patient empathy among medical students

Amigable-Villamor, M

Introduction: Medicine at its core is a human service profession with the goal of caring for patients. It is expected that a physician practices medicine that combines the life sciences with humanism. Many observations have been reported on the dehumanization and lack of empathy among medical practitioners. This study aimed to determine empathy among medical students in terms of sex and year level.

Methods: This study established the reliability of the 30-item Patient Empathy Scale for Medical Students and compared the empathic attitudes of medical students. A sample of 186 third and fourth year medical students of a private institution was selected as respondents. Data analysis included the estimation of internal consistency using Cronbach's α and factorial ANOVA to determine the influence of sex and year level on the empathy of the medical students.

Results: The PESMS had a high reliability coefficient ($r = 0.907$). A significant difference in the empathy scores was confirmed in terms of sex ($P < 0.01$) and year level ($P = 0.01$). However, there was no significant interaction between sex and year level ($P = 0.97$).

Discussion: The high reliability coefficient confirmed the consistency or close relation among individual items in the scale and therefore measured an underlying or latent construct of empathy. Analysis provided evidence that a difference in the mean empathy scores existed in terms of sex and year level. However, no interaction between sex and year level was substantiated.

Conclusion: The females displayed more empathic attributes compared to their male counterparts while the third year students were more empathic compared to the fourth year students.

(Authors' abstract)

Keywords: *Medicine, Empathy, Medical education, Humanism, Scale development*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 44-48

2013,

(Filipiniana Analytics)

File(S) R97.4 U37 2/2 2013

0538

The Philippines' first biohazard spill response drill at the research and biotechnology of St. Lukes Medical Center Quezon City

Moreno, II, Miguel Martin N., Inovejas, Samuel Alan B., Portilla, Ma. Cristy B., Casingal, Cristine R., Monlinong, Jason Paul C., Torres, Brian Carl Michael L., Fajardo,

Lindsay Sidney N., Cruz, Anna Karen S., Juan, Ma. Luisa G., Cortes, Maria Celeste, Araga, Roldan L., Natividad, Filipinas F., The SLMC-Biosafety Emergency

Preparedness and Disaster Control Team (BEPADCT)

Introduction: We have yet to see a country that has biosafety laws that are strictly followed to the letter. People and institution behaviors greatly affects the various aspects of a laboratory, e.g. from accepting the guidelines and standards, compliance to these, performing a risk assessment, voluntarily reporting incidents, etc. Execution of biosafety and biosecurity drills constitutes a major challenge for institutions to put into practice what they have all learned from lectures, conferences, workshops, seminars and the like.

Objective: With the approval of the vice president for research, the scientist in charge of biosafety at R&B, together with the cooperation of the Biosafety Emergency Preparedness and Disaster Control Team (BEPADCT) of SLMC, conducted a biohazard spill response drill. The goal was to assess the readiness of the staff, the unit, and the entire medical center in responding to biological hazard spills specifically infectious and chemical in nature.

Methodology: The participants of the infectious spill response drill used Glow Germ™ -simulated germs provided by the Philippine Biosafety & Biosecurity Association (PhBBA), whereas 1N nitric acid was used for the chemical spill response drill.

Results: The drills were officially observed by officers of the PhBBA and representatives from the Asia-Pacific Biosafety Association, Department of Health, Philippine National Police, Philippine Society of Pathologists, Philippine Society of Microbiologists and Infectious Diseases, Philippine Association of Medical Technologists, and other units in SLMC, namely, Infection Control Committee, Institute of Pathology, Facilities Management and Engineering, and the In-House Security.

Conclusion: A short debriefing was held following the successful drill. The scenarios were discussed, and all aspects of the drill were meticulously dissected for loopholes and flaws. Positive commendations and recommendations were given by the observers. It was then announced by the president of PhBBA that, as per records of the PhBBA, the concluded drill was the "Philippines' first." (**Authors' abstract**)

Keywords: *Medicine, Biohazard spill, Biosafety laws, Biotechnology*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 41-48

(Filipiniana Analytics)

Fil(S) R97 S75 9/1 2014

0539

A pilot study to evaluate the role of 18F-FDG labeled WBC PET/CT in infection imaging in patients with diabetic foot and osteomyelitis at St. Luke's Medical Center

Gomez, Jamilla Cecilia L., Domingo, Allan Jay C., Robin, Althea Camilla D., Santiago, Jonas Francisco Y.

Introduction: Infectious cases require prompt diagnosis for effective therapy. Imaging infection in nuclear medicine uses radiotracers with different mechanisms of action.

Objectives: The objective of this study was to determine the potential role of 18F-fluorodeoxyglucose labeled leukocytes (FDG-WBC) positron emission tomography with low-dose CT (PET-CT) in infection imaging in patients with diabetic foot and osteomyelitis at St. Luke's Medical Center.

Methodology: There were 11 participants (6 male, 5 female; mean age of 49 ± 18.6 years) with diabetic foot or suspected with osteomyelitis from November 2009-October 2012. In vitro labeling of autologous human leukocytes with ^{18}F -FOG was done. Labeling efficiency and cell viability values were obtained. A PET-CT of the infection site was performed 65.1 ± 8.4 minutes after injection of 96.4 ± 42.5 MBq of FDG-WBC. The scans were read as positive or negative for infection by 3 Nuclear Medicine physicians and subsequently compared to a reference standard (histopathology or clinical end-diagnosis).

Results: Radiochemical purity, cell viability and labeling efficiency were $>95\%$, $98.6 \pm 1\%$, and $17.4 \pm 6\%$, respectively. No adverse reactions were encountered. There were 10 positive PET-CT results. Nine had concordant final diagnoses of infection.

The one false positive PET result had a final diagnosis of Giant cell tumor. One patient had a negative PET-CT finding but was diagnosed to have infection. There were 9 concordant and 2 discordant results.

Conclusion: FDG-WBC PET-CT scan is useful in imaging patients with diabetic foot and osteomyelitis. It has shorter radiotracer half-life, waiting time post-injection, scan duration and superior images than other infection scans. **(Authors' abstract)**

Keywords: *Medicine, ^{18}F -fluorodeoxyglucose labeled leukocytes PET scan, Infection imaging, Diabetic foot, Osteomyelitis*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 55-62

(Filipiniana Analytics)

File(S) R97 S75 9/1 2014

0540

Posterior fossa central nervous system tumors in children

Laya, Bernard F., Serrano, Louis Allan P.

Tumors of the central nervous system (CNS) are the most common solid tumors of childhood and are the second most common cause of cancer-related deaths in children less than 15 years of age. The histological spectrum of CNS tumors in children and adolescents differs from that in adults. There is a known relation between tumor location and age. In Imaging, pediatric tumors are usually categorized according to their location namely; posterior fossa, pineal region, sellar and parasellar, intraventricular, and supratentorial region tumors. More than half of all CNS tumors in children occur in the posterior fossa or in the brainstem. A tumor in this region can obstruct the CNS drainage leading to hydrocephalus and increased intracranial pressure. Marked nausea and vomiting (involvement of emetic center) and cranial nerve palsies or ataxia (typical cerebellar syndrome) can also be seen. Tumors in this location include: juvenile pilocystic astrocytoma, medulloblastoma, ependymoma, brainstem glioma, and atypical teratoid rhabdoid tumor. Pediatric neuroimaging plays an important role in the timely diagnosis and management of CNS tumors. The purpose of this review is to describe the spectrum of pediatric CNS tumors in the posterior fossa. A brief overview will be presented followed by discussion of specific CNS tumors and their typical imaging characteristics. This brief review also aims to highlight the advanced imaging techniques giving emphasis to its applications and strengths, although pitfalls and weaknesses will also be covered. **(Author's abstract)**

Keywords: *Medicine, Posterior fossa, Central nervous system (CNS), Tumors*

PPD tuberculin test reactivity of Filipino infants aged 6 months and 1 year vaccinated with BCG at birth

Alon, Jessica C., Gatchalian, Salvacion, Tabora, Corazon

OBJECTIVE. To determine the tuberculin reactivity to 5- TU PPD of infants BCG vaccinated at birth age 6 months and 1 year.

DESIGN. Manila Doctors Hospital OPD clinic and RHU- I Imus, Cavite.

PATIENTS. Infants aged 6 months and 1 year who were BCG vaccinated at birth, with no history of viral infection, no known exposure to tuberculosis and malnourished. A total of 62 subjects were enrolled using the national standard for positive results.

RESULTS. Sixty-two subjects were enrolled in the study. Comparing the mean PPD reaction size, there is no significant difference in the size between infants 6 months and 1 year as proven by the p value of >0.05 by the t-test and comparing the positive reaction to the tuberculosis skin test the result showed that there was no significant difference in the comparison of the proportion ($p>0.05$). It only implies that none of the groups has greater or lesser proportion of those with or without reaction to PPD.

CONCLUSION: The study shows that 78% of infants 6 months of age who had BCG at birth had PPD reaction of <10 mm induration, while infants 1 year of age had 76.7% of PPD reaction <10 mm. This study shows that the induration of >10 mm is still the cut-off size of positive tuberculin skin test using 5 TU PPD which is comparable to the standard stated in the 1997 National Consensus on Childhood Tuberculosis. (Author's abstract)

Keywords: *Medicine, BCG (Bacillus Calmette Guerin), PPD tuberculin, Tuberculosis*

Primary malignant bone tumors

Geslani, Melodia B., Laya, Bernard F.

Primary bone cancers are rare, accounting for less than 1% of all cancers. The most common among these in descending order of frequency are: multiple myeloma, osteosarcoma, chondrosarcoma and Ewing's sarcoma. The role of imaging is in the

diagnosis, follow-up, and staging of these tumors. Radiography is the first screening modality in the diagnosis of bone tumors, showing the characteristic tumoral calcification, pattern of bone destruction as well as the periosteal reactions. MRI is used for staging purposes, defining the intraosseous and extraosseous extent and size of the tumor. **(Author's abstract)**

Keywords: *Medicine, Primary bone cancer, Myeloma, Osteosarcoma, Chondrosarcoma, Ewing's sarcoma*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 4, 113-124

(Filipiniana Analytics)

Fil(S) R97 S75 9/4 2014

0543

A profile on child workers involved in the production of pyrotechnics in Radar Babag, Lapu-Lapu City

Brodith-Dauz, Migresa P.

CONTEXT: despite several attempts to combat the proliferation of child labor, it is still very much a problem at present. This study describes a form of child labor involving hazardous work activities specifically pyrotechnics production.

OBJECTIVES: To describe the epidemiology of child labor focusing on the manufacturing of pyrotechnics in Radar, Babag, Lapu-Lapu city.

STUDY DESIGN: A cross-sectional survey.

STUDY SETTING: Radar, Babag, Lapu-Lapu City.

STUDY POPULATION: All children 7-17 years old living in Radar, Babag, Lapu-Lapu City.

MAIN OUTCOME MEASURES: Prevalence, demographic characteristics of children involved in pyrotechnics production, type of tasks assigned, daily earnings and work related injuries.

RESULTS: The total number of respondents was 386. Two hundred sixty (67.4%) of whom were involved in making firecrackers with a mean age of 12.7 ± 2.9 years. There were more females (54.2%) than males (45.8%). Distribution of those making pyrotechnics based on levels of educational attainment showed that 25% were grades 1-3, 44.6% were in grades 4%-6% and 30.4% were in high school. Majority (79.6%) claimed to have work — associated illness such as body aches/pains (89.9%), skin diseases (29.5%) and recurrent cough (20.8%). Thirteen respondents (5%) encountered injury while making firecrackers, namely burns (61.5%) and cuts/wounds (38.5%).

CONCLUSION: Working children involved in pyrotechnics production is prevalent (67.4%) in Radar, Babag, Lapu-Lapu City. Majority (79.6%) of these children claimed to have work —associated illness and 13 (5%) of them suffered injury related to making firecrackers. **(Author's Abstract)**

Keywords: *Medicine, Radar Babag, Lapu-Lapu City , Child workers, Pyrotechnics*

Protective role and influence on severity of eotaxin and IL5 SNPS among selected allergic asthma population

Ching, Maricar W., Yap, Jennifer Maries G., Ong, Cesar M., Santos, Kevin Carl P., Ramos, John Donnie A.

Eotaxin is an eosinophil- specific chemokine that is found to be directly related to asthma, and inversely related with lung function. IL5 is a hematopoietic growth factor for eosinophils and basophils, effector cells involved in asthma and allergic reactions. Eotaxin-384A>G and IL5-703C>T SNPs were genotyped and characterized for association with asthma and asthma phenotypes among match-paired allergic asthmatic cases and non- asthmatic controls.

Observational- analytical, case-control method was used to examine 250 age- and sex-matched allergic asthma cases and non- asthmatic controls. Genotyping was performed using PCR-RFLP under optimized conditions. Asthma phenotypes such as total serum IgE, HDM-specific IgE, and absolute eosinophil counts were determined for association with Eotaxin-384A>G and IL5-703C>T SNPs. All protocols were approved by the Institutional Ethics Board Committee of the Philippine Children's Medical Center.

The mean total serum IgE, HDM-specific concentration and absolute eosinophil count of the cases were significantly higher than the controls. Eotaxin-384A>G GG genotype has increased odds of having asthma than AA genotype (OR=2.66; OR=1.60, respectively). Further, Eotaxin-384A>G AA genotype has low risk of having asthma compared to GG genotype (OR=0.38; OR=0.59, respectively). Homozygous IL5-703 TT genotype has a higher risk to develop asthma than the CC genotype. IL5 -703 CT genotype is less likely to have lesser total IgE as compared to TT genotype, suggesting a protective role against production of increase total IgE in children with allergic asthma.

In conclusion, Eotaxin-384A>G Aallele has a protective role on asthma development while IL5-703C>T polymorphism may play a role in increase IgE production among asthmatic patients, indicating that while it may not have direct role in occurrence of asthma, it contributes in the disease severity. **(Authors' abstract)**

Keywords: *Medicine, Eotaxin, IL5, Asthma, Allergy*

Quality of life of Filipino elderly with dementia (QoL-FD) assessment tool: its development, validation and standardization

Sunga-Vargas, Mary Ann , Magpantay, C

Introduction: Life value should also be considered in an elderly person with dementia, aside from the medical attention. An assessment of the quality of life will provide a substantial impact in the clinical practice, disease severity, and evaluation of treatment outcomes provided for this condition. In the Philippines, the use of a self-constructed instrument to assess the quality of life specifically among this group is very limited; hence developing a culturally sensitive quality of life measure was the thrust of this study.

Methods: The research utilized test construction methodology to develop the Quality of Life of Filipino Elderly with Dementia (QoL-FD) tool. In the item generation stage, a multi-source approach was done utilizing in-depth interviews with elderly with dementia, caregivers, a neurologist and other health allied practitioners specializing in dementia. The draft underwent face validation by the experts and was administered to a sample of 5 patients in a private hospital's memory clinic. The final form of Quality of Life of Filipino Elderly with Dementia (QoL-FD) tool was pretested in a sample of 211 community-dwelling elderly in a city in the metropolitan area.

Results: From the pool of samples, 20 elderly were diagnosed to have mild to moderate level of dementia. During the preliminary testing, the items generated convergent validity with WHOQOL BREF. To test the internal reliability, a Spearman Brown formula and Cronbach's alpha coefficient were computed and showed that it was a valid and reliable instrument.

Conclusion: In the final form, the tool had a validity value with Pearson r of 0.90, split half reliability value using Spearman Brown formula of 0.92 and Cronbach's alpha of 0.90. Thus, the QoL-FD is a psychometrically sound instrument for measuring quality of life. **(Authors' abstract)**

Keywords: *Medicine, Dementia, Alzheimer, Quality of life*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 77-82

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/2 2013

0546

A randomized controlled trial of virgin coconut oil and ultrasound gel as coupling medium for therapeutic ultrasound in the management of pain from degenerative osteoarthritis

Cabazor , Raquel S.

Introduction: This study aimed to compare the effectiveness of direct ultrasound treatment coupled with virgin coconut oil to ultrasound treatment coupled with standard ultrasound gel in the management of pain in degenerative osteoarthritis of the knee.

Methods: Twenty-four patients were randomly assigned to either virgin coconut oil or gel groups. Continuous ultrasound of 1.0 MHz frequency and 1.5 watts/cm² was applied for seven minutes to the painful knee joint for 12 treatment sessions using either virgin coconut oil or gel as coupling medium. The outcome measures were pain level assessed by a visual analogue scale and onset of pain relief from the baseline to four weeks post-treatment. Significant pain relief was defined as a 20% decrease from the baseline pain score. The onset of pain relief was recorded as three consecutive days of decrease from the baseline score.

Results: Both groups had a mean pain score of 7.5. After two weeks, there was a lower mean score (2.6) for the virgin coconut oil group compared with the gel group (2.9). After four weeks, there was a lower mean score for the gel group (2.1) compared with the virgin coconut oil group (2.5). An earlier onset of pain relief was noted for the virgin coconut oil group (15.9 ± 10.1 days) compared with the gel group (18.3 ± 8.3 days). The differences in the mean pain scores and onset of pain relief between the two groups were not significant.

Conclusion: Virgin coconut oil is as effective as standard gel when used as coupling media in therapeutic ultrasound in pain management for degenerative osteoarthritis of the knee. Virgin coconut oil may be an alternative coupling medium for therapeutic ultrasound that is locally available and relatively inexpensive. **(Authors' abstract)**

Keywords: *Medicine, Virgin coconut oil (VCO), Therapeutic ultrasound gel, Coupling medium*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 16-21

2014,

(Filipiniana Analytics)

Fil(S) R97.4 U37 3/1 2014

0547

Randomized controlled trial on the effect of preoperative gum chewing on the level of postoperative anxiety among boys undergoing circumcision

Ang, Angeli Anne C., Almora, Christine Corintha D., Al-Qaseer, Elaina C., Altabano, Karl Henri P., Alvarez, Enrimin Joie B., Ang, Jeremy Philip C., Ang, Mae Madeleine N., Angeles, Mark B., Aquino, Jubelle F., Arevalo, Martha Margarita, Aritonang, Daniel Yakin E., Astudillo, Ma. Veronica Kaye D., Baes, Camille Christine M., Balingit, April Keith B., Paredes, Georgina T.

Introduction: Circumcision is a Filipino tradition that persists today as a pre-adolescent coming-of-age surgery that, without sufficient mental preparation, may confer some level of psychological trauma. The procedure is made difficult by the anxiety of young boys prior to the operation. This study aimed to determine the effects of gum chewing in the pre- and post-circumcision anxiety of school aged boys.

Methods: Data were gathered from 241 boys, aged 7 to 13 years, who were present in medical missions in Quezon City in April 2013. The anxiety of the participants was assessed using the Yale Preoperative Anxiety Scale. Data were encoded and analyzed using EpiInfo™ 3.5.4. Percent change in mean anxiety scores during pre-intervention, post-intervention, and post-circumcision were compared between and within the group using T-test.

Results: A 7.6% decrease in anxiety score was seen in the experimental group, while a 34.4% increase was seen in the control group.

Conclusion: This study shows that gum chewing has an immediate anxiety-relieving effect which is carried over until the postoperative period in boys undergoing circumcision. **(Authors' abstract)**

Keywords: *Medicine, Anxiety, Circumcision, Gum chewing, Postoperative anxiety*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 25-30

(Filipiniana Analytics)

A randomized controlled trial on the effectiveness of baking soda - acetic acid solution as an adjunct to benzoyl peroxide in treating acne vulgaris among Filipino teenagers and adults

Prieto, Blessie C. , Perez,, Maria Anna F. , Plaga, Tweetums Kay R. , Palileo, Nyssa Elline M. , Paguio, Katerina U. , Pagtakhan, Ma. Nica Rielle D. , Padre, Jed Gaper P. , Padillo, Nicolette Michelle Y. , Mamaradlo, Day Razz Blythe T. , Lineses, Rhowell D. , Lim, Almeric Jay , Leh, Denise Emily L. , Lee, Jonathan Bernie Y. , Lee, Jin Hee, Javier, Ramon Jason

Introduction: Acne vulgaris is common among young adults. Benzoyl peroxide is the current mainstay of treatment. Baking soda and acetic acid are common household agents that can be used in creating a solution for skin conditions, including acne. This study aimed to determine the effectiveness of a baking soda-acetic acid solution as an adjunct to Benzoyl peroxide in treating subjects with facial acne who have at least 10 non-inflammatory lesions, at least 5 inflammatory lesions, or a total lesion count of at least 15 using Evaluators Global Severity Scale.

Methods: This study was a double-blind, randomized, controlled trial. Subjects were randomized to a treatment group (Benzoyl peroxide gel-baking soda-acetic acid) or a control group (Benzoyl peroxide gel-distilled water). Improvement was noted by a 1-grade reduction from baseline score at the end of each week for four weeks.

Results: There was a more significant improvement ($p=0.008$) in the control group than the treatment group by EGSS score, with a mean reduction of 1.39 for the baking-soda solution and 2.09 for the distilled water groups. The relative risk (0.820) showed the control was more beneficial than the treatment, although not statistically significant ($p=0.109$).

Conclusion: Data from this study do not conform to results of previous researches, which showed significant improvement of acne severity. A possible explanation for this discrepancy is the addition of aspirin in previous studies, which was not used in this trial. Improvement in EGSS scores in both groups was believed to be secondary to Benzoyl peroxide. Baking soda-acetic acid solution was not effective as an adjunct to Benzoyl peroxide in treating acne vulgaris. **(Authors' abstract)**

Keywords: *Medicine, Acetic acid solution, Benzoyl peroxide, Acne vulgaris*

UERM Health Science Journal, Volume No. 2 Issue No. 1, 18-22

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/1 2013

A randomized single-blind trial on the efficacy of cooled plain lubricant jelly in preventing the pain of urethral catheterization as compared to plain lubricant jelly at room temperature

Alaban, Cesar Alfred C. , Ampil, I, Isaac David E. , Anastacio, Antonio L. , Morano, Marj

Objective: The use of cooled plain lubricant jelly in preventing pain during urethral catheterization was compared to plain lubricant jelly. The study was a randomized, single-blind trial, conducted, from June 01 to October 20, 2006.

Sixteen (16) patients were allocated by block randomization to two groups: group 1 (control) – using lubricant jelly at room temperature (22°C), group 2 (experimental) - using cooled plain lubricant jelly (2°C to 6°C). Intraurethral administration of lubricant jelly preceded urethral catheterization. VAS for pain perception measurement was used pre and post urethral catheterization. The mean differences in pain score per group were compared using the t-test. Analysis showed that the p value was not statistically significant in terms of their baseline (p=0.3) VAS scores. Post catheterization (p=0.1) VAS scores was lower in the experimental group as compared to control group. The p value was statistically significant (p<0.05) in terms of mean difference VAS scores. The study showed that there was pain urethral catheterization and can be decreased by the use of cooled lubricant jelly given intraurethrally. Postcatheterization pain scores were lower using cooled lubricant jelly as compared to lubricant jelly at room temperature. **(Authors' abstract)**

Keywords: *Medicine, Cooled lubricant jelly, Urethral catheterization, Visual analog scales (VAS)*

UERMMC Journal of Health Sciences, Volume No. 10 Issue No. 1, 1-8

2007,

(Filipiniana Analytics)

File(S) R97.4 U37 10/1 2007

0550

Re-evaluating the efficacy and safety of citicoline in acute ischemic stroke: a meta-analysis

Mesina, Belinda Lioba L., San Luis, Amado M.

Introduction: This meta-analysis aimed to re-evaluate the evidence obtained from randomized controlled trials on citicoline in the treatment of acute ischemic stroke by determining the efficacy of citicoline in terms of post-treatment functionality and its safety.

Methods: Studies were included in the meta-analysis after a systematic, computerized search if they met the criteria. The primary outcome was clinical improvement measured by the Barthel Index. An intention-to-treat analysis was done. The data were analyzed using the Review Manager 5 and odds ratios were determined.

Results: The five trials included had 4,121 patients, with a mean age of 69.7 years, admitted for an acute ischemic stroke or infarct within 24 hours to 14 days of the onset of neurologic symptoms. The citicoline group consisted of 2,194 patients, while 1,927 patients were given placebo. The mean baseline NIHSS score was 13.7. There were no significant differences between treatment and control groups in terms of efficacy and safety.

Conclusion: Citicoline is safe but not efficacious in the treatment of acute ischemic stroke. **(Authors abstract)**

Keywords: *Medicine, Citicoline, Acute ischemic stroke, Meta-analysis*

UERM Health Science Journal, Volume No. 2 Issue No. 2, 71-76

2013,

(Filipiniana Analytics)

File(S) R97.4 U37 2/2 2013

0551

A retrospective cohort study of ankle inversion sprain injury and leg dominance among runners

Callejo, Archelle Jane C. , Villasanta, Rayzielle Brenn Z. , Shafiei, Milad C. , Koh, Rachel R

Introduction: The overall objective of the study was to determine the relationship of ankle inversion sprain injury in the dominant and non-dominant leg among runners.

Methods: This was a retrospective cohort study to test the relationship of ankle inversion sprain injury and leg dominance among runners. Thirty-three runners with ankle inversion sprain in the dominant leg and 27 runners who had ankle inversion sprain in the non-dominant leg were recruited from various universities and runner's clubs/associations. Patients who had medical records or charts in a clinic within Metro Manila were also included. The relative risk was computed to determine the strength of association between ankle inversion sprain injury and the risk factors. Linear regression was used to determine the strongest indicator of ankle inversion sprain injury in the dominant and non-dominant leg, in relation to age, weight and height. An independent t-test was done to test the significance of means of two groups.

Results: Runners aged 15-32 years (low age; RR = 1.14), who weighed 61-90 kg (high weight; RR = 1.11) and had a height of less than 170 cm (low height; RR = 1.08) were more likely to sustain ankle inversion sprain. The strongest indicator of ankle inversion sprain in both the dominant and non-dominant leg was low age (15-32 years). A height less than 170 cm (low height) was a significant factor in the dominant leg.

Conclusion: There was a relationship between ankle inversion sprain injuries and low height (≤ 170 cm) in the dominant leg but not in the non-dominant leg. Low age (15-32 years) was the strongest indicator of ankle inversion sprain in both the dominant and non-dominant leg, however; it had a low association with a significance value of 0.18. There was an additional 25.9% increase in the risk of having ankle inversion sprain in the dominant and non-dominant leg if a runner had low age. **(Authors' abstract)**

Keywords: *Medicine, Ankle inversion sprain injury, Leg dominance, Runner*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 32-37

2014,

(Filipiniana Analytics)

File(S) R97.4 U37 3/1 2014

Sexual activity and QoL in the elderly: a cross-sectional study of the association of sexual activity with the quality of life and performance of activities of daily living in elderly persons in Barangay Ugong, Pasig City

Barbosa, Rey Christian A. , Balatazar, Maria Iris O. , Bantug, Rio Fiona B. , Balatibat, Emilaine M. , Azucenas, Angelique A. , Avancena, Joy Chrysta S. , Austria, Karmina Jaymee H. , Ardales, Michelle D. , Arceo, Jovy Joy V. , Ambrosio, Denice Mari R. , Alumno, Marc Joseph E. , Alzona, Astrid Marie L., Bautista, Cheska R. , Juangco, Jose Ronilo

Introduction: Sexual activity has been known to improve several aspects of health of individuals such as in increasing the quality of life and the ability to perform everyday task. However, data about the sexual activity of the elderly is scant. This study sought to determine the association of sexual activity with quality of life (QOL) and activities of daily living (ADL) performance among elderly individuals.

Methods: Facilitated interview of subjects living in Barangay Ugong, Pasig City selected through convenience sampling was done using a structured 4-part questionnaire. The QOL was scored using World Health Organization Quality of Life BREF, while ADL performance was scored using The Katz Index of Independence in Activities of Daily Living.

Results: Majority of respondents were not sexually active; those who were sexually active tended to be young-old married males. Prevalence odds ratio showed that sexual activity was associated with quality of life but not with activities of daily living.

Discussion: Sexual activity is associated with a good quality of life but not with the performance of activities of daily living. The apparent absence of an association with activities of daily. **(Authors' abstract)**

Keywords: *Medicine, Sexual activity, Quality of life, Activities of daily living, Elderly*

UERM Health Science Journal, Volume No. 2 Issue No. 1, 30-33

2013,

(Filipiniana Analytics)

Fil(S) R97.4 U37 2/1 2013

The social reproduction of the medical profession: the case of the University of the Philippines-Philippine General Hospital Medical Center

Sana, Erllyn A.

This paper is an investigation on the various rules and resources pertinent to the norms and traditions that pervade the clinical internship program of the University of the Philippines-Philippine General Hospital Medical Center (UP-PGH). Being the premier medical center in the Philippines, it has graduated physicians whose expertise in various fields has long been recognized by modern countries. Rules in the study pertain to the official, operational and hidden curricula of clinical internship. Resources of the training program come in the form of

key players, e.g. interns, their clinical supervisors, their patients, including the unique learning environment (the hospital itself). The study hoped to come up with explanations on how physicians are socialized professionally and the social reproduction of the medical profession.

Qualitative data were collected through a combination of direct observation, survey, key informant interviews and were subjected to analysis including secondary data analysis. Four groups of medical interns and one group of medical clerks were observed for 54 days as they rotated in the four core clinical departments of PGH namely the Departments of Medicine, Surgery, Pediatrics and Obstetrics-Gynecology. Actual fieldwork was done from May to July 1998.

Very strict rules were found to be imposed jointly by UP-PGH and the University of The Philippines College of Medicine (UPCM) in making sure that only the most qualified, able and determined candidates enter and finish clinical internship. The rigid selection procedures that student have to go through, the discipline required in order to cope with the demands of internship and the continuous evaluation of their performance while on training describe this strict official curriculum. Furthermore, since PGH is a public tertiary hospital, it is a national referral center for clinical cases that other hospitals cannot manage. The sheer volume and variety of patients almost effortlessly assure the efficacy of the operational curriculum. The combination of the official and operational curricula partly explains why trainees of PGH are highly competent and recognized by their peers as outstanding clinicians

Further analysis of data, particularly that of the hidden curriculum, identified several traditions and practices that have strongly penetrated the clinical training program of UP-PGH. These include the tradition of excellence and the development of a very strong batch culture that goes a long way even after graduation from internship, the tradition of hierarchy and inequality, and even the culture of coping in medical school were also inferred. These traditions describe the medical interns as a uniform elite group. It builds a group of professionals with a monopoly of medical knowledge that sets the doctors apart from other professionals. The whole process also shows a structure that latently promotes the perpetuation of the existing rules and resources for social reproduction. **(Author's abstract)**

Keywords: *Medicine, Medical education, Clinical internship, Clinical clerkship, Social reproduction*

The UPManila Journal, Volume No. 5 Issue No. 2, 1-7

(Filipiniana Analytics)

Fi(S) RA421 U3 5/2 2000

0554

Socio-cultural influences on occupational health management of Filipino women workers

Lu, Jinky Leilanie D.P.

This research paper focuses on the health management and practices of selected women workers in the Philippines, as well as on the socio-cultural factors that affect such behavior. This study was done using key informant interview and walk-through survey in six small-scale and bog-scale industries in Metro Manila, Philippines.

The data show that some women workers have knowledge on the chemicals they handle and the effects of these chemicals to their health. However, there are problems in the way they protect themselves from occupational hazards that include non-use of personal protective equipments e.g. gloves, head caps, welding visor and the like, and no regular consultation with health professionals.

Traditional belief systems, group norms and superstitious practices mainly influence the way the women view and manage their health. The study proposes some strategies on how to come up with an effective health management for workers that can be adopted by health professionals, company doctors, labor inspectorates and the workers themselves.

This study aims to contribute significantly to the reduction of occupational illnesses, injuries and disabilities arising at the workplace. **(Author's abstract)**

Keywords: *Medicine, Health behavior, Occupational health, Occupational safety, Protective devices*

The UPManila Journal, Volume No. 5 Issue No. 2, 16-23

(Filipiniana Analytics)

Fil(S) RA421 U3 5/2 2000

0555

Spectrophotometric determination of losartan potassium in tablets

Recto, Juan Paolo D. , Salinas, Melanie V. , Linatoc, Isaac Ireneo B. , Dimalala, Jesus John C. , Dueñas, Timothy Joseph P. , del Rosario, Regine Philline S. , de Luna, Willison John E. , Corpuz, Marlyn C. , Brizuela, Karen Mae M. , Binos, Richard Simon R. , Aniñon, Arianne Diane A., Paraiso. West Kristia

In the quality control of pharmaceutical products, it is of utmost importance that validated analytical methods are used to ensure the credibility of the results generated. At the time of the study, official monographs from the United States Pharmacopeia and National Formulary (USP-NF) for the quantification of Losartan potassium in tablets were unavailable, denoting the need for a validated analytical procedure for the analysis of the drug. The study adapted direct and first-derivative

UV spectrophotometry methods proposed by Bonfilio and others (2010) for the assay of Losartan potassium in Losartan 50 mg. capsules, then modified and validated the said procedures for the assay of Losartan potassium in Losartan 100 mg. tablets following the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) guidelines on method validation for accuracy, precision, specificity, linearity, limit of detection, and limit of quantitation. Results demonstrated that all the performance characteristics of both methods were highly satisfactory and confirmed the possible application of the methods in routine analysis of Losartan potassium tablets. **(Author's abstract)**

Keywords: *Medicine, Losartan potassium, UV spectrophotometric determination, Assay validation, Direct and first-derivative spectra, Hypertension*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 26 Issue No. 1, 41-52

2014,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 26/1 2014

0556

Strengthening medical practice through research

Laya, Bernard F.

Strategies and resources necessary to build a research agenda were presented along with the important steps in the research process. Misconceptions and challenges about scientific research were explained, but at the same time the joy and satisfaction derived from doing a research project was also emphasized. Types of research with corresponding examples that can be done in clinical practice were given. Dr. Laya's overall message was to present research as an important tool in enhancing clinical practice and to inspire the listeners to embark on a research-oriented culture. **(Author's abstract)**

Keywords: *Medicine, Clinical practice, Research, Systematic approach, Scientific method*

St. Luke's Healthcare Journal, Volume No. 9 Issue No. 1, 7-12

(Filipiniana Analytics)

Fil(S) R97 S75 9/1 2014

0557

The threat of HIV among injecting drug users in Zamboanga City: a qualitative assessment

Echem, Rosa

Data on IDUs (injectable drug users who are a high-risk for HIV/AIDS) were limited. The number of IDUs was estimated at 10,000 by the Department of Health as reported in the book "Revisiting the Hidden Epidemic" (1998). Other sources suggested higher numbers. The Joint United Nations Programme on AIDS' (UNAIDS) estimate of 400,000 IDUs in the Philippines (1998), was thought to be too high. In Zamboanga City, the estimate was between 600-800 in 2004 (HDES, 2004).

Hence, this in-depth study was carried out for three months (December 2005-March 2006) and was based on a research design developed by the Family Health International (FHI) to address the need for a better understanding of the dynamics and context of injectable drug use in Zamboanga City. **(Authors' abstract)**

Keywords: *Medicine, Injectable drug users (IDUs), HIV, Department of Health*

WMSU Research Journal, Volume No. 27 Issue No. 2, 1-19

2008,

(Filipiniana Analytics)

Fil(S) AS539.5 R47 27/2 2008

0558

Transovarial transmission of dengue virus in *Aedes aegypti* in Quezon City

Bawalan, Ralph Julius, Salazar, Nelia P.

Introduction: Due to the changing nature of dengue epidemiology and control, this study was conducted to determine and describe evidence for transovarial transmission of the dengue virus.

Methods: This was a quantitative experimental study on the transovarial transmission of the dengue virus from field-collected *Aedes aegypti* in an animal model. Viremia was detected by reverse transcriptase-polymerase chain reaction. Mosquito homogenate was used for intracranial inoculation of the virus into suckling mice. The brains of the suckling mice were extracted and inoculated intraperitoneally into 3 to 4 week old mice for recording of disease manifestations.

Results: The mice infected intraperitoneally with dengue virus from field Aedes mosquitoes showed evidence of dengue disease manifested through physical signs, thrombocytopenia and histopathologic changes in affected organs.

Conclusion: These observations indicate that transovarial transmission of dengue virus can occur in a highly urbanized locale like Quezon City where dengue cases are high, and virulence may translate into dengue disease when inoculated in an animal model. **(Authors' abstract)**

Keywords: *Medicine, Dengue, Animal model, Vector control, Histopathology, Molecular diagnostic, Virus inoculation*

UERM Health Science Journal, Volume No. 3 Issue No. 1, 1-8

(Filipiniana Analytics)

Fi(S) R97.4 U37 3/1 2014

0559

Use of magnesium sulfate in tetanus: a systematic review

Pineda, Rio Carla F., San Luis, Amad

A sum of 154 articles was reviewed from the databases searched. There were no randomized controlled trials or meta-analyses; all were only case reports and case series.

Five reports of magnesium sulfate use in the treatment of sympathetic over-activity and spasms in tetanus were reviewed. The primary endpoints of the reports obtained were based mainly on observations of the respective investigators. No grading systems or standardized guidelines were used to quantify the endpoints of interest.

The dose of magnesium sulfate was variable; three studies used a loading dose of 5 grams IV bolus loading dose. Of the 3 studies, 2 studies used a continuous infusion of 2-3 grams/hour of magnesium sulfate.

One study used an infusion of 1-3 grams per hour. The study by Lubbad and Ho used an infusion of 1-2 grams per hour, with the aim of maintaining the serum magnesium level

between 3-4 mmol. There is not enough evidence to support the routine use of magnesium sulfate for the management of sympathetic over-activity and muscle spasms in tetanus. However, this review shows that the collected 61 cases reported suggest that magnesium sulfate has the potential of becoming an ideal treatment in the control of spasm without sedation, prevention of life threatening sympathetic over-activity, advantage of minimal adverse reaction and low cost in the management of tetanus. **(Authors' abstract)**

Keywords: *Medicine, Magnesium sulfate, Tetanus, Nervous tissue*

UERMMMC Journal of Health Sciences, Volume No. 10 Issue No. 1, 42-45

2007,

(Filipiniana Analytics)

Fi(S) R97.4 U37 10/1 2007

NUTRITION

0560

Development of a nutritious and healthy jackfruit (*artocarpusheterophyllus lam.*) seed' vegan cookie

Kia, Wen Pang, Pangaribuan, Eva, Laborde, Gladys Mae R., Balagtas, Maribel C., Taclan, Lorcelie B.

The study was conducted to develop a jackfruit seeds' vegan cookie to increase usage of the seeds. Specifically, (1) to establish the nutritional value of the cookie in terms of: total calorie; carbohydrate; protein; fat; dietary fiber; vitamins A and C, thiamin; riboflavin, niacin; and minerals: phosphorus, calcium and iron; (2) to determine the acceptability of the developed cookie with reference to appearance, texture, flavor and aroma using the sensory evaluation test; (3) to identify the shelf life and the most appropriate packaging material of the newly developed cookie through a shelf life analysis; and to (4) establish the selling price of the product through cost analysis. Jackfruit were gathered, cleaned, boiled and dried using the Multi commodity heat pump dryer. Dried seeds were processed into flour and into cookies, with applesauce as a fat substitute. Nutritional value computation, sensory evaluation test, shelf life analysis were carried out after recipe's standardization. Results showed that the newly developed cookie has the following: high in total calorie (258 kcal/100 g); moderate in carbohydrate (56.2g/100 g); rich in fiber (3.4 g/100 g); moderate in protein (1.9 g/100 g); low in fat (1.9 per 100g); good source of calcium (144.6 mg/100 g); rich in phosphorus (109.9 mg/100 g) and good source of iron (2.9 mg/100 g). It was moderately acceptable based from appearance which was the most preferred attribute while texture as the least. Its expiration date was on the seventh day after baking. The plastic bag preserved its shelf life longer than the plastic container. The selling price per pack (five cookies) is P29.67. Thus, a vegan jackfruit seeds' cookie with loaded nutritional and mineral contents, delicious, affordable and individually packed in a plastic bag was developed and marketed. **(Author's abstract)**

Keywords: *Nutrition, Jackfruit seeds, Vegan cookie, Nutritious and healthy*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 138

(Filipiniana Analytics)

Fi(S) Q149.P5 N38 37/1 2015

Iodine status of Filipino school-aged children: Philippines 2013

Serafico, Michael E., Perlas, Leah A., Ulanday, Joselita Rosario C., Marcos, Juanita M., Desnacido, Josefina A.

Urinary iodine excretion (UIE) is currently the most practical biomarker for iodine nutrition. For this biomarker, international groups have recommended school-aged children (SAC) as useful target group for surveillance and as an acceptable proxy for the iodine status of the general population because of their high vulnerability and easy access. In 2013, the Food and Nutrition Research Institute of the Department of Science and Technology conducted the 8th National Nutrition Survey where one of its aim is to re-assess the prevalence and severity of iodine deficiency disorder (IDD) among 6-12 years old Filipino SAC and to compare the results with the previous surveys. The UIE of 22,588 SAC was measured based on the catalytic effect of iodine on the reaction between cerium and arsenic after sample digestion using ammonium persulfate. Median UIE among Filipino SAC was 168 µg/L with 16.4% having values less than 50 µg/L, indicating "optimal iodine status". These figures were better than the previous survey of 2008 where median VIE among Filipino SAC was 132 µg/L and 19.7% have values below 50 µg/L. Regions with the highest median UIE were CALABARZON (236 µg/L), Cagayan Valley (223 µg/L) and National Capital Region (220 µg/L) while those with the lowest median UIE were Davao (122 µg/L), Northern Mindanao (121 µg/L) and Zamboanga Peninsula (68 µg/L). Median UIE for Zamboanga Peninsula indicates mild iodine deficiency. Results show that the Philippines' endeavor in eliminating IDD is positively progressing. However, there are still packets of the deficiency since more than 20% of the surveyed population in some regions had UIE less than 50 µg/L. To achieve optimal iodine nutrition, comprehensive information dissemination and strict implementation of the ASIN (An Act for Salt Iodization Nationwide) Law is encouraged.

(Author's abstract)

Keywords: *Nutrition, Iodine, Urinary excretion, Biomarker, School-age children*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 137

(Filipiniana Analytics)

Fi(S) Q149.P5 N38 37/1 2015

Lifestyle and health status of faculty of the College of Human Ecology and Food Sciences and the College of Education

Moscoso, Leila S., Babao, Alma

This study was conducted to determine: (1) the demographic and socio-economic characteristics of the respondents; (2) the lifestyle of the respondents in terms of nutrition such as meal pattern, caloric and nutrient adequacy of the food intake and food habits and preferences; (3) the lifestyle of the respondents in terms of weight status ; (4) the lifestyle of the respondents in terms of exercise; (5) the lifestyle of the respondents in terms of sleeping pattern; (6) the vices that affect the lifestyle of the respondents; (7) the lifestyle status of the respondents; (8) the health status of the respondents in terms of their medical check-up and diseases encountered for the last 3 months.

A total of 30 faculty were the respondents of the study. The data were collected and analyzed using mean, frequency, counting, and percentage. The nutritional status was analyzed using the formula for the Body Mass Index (BMI). The Desirable Body Weight (DBW) and Total Energy Requirement (TER) were individually computed and the physical activity (PA) of the respondents were computed generally using the light physical activity. The Total Energy Requirement was distributed using Non Protein Calorie (NPC) allowing 70% and 30% of the NPC for carbohydrate and fat, respectively. The Food Exchange List was utilized in the determination of the caloric and nutrient adequacy of the 1 day intake of the respondents.

Results revealed that out of 30 respondents, about 40% belonged to the age bracket of 26-30 years old. Great majority (70%) of the respondents were females, and 57% of them were single, 63% were Catholics, and 1 (3.33%) was Islam.

Fifty-seven percent (57%) of the respondents earned monthly income of 10,000-14,999. Majority of the respondents or (77%) had a bachelor's degree and 2 of the respondents (7%) had doctorate degree.

With regards to the meal pattern of the respondents, results revealed that majority of the respondents (93%) usually ate their breakfast and lunch while only 40% of the respondents had AM snack only.

In terms of nutritional status 43% of the respondents were normal and 3% were CED Grade 2. They always ate their breakfast before going to their respective works. They sometimes avoided unhealthy snacks and sometimes limited the amount of fats and cholesterol they ate. They drank more soft drinks or other beverages than water. Most of their calorie, carbohydrate, protein, and fat were inadequate.

The respondents sometimes used part of their leisure time in family or team activities, and did vigorous exercise for 20-30 minutes a day. A majority (83%) of respondents had good sleeping pattern of 7-8 hours of sleep; great majority (90%) of them did not have any vices. All 30 respondents (100%) had their medical check up and 76.6% of the respondent had once-a-year medical check-up only. Most them had been sick (60%) for the last three months with cough. **(Authors' abstract)**

Keywords: *Nutrition, Calorie intake, Diet, Food habits, Food intake, Nutrition*

USM R&D Journal, Volume No. 16 Issue No. 2, 25-34

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

0563

Perspectives of ASEAN students on food safety in the 21st century

Sulabo, Evangeline Casilda , Bumatay, Ernesto Laforteza, Regalado,

Perspectives of ASEAN students on food safety were categorized to the definition, regulation, institutes, problems, facts/ findings, situations, plans/ programs, authors opinion and suggestions. Food safety on agriculture-based produce starts from the farmer (producers) to the processors (company/agency partners), to distribution (market participation), and the consumers. It is recommended there should be research and development partnership between the consumers and the producers on food produce and consumption. The partnership will provide venue for increase information and action involvement exchange. **(Author's abstract)**

Keywords: *Nutrition, Agriculture-based products, ASEAN perspectives, Eating habits, Food consumption, Food poisoning*

USM R&D Journal, Volume No. 16 Issue No. 2, 13-24

2008,

(Filipiniana Analytics)

Fil(S) Q179.9 U3 16/2 2008

0564

Translation and publication of nutritional guidelines for the prevention of chronic degenerative diseases to five different dialects

Tanchoco, Celeste C., del Rosario, P. L., Cruz, A. J., Villadolid, M. F.

As part of its goals or health promotion through diet, the Food and Nutrition Research Institute (FNRI) formulated and published two sets of guidelines: "Nutritional Guidelines for the Prevention of Heart Diseases and Diabetes Mellitus", and "Dietary Guidelines for the Prevention of Cancer". These guidelines were developed in English and laymen with at least high school education have found them easy to follow and understand. To reach a greater segment of the population, the FNRI sought the assistance of the Komisyon ng Wikang Filipino in the translation of the guidelines in five major dialects: Filipino, Bicolano, Cebuano, Hiligaynon and Ilocano. Five translators, each selected did the initial translation.

Then, five technical editors who were all nutritionist-dietitians and also, well versed in the said dialects were chosen to cross-edit the completed translations. Comments and suggestions gathered from the results of the pre-testing were incorporated in the revision prior to finalization and publication of the guidelines. **(Author's abstract)**

Keywords: *Nutrition, Chronic degenerative diseases, Nutritional guidelines for the prevention of heart diseases and diabetes mellitus, Dietary guidelines for the prevention of cancer*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 19 Issue No. 1, 31-35

(Filipiniana Analytics)

Fil(S) T1 N2 19/1 1994

PHYSICS

0565

Effect of packaging material to the physico-chemical properties of the radiation sterilized honey alginate wound dressing for exudating wounds

De Guzman, Zenaida, Asaad, Celia O., Baldos, Davison T., Asa, Anie Day DC., Diano, Gilberto T.

Honey-alginate wound dressing was developed at PNRI which was suitable for radiation sterilization at 25 kGy in its packaged form. Locally produced honey was incorporated with alginate to obtain a wound dressing with gel-forming properties, slightly acidic pH suitable for good wound healing and low moisture content ideal for longer shelf-life. In order to obtain the optimum conditions of packaging for the honey alginate wound dressing, two different packaging material i.e. laminated packaging films made from polyethylene terephthalate-polyethylene (PET-PE) and laminated packaging films from polyethylene terephthalate-Foil-polyethylene (PET-foil-PE) are compared as to the different physicochemical properties such as pH, moisture content and colour intensity for a one-year shelf-life study. No significant difference between the packaging materials in terms of pH was observed after one year storage but the Honey-alginate dressing packed in PET-Foil-PE was observed to maintain its moisture content through time and the rate of browning based on colour intensity is higher in PET-PE than in PET-Foil-PE. This reflects the change in the amount of pigments responsible for its antioxidant property. We therefore conclude that PET-Foil-PE provided better packaging environment for Honey-alginate wound dressing than PET-PE after one-year storage. **(Author's abstract)**

Keywords: *Physics, Honey, Alginate, Wound dressing, Exudating wounds, Packaging*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 140

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0566

Establishment of dose-response curve for dicentrics in cobalt-60-irradiated human lymphocytes for radiation emergency preparedness

Asaad, Celia O., Caraos, Gloriamaris L., Asa, Anie Day DC., Cobar, Maria Lucia C., Robles, Gerardo Jose M.

In the event of a radiation emergency, there is a need to timely estimate the absorbed dose of exposed individuals that can be used by physicians in the medical management of exposed individuals and in medical triage, in the event of mass casualty. Biological dosimetry has been used as a tool to estimate absorbed radiation dose in cases where physical dosimeters were not available at the time of exposure, in cases of over exposure and for radiological reassurance. Each biological dosimetry laboratory should establish a dose-response curve for chromosome aberrations. An in- vitro irradiation study of human peripheral lymphocytes was conducted in order to establish a dose-response curve for radiation-specific dicentric aberrations. Blood samples were collected from volunteer donors and together with OSL dosimeters, were irradiated at 0, 0.1, 0.25, 0.5, 0.75, 1, 2, 4, & 6 Gy of Co-60 source. Blood samples were cultured for 48 hours and the metaphase were harvested, fixed and stained on glass slides. At least 100 metaphase cells were scored for dicentric aberrations at each dose point. The data were analyzed using R language program. The results indicated that the distribution of dicentric cells followed a Poisson distribution and the dose-response curve was established using the estimated model, $Y_{dic} = 0.0003 (\pm 0.0003) + 0.0336 (\pm 0.0115) \times D + 0.0236 (\pm 0.0054) \times D^2$. The test for goodness of fit of data points showed that this linear quadratic model is appropriate (chi-square p-value = 0.24 with df=6). **(Author's abstract)**

Keywords: *Physics, Dosimetry, Dicentrics, Dose-response, Cobalt-60*

0567

Fabrication, testing, and utility-acceptability assessment and evaluation of an improvised magnetic force gauger: benchmarking a potential physics laboratory tool

Leelian, Maria Catherine B.

Improvised magnetic force gaugers were fabricated and were used to verify and to validate the distance-dependent magnetic force in a system of two vertically-aligned and repulsively-orientated disk-shaped radio magnets. Testing and validation were done using well-defined experimental set-up and procedures. Data organization, testing, analysis, and validation were computer-aided using basic equations and regression analysis. The interplay of Newton's third law was also explored using the inventive set-up.

Magnetic force strengths dramatically increase with decreasing separation distance and decrease with increasing separation distance. The linearized plots of the natural logarithms of magnetic force and separation distance revealed a slope of 2.0, denoting the inverse power law exponent n value. The interplay of Newton's third law was also very evident in the setup, with error of difference just within the range of 0.05%-1.45%. Teacher-users' responses on the utility assessment revealed a t -stat value of -1.89737; with no significant difference. That is, teacher-users' pre-and-post-test results were significantly just the same at 95% degree of significance. On acceptability, 99-100% of the nine (9) teacher-users answered yes on the design and engineering, utility, technicality, functionality, practicality and applicability of the improvised apparatus. Hence, teacher-training period is recommended to be increased, and a substantial exploration of the limiting distance must be explored within the context of an improved magnetic force gauger. **(Authors' abstract)**

Keywords: *Physics, Fabrication, Utility-acceptability assessment and evaluation, Improvised magnetic force gauger, Distance-dependent magnetic force, Newton's third law*

0568

Growth of anatase titanium dioxide nanotubes via anodization

Somintac, Armando S. , Salvador, Arnel A. , Borja, Celestino Andrew M. , Defensor, Michael J. , Daclan, Renato , Dilla, Ed

In this work, titanium dioxide nanotubes were grown via anodization of sputtered titanium thin films using different anodization parameters in order to formulate a method of producing long anatase titanium dioxide nanotubes intended for solar cell applications. The morphological features of the nanotubes grown via anodization were explored using a Philips XL30 Field Emission Scanning Electron Microscope.

Furthermore, the grown nanotubes were also subjected to X-ray diffraction and Raman spectroscopy in order to investigate the effect of the predominant crystal orientation of the parent titanium thin film on the crystal phase of the nanotubes. After optimizing the anodization parameters, nanotubes with anatase TiO_2 crystal phase and tube length more than 2 microns was produced from parent titanium thin films with predominant $\text{Ti}(010)$ crystal orientation and using ammonium fluoride in ethylene glycol as an electrolyte with a working voltage equal to 60V during 1-hour anodization runs. **(Author's abstract)**

Keywords: *Physics, Nanotechnology, Titanium dioxide, Anodization, Nanotubes*

Science Diliman: a philippine journal of pure and applied sciences, Volume No. 24 Issue No. 1, 33-42

2012,

(Filipiniana Analytics)

Fi(S) Q1.A3 S35 24/1 2012

0569

Growth of gold-assisted gallium arsenide nanowires on silicon substrates via molecular beam epitaxy

Somintac, Armando , Salvador, Arnel A. , Concepcion, Paul , Somintac, Michelle B. , Defensor, Michael J. , Presto, Jorge Michael M. , Jaculbia, Rafael B. , Fernando, Joel G. , Ibañez, Jasher John A. , delos Santos, Ra

Gallium arsenide nanowires were grown on silicon (100) substrates by what is called the vapor-liquid-solid (VLS) growth mechanism using a molecular beam epitaxy (MBE) system. Good quality nanowires with surface density of approximately 108 nanowires per square centimeter were produced by utilizing gold nanoparticles, with density of 1011 nanoparticles per square centimeter, as catalysts for nanowire growth. X-ray diffraction measurements, scanning electron microscopy, transmission electron microscopy and Raman spectroscopy revealed that the nanowires are epitaxially grown on the silicon substrates, are oriented along the [111] direction and have cubic zincblende structure. **(Author's abstract)**

Keywords: *Physics, Gallium arsenide nanowires, Silicon substrates, Molecular beam epitaxy, Vapor-liquid-solid (VLS)*

Science Diliman: a journal of pure and applied sciences, Volume No. 20 Issue No. 1, 31-38

2008,

(Filipiniana Analytics)

Fi(S) Q1.A3 S35 20/1 2008

0570

***In vivo* HPRT mutation assay for monitoring radiation exposure**

Yulo-Nazarea, Ma Teresa, Dy, Romy, Cobar, Maria Lucia C.

The increased use of X-ray machines, Co-60 teletherapy machines, scanners and radioactive materials by nuclear facility staff and technicians in hospitals calls for the need to assess radiation exposure of these individuals. The results of the preliminary study using a modified HPRT mutation assay for detection of radiation-induced mutation among personnel/staff of nuclear medicine departments in hospitals is presented. This method makes use of the somatic mutation in the x-linked hprt gene which is observed when peripheral blood lymphocytes in vivo are exposed to radiation. The present protocol, modified from the autoradiographic assay of Albertini, et al. (1988) uses a liquid scintillation counting method to measure mutation induction among radiation workers by calculating for somatic mutation index in peripheral blood lymphocytes of these workers. Favorable growth in vitro was observed when lymphocytes were grown in fetal bovine serum and proliferation of T-cells were specifically stimulated by addition of phytohemagglutinin. A high mutation index was observed in two samples suggestive of somatic mutation at the hprt gene locus. One of these samples came from an individual who has recently been exposed to a Co-60 source. All samples collected were from individuals ranging in age from 20-35 years of age; radiation workers were all non-smokers. Based on this preliminary study on the explicit detection of somatic mutation at the hprt gene due to exposure to radiation, the modified HPRT mutation assay seems very promising as a detection method for somatic gene mutation in peripheral blood lymphocytes. **(Author's abstract)**

Keywords: X-ray, Co-60 teletherapy machines, Scanners, Radio active materials, HPRT mutation assay, In vivo, Physics

Philippine Nuclear Journal, Volume No. Issue No. , 47-52

(Filipiniana Analytics)

Fil(S) QC173 P55 v9 1992

0571

Optimal solution viscosity in electrospinning polyaniline (PANI) elastomeric adhesive fibers

Emralino, Francis Murillo, Herrera, Marvin Ustaris

This work details the investigation on the effects of optimized polymeric solution viscosity on the mean fiber diameters of electrospun polyaniline (PANI)-elastomeric adhesive fibers. Five solutions of PANI (dissolved in dimethyl sulphoxide [DMSO]) were mixed with different volumes (25%, 37.5%, 50%, 62.5%, and 75%) of elastomeric adhesive. Viscosity measurements on the solutions carried out in room temperature showed a relative increase in viscosity (in centipoise) as the volume of elastomeric adhesive in the solution was increased.

The solution with 50% elastomeric adhesive was chosen to be used in subsequent electrospinning in the study owing to its relative ease of preparation and intermediate viscosity compared to other solutions. Mean fiber diameter measurements from captured scanning electron microscope (SEM) images of electrospun fibers using solutions with 50%, 62.5%, and 75% elastomeric adhesive were 0.763 μm , 2.819 μm , and 1.027 μm , respectively. Smaller mean fiber diameter was obtained from the chosen optimum polymeric solution for electrospinning. **(Authors' abstract)**

Keywords: Physics, Conducting polymer, Elastomeric adhesive, Electrospinning, Polyaniline

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 174

(Filipiniana Analytics)

Optimization of anodized aluminum oxide pore morphology for GaAs nanowire growth

Somintac, Armando S. , Salvador, Arnel A. , Ibanes, Jasher John A. , Ceniza, Claude R. , Loberternos, Regine A., Semblante, Oliver D. , Dizon, Rogelio G

Anodic Aluminum Oxide (AAO) films were produced by anodization of sputtered aluminum thin films on Silicon substrates. The effects of anodization voltage and aqueous oxalic acid solution on the pore diameter and interpore distance were studied. Parameters were sequentially varied to optimize the pore uniformity. Pore morphology was most uniform at 40V anodization voltage and 0.3M solution concentration. Average pore diameter and interpore distance for these parameters are $26.14\text{nm} \pm 13\%$ and $74.62 \pm 8\%$, respectively. Pore diameter uniformity was further improved by etching with phosphoric acid solution. The AAO films were also successfully used to pattern gold nanoparticle catalysts for the synthesis of semiconductor nanowires. **(Author's abstract)**

Keywords: *Physics, Anodic films, Electrolysis, Nanoparticles*

Science Diliman: a journal of pure and applied sciences, Volume No. 22 Issue No. 1, 19-25

2010,

(Filipiniana Analytics)

Fil(S) Q1.A3 S35 22/1 2010

A reaction rate model for composite particles

Belisario, Ka

The researcher presented an approach for the determination of the reaction rate of composite particles. It was demonstrated that the reaction rate of composite particles may be obtained from the reaction rates of its constituent particles. That is, that the composite particle reaction rate was a function of the reaction rate of each individual particle. The use of virtual modelling allowed the researcher to investigate the different configurations of the particles and determine their properties. In this study, a molecular dynamics method was utilized to simulate the behaviour of 10 particles moving in a one-dimensional ring. This was done by assuming the particles to be hard spheres interacting via the Lennard-Jones potential. Equilibrium was achieved by reducing the kinetic energy of the particles during a particle-particle collision. A pair was considered to have bonded when their separation distance corresponded to a certain fraction of the minimum potential energy. The model showed that as the fractional energy loss between collisions increases, the time to equilibrium decreases exponentially. **(Author's abstract)**

Keywords: *Physics, Composite particles, Molecular modelling, Computer simulation method*

The role of temperature on morphological properties of gallium nanowires: a kinetic monte carlo study

Albao, Marvin A. , Putungan, Dar

We have investigated the effects of temperature on surface morphology during deposition of Ga on Si(100) at room-temperature (RT) under Ultra-High Vacuum (UHV) conditions, using kinetic Monte Carlo (kMC) simulations. Specifically, we are interested on the impact of temperature on key quantifiable quantities such as the ratio of homogeneous to heterogeneously nucleated islands, R , as well as the mean island size. In this study, the relevant energetic and kinetic parameters were first calculated using Density Functional Theory (DFT) which were then used as input to the simulation model. Our simulations unequivocally show that as temperature increases the population of homogeneously nucleated islands grows at the expense of their heterogeneous counterparts. This suggests that the thermally driven increase in adatom surface mobility may have some asymmetric effect on the respective rates of homogeneous and heterogeneous nucleation. Interestingly, the observed shift in the balance between the two types of islands with increasing temperature were accompanied by a corresponding decrease in the mean island size. The latter observation is somewhat surprising vis-a-vis prediction from conventional mean-field nucleation theory that longer (or bigger) islands should dominate at higher temperatures as a result of more efficient surface equilibration. **(Author's abstract)**

Keywords: *Physics, Density functional theory, Kinetic monte carlo, Self-assembly*

SCIENCE AND TECHNOLOGY

Cleaner production technology on the pretreatment of greige cotton fabric.

Cauton, Char

Evaluation of different pre-treatment processes was conducted, specifically, the substitution of newly developed auxiliaries involving enzymatic treatment in place of non-biodegradable auxiliaries. Among the processes evaluated, bioscouring using a pectinase enzyme gave satisfactory results in terms of pollution load, appearance and handle. (Author's abstract)

Keywords: Bioscouring, Greige cotton fabrics, Pretreatment technology, Science and technology

Samay Bulletin, Volume No. Issue No. , 17-20

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.1 2001

0576

Development of Candy from Marang (*Artocarpusodoratissimus*)

Rivero, Eleanor C. , Salome, Lorna L. , Alcayde, Glad

The research was conducted to develop candy from marang fruit. Three formulations of marang using different milk forms (condensed milk, buttermilk and evaporated milk) were evaluated for acceptability and preference. The three formulations were described as liked moderately by the panelists. Results of the one-way analysis of variance (ANOVA) showed no significant difference in the degree of acceptability of the candies. However, marang and buttermilk ratio ranked first as the most preferred formulation. The one-way ANOVA results for the ranking for preference showed a significant difference among the milk formulations. Fisher's Least Significant Difference (FLSD) revealed a significant difference between buttermilk and condensed milk formulations, between buttermilk and evaporated milk formulation but not between condensed milk and evaporated milk formulations.

The most preferred marang candy was the dark brown in color, slightly hard in texture, with moderately weak marang aroma and slightly weak marang taste as evaluated by the panelists.

The physico-chemical characteristics of the preferred marang candy were also analyzed. Analysis showed that marang candy contained 6.09% moisture, 1.4% crude protein, 3.41% total fat, 0.5% ash, 88.68% carbohydrates and 0.628 Aw at 25°C.

Cost-benefit analysis of the three formulations revealed that evaporated milk formulation showed low cost of production but high net income whereas production of buttermilk formulation showed medium cost, medium net income and condensed milk formulation had high cost of production but low net income. More time was consumed in the production of evaporated milk formulation with high yield. Condensed milk formulation required medium time for production compared to buttermilk formulation, which was less but both with medium yield.

Storage for one month showed no significant difference as shown by ANOVA at 0.05 level for the slightly-hard marang candy. Dark brown color was noted on the marang candy on the first and second week as well as the slightlyweak marang aroma was observed on the first and fourth week. However, there was no significant difference at 0.05 level in the color and aroma of the candy during storage. The taste of the marang candy increased with storage time from slightly weak to slightly strong on the third to fourth week. ANOVA result revealed no significant difference in the taste of the candy. (Authors' abstract)

Keywords: Science and technology, Marang, *Artocarpus odoratissimus*, ANOVA, Fisher's least significant difference (FLSD), Physico-chemical characteristics

WMSU Research Journal, Volume No. 28 Issue No. 1, 1-17

2009,

(Filipiniana Analytics)

File(S) AS539.5 R47 28/1 2009

0577

Development of printer ink from cephalopods

Baga, Cecilio S., Macachor, Corazon P., Pepito, Joseph C., Montecillo, Romeo P., Cuizon, Pedro P.

The production of the squid ink developed by the Cebu Technological (CTU), Main Campus-Technology Research Center (TRC) researchers, promote the utilization of ink from sac of Cephalopods particularly Squid, Diamondback Squid and cuttlefish that may influence the decrease in the actual cost of commercial ink. The squid ink using different species of cephalopods is superimposed with water, acid, glycerin, thinner and varnish. This is a liquid containing black pigment used for coloring a surface to render an image or text, drawing or writing with a pen and now as printer ink. The developed printer squid ink from *Thysanoteuthis rhombus*, cuttlefish and squid were enhanced with virgin coconut oil and resulted to **light black** color, **moderately desirable** solvent-like odor, **sharp regular line, thin and dry** ink consistency as perceived by the Bachelor of Science in Graphics and Design students. All attributes significantly differ among ink sac from different species of Cephalopods based on Analysis of Variance and Duncan Multiple Range Tests at 5% level of significance. The printer ink from squid had a density (0.98 g/ml) closer to commercial ink and is safe for use, since the lead content was less than 3.00 ppm. The squid ink were tested as printer ink and found comparable with commercialized printer ink using different mode of printing. The researchers are on their way to refining the ink density towards wider application of the newly formulated ink from a natural source. **(Author's abstract)**

Keywords: Science and technology, Ink sac, *Sepia*, Cephalopods, Printer ink

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 164

(Filipiniana Analytics)

File(S) Q149.P5 N38 37/1 2015

0578

Handmade paper dye from young coconut (*Cocos nucifera* L.) husk

Pamplona, Buena S.

Dye from the husk of 7 - and 8-year old coconut (*Cocos nucifera* L.) nuts was extracted with hot water, and some of its physical and chemical properties identified. It was applied to handmade paper pulp.

The hot water (80 - 93°C) solubles from the husks of 8-month old coconut fruit averaged 31.51% and contained 13.4% tannins 1 (4% 2 in the husks); that of the 7-month old husk had 26.64% with 12% tannins 1. (3.4% 2 in the husks).

The fresh extract was brown, with pH of 5.3 and 4.8% ash content. Color reaction tests and infrared (IR) analysis indicated the presence of glycosides and flavonoids (possibly leucocyanidin), but negative for saponins, alkaloids, triterpenes and steroids.

The dyed abaca-coconut coir mix (75:25) was colorfast to heat (16 hrs at 55°C) but not to sunlight (5 hrs exposure).

The dyeing conditions for abaca, cogon, rice straw and office waste paper pulps using ferric chloride mordant, which gave the most intense gray color, were established. These were: pH - 4.8 to 8.0, ideal at pH 7; dye dosage - 2% based on oven-dry pulp; mordant concentration - 2% of pulp; drying system - exposed to sunlight and under the shed; dye bath temperature - 30°C, 50°C and 80°C did not show visual effect on the color shade of the dyed pulp; age of aqueous extract - best to apply fresh. **(Authors' abstract)**

Keywords: *Science and technology, Natural dye, Coconut husk dye, Handmade paper dye*

FPRDI Journal, Volume No. 26 Issue No. 1-2, 1-10

(Filipiniana Analytics)

File(S) SD339 F76 26/1-2 2000

0579

Husk of young fruit of *Cocos nucifera* Linn. as source of textile dye

Lopez, Daisy C.

This preliminary study on several properties of the aqueous extract from the husk of the young fruit of *Cocos nucifera* Linn. (buko) aimed to assess the viability of the buko husk as source of textile dye. The extract dyed cotton into different hues when used with different mordants. It is stable to changes in temperature and to traces of metals when in neutral or original pH. Its concentrated form did not show molds after prolonged storage at room temperature. The isolated tannin is unstable, and its chromatogram showed that it contains mixtures of dyes. The results of dyeing and stability tests indicated that buko husk is a good source of textile dyes. However, the instability and complexity of the components of the isolated tannin showed that dyeing reproducibility with extract will be difficult to attain, and that the isolation, structural identification and modification of the component dyes will be a difficult task. **(Author's abstract)**

Keywords: *Textile dye, Natural dyes, Coconut husks, Cocos nucifera, Coconuts, Science and technology*

0580

Isocyanate bonded medium density chicken feather fiber board overlaid with Mangium (*Acacia mangium* Willd) veneers

Rabajante â€œ Saipudin, Hidel

Medium density fiberboards were fabricated using a dry, batch process containing various proportions of waste feather fibers bonded with isocyanate-based resin, and overlaid with *Acacia mangium* Willd Veneers. Physical and mechanical properties of fabricated boards were determined following standard procedures of the American Society for Testing and Materials. Results of the study showed that increasing isocyanate content from 12.5% to 50% and overlaying the chicken feather fiber boards with *Acacia mangium* veneers improved the stiffness (modulus of elasticity) and strength (modulus of rupture). Similarly, improved dimensional stability as indicated by lower thickness, swelling and reduction in water absorption were obtained in boards containing isocyanate resin from 12.5% to 50%. Chicken feather fiber boards overlaid with *Acacia mangium* veneers and with 50% isocyanate content exceeded the modulus of rupture and modulus of elasticity values set by the American National Standard for MDF and the ANSI/AHA A135.4-1995 hardboard physical property requirements. Therefore, chicken feather fibers could potentially be used as raw material for MDF and sandwich construction with isocyanate based adhesive as binder. **(Author's abstract)**

Keywords: *Science and technology, Acacia mangium, Chicken feather fiber board, Medium density fiber board*

0581

Microbial degumming of pineapple (*Ananas comosus* var. *Formosa*) and banana (*Musa sapientum* var. *Cavendish*) fibers

Caliwara, Maria Trisette E., de Guzman, Zenaida I.

Geotrichum sp. and *Bacillus* sp. were isolated from pineapple (*Ananas comosus* var. *Formosa*) and banana (*Musa sapientum* var. *Cavendish*) fibers. Pure culture of the isolates were used to degum said fibers at various conditions of materials-liquor ratio (LR) and nutrient additive. The efficacy of the microorganisms as retting agents was evaluated based on their degumming capability towards the fiber as indicated by the treated fiber's residual gum content and tensile strength. Lab-scale degumming of the microorganisms for pineapple fiber with variations in LR, showed that at 1:10, the fungal isolate of pineapple fiber was effective in reducing the gum content of the fiber by 6.73% with a 9.77% increase in tensile strength. Addition of urea as nutrient additive increased the efficiency of the fungal isolate in degumming the said fiber for it further reduced the gum content by 7.14%. For banana fiber, using urea and LR of 1:20, its bacterial isolate effected a 9.16% gum reduction with an 18.9% increase in the fiber's tensile strength.

The obtained gum reductions of the established microbial degumming for pineapple and banana fiber were still insufficient to meet the spinning requirements. Hence, a combined microbial-alkali degumming trial was conducted. **(Authors' abstract)**

Keywords: *Science and technology, Microbial degumming, Pineapple, Banana, Musa sapientum var. Cavendish*

PTRI Samay Bulletin, Volume No. 4 Issue No. 1, 5-10

(Filipiniana Analytics)

Fil(S) TS1300 S42 4/1 2004

0582

Natural dyeing technology transfer in Banaue, Ifugao

Leano, Jr., Julius L.

Cognizant of its mandate, the Philippine Textile Research Institute (PTRI) undertakes the transfer of its developed natural dyeing technology to interested adopters and intended beneficiaries. A technology transfer seminar was conducted in Banaue, Ifugao on October 7-9, 2003 for the members of the Federation of Banaue Women's Organization. The seminar included lectures, hands-on training, field assessments and discussions. Amidst the innate skills in natural dyeing of the dyers, they were open to the infusion of the technology to their age-old dyeing practices. The conduct of the training on natural dyes was successful in the enhancement of the innate skills of the dyers, created awareness of the benefits derived from the use of natural dyes and diversified the product line of the weavers. **(Author's abstract)**

Keywords: *Science and technology, Natural dyeing technology, Hawili bark, Yellow ginger*

PTRI Samay Bulletin, Volume No. 4 Issue No. 1, 15-20

(Filipiniana Analytics)

Fil(S) TS1300 S42 4/1 2004

0583

Pretreatment and dyeing technology for abaca fibers

Quiros, Imelda V.

The study involves optimization of various bleaching and dyeing methods, and comparative evaluation of the process performance. For bleaching, the criteria used are whiteness retention, breaking strength and cost efficiency, while for dyeing, colorfastness to washing and light were assessed. Three bleaching methods namely hydrogen peroxide, calcium

hypochlorite and sodium hypochlorite were tried. Based on the results, the hydrogen peroxide method exhibited the best bleaching performance, for dyeing reactive, direct, basic and disperse dyes were tested and reactivities turned out best. **(Author's abstract)**

Keywords: *Textile dyeing, Manila hemp, Abaca, Science and technology*

Samay Bulletin, Volume No. Issue No. , 43-48

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.1 2001

0584

Quick screening for carcinogenic amines by high performance liquid chromatography

Reconose, Marina V., Lopez, Daisy C.

Azo dyes may form amines upon cleavage of their azo groups. The banned azo dyes may therefore be detected via the carcinogenic amines that they produce. However, the published High Pressure Liquid Chromatography programs are time-consuming and/or use toxic eluants. A study to establish elution programs that can be finished at shorter time and with less health hazard was therefore started. Initial results showed that isocratic elution with neat methanol (MeOH) and MeOH:water (7:3) elute the 8 standard amines in less than 7 minutes, and indicated that these eluants are suitable for quick screening for those amines, with the latter as the better eluant. **(Author's abstract)**

Keywords: *Science and technology, Carcinogenic amines, Azo dyes, High performance liquid chromatography*

PTRI Samay Bulletin, Volume No. 4 Issue No. 1, 27-35

(Filipiniana Analytics)

Fil(S) TS1300 S42 4/1 2004

0585

Test conditions for moisture regain of cotton woven fabric using the moisture balance (Infra red drying)

Forcadela, Marilou C., Alvarez, Virnila B.

A series of laboratory tests was conducted to determine the appropriate test conditions for moisture regain of cotton woven fabric using the moisture balance (MB) method. Parallel run with the oven-desiccator balance (ODB) method based on the American Society of Testing Materials (ASTM) was conducted. The established conditions for MB method were set at interval 1, and Heat Level 1 and temperature of 105°C.

The results were compared and validated with the results of ODB method. Using the t-test on paired data, results showed that there is no significant difference between the values

obtained from the two methods at 0.05 level or 95% confidence level. Thus the established test conditions for moisture regain of cotton woven fabric using MB method gave the same values with that of the ODB method.

Findings revealed that the established test conditions are the most appropriate for standard cotton woven fabric, as statistically validated; and that the MB method could be used for moisture regain determination instead of the traditional ODB method to shorten the testing time from 5 hours to approximately 30 minutes. The above findings were confirmed only for the test fabric used. Further studies should be done using cotton fabrics of different construction and eventually fibers, yarns, & other blended fabrics. **(Authors' abstract)**

Keywords: *Science and technology, Moisture balance (MB) method, Oven-desiccator balance (ODB), Cotton woven fabric, Infra red drying*

PTRI Samay Bulletin, Volume No. 4 Issue No. 1, 11-14

(Filipiniana Analytics)

Fil(S) TS1300 S42 4/1 2004

0586

Textile value of "yucca" (*Dracaene sp.*) fiber

Hagad, Stela Ma

The properties of the fiber "Yucca" (*Dracaena sp.*) were studied to assess its potential as a possible new source of material for textile. Major properties investigated were tensile strength, denier, residual gum content and some microscopic characteristics. The results showed that the properties are comparable if not better than the existing indigenous fibers being used for the development of the tropical fabrics. **(Author's abstract)**

Keywords: *Tropical fabrics, Natural fibers, Dracaena sp., Yucca, Science and technology*

Samay Bulletin, Volume No. Issue No. , 33-38

(Filipiniana Analytics)

Fil(S) TS1300 S42 v.1 2001

SOCIAL SCIENCES

0587

Addressing the demographic crisis in a collective fashion

Biazon, Rodolfo G.

The population of the Philippines, at the annual growth rate of 2.36%, reached 80 million in 2003 and is expected to double within 29 years if this rate does not decline . While the model of demographic transition predicts that all countries would, over time, go through the four demographic transition stages, it is recognized that the Philippines is now in a demographic crisis that need's urgent solution to ensure survival of future generations. The paper describes the current realities regarding population pressures in terms of poverty, unemployment, malnutrition, environmental degradation, land conversion, urbanization, low economic growth and increasing overseas employment of Filipinos. The need for a relevant population policy that integrates the variables of population, health and environment is underscored. The paper describes the proposed Integrated Population and Development Act tiled in the Congress of the Philippines. **(Author's abstract)**

Keywords: *Social sciences, Population policy, Demographic crisis, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. 25 Issue No. 2, 174-178

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 25/2 2003

0588

Discipline, culture, and information systems computerization and behavioral technology in government and society

Lagmay, Alfredo V.

The broad-spectrum complexity of our national crisis is regarded as characteristic of the rise and growth of population and urban centers. The existing structures and tools of government management do not constitute an adequate means for handling the intricacies of administration and the volume or information quickly and analytically across distance and time, belonging as they do to an era of small organizations and traditional communities. The new information systems technology is proposed for consideration.

A culture of information technology needs a concerted effort in development and therefore will imply an official statement of policy of entry into the Information Age at the highest levels or authority. The reasons for this are conceptualized and examples in the discipline of government and society are alluded to as possibilities that might yield through a more adequate information systems technology.

Recommendations are made for establishing the mechanisms (1) for a continuing study of the impact of information technology on Philippine culture, all in the service of policy; and (2) for supporting and designing the implementation and execution of policies In (1) by the executive and legislative branches of government. **(Authors' abstract)**

Keywords: *Social sciences, Discipline, Culture, Information systems, Computerization, Behavioral technology*

Philippine Technology Journal: a quarterly publication for applied researches, Volume No. 19 Issue No. 1, 1-7

(Filipiniana Analytics)

Fil(S) T1 N2 19/1 1994

Education and internally displaced persons: do school in Lanao have support mechanisms for Rido-affected students

Caballero, Juvanni A., Torres, Mark Anthony J.

Rido or Clan Feuding is a form of horizontal conflict that has entailed large asset losses for some cultural communities in Mindanao. In the advent of *rido*, members of warring families become targets of revenge, retaliation, and extrajudicial killings causing the displacement of vulnerable individuals including the youth. In general, *rido* causes substantial losses in physical, financial, social and human capital. As a result, *rido* leaves a legacy of structural violence that is difficult to overcome .

Amongst the most vulnerable victims of clan feuding are students who are forced to take indefinite absences from then classes, transfer to far-away schools, or continue attending classes in absolute fear. This study therefore sought to determine the existence of support structures for *rido*-affected students in six schools in Iligan City. In achieving this objective, both quantitative and qualitative approaches were adopted by: (i) documenting narratives about the special needs of these students (ii) analyzing quantitative evidence so as to understand the attitude of teachers and students towards them; and (iii) determining existing support mechanism based on interviews of school administrators. Results indicate the lack of institutionalized support mechanisms for the students among the schools surveyed. However, there is hope as data shows many of the teachers and school mates of affected students registered high scores when their willingness to help and empathy were measured. In this paper, we posit that unless a positive intervention in the form of an institutionalized support structure is implemented in schools, *rido*-affected students will remain trapped in the cycle of violence. **(Authors' abstract)**

Keywords: *Social sciences, Rido, Clan feuding, Students, Education, Support*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 181

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Emerging trends and the changing conflict landscape in Lanao

Caballero, Juvanni A., Torres, Mark Anthony J.

This paper presents the results of a three-year (2011-2013) longitudinal study aimed at determining patterns of violent conflict incidents in the two Lanao provinces of Mindanao. This was done by establishing a database that can be used to disaggregate incidents, causes or triggers, and impacts of violence based on data collected from newspapers and blotter reports from the Philippine National Police. The results of the study showed emerging conflict typologies and revealed a changing conflict landscape in Lanao. A notable observation is the pervasiveness of extra-judicial crimes and shadow economy activities in the region dwarfing the number of incidents resulting from threats of Moro rebellion, Muslim-Christian squabbles and *Rido*. There is also the prevalence of horizontal conflict as evidenced by the high involvement of civilians in the violent incidents compared to the number of Moro separatists (Moro Islamic Liberation Front and Moro National Liberation Front) and other armed combatants involved. Finally, the results showed a higher concentration of crime and conflict incidents in many coastal areas of Lanao del Norte compared to Lanao del Sur. If this is to be taken only in its face value, this data would project a more dangerous Lanao del Norte compared to Lanao del Sur.

However, based on the results of the focus group discussion conducted, the "hot spots" in Lanao del Norte could also be viewed as manifestations of better crime recording, police trustworthiness and the culture of reporting on the part of the community. In general, the result of this study is taken as a contribution to foster evidence-based peace and development initiatives in Lanao. **(Author's abstract)**

Keywords: *Social sciences, Bangsamoro, Conflict monitoring, Conflict landscape*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 180

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0591

Happiness of working and non-working wives in urban and rural areas of San Jose City, Nueva Ecija

Ignacio, Jerome Q., Acoba, Evelyn F.

The primary goal of this study was to find out the general level of happiness among working and non-working wives in the urban and rural areas of San Jose City, Nueva Ecija. This study is both qualitative and quantitative. There are eight respondents for the qualitative part. Sample size for the quantitative part is ninety two (92); twenty-three wives for each category, urban working wives, urban housewives, rural working wives and rural housewives.

Data were gathered through in-depth interviews and with the use of researcher-developed survey questionnaire. Data were analyzed using descriptive statistics such as frequency counts, percentages, means, and standard deviations Pearson Moment Correlation and T-test computations.

Findings showed that both qualitative and quantitative parts of this study revealed that family, specifically children, serves as a major source of happiness for the wives. In general, working and non-working wives in the urban and rural areas of San Jose City of Nueva Ecija are happy with their lives. Working wives and non-working wives tend to have similar level of happiness. However, significant difference in the level of happiness is observed when the wives are grouped according to locale. Urban wives were found to be the happier group. .

Furthermore, results showed that the socio-demographic characteristics such as age, number of children, length of marriage and monthly income have no significant relationship with their happiness. **(Authors' abstract)**

Keywords: *Social sciences, Happiness, Working and non-working wives, Urban and rural areas*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 185

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

Media habits and exposure to modern music: their relation to suicide potential of high school students

Gajudo, Nemencia D., Fabella, Arman T., Marticio, Flor Villa P.

The study focused on the relationship of media habits and exposure to modern music to suicide potential of high school students. There were 381 respondents in the study. The respondents experienced *moderate* degree of hopelessness, negative self-evaluation, suicide ideation, helplessness, and hostility implying that the respondents showed potentiality to suicide but not clinically significant. Two-hundred twenty (220) respondents spent 1-7 hours per week surfing the internet and with the reason to chat with friends (78.95%). There were 231 respondents that spent 1-7 hours per week playing video games such as puzzle video games (57.37%). Media habits are positively correlated to suicide potential which suggests that the lower exposure to media habits, the lower suicide potential such as hopelessness, hostility, and helplessness. On the other hand, the more time spent surfing the internet, the higher the level of hopelessness ($r=.126$; $p=.014$) and hostility ($r=.142$; $p=.005$). Moreover, high exposure to heavy metal music and popular music predicts helplessness. The study concludes that media habits and higher exposure to modern music leads to higher tendency for committing suicide. It is recommended for the parents, guardians and teachers to monitor and guide students with their media habits and type of music to lessen suicide potentiality. **(Author's abstract)**

Keywords: *Social sciences, Suicide potential, Music, Media habits*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 186

(Filipiniana Analytics)

File(S) Q149.P5 N38 37/1 2015

Mediating role of coping strategies to work-related psychosocial risk factors and quality of life of police officers: basis for a program

De Leon, Jezamine R.

The responsibilities of police work are both wide-range and challenging. In doing so an understanding of police officers quality of life at work and in the family; and factors affecting such is of paramount importance. This study used the descriptive-correlational research design to understand the mediating role of coping strategies to work-related psychosocial risk factors and quality of life among selected police officers. A total of 526 selected police officers participated in this study .. Findings showed that avoidant coping strategies, poor leadership mechanisms, poor relationships in the organization, advances in age and rank, *decreased* the levels of compassion satisfaction and *increased* the levels of compassion fatigue. When these happened, levels of family satisfaction increased. Further, coping strategies showed a partial effect as it mediated between work-related psychosocial risk factors and quality of life of police officers. Finally, based on the results of this study a program. entitled, "*Police C.A.R.E*" was created as a basis to help improve the quality of life of police officers. **(Author's abstract)**

Keywords: *Social sciences, Coping strategies, Work-related psychosocial risk factors, Quality of life, Police officers*

Mount Hulog historical shrine as potential ecotourism site in Maragondon, Cavite Province, Philippines

Mundo, Christian G., Gonzalez, Juan Carlos T.

This paper presents the historical and biological value of Mount Hulog in Barangay Pinagisahan, Maragondon, Cavite. This area is significant for being the execution and burial site in 1897 of Philippine hero, Andres Bonifacio. It contains a considerable number of indigenous species of terrestrial fauna unique to the Philippines such as the endemic Philippine Bulbul and Philippine Tailorbird. Given this unique combination, the potential for ecotourism and recreational development was explored. Specific recommendations for ecotourism development and conservation are discussed. **(Author's abstract)**

Keywords: *Social sciences, Historical mountain, Biological environment, Land vertebrates, Bonifacio Shrine, Philippine fauna*

Pet attachment and psychological benefits of pet ownership among college students

Soriano, Dennis M., Acoba, Evelyn F.

Important psychological benefits of pet ownership have been shown in several researches. To further understand what factor influence the psychological benefits that pet ownership brings, this paper examined the relationship of level of pet attachment and psychological benefits of pet ownership among college students of Central Luzon State University.

Data came from five hundred (500) college student pet owners from five (5) different colleges in the university. Levels of pet attachment and psychological benefits were measured using a self-developed questionnaire. Data were analyzed using Means, Chi square and Pearson r correlation.

Results of the correlation analysis showed that there is a significant positive relationship between pet attachment and psychological benefits of pet ownership. This suggests that pet owners with higher level of pet attachment derived more psychological benefits from pet ownership. As the level of pet attachment increases, the more pets act as social support, stress buffer and source of relaxation among pet owners.

Furthermore, highly attached pet owners are found to be those who are the main provider of their pet's needs, those who have more pets, and those students who are taking animal related courses.

Moreover, results showed that pets serve as source of social support, stress buffer, relaxation and helpful in developing empathy. **(Authors' abstract)**

Keywords: *Social sciences, Pet attachment, Psychological benefits, Pet ownership*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 184

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0596

Population: how and why it matters

Concepcion, Mercedes B.

The Philippines experienced a four-fold increase in population from 1948-2000. Based on previously published papers on population, this paper analyzes the effects of the country's demographic changes on economy, on poverty and family. on agriculture and natural resources, and their implications on economic. social and population policies.

Data have shown the negative effect of an increase in population on the economic growth of the country. The paper further explained this by describing the transition that the population would go through when fertility rate diminishes. According to studies presented, a country going through the demographic transition would first experience increase in the child dependency ratio. which will eventually be followed by an increase in the working age group and later on by the growing old-age dependency ratio. It was also concluded that an increase in fertility rate could lead to an increase in poverty rates and its intensity. This was supported by the general notion that poverty and large family size go together. Another problem caused by population growth is the issue of environmental degradation.

Based on these, five sets of policies were presented on maximizing the well being of individuals and families: (a) undo any existing policy-induced distortions; (b) institute a variety of economic policies that strengthen land, labor and financial markets and encourage broad-based income growth; (c) develop a range of social programs, including education and health programs; (d) promulgate policies and programs that improve the status of women; and (e) ensure availability of and access to family planning information and services. **(Author's abstract)**

Keywords: *Social sciences, Population policy, Demographic indicators, Philippines, Poverty*

Transactions of the National Academy of Science and Technology, Volume No. 25 Issue No. 2, 179-193

(Filipiniana Analytics)

Fil(S) Q149.P5 N25 25/2 2003

Profile of selected Filipino scientist: sociocultural and personality characteristics

Torres, Elizabeth M.

This study looked into the personality, family background, education and training, special qualities, and the process of research conceptualization and production of forty-two outstanding Filipino scientists. Using an auto-biographical technique, the researcher found out that most were males, of middle class origin, with at least one parent who was a strong influence in their lives. They were bright if not superior in intellectual abilities. Among the factors that influenced their choice of a science career - a parent or member of the family, scholarships, interest in and or abilities in science and mathematics, community, the most profound was a teacher or a mentor. Among the common qualities of Filipino scientists were strong inclinations for order and discipline, a desire for closure, and habits of personal leadership and management. They had a strong desire for intellectual adventure, and along with a patriotic spirit, a strong sense of mission. The processes of association, imagination, and "piling up of ideas ", were evident in the conceptualization and production of research. The scientists also explored extensions, variations, and missing gaps of previous researches. Writing and documentation were part of the efforts to pin down ideas and bring these to fruition. Pedagogical and policy implications were drawn from the study.

(Author's abstract)

Keywords: *Social sciences, Filipino scientists, Scientific personality, Auto-biographical technique*

NRCP Research Journal, Volume No. 8 Issue No. 9, 2-9

(Filipiniana Analytics)

Fi(S) Q179.9 N323 8/9 2006

Revisiting past eruptions of Mayon Volcano: new insights from residents' narratives

Martinez-Villegas, Ma. Mylene, Lamela, Ruben

Mayon Volcano, in Albay Province is one volcano wherein several major eruptive events have taken place in the last 50 years. However, with limited available equipment to record interviews prior to the 1990s, events in the past have sparse documentation in terms of descriptions of people 's experiences and responses. Revisiting past major volcanic eruptions by searching for people who experienced these events and using video cameras to record interviews with them is a valuable process and tool to reconstruct these significant events. This work looked at comparisons of the following major eruptive events: 1968, 1978, 1984, 19~3, 2000-2001, 2006 and 2009 from the perspectives of people who experienced specific events. we searched for and interviewed people who can still recall and narrate their experiences- from observations of natural signs if any, how a specific event had impacted their lives, notable impacts to the environment, and how they and others have responded to the crisis. The interviews with 30 people were transcribed and analyzed. Vivid descriptions of local observations can support and explain scientific data and would help better understand volcano eruptive behaviors. The narratives of people based on transcribed interviews gave us valuable

perspectives of not only how, but also of why affected people have behaved the way they did- and .which factors influenced their behavior. Some possible influencing factors identified that can affect behavior and response are: prior knowledge as learned from experience, information learned as taught by others, access to information during ongoing crisis, trust in authority, influence of others such as prominent figures and leaders in the community. **(Author's abstract)**

Keywords: *Social sciences, Mayon volcano eruptions, Narratives, Behaviors, Interviews, Perceptions*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 183

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0599

Rice , job misery, hunger incidence: an econometric analysis

Mapa, Dennis S., Castillo, Kristelle M., Francisco, Krizia DR.

The Social Weather Stations (SWS) quarterly surveys show a relatively high level of hunger incidence in the country through the years, averaging at 19.5 percent of families experiencing involuntary hunger in the year 2013. This paper looks at the factors that influence the dynamic nature of hunger incidence in the Philippines using the data from the SWS quarterly surveys on hunger, from the 1 st quarter of 2000 up to the 4th quarter of 2013. Variables identified as potential determinants of hunger incidence are, among others, changes in the price of rice and job misery index (sum of the employment and unemployment rates). A Vector Autoregressive (VAR) model is used to determine the effect of a shock to the possible determinants on total hunger. Results show that a shock (increase) in the price of rice at the current quarter tends to increase hunger incidence in the succeeding quarter. A shock (increase) in job misery index at the current quarter also increases the hunger incidence in the next quarter. Further analysis using the time-varying parameter (TVP) model shows a higher effect of changes in the price of rice to hunger incidence after the global rice crisis in 2008. This means that hunger incidence is becoming very sensitive to changes in the price of rice.

(Author's abstract)

Keywords: *Social sciences, Hunger incidence, Vector autoregressive (VAR) model, State space, Time-varying parameters (TVP) model*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 188

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0600

Self-rated poverty and subjective wellbeing of selected rice farmers in the Science City of Muñoz, Nueva Ecija

Palit-ang, Janice B., Agaser, Nixon V.

This study was conducted to determine the relationship between self-rated poverty (SrP) and subjective wellbeing (SWB) of farmers measured at three different periods within a cropping season (land preparation, growing period, and harvesting period). Participants (n=63) were conveniently selected from two barangays in the Science City of Munoz, Nueva Ecija. We developed a 10-item Likert-type questionnaire for SrP and we used Diner's Satisfaction With Life Scale (SWLS) in measuring SWB.

As expected, there seems to be a pattern in the SrP and SWB of the respondents throughout one cropping season. During land preparation, SrP is moderately high ($M=4.61$), becomes very high during the growing season ($M=5.4$), and shifts to moderately low during the harvesting season ($M=3.81$). For SWB, moderately low during land preparation ($M=2.47$), very low during growing period ($M=1.67$), and moderately high during the harvesting period ($M=3.42$). It should be noted that majority of the respondents have no other means of livelihood other than that of rice farming. Hence, the results indicate that they consider themselves very poor and feel unhappy during "income-less" (or *gawat* in local vernacular) months. This is supported with the significant negative relationship between SrP and SWB particularly during the growing period ($r=-.37$, $p=.018$). Decrease in SrP and increase in SWB begin to be observed during the harvesting period.

Overall, findings show the need to help farmers create other sources of income that could serve as financial buffer across the cropping season and in a way, helping them experience a more meaningful and happier life. **(Authors' abstract)**

Keywords: Social sciences, Self-rated poverty, Subjective wellbeing, Farmers

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 179

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

0601

Stakeholder analysis of the quaoit river watershed (QRW), Batac City, Ilocos Norte

Pastor, Floramante C., Alibuyog, Nathaniel R., Utrera, Rodel T., Manzano, Virgilio Julius P., Ayson, Roseller R., Cruz, Rex Victor O.

Involvement of stakeholders is one of the keys for better project planning and implementation. This study tried to assess the stakeholders in the QRW with regards to their composition, interests, conflicts and alliances, and the key people to be most likely affected and those with high influence. Data on these were gathered through a focused group discussion (FGD) with 50 key people from the watershed. Results showed that half of the respondents (50%) agreed that farmers have the greatest stake in the watershed, followed by Kaingineros (20%), wildlife collectors (18%), community, fisherfolks, furniture makers, and charcoal makers. These were mainly considered for economic and subsistence. Local government units, together with the Department of Environment and Natural Resources, military, Department of Agriculture, Bureau of Fisheries and Aquatic Resources, Department of Health and Department of Agrarian Reform were considered as mediating institutions in the watershed because of their mandated roles in law enforcement and environmental protection. Sources of conflicts among stakeholders can be economic, social or attitudinal in nature such as issues on violations of laws, production shares, disputes of tenural rights, and competition for resource use. Categories of stakeholders relative to the degree of importance and influence are perceived by respondent to be diverse.

Stakeholder analysis is very instrumental because this serves as source of more ideas/insights, and varied perspectives from all sectors and help us recognizes the issues and concerns of people that can be bases in designing appropriate watershed management schemes or for any development endeavor. **(Authors' abstract)**

Keywords: *Social sciences, Watershed, Stakeholders, Focused group discussion*

Transactions of the National Academy of Science and Technology, Volume No. 37 Issue No. 1, 182

(Filipiniana Analytics)

Fil(S) Q149.P5 N38 37/1 2015

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Comparative study of different techniques in eradicating virus infected abaca (*Musa textilis* Nees) plants in Region XI Macarayan, Olympio B.. **USM R&D Journal**, , 13(2):172-177 Fil(S) Q179.9 U31 13/2 2005

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ZINC

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ZOOPLANKTON

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LIST OF PUBLICATIONS ABSTRACTED

FPRDI Journal
IRRN International Rice Research Notes
NRCP Research Journal
Philippine Engineering Journal
The Philippine Journal of Pediatrics
Philippine Nuclear Journal
Philippine Technology Journal: a quarterly publication for applied researches
PTRI Samay Bulletin
Samay Bulletin
Science Diliman: a journal of pure and applied sciences
Science Diliman: a philippine journal of pure and applied sciences
St. Luke's Healthcare Journal
Transactions of the National Academy of Science and Technology
UERM Health Science Journal
UERMMMC Journal of Health Sciences
The UPManila Journal
UPV Journal of Natural Sciences
USM R&D Journal
WMSU Research Journal