PHILIPPINE SCIENCE & TECHNOLOGY ABSTRACTS

SCIENCE AND TECHNOLOGY INFORMATION INSTITUTE
INFORMATION RESOURCES AND ANALYSIS DIVISION
Department of Science and Technology
Bicutan, Taguig City, Metro Manila
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PHILIPPINE
SCIENCE AND TECHNOLOGY
ABSTRACTS

Bimonthly classified abstracts of the latest Philippine
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0001

Acetylcholinergic receptors in the CA1 region of the rat: An opticals recording study

Salunga, Thycudides L., Kawashima, Takashi, Akaike, Tadashi, Sugai, Tokio, Onoda, Norihiko, Matsunami, Ken'ichi

Optical responses were recorded from the rat hippocampal slices (450 μm), stained with a voltage sensitive dye, RH 482 (0.01%), using a real-time optical recording system to study the cholinergic influence on hippocampal activity. The recording system consists of a camera head with a 128 x 128-photodiode array with a high time resolution of 0.6 ms. Electrical stimulation was applied through a bipolar electrode placed in the fornix to stimulate the cholinergic pathway.

Electrical stimulus evoked a response that propagated both to the dentate gyrus and CA1 region. Latencies of response varied among slices with a median value of 13 ms. In the presence of acetylcholine (Ach) or carbachol (CCh) the optical response was diminished specially in the CA1 region. This effect was nearly abolished by atropine. Furthermore, GABA at low concentration also attenuated the response and with the addition of Ach/CCh further inhibition was seen. Application of Ach and CCH had little effect on optical signals around the stimulating electrode where direct activation of nearby cells or non-synaptic response is mostly responsible for the recorded optical responses.

We conclude that the inhibitory effect of acetylcholine and its agonist can be brought by activating the muscarinic receptors in the GABAergic inhibitory interneurones. This activation increases the excitability of the interneurones and that synaptically released. Ach increases interneural activity. The partial effect of muscarinic antagonist aatropine suggests that only muscarinic but also nicotinic receptors are activated as demonstrated by the effect of d-tubocurarine. **(Author's abstract)**

Keywords:

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 339
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0002

An antimicrobial alkaloid from *Catharanthus roseus*

Ragasa, Consolacion Y., Inte, Vic Marie L., Rideout, John A.

The chloroform extract of the air-dried leaves of *Catharanthus roseus* Linn. afforded perivine (1). The structure of 1 was elucidated by 1D and 2D NMR, UV and FT-IR spectroscopy and mass spectrometry. Results of the antimicrobial tests on 1 showed that at a concentration of 20 mg, 1 is active against *Pseudomonas aerugenosa, Bacillus subtilis, Candida albicans* and *T.*

mentagrophytes. It was found inactive against *Aspergillus niger, Escherichia coli* and *Staphylococcus aureus*. **(Author's abstract)**

Keywords:

The Manila Journal of Science, Volume No. 1 Issue No. 2, 19-27
(Filipiniana Analytics)
Fil(S) Q1 M314 1/2 1998

0003

Antimicrobial compounds from *Spondias purpurea*

Ragasa, Consolacion Y., Poblete, Asteria T., Navida, Eugenio C.

The dichloromethane, ethyl acetate, ethanol and water extracts of the freeze-dried bark of Spondias purpurea were tested for antimicrobial activities against seven microorganisms. Results of the study indicated that all the extracts at 30 µg have low antimicrobial activities against E. coli, P. aeruginosa and T. mentagrophytes. The water and ethanol extracts showed low activity against C. Albicans, while the ethyl acetate extract gave low activity against A. niger. All the extracts were inactive against S. Aureus and B. subtilis. The dichloromethane extract was fractionated by silica gel chromatography. It afforded 1, 2 and a mixture of hydrocarbons. Compounds 1 and 2 were identified by comparison of their ^{1}H NMR spectral data with those of lutein and sistosterol, respectively. Sitosterol and the mixture of hydrocarbons were tested against the same microorganisms. Result of the study indicated that both compounds had low activity against E. Coli and P. aeruginosa at 30 µg and inactive against S. Aureus, B. subtilis, T. mentagrophytes and A. niger. Sitosterol gave low activity against C. albicans. **(Author's abstract)**

Keywords: *Spondias purperea, Anacardaceae, Lutein, Sitosterol, Hydrocarbons, Antimicrobial*

The Manila Journal of Science, Volume No. 4 Issue No. 1, 24-28
(Filipiniana Analytics)
Fil(S) Q1 M314 4/1 2001

0004

Aspect of biology and conservation of the Philippine Cockatoo *Cacatua haematuropygia* on Rasa Island, Palawan, Philippines

Widmann, Peter, Lacerna, Indira D., Diaz, Siegf

The Philippine cockatoo, (Cacatua Haematuropygia), is a highly endangered bird species. Since three years ago, the Philippine Cockatoo Conservation Program has been carrying out a project in Southern Palawan to save this species from extinction. The project area comprises the

small coral island of Rasa (8.3 km^2) in the Sulu Sea, which belongs to the municipality of Narra in southern Palawan. The vegetation of the island consista of predominantly old growth mangrove and coastal forest, with a fair presence of suitable nesting and feeding trees.

One of the activities of this program is gathering information on the conservation status, population dynamics, feeding, and breeding biology of the species. As of 2000, the density of cockatoo breeding pairs was 1.6 breeding pairs per km^2. At the end of the breeding season in 2000 the minimum density was 6.7 individuals per km^2 which reflects the high proportion of non-breeding birds.

Following an ecosystematic, rather than a purely species conservation approach, with the cockatoo serving as flagship species, the project activities on Rasa consequently include all terrestrial and marine ecosystem of the island. Basic inventories of woody plants, fishes, reptiles, birds, and mammals have been conducted.

The project also follows a strongly community-based approach to management which involves all stakeholders in the design of the project from the beginning. Aside from the conservation work, other components of the project include information-education-communication campaigns, alternative livelihood and community organizing. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 42 Issue No. 2, 129-148
(Filipiniana Analytics)
Fil(S) AS538 S46 42/2 2001

0005

The bandwidth of the cartesian product of a double star and a path

Fajardo-Lim, Yvette

The cartesian product of two graphs G and H, written G x H, is the graph with *vertex set* V (G) x V (H) and with (u_1, v_1) adjacent to (u_2, v_2) if u_1 is adjacent to u_2 in G and $v_1 = v_2$ or $u_1 = u_2$ and v_1 is adjacent to v_2 in H. This paper establishes the bandwidth of the cartesian product of a double star and a path. **(Author's abstract)**

Keywords: *Graph, Cartesian product, Bandwidth*

The Manila Journal of Science, Volume No. 4 Issue No. 1, 29-37
(Filipiniana Analytics)
Fil(S) Q1 M314 4/1 2001

0006

Bilinear henstock-stieltjes integral

Jamil, Ferdinand P., Canoy, Jr., Sergio R.

Both the bilinear Riemann-Stieltjes and Moore-Pollard-Stieltjes integrals have certain difficulties and shortcomings in the case where the functions under the integral sign share a common discontinuity. To overcome some of the deficiencies of these integrals, a new integration process must be developed. In 1995, the second author introduced the bilinear Henstock-Stieltjes integral fro Banach-valued functions and proved the existence of the integral in the case where the function is continuous and the integrator is of bounded variation or bounded semi-variation. Recently, these authors proved the existence of the same integral in the case where the function is regulated and the integrator is of bounded variation. Indeed, as seen and proved, the Henstock-Stieltjes integral is far better and has greater advantage than the former aforementioned integrals. In fact, as an example will show, the conditions that the integral. Furthermore, this paper offers two main results, namely, the existence of the bilinear Henstock-Stieltjes integral in the case where the functions are both regulated and a better integration by parts formula. **(Author's abstract)**

Keywords:

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 353-354
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0007

Binary formulation of local whiteware bodies by slip casting

Rivera Virtudazo, Raymond V., Burgos, Celia, Cacao, Mayflor, Dejeto, Rodrigo V.

In the Ilocos region, the abundance of white clay explains the need to investigate, utilize and develop the raw material for earthenware products. White clays in Solsona have been studied using ternary formulation in which it passed the physical standard for earthenware bodies.

This study focused on the development of binary formulation of earthenware bodies utilizing only Solsona white clay and Ventura feldspar.

Wet screen method was used to homogenize the particle size and remove bigger size of organic materials present in the clay. Improvise radio magnet was also used in order to get or minimize iron content present in the local white clay.

Four (4) formulations were tested (90:10, 80:20, 75:25, and 70:30 of clay feldspar ratio). The test specimen was fired at 850^{o}C, 950^{o}C and 1050^{o}C. It was conducted to determine the physical (fire) properties and evaluate the formulated bodies for earthenware product.

Results of the study show that majority of 90:10 (clay:feldspar) formulation exhibits the highest results in linear shrinkage, change in weight, water absorption and apparent porosity at 850^{o}C.

However, all the experimental binary formulations are possible to produce an earthenware product using the slip casting method based on the product results and data produced in the research study. **(Author's abstract)**

Keywords: *Binary formulation, Earthenware bodies, Local feldspar, Local white clay, Slip casting*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0008

Blood transfusion practice in the management of dengue hemorrhagic fever in 0 to 19 years old at a private tertiary medical center

Madatu, Sitti Nur-en R., Ty, Florentina U.

Dengue virus and virulent Dengue Hemorrhagic Fever (DHF) represent an international health issue that remains untreatable with traditional antiviral and vaccine therapy. A Cross Sectional Descriptive study was conducted to review blood transfusion (BT) practice in the management of Dengue Hemorrhagic Fever in **MCU-FDTMF** Hospital from year 2006-2008 to assess the outcome of patients with or without transfusion. There were a total of 80 patients from 0-19 years old admitted due to DHF. Diagnosis was confirmed according to WHO criteria for DHF. From a total of 80 patients, 11 were given BT comprising 14% of total population; 43 patients presented as grade 1 (54%), 28 grade 2 (35%), 4 as grade 3 (5%) and 5 patients presented as grade 4 (6%). Most common indication for blood transfusion is bleeding followed by decreased platelet count. It was shown that there were a significant number of cases who developed bleeding such as melena, hematamesis and pulmonary hemorrhage given blood transfusion compared to patients who were not given blood transfusion. The length of hospital stay is longer in the patients with blood transfusion compared to those with out blood transfusion. Complications of DHF were mostly observed in patients given blood transfusion compared to those not transfussed. All of the mortalities belong to the group who underwent blood transfusion. Urticarial rash and intravascular volume load are the adverse effects that were observed after blood transfusion. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 43 Issue No. 1, 6-11
(Filipiniana Analytics)

0009

Carbon dioxide sensor based on a pH sensitive polypyrrole

Tongol, Bernard John V., Binag, Christina A.

The measurement of carbon dioxide is essential in biotechnology, in health care, and in beverage industry. The simplest device for detecting dissolved CO_2 is the Severinghaus electrode. However, the pH-glass electrode used in Severinghaus electrode is bulky and fragile.

In this study, a Severinghaus-type carbon dioxide sensor is fabricated using conducting Polypyrrole (PPy) as the pH sensing device. The PPy was polymerized galvanostatically (I = 1 mA) onto a Pt wire (0.17 cm^2) for 5 min in a solution containing 1.0 M pyrrole and 0.1 M $NaHCO_3$ solution. The PPy-pH sensor gave a sub-Nernstian response of –43.44 mV/pH with a very good linearity of –0.999 for three replicate measurements. For the fabrication of the CO_2 sensor, the PPy-pH sensor and the Ag/AgC1 reference electrode are immersed in a mixture of 0.001 M $NaHCO_3$ and saturated KC1 solutions. The sensor body is then covered with a gas permeable membrane. The sensor is sensitive to dissolved CO_2 gas from 1 x 10^{-2} M to 1 x 10^{-5} M $NaHCO_3$ solution. Further investigation is underway in view of optimizing the CO_2 sensor. A Pt disc which has a greater surface area than the Pt wire electrode has been employed, as well, for the electrodeposition of PPy. Surface morphology of the polymer-modified electrode has been studied using SEM while the elemental composition of the electrode surface has been analyzed through XPS and TOFSIMS. **(Author's abstract)**

Keywords: *Carbon dioxide, Carbon dioxide sensor, pH-sensitive, Conducting polypyrrole, SEM, XPS, TOFSIMS*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 372
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0010

On cayley algebras of dimension 2^r, $r \geq 4$

Cawagas, Raoul E.

The existence of Cayley Algebras of Dimension $n = 2^r$ is established by construction using a new procedure called the *ZSM Process*. These algebras form a class of flexible real algebras that includes the *Cayley-Dickson algebras* as a subclass. If r e" 4, one of the smallest algebras of this type is the *sedenions* S ($n = 2^4$) which contains as subalgebras the *real numbers* R ($n = 2^0$),

complex numbers C($n = 2^1$) quaternions H ($n = 2^2$), all of which are associative, and the *Cayley numbers* (*octonions*) O ($n = 2^3$) which is nonassociative. This paper shows that these real algebras have a common structural base (the *Klein group* of order $n = 2^r$), and they all belong to a single family composed of classes of Cayley algebras of dimension 2^r. **(Author's abstract)**

Keywords: *Cayley-Dickson algebrasm ZSM process, Sedenions, Octonions, Quaternions*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 354-355
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0011

Chronic sinusitis in pediatric patients with chronic respiratory symptoms in the out-patient department of PGH

Quitain, Grace Ann B., Sumpaico, Madeleine W.

OBJECTIVE:

1. To determine the risk factors associated with the presence of chronic sinusitis in patients with chronic respiratory complaints.

2. To determine if a group of common signs and symptoms exist among these patients.

3. To determine the prevalence of chronic sinusitis among these patients.

STUDY DESIGN: Cross-sectional study

POPULATION: Patients from 2-17 years old with complaints of upper respiratory tracts symptoms for at least 3 months.

SETTING: Sick Child and Pediatric Allegy Clinics of the Out-Patient Department of PGH.

METHODS:

Patients seen from April to August 31, 1995 were interviewed and underwent allergy skin testing, upright Waters view, and serum IgG and IgA levels. The x-rays were read by a single allergy fellow. The blood samples were examined at the Immuno-MRL laboratory of UP-PGH.

Chronic sinusitis was defined, according to the criteria proposed by Shapiro and Rachelefsky.

Date analysis was done by chi-square, relative risk determination with 95% confidence interval estimation, and multiple regression analysis.

RESULTS

Forty five new patients, 53% females and 47% males with mean age of 9.6 + 3.4 years were included in the study. The mean duration of symptoms was 2.7 + 2.6 years. Seventy one percent had positive skin tests. 68.9% has a family history of atopy, and 26.7% had a history of chronic asthma. Single sinus involvement was more frequent in the younger age group.

Wheezing was the only respiratory symptom found to have significant relative risk at 1.56 (95%) CI: 1.22, 2.00). Among the possible risk factors, family history of atopy in the univariate analysis was found to be significant (RR = 4.17, 95% CI, 1.05, 16.48). However, both were not significant in the multiple regression analysis.

CONCLUSION:

Wheezing and family history of atopy were found to be significantly associated with sinusitis in the univariate analysis. However, in the multiple regression analysis, they were both not significant. In this study, 71% of pediatric patients with chronic respiratory complaints had chronic sinusitis which was higher then previous foreign studies. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 25-31
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0012

Coal trade prospects in selected countries in east and southeast asia around the year 2000

Puno, Recto H.

Countries in East and Southeast Asia feel the need of resorting back to coal as a major source of energy. Most of the projected requirements would have to be imported from outside the region which would entail a tremendous amount by the year 2000. But economies of scale in ocean shipping exist and a substantial reduction of cost can be achieved using bigger vessels. This paper looks into the possibility that economies of scale could justify construction of one or more transshipment depots in the region at which large loads from the supply sources are broken up and re-distributed in small vessels to small consumers. **(Author's abstract)**

Keywords:

Philippine Engineering Journal, Volume No. 5 Issue No. 2, 150-160
(Filipiniana Analytics)
Fil(S) TA4 P532 5/2 1984

0013

Comparative study of linux distribution for desktop use

Quinton, Suzette, Vida, Sheilafel, Ruiz, Erwin, Liguit, Michael, Cabeza, Ivy, Gonzales, Joanna, Pagador, Emily, Banzon, Peter

This paper tests different Linux distributions to come up with a recommended open source operating system best suited for desktop computers. Benchmarking was done to statistically compute the performance of each Linux distribution. A user survey was also conducted to complement the result of the benchmark.

The Linux Benchmarking Toolkit was used to benchmark three of the most popular Linux distributions: Caldera 3.1, Red Hat 7.2 and Mandrake 8.1. Each distribution was installed on a Pentium III machine and subjected to four benchmarking suites.

The user survey subjects a set of individuals to installation sessions. The total number of successful installations was considered. Respondents were also asked for the easiest operating system to install and their recommendations. **(Author's abstract)**

Keywords: *Bench marking, Linux, Operating system, Open source*

Philippine Journal of ICT & Microelectronics, Volume No. 1 Issue No. 2, 36-44
(Filipiniana Analytics)
Fil(S) T7800 P535 1/2 2002

0014

Comparison of different raingages in upper Agno river basin

Veracion, V.P., De los Santos, A.E., Rondilla, C.S.

Testing 4 different raingages (Philippine Standard, U.S. Standard, Helmann, and Recording) for measurement of rainfall in the Upper Agno River Basin showed no significant difference among them. **(Author's abstract)**

Keywords:

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 24-25
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0015

On complete 14-arcs in semifield planes of order 16

O'Keefe, Christine M., Pascasio, Arlene A.

Examples of complete 14-arcs have been given in all, except two, non-desarguesian translation planes of order 16. In this paper we give examples of complete 14-arcs in the two remaining planes namely the semifield plane with kernel GF(2) and the semifield plane with kernel GF(4). **(Author's abstract)**

Keywords:

The Manila Journal of Science, Volume No. 1 Issue No. 2, 29-32
(Filipiniana Analytics)
Fil(S) Q1 M314 1/2 1998

0016

Correlation between the duration of right lower quadrant abdominal pain and clinical stage of acute appendicitis among patients who underwent appendectomy at MCU-FDTMF hospital

Batallones, Jr., Bonifacio H.

Right lower quadrant abdominal pain is the prime symptom of acute appendicitis. The surgical treatment of appendicitis is one of the great public health advancement of the last 150 years.

The objective of this study is to correlate the duration of right lower quadrant abdominal pain with the clinical stage (Pathologic diagnosis) on patients who underwent appendectomy at MCU-FDTMF Hospital from January 2006 to December 2006.

This is a cross-sectional study. There were one hundred and ninety four (194) patients who presented with right lower quadrant abdominal pain and underwent appendectomy. One hundred and eighty six (186/194) had acute appendicitis during surgery and eight (8/194) patients with normal appendix. The 3 most common diagnoses on patients with normal appendices were pelvic inflammatory disease, ovarian torsion and urinary tract infection. The total number of patients who underwent appendectomy surpassed the required sample size of at least 130 observations. A Chi-square test was used for univirate analysis of data.

The study revealed that right lower quadrant abdominal pain of acute appendicitis < 12 hours was either congestive or suppurative (94%) stage and for pain duration of > 24 hours increased the likelihood of a ruptured appendicitis (98.5%). **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 43 Issue No. 1, 12-16
(Filipiniana Analytics)
Fil(S) Q181 P56 43/1 2010

0017

Crybabies: Are they simply what infantile colic is about

Salavaria-Imperial, Ma. Lourdes A., Agrasada, Ma. Gracia V.

A study on what mothers perceive to be infantile colic was carried out in the out-patient clinics of a tertiary hospital. Seventy-eight mother completed self-administered questionnaires on characteristics of colicky episodes, beliefs regarding its etiology, mothers' responses to the colicky infant and interventions done to relieve the infant's crying. Results showed that 72% (56/72) exhibited colic with onset between 4-8 weeks and with occurrence at any time during the day, each episode lasting up to 15 minutes. Colic was typically manifested as flushing of the skin, crying as if in pain, passage of a lot of gas and the infant being inconsolable. Mothers react to these episodes with feelings of distress (57%) panic (34%) and fear (20%). These mothers believed that colic could be a normal pattern of crying (41%), or be secondary to the infant's temperament (23%) or occult/supernatural forces (21%). Other evoked causes were noxious stimuli in the infant's environment, possible organic pathology, maternal anxiety and ineffective responses to the infant's crying. Intervention commonly employed were carrying (90%) and burping (59%) the infant, followed by singing to the infant (29%), use of an abdominal binder (27%), or medications (7%) to relieve perceived abdominal pain. Application of "azete de manzanilla," increased carrying and burping of the infant, as well as the use od abdominal binder constituted prophylaxis for colic episodes. Of the 56 mothers of colicky infants, 45 (80%) sought consult primarily with experienced older relatives (32%) and other mother (32%) like themselves. This was followed by consult with medical (27%) and other health personnel (20%), and practitioners of folk medicine (11%). This would indicate that although colic is a commonly observed phenomenon, it is not routinely brought to medical attention and is instead managed without a physician's guidance. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 59-70
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0018

Current status/role of biophysical studies in integrated coastal management sustainability in selected sites in Negros Oriental and Sogod Bay, Leyte Philippines

De Leon, Roy Ol

Biophysical studies have become an integral part of the Integrated Coastal Management (ICM) process. Such studies in most cases take a significant portion of the ICM budget costing about 14 percent of the year 1 budget per kilometer of costline. Yet, a review of different Coastal Resources Management (CRM) resources profiles and plans, legislation developed in aid of CRM, and augmented by interviews of 30 key informants in selected sites reveals that the biophysical data generated are underutilized. A trace of the flow of information in the ICM process cycle further reveals that in most cases, the information stop in the planning stage. The low utilization of information can be attributed to problems in accessing the information, lack of perceived ned for the information, or lack of technical know how in utilizing the information as well as updating the information. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 44 Issue No. 1, 265-284
(Filipiniana Analytics)
Fil(S) AS538 S46 44/1 2003

0019

Density of sowing anthocephalus chinensis (Lank). rich ex. walp seeds

Bholachai, P., Domingo, I.L.

Different densities of sowing Kaatoan bangkal *Anthocephalus chinensis* (Lank.) Rich. ex Walp., seeds in seedflats were compared. Sowing seeds at one gram per 30 cm x 45 cm seedflat gave the greatest number of seedlings suitable for potting, followed by sowing seeds at 1.5, 2.0, 2.5, 3.0 and 0.5 grams. The lower number of seedlings suitable for potting in the higher densities of sowing was believed to be due to more severe attacks of damping-off. **(Author's abstract)**

Keywords: *Damping-off*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 68-70
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0020

Detection of influental observations in canonical factor analysis

Mateo, Zenaida F.

Sensitivity analysis procedures have been previously studied by Tanaka and Odaka for detecting influential observations. Some of these analysis/procedures are the principal factor analysis, maximum likelihood factor and least squares factor analysis.

In the present study, it was shown that a similar method can also be developed in canonical factor analysis (CFA). The main objective here is to investigate the influence of a small change of data on the result of the analysis. One of the influence measures utilized to detect/assess influence observation is called Euclidean norm of t Ä(1)t. It is note mentioning that some techniques such as the usage of the Cholesky decomposition and its derivative are used to formulate the sensitivity analysis. First, the theoretical influence functions s(X; Ä) and s(x; LL.) for the unique variance matrix Ä and the common variance matrix LL., were derived and utilized in the formulation of theory.

The present method was applied to the Open/Closed book data (Mardia, Kent, Bibby, 1979). The data cover 88 students who took examinations in the five area subjects namely mechanics, vector, algebra, analysis, and statistics. The examinations of the five subjects were administered using a closed book and an open book method. A two-factor model is assumed and the canonical factor analysis was applied based on the correlation matrix.

The results showed that the two individuals No. 82 and 75 are the most influential among the 88 observations. It was observed that omission of these two observations is not small and influence appears mainly in the loading and communalities of the two subjects, that is in variable 1 (mechanics) and variable 2 (vector).

Considering the whole data set, the study revealed that there are two factors extracted namely: "Closed book test: and "Open book test". Omission of these two observations resulted to a vague structure, which suggest that the two individuals play important role in the analysis. **(Author's abstract)**

Keywords: *Influential observations, Canonical factor analysis, Euclidean norm, Cholesky decomposition, Unique variance matrix, Common variance matrix*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0021

Detection of paralytic shellfish poisoning (PSP) toxins in Philippine Mussel Samples by electrospray mass spectrometry

Floresca, Ma. Christina Grace Z., Abad, Barbara Michelle, Amora, Tabitha, Lim, Mary Angelica, Marquez, John Paulo

The occurrence of toxic red tide outbreaks is an environmental and public health hazard in the Philippines. Thus, it is necessary to develop monitoring programs to protect the shellfish industry and the general public. Previous methods for the detection of paralytic shellfish poisoning (PSP) toxins make use of mouse bioassays and /or fluorescence detection through High Performance Liquid Chromatography (HPLC). The mouse bioassay, while cheap and rapid, requires a large amount of sample, and is capable of detection of toxin concentrations that are already near the

regulatory limit. Fluorescence HPLC analysis of derivatized PSP samples is destructive and is not sufficiently reproducible. We report a new procedure for the rapid detection of components of samples contaminated by Pyrodinium bahamense var compressum using a combination of reverse-phase HPLC and electrospray mass spectrometry. The procedure is fast and requires minimal amounts of sample, so that purified toxins need not be derivatizated as a prerequisite for its detection. In addition, results from this study complement earlier findings that the main toxic components of Philippine toxic red tide are neosaxitoxin, decarbamoylsaxitoxin, and gonyautoxin. **(Author's abstract)**

Keywords: *Saxitoxin (STX), Paralytic shellfish poisoning (PSP), Red tide monitoring*

The Manila Journal of Science, Volume No. 4 Issue No. 1, 38-44
(Filipiniana Analytics)
Fil(S) Q1 M314 4/1 2001

0022

Determination of all elementary nafil loops of order 7

Layno, Renilda S.

The study of NAFILs *(non-associative finite invertible loops)* is a new frontier in the theory of loops and quasigroups. This is a class of loops that includes the familiar IP, Moufang, and Bol loops which are involved in such diverse fields as finite geometries, combinatories, and theoretical physics. Not much is known about other interesting loops in this class like the *elementary* NAFILs (loops with no non-trivial subsystem).

This paper deals with the study of elementary NAFIL loops of small order. In particular it presents studies on the determination of all elementary NAFIL loops of order n = 7 using the software FINITAS. This software was developed as a tool for the analysis and construction of finite algebraic structures.

The results shoe that there are exactly 2,333 NAFIL loops of order n = 7 out of which 16 are abelian and 2,317 are non-abelian. Out of the 16 abelian NAFILs, 8 are elementary. Of the 2,317 non-abelian elementary NAFILs, exactly 681 have one self-inverse element. To date we have determined about 176 non-abelian elementary NAFILs of order 7. Most of these elementary NAFILs have Cayley table that are full permutations. Moreover, many of these have no known loop properties like IP (inverse property), AP (alternative property), CIP (cross inverse property), etc. The search for other elementary NAFILs of order 7 is still continuing. **(Author's abstract)**

Keywords: *Loop, Non-associative, Invertible, NAFIL, Elementary, FINITAS*

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(Filipiniana Analytics)

Fil(S) Q149. P5 N25 v.23 2001

0023

Developing a Windows® 2000 serial driver for bluetooth™

Ballesteros, Janice M., Borres, Mabeth M., Botardo, Lucelle C., Caccam, Anne Margrette Q., Galang, Jr., Bienvenido H., Pucyutan, Billy S.

Developing applications over Bluetooth™ requires a device driver to enable communication with the Bluetooth™ host controller. A device driver is a software component that provides input and output services between peripherals and the Host Operating System. This paper describes the development of a serial device driver for Bluetooth™ in the Windows® 2000 platform. This is in line with the Advanced Science and Technology Institute's effort in developing a Bluetooth™ Host-side protocol stack. **(Author's abstract)**

Keywords: *Bluetooth TM, WindowsÂ® 2000, Device driver, Operating system*

Philippine Journal of ICT & Microelectronics, Volume No. 1 Issue No. 2, 28-31
(Filipiniana Analytics)
Fil(S) T7800 P535 1/2 2002

0024

Development of a cellular automata modeling tool on a cluster computer

SaldaÃ±a, Rafael D., Yu, William Emmanuel S.

A cellular automaton (CA) is defined as a discrete dynamical system, where space, time, and the states of the system are discrete and have the following properties:

(1) Space is represented by a regular lattice in one, two, or three dimensions.

(2) Each site, or cell, in the CA lattice can be in one of a finite number of states.

Using the C programming language and the Local Area Multicomputer Message Passing Interface (LAM-MPI) parallel computing environment, we developed a CA modeling and simulation tool on a cluster computer consisting of eight compute nodes.

The toolkit integrates four standard CA algorithms, namelyL (1) Game of Life, (2) Greenburg-Hastings, (3) Cyclic-Space, and (4) Hodgepodge Machine.

The developed modeling and simulation tool can be used to demonstrate the following complex phenomenal artificial life forms, neuron excitation, spread of diseases, and wave propagation in excitable media. **(Author's abstract)**

Keywords: *Cellular automata, Cluster computer, Parallel computing, Excitable media, Modeling and simulation*

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Issue No. , 358
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0025

Development of DNA extraction protocols for forensic applications

Paraguison, Rubigilda, Altea, J., Penaranda, M., Miranda, Jasmin Jiji

Whole blood and body fluids such as saliva and urine are the samples of choice in routine human DNA testing. In forensic casework however, samples may be hard material e.g. bones and teeth, or archival samples e.g. paraffinized or formalin-fixed tissues. This work involved the development and optimization of DNA extraction protocols that may be used when processing these alternative materials. Using simulated casework, a protocol consisting of (1) decalcification in EDTA for bones and teeth or deparaffinization in xylene for embedded materials; (2) proteinase K and lysozyme treatment; (3) organic solvent extraction; and (4) salting-out and isopropanol precipitation, was optimized to give high-quality DNA extracts that are amenable to PCR-based typing and RFLP analysis. Typically, the whole procedure can be completed in 2 days and cost of extraction is estimated at less than P20/sample. This procedure is a feasible and efficient alternative to expensive kit-based extraction methods. **(Author's abstract)**

Keywords: *DNA extraction, Forensic science, Human DNA testing, Molecular genetics*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 332
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0026

Development of genetically enhanced open pollinated varieties (GEnOPVCoco) of Coconut (*Cocos nucifera* L.)

Santos, G.A.

Knowing the disadvantages of the farmers' practice of using F_2s, research for high yielding open pollinated varieties or OPVs using plant-breeding method apart from mass selection, reciprocal recurrent selection and progeny testing is needed. Breeding for a synthetic or a composite variety is an approach that has been proposed a long time ago in India and Sri Lanka.

Unfortunately, the success of hybrid varieties in coconut suppressed the interest in other methods of breeding and relatively little or no attention has been given to the development of synthetic or composite varieties.

In Philippine Coconut Authority (PCA), the possibility of producing a synthetic coconut variety was initiated in 1979 with the establishment of selfed lines (S1) of Laguna (LAG) and Bago-Oshiro (BAO) tall coconut populations at the Zamboanga Research Center (ZRC). It was hypothesized that the allogamous nature of tall coconut varieties makes them suitable parents for a "synthetic variety".

The paper discusses the principal and technical merits and disadvantages of this approach to achieve a more suitable type of high yielding planting materials for small coconut farmers. It also presents new data on the performance of the hybrid parents as well as the new directions being followed in the light of fresh evidence obtained from the application of DNA technology. **(Author's abstract)**

Keywords: *Synthetic variety, Composite variety, Mass selection, Progeny testing, Reciprocal recurrent selection, Hybridization*

The Philippine Journal of Coconut Studies, Volume No. 32 Issue No. 1-2, 57-72
(Filipiniana Analytics)
Fil(S) SB401 C6 P5 32/1-2 2007

0027

An economic review on the productivity and profitability of the two Philippine coconut tall varieties: Laguna and Baybay Talls

Magat, S.S., Canja, L.H.

Two known tall varieties of coconut in the country were considered in this analytic work to generate indicative information and knowledge on the productivity and production economics in growing tall coconut varieties. These are Laguna Tall (LAGT) and Baybay Tall (BAYT) grown at the genetic blocks of Zamboanga City, which is a coastal-flat area of Western Mindanao and an intermediate growing zone of coconut. The data from establishment, maintenance and yield for the first 15 yr from field-planting (FP) were used in this simple production economic analysis, a practical tool for decision-making in coconut farming.

Between the two coconut tall varieties evaluated, Baybay Tall has consistently demonstrated its high yields and its highly desirable attributes than the traditional Laguna Tall variety. BAYT had an earlier initial harvest of 6 yr compared to 7 yr of LAGT. It is also generated higher gross return, net returns, benefit-cost ratio (BCR) of 1.66-4. 12 vs 1.05-3.30 for LAGT, and earliest break-even year (BEY) of 9 yr vs. 14 yr at a copra price of P14/kg. Based on the results, BAYT deserves more attention in terms of profitability; suggesting more planting materials should be grown in coconut farm locations similar to conditions of intermediate growing zone of coconut.

Implications in coconut planting/replanting, palm productivity and profitability as influenced by the different planting materials are discussed with respect to policies in coconut industry development. (PhP 49 = 1 US$) **(Author's abstract)**

Keywords: *Coconut production, Coconut palms, Tall variety, Replanting, Coconut productivity, Economic profitability, Nuts, Copra yield*

The Philippine Journal of Coconut Studies, Volume No. 32 Issue No. 1-2, 23-39
(Filipiniana Analytics)
Fil(S) SB401 C6 P5 32/1-2 2007

0028

Effect of grass type and cattle grazing on soil compaction in the upper talavera river basin

Sims, Bruce D.

The study was conducted in the Upper Talavera watershed in Nueva Ecija to investigate the interrelationship of grass type, cattle grazing, and soil compaction on range land.

The data indicated that ungrazed areas of *Themeda triandra* Frosk. (2.43 kg/cm^2) and *Imperata cylindrica* (Linn) Beauv (1.30 kg/cm^2) were substantially less compacted than overgrazed areas of *Themeda* (3.48 kg/cm^2) and *Imperata* (4.03 kg/cm^2). The data also indicated that the ungrazed *Themeda* was more compacted than the ungrazed *Impreta*. In addition, the pocket penetrometer appeared to give good results with a minimum of effort and could easily be used by land managers to help determine proper grazing capacities. **(Author's abstract)**

Keywords: *Themeda triandra Frosk, Imperata cylindrica (Linn.) Beauv*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 53-55
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0029

The effect of using pelletized media on a-amylase production by solid-state fermentation in an aerated packed-bed bioreactor

Arquiza, Apollo C., Jose, Wilfredo I.

Biotransformation processes, when compared to their chemical counterparts, offer the advantages of high selectivity, mild operating conditions, and the use of a wide variety of inexpensive raw materials (e.g. agricultural wastes). Most industrial fermentation use the submerged fermentation process (SmF) but another technique, solid state fermentation (SSF), is

considered as a promising alternative for some biotransformation processes because of its advantages over SmF.

The study investigated the effect of using palletized media on the performance of an SSF system, particularly on an aerated packed-bed bioreactor. The SSF utilized *Aspergillus oryzae* grown on a rice bran-cassava starch medium (10:1 mass ratio) to produce a-amylase. The palletized medium had an effective diameter of 5 mm compared to less than 0.833 mm for the unpelletized one. The column bioreactor used had a diameter of 100 mm and a bed height of 165 mm (total bed volume of 1.3 dm^3). at an aeration rate of 1.20 vessel volume per minute (vvm) and 84 hours fermentation time, the palletized medium gave a yield of 589 dextrinizing unit (DUN)/(g dry medium) compared to 179 (DUN)/(g dry medium) for the unpelletized medium at the same conditions. Compared to that reported for SSF in static trays, the palletized medium gave 6.52 greater value. At 3.40 vvm aeration rate, the yield (palletized medium) was 611 DUN/ (g dry medium), which was 1.55 times that for the unpelletized medium and 6.76 times that for trays.

The effects of aeration rate and length of fermentation were further investigated for the palletized medium. The results show that the yield of á-amylase did not vary significantly (a=5%) for aeration rates of 1.20, 2.06, 2.81, and 3.40 vvm. A fermentation time of 120 h produced an á-amylase yield taht was 60% greater than that for 84 h. **(Author's abstract)**

Keywords: *Solid-state fermentation (SSF), Packed-bed, Bioreactor, Palletized, Aspergillus oryzae, Aeration, A-amylase, Enzyme, Heat transfer, Rice bran*

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Issue No. , 360
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Fil(S) Q149. P5 N25 v.23 2001

0030

Effectivity of EMLA cream for intradermal skin testing in children.

Cabaluna, MJ, Koh, MLJ, Sumpaico, Madele

To determine whether EMLA cream affects the wheal and flare response and also reduce pain perception during intradermal skin testing, twenty 5 to 7 year old boys with allergic rhinitis and bronchial asthma were studied.

EMLA cream was applied randomly either on the left or right arm and placebo on the other arm. The test areas were occluded for an hour then injected intradermally with both histamine and phosphate buffered saline. Skin reactivity was measured as wheal and flare diameter (in mm). The subjects were requested to point out their pain perception using a Faces of Feeling Scale. Paired t-test analysis of skin reactivity showed no significant difference in the wheal diameter response to histamine (p=0.6) and saline (p=0.6) in areas with EMLA compared to

placebo. There was also no significant difference in flare diameter response to histamine (p=0.4) and saline (p=0.6). Wilcoxon matched pairs signed ranks analysis of pain perception showed significant reduction (p=0.001) of pain in areas with EMLA compared to placebo.

EMLA cream does not affect skin reactivity to histamine and saline and also reduces pain during intradermal skin testing in children. EMLA may be an option to children who are unduly distressed by intradermal skin testing. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 43-50
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0031

The effects of dissolved acetate salts on the vapor-liquid equilibria of the ethanol-water mixtures

Saquing, Carl D., Remoroza, Alvin I., Arquiza, Apollo C., Bugante, Elizabeth

The effects of the potassium acetate and sodium acetate at 10% and 15% concentrations on the vapor-liquid equilibria (VLE) of the binary ethanol-water mixture were studied at atmospheric pressure using a modified Othmer still. Calibration using the ethanol-water mixture was done to check the reliability of the VLE apparatus on VLE determination. The results showed that the measured VLE data are closed to published data.

The VLE data of the ternary mixtures of ethanol, water and salt were measured using the calibrated apparatus. Samples were collected at different temperatures ranging between the boiling points of pure ethanol and pure water, and were then analyzed by gas chromatography. Data showed that the addition of the two salts broke the ethanol-water azeotrope at all salt concentrations exept for sodium acetate at 10%. The addition of acetate salts increases the relative volatility of ethanol from 5 up to about 77, and the increase becomes higher as the salt concentration increases. Between the two salts, the increase in relative volatility is higher with potassium acetate than sodium acetate may be explained by the stronger interaction of the former with water as indicated by its higher solubility in this solvent.

Moreover, activity coefficients (ã) of the liquid samples were calculated from the experimental data and results manifested that the system with dissolved salts have higher ã than that of no-salt system. At one particular composition, the ã changed from 4.7 to 27.2. Thermodynamic consistency tests were performed on the data and were thermodynamically correlated using Wilson and NRTL activity coefficient models. Both models show good fit, but the Wilson model appears to be superior. **(Author's abstract)**

Keywords: *Vapor-liquid equilibria (VLE), Sodium acetate, Potassium acetate, Azeotrope, Azeotropic distillation, Extractive distillation, Relative volatility, Activity coefficient, Entrainer, Ethanol*

Transactions of the National Academy of Science and Technology Philippines, Volume No. Issue No. , 363-364
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0032

Effects of light quality and duration on the germination of anthocephalus chinensis rich. ex walp. seeds

Quintos, M.M., Sandoval, L.D., Dela Cruz, R.E.

The effects of different light quality and exposure time on the germination of Kaatoan bangkal, *Anthocephalus chinensis* Rich. ex. Walp., seeds were studied. Seeds were exposed to four light-quality treatments: white, red, yellow, and blue lights. Seeds exposed to white and red lights gave significantly higher germinations (78% and 73%, respectively) compared with those exposed to yellow (59%) or blue (0%) light. Blue light significantly inhibited germination. Transferring the seeds exposed to blue light to 12-hour while light significantly reversed the inhibition process giving 53% germination. Other seeds were exposed to continuous white light, 12-hour white light and 12-hour dark periods, and continuous dark conditions for 20 days. Seeds exposed to 12-hour light and 12-hour dark periods gave higher germination (72%), than those seeds exposed to either continuous lught (13%), or continuous dark (1%). Seeds exposed to either continuous light or dark treatments, when transferred to 12-hour light and 12-hour dark periods significantly increased germination to 67% and 55% respectively. **(Author's abstract)**

Keywords:

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 44-46
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0033

Effects of soil moisture stress on the shoot growth of anthocephalus chinensis rich ex. walp. and albizia falcataria (L.) fosb.

Fernando, E.S., dela Cruz, R.E.

The effect of soil moisture stress on the shoot growth of seedlings of Kaatoan bangkal, *Anthocephalus chinensis* Rich. ex. Walp., and Moluccan sau, *Albizia falcataria* (L.) Fosb., was

studied. Moluccan sau seedlings exhibited a more rapid rate of shoot growth at 90 percent of field capacity and Kaatoan bangkal at 70 percent. Inhibition of shoot growth was greater in Moluccan sau than in Kaatoan bangkal under all levels of soil moisture stress. **(Author's abstract)**

Keywords: *Water relations, Drought tolerance*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 66-67
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0034

Effects of temperature and moisture content on tensile strain at fracture in the tangential direction of Northern red oak and aspen

Bello, Emmanuel D.

The tensile strains at fracture in the tangential direction of northern red oak were about 3/10 to 7/10 of that of aspen. Within the moisture content range from 6 to 18% and temperature range from 80^{o} to 170^{o}F, the fracture strain of aspen increased linearly with either increasing temperature or moisture content. In the case of northern red oak, the relationship of this property with either of the two factors followed a quadratic curve. For both, a significant interaction between moisture content, within the hygroscopic range, and temperature was also present, denoting that the effect of temperature was intensified as moisture content increased below the fiber saturation point.

The two relationships of fracture strain with moisture content over the entire hygroscopic range at a constant temperature followed complex sigmoid curves. **(Author's abstract)**

Keywords:

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 6-13
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0035

Effects of wood preservative concentration in glue formulation on plywood bond quality

Binoya, R.G., Casilla, R.C., Tesoro, F.O., CariÃ±o, H.F

An investigation on the effect of varying acid copper chromate (ACC) wood preservative concentrations in glue formulations on the bond quality of red lauan (*Shorea negrosensis* Foxw.)

plywood using urea formaldehyde and resorcinol-phenol formaldehyde resins was conducted. increasing amounts of preservative in the glue mix correspondingly decreased bond strength. Preservative concentrations used were 2.5, 3.75, 5, and 6.25% based on the weight of the resins. **(Author's abstract)**

Keywords:

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 47-52
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0036

Emergency room utilization by adolescents at the Philippine General Hospital

Dawis, Ma. Agnes Chaluangco, Hipolito-Nancho, Rosa Ma

The emergency room utilization by adolescents was determined by review of data. A total of 1,318 patients, 760 males and 558 females, consulted from January 1 to March 31, 1995, comprising about 22% of the total pediatric consults. Male consults were higher than female consults for all age groups. Injury (42.3%) and pain (21.8%) were the most common chief complaints. Consults related to risk-taking behavior were about 50% of the total adolescent consult and included injury (42.3%, n=557), pregnancy (5.9%, n=78), substance ingestion (1.9%, n=25) and substance abuse (<1%, n=1). Sixty-eight percent of cases seen were sent home while 23% were admitted. Forty percent of the study population (n=480) had good compliance to follow-up. Physicians should emphasize the need for follow-up where adolescents can be evaluated thorouhhly and where the issues beyond their medical complaints can be addressed. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 33-41
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0037

Extraction of essential oil from *Pogostemon cablin* BENTH (Patchouli) leaves using supercritical carbon dioxide

Navidad, Suzeth V., Malaluan, Roberto M.

The supercritical carbon dioxide extraction of patchouli oil was studied using air-dried patchouli leaves as raw materials at temperatures 35^{o}C and 40^{o}C and pressures of 80, 100 and 120 atm. The percentage oil yield at 35^{o}C at pressures of 80, 100 and 120 atm averaged 4.86,

6.25 and 8.81%, respectively. At 40°C at the same pressures, the yields averaged 4.92, 7.15 and 8.93%, respectively. The conventional steam distillation process used by Pilipinas Kao Inc. yields only between 1.3 to 1.8% from air-dried samples of patchouli leaves.

Colors of the supercritical carbon dioxide extracts were yellow. The intensity of the color however, increased as temperature and pressure were increased. The extract obtained at 40°C and 100 atm was considered good since no waxy substances were obtained under said conditions.

The refractive index of the supercritical carbon dioxide extract at 40°C and 100 atm was 1.37192 and that from the steam distilled extract was 1.50840.

Gas chromatographic analyses were done for the different SC-CO_2 extracts and the extract from the steam distillation process. Chromatograms from SC-CO_2 extracts showed a few peaks while that of the steam distilled-extract showed many peaks. The presence of several peaks in the latter extract indicates the formation of other components due to thermal degradation.

The percentage oil yield at 40°C and 100 atm was 7.15%. This condition was chosen to be the best among other conditions because it was at this temperature and pressure that no waxy substances were observed.

The conditions of 40°C and 100 atm produced percent oil yield of 7.15% without any waxy substances. Thus, these conditions were chosen to be the best among the conditions tested. **(Author's abstract)**

Keywords:

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0038

Floral biology of amherstia

Garcia, Mercedes U.

A study was conducted to observe the biology of the flower of Amherstia, *Amherstia nobilis* Wall, at the College of Forestry campus, College, Laguna. Different methods of hand pollination employed were not successful. The test for natural pollination showed an 18.18% success. Iodine Test revealed a 24% pollen sterility. Ten percent sucrose was best for germination of *Amherstia* pollen in the dark with 21% success. The use of 5 ppm gibberellic acid *in vitro* germination showed a cytological manifestation of enhanced pollen tube growth. Fixed styles revealed germination of pollen but the pollen tubes did not penetrate the stylar tissues longer than 355 u within 48 hours. Pollen failed to germinate in pistillate extract even up the 4th hour observation.

The use of 200 ppm gibberellic acid in pollination was able to break an initial barrier to fertilization. Six big seeds were obtained and one germinated. **(Author's abstract)**

Keywords: *Pollination, Flower fertilization*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 26-35
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0039

Frequency of glucose-6-phosphate dehydrogenase deficiency mutations among Filipino newborns detected by newborn screning

Padilla, Carmencita D., Cutiongco, Eva Maria C., Shirikawa, Taku, Nishiyama, Kaoru, Abaya, Christian Eric S., Matsuo, Masfumi

A newborn screening pilot study on glucose-6-phosphate dehydrogenase (G6PD) deficiency was conducted among Filipino newborns using the Formazan method on dried blood spots. Results revealed a G6PD deficiency incidence of 3.6% among newborns screened. A red cell based quantitative enzyme assay was used to confirm screen positive cases for G6PD deficiency. Among the confirmed G6PD deficiency cases, multiplex polymerase chain reaction (PCR) using multiple tandem forward primers and a common reverse primer (MPTP) was used to detect for previously reported common mutations in exons 5, 9, 11 and 12 of the G6PD gene. The DNA of 200 Filipino newborns with G6PD deficiency were analyzed and results showed 169 or 84.5% had detectablemutations while in 31 or 15.5% of the samples, no mutations in exons 5, 9, 11 and 12 could be detected. The most common mutations was the G to A transition on nucleotide 871 (Viang Chang) of exon 9 in combination with a silent mutation on exon 11 accounting for 33.7% of the cases. This was followed by the C to T transition on nucleotide 1360 (Union) in 21.3% and silent mutations on nucleotide 1311 in 15.4% of cases both mutation were found on exon 11. Other mutations include 383 T '! C (Vanua Lava) in 10%, 100 G '! A (Chatam) in present 9.5% and 1376 G '! T (Canton) in 3.6% of the newborns. There were combinations of these mutations present in a minority of cases. Results of this study show the molecular heterogeneity underlying G6PD deficiency among Filipino newborns. **(Author's abstract)**

Keywords: *G6PD deficiency, Formazan method, Multiplex PCR, MPTP*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0040

Genetic diversity among natural populations of giant honeybee (*Apis dorsata* F.) in the Philippines

Merca, Anna E., Laude, Rita P., Tandang, Rosalina N.

SDS-PAGE and morphometric analysis was done to determine the diversity between two populations of the giant honeybee from Jubileeville, Bay, Laguna and Forestry Campus, UPLB, College, Laguna, Philippines. A total of five protein bands of high molecular weight were present in both population. Band 1, 2, and 3 were present in both population 1t 100%. Band 4 was present in both the Jubileeville bee population, and Forestry bee populations at 100% and 85%, respectively. Band 5 had the lowest frequency of occurrence of 20 and 40% in the Jubileeville and Forestry giant honeybee populations, respectively. A total of three protein band patterns (BP) were observed. These were BP-A, with bands 1, 2, 3, 4, and 5: BP-B with bands 1, 2, 3, and 4; and BP-C with bands 1, 2, and 3. BP-A and BP-B was common to the two populations while BP-C was observed only in the Forestry population. The Jubileeville population had a high similarity index (SI) of 80-100% while the forestry samples gave a SI of 60-100%. The two populations exhibited an average SI of 71%. Morphological measurements showed that the twopopulations were separate from each other by clustering into two separate groups based on location. The only body part that can possibly distinguish the two populations from each other was the distance of the wax mirror. It may be concluded that the populations are highly similar to each other both morphologically and biochemically based on protein composition. **(Author's abstract)**

Keywords: *Honeybee, Apis dorsata, Genetic diversity, Protein profile, SDS-PAGE, Electrophoresis , Similar index, Morphometric analysis, Principal component analysis*

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Issue No. , 325
(Filipiniana Analytics)
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0041

Hydrothermal synthesis and characterization of an akaganeite-type iron oxide octahedral molecular sieves

Nicolas-Tolentino, Elaine, Alfornon, Pamela

Iron oxide octahedral molecular sieve with 2x2 tunnel, designated as FeOx-OMS (2x2) was successfully synthesized by hydrothermal method. FeOx-OMS (2x2) has high degree of purity and higher thermal stability than those of previously reported akaganeite type materials. The X-ray powder diffraction (XRD) pattern shows peaks that are characteristic of pure akaganeite-system. Based on its TGA profile, its thermal stability is reported up to 255^{o}C, and beyond 402^{o}C, new phases are formed which is a mixture of hematite and magnetite based on its XRD pattern. The SEM result shows needle-like morphology that is typical of a tunnel structure. **(Author's abstract)**

Keywords: *Hydrothermal, Akaganeite, Octahedral molecular*

The Manila Journal of Science, Volume No. 4 Issue No. 1, 1-10
(Filipiniana Analytics)
Fil(S) Q1 M314 4/1 2001

0042

Hydrothermal synthesis (by direct dissolution and via transformation of layered precursor) of an akaganeite-type iron oxide octahedral molecular sieve

Nicolas-Tolentino, Elaine, Alfornon, Pamela

Iron oxide octahedral molecular sieve with akaganeite-type structure (2x2 tunnel), designated as FeOx-OMS (2x2) was successfully synthesized by hydrothermal method. The prepared FeOx-OMS (2x2) has high degree of purity based on X-ray powder diffraction (XRD) analysis and higher thermal stability than those of previously reported akaganeite-type materials. Thermal gravimetric analysis shows that the material is thermally stable up to 255^{o}C in nitrogen atmosphere. At temperatures higher than this, the structure collapses and at 402^{o}C, a new phase is formed which is hematite-magnetite based on its XRD pattern. The scanning electron microscopy (SEM) analysis reveals needle-like morphology which is a common characteristics feature of tunnel structures.

Synthesis of the akaganeite-type material via the transformation of a layered, lepidocrocite-type material, reffered to as 1-FeOx-L2 to the tunnel structure is reported. This is the first successful conversion of a layered iron oxide as a precursor to a tunnel material. SEM micrographs further support this transformation as the plate-like morphology of 1-FeOx-L2 turned into needles. Thermal stability, however, of this material is much lower (195^{o}C) than that prepared via direct dissolution using the hydrothermal method. **(Author's abstract)**

Keywords:

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0043

A hypothetical perpetual motion machine of the second kind

Viray, Arnold M.

A perpetual motion machine of the second kind is an impossibility, according to the second law of thermodynamics. The machine refers to a continuously operating device that extracts heat from a reservoir at a particular temperature and then converts this heat completely into work. Its impossibility rests on the assumption that a heat-to-work conversion requires a temperature difference.

Any device for converting heat into work is called a heat engine, whose operation involves, typically, the following:

1) a high-temperature reservoir at absolute temperatures T_1 supplies heat to the engine

2) a portion of the inputted heat is convertd by the engine into work

3) the remaining heat is exhausted to a low-temperature reservoir at absolute temperature T_2.

How efficiently the conversion takes place is a function of the temperatures of the two reservoirs:

$$^{e}\max = {}^{1 - T_2/T_1}$$

This equation, which defines the maximum thermal efficiency, affirms that assumption on which the second law depends; i.e., a heat-to-work conversion requires a temperature difference. Thus, if we are to harness the heat content, say, of the atmosphere at 300 K in order to operate a conventional heat engine, we must provide another reservoir at a sufficiently lower temperature.

Such a requirement, however, is by passed in the following hypothetical heat engine-in essence, a multimicrogenerator system activated by spontaneous pressure fluctuations arising from the intrinsic random molecular motion of the gaseous substance.

For the derivation of this second-circumventing-technological-possibility, three principles are relied mainly upon: Brownian motion, electromagnetic induction and energy conservation. **(Author's abstract)**

Keywords: *Hypothetical perpetual motion machine*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 359
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

The identification and application of a yeast lipase for the bioorganic synthesis of (S+) – aryl propionic acid from racemic precursors

Andaya, Elleanor Rio C., Peralta, Milagros M., Revilleza, Ma. Jamela R.

The move to go in the direction of single isomer synthesis is gaining popularity since this will result in greater efficacy, faster relief and reduced toxicity. The present study aimed to identify an approach to synthesize single enantiomerchiral aryl porpionic acid, ibuprofen, a model compound for non-steroidal anti-inflammatory drugs through a process known as enzymatic kinetic solution.

Four strains of *Candida*, the species first reported in the literature to exhibit enantic selectivity in bioorganic reactions, were screened for hydrolase activities. An extracellular lipase from *Candida clausenii* exhibited the highest lipase activity of 312 U/mg and was chosen for the study. Production of the crude enzyme was optimiezed at pH 6.5 and 40oC. The enzyme was partially purified through DEAE anion exchange chromatography, eluting at 0.2 M NaC1. This resulted in an 11 fold increase in lipase specific activity when compared to the crude extract. SDS-PAGE analysis of the fraction indicated the presence of two protein bands at 59 and 67 kD, respectively. When used to catalyzed hydrolysis of the synthetic ibuprofen budy ester, an apparent S(+) enantioselectivity, due to production of S(+) acid, was observed after HPLC analysis of the hycrolysales on a chiral column, S, S-Whelk-01 chiral column. With methyl ester as substance, no products resulted. The crude extract also showed preference for the S(+) enantiomer, the fast acting desired isomer, but peak intensity was low compared to the 0.2 M fraction, emphasizing the importance of protein purification to select for the isoform that acts on the desired substrate. **(Author's abstract)**

Keywords: *Lipase, Yeast, Enantioselectivity, Enantiomer, Chiral*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 378-379
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0045

Idiopathic scoliosis among female Filipino school-children

Gonzalez-Paso, Maria Victoria SG., Agrasada, Ma. Gracia V.

GENERAL OBJECTIVE:

To determine the prevalence of idiopathic scoliosis

SPECIFIC DESIGN:

1. To screen female Filipino schoolchildren ages 9-13, by physical examination and document scoliosis through referral to an Orthopedic surgeon and radiologic examination.

2. To determine the demographic characteristics of the disease; curve severity, curve pattern, measure the heights and weights of the subject, onset of menarche and family history.

STUDY DESIGN:

Descriptive-survey.

RESULTS:

A total of 637 subjects from Malate Catholic School were screened, 23 (3.61%) referred to the Orthopedic Surgeon. All 12 (1.88%) subjects who complied for xray were found positive. More than 65% were taller than the average Filipino weight (50th percentile).

Six (50%) had menarche with mean age of onset of 11 years 2 months Tanner's staging: 6(50%) Tanner's 1,5 (41.67%) Tanner's^2 and 1 (8.33%) Tanner's 3. Five (41.67%) had positive family history for scoliosis.

Curve patterns based on King's classification: Type III, 8 (66.67%), right-sided. All curves fell below 20 degrees.

Risser's staging: Risser O, 5(41.67%), Risser 2, 1 (8.33%) Risser 3, 2 (16.67%), Risser 4, 3(25%) and Risser 5, 1 (8.33%).

Idiopathic Scoliosis among Female Filipino Schoolchildren. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 51-58
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0046

Incidence of urinary retention necessitating maneuvers in patients with indwelling foley catheter for seven days or less among patients at the medical intensive care unit

Buitizon, Rodel R.

Urinary retention is the inability to empty the bladder. It may be acute or chronic. Acute urinary retention is a medical emergency requiring prompt action such as insertion of a urethral catheter.

The objective of this study is to determine the incidence of bladder retention necessitating maneuvers that will induce urination in patients with indwelling foley catheter for seven days or less in an intensive care unit setting.

There were a total of 125 patients who were included and observed in this study. The primary inclusion criterion was seven days on indwelling catheter. Nine out of 125 patients or 7.2% experienced urinary retention. There was a significant association noted between age and urinary retention but no association noted between sex and urinary retention. There was a significant difference in the number of days with catheter on subjects with or without urinary retention.

The study showed that out os 125 patients who were included in this study, only nine patients (7.2%) had urinary retention. The predictive factors for the occurrence of urinary retention in catheterized patients include: ages of $\geq$ 80 y/o and > 4 days on indwelling catheter. The gender as well as the primary illness has no association with the occurrence of urinary retention. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 43 Issue No. 1, 2-5
(Filipiniana Analytics)
Fil(S) Q181 P56 43/1 2010

0047

Infectious mononucleosis in children

Ero, Lyzeil P.

Objective: To be able to identify cases of Infectious Mononucleosis and be able to differentiate it from other common illnesses.

Design: Case Report

Setting: Department of Pediatrics

Case Summary: A case of 13 year old, female, admitted due to fever and enlarged right lateral neck mass. The mass was noted 2 weeks prior to admission as firm, movable, non tender, non-erythematous and no probable site of insect bite. No other signs and symptoms noted like fever, difficulty in swallowing, and difficulty of breathing. No consult was done, no medications were taken. Decreased appetite was also noted one week prior to admission Methissoprinol an immuno-stimulant and paracetamol for fever were given during consultation. It was persistent

and fever became high grade. Mass was noted to be enlarged, thus admission. Patient presented with generalized lymphadenopathy hepatomegaly, persistent fever and pallor. Initial diagnostic evaluation also leads to malignancy. Further evaluation was done. Bone marrow aspiration was done revealing normal result. Other manifestations compatible with infectious mononucleosis appear in the latter part of the disease; It has a high result of EBV VCA IgM, one test to determine presence of infectious mononucleosis.

Described above was the atypical presentation of Infectious mononucleosis and probably happens elsewhere and left undiagnosed.

Conclusion: This case is reported because a lot of Infectious Mononucleosis cases were left undiagnosed and presentation may confuse with other illnesses. Understanding its presentation may help us physician to choose what diagnostic evaluation to request. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 43 Issue No. 1, 17-20
(Filipiniana Analytics)
Fil(S) Q181 P56 43/1 2010

0048

An integral-momentum analysis of the laminar boundary layer along a rectangular corner
Liongson, Leonardo Q.

An integral-momentum analysis is applied to the problem of the laminar boundary layer along a rectangular corner. It involves an assumed self-similar velocity profile defined by functions with prescribed properties. Two case examples are provided. Reasonably good agreement is obtained between the results of the present study and the available numerical solution of previous workers on the problem. **(Author's abstract)**

Keywords:

Philippine Engineering Journal, Volume No. 5 Issue No. 2, 120-131
(Filipiniana Analytics)
Fil(S) TA4 P532 5/2 1984

0049

Interaction of *Anthocephalus chinensis* (lank) rich. ex. walp and *Albizia falcataria* (L.) Fosb.
Zabala, Neptale Q.

Kaatoan bangkal, *Anthocephalus chinensis* (Lank.) Rich & Walp., and Moluccan sau, *Albizia falcataria* (L.) Fosb, trees were planted in pure and mixed stands to determine differences between mixed and pure stands of the same species in terms of growth and damage by destructive agencies.

Results showed that mixing the two species had no advantage over pure stands of the same species in terms of both volume growth and survival. Insect infestation was very light, and no difference was observed between species or between pure and mixed stands. More Moluccan sau trees were broken and wind-thrown than Kaatoan bangkal trees. **(Author's abstract)**

Keywords: *Kaatoan bangkal, Moluccan sau*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 1-5
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0050

Isolation, purification and partial characterization of cocosin: The coconut 11S globulins

Garcia, Roberta N., Tecson-Mendoza, Evelyn Mae, Baldiviano, Perla F., Laurena, Antonio C.

The major protein of the coconut endosperm is cocosin, one of a large clas of seed storage proteins known as 11S globulins. This study aimed to isolate, purify and characterize the cocosin, an essential requirement in cloning and characterizing its gene.

Cocosin was isolated and purified by salt extraction (0.35 NaC1), Fast Protein Liquid Chromatography (FPLC)-gel filtration using Hiload 26/60 Superdex 200™ column and FPLC-anion exchange chromatography with RESOURCE Mono Q™ column, The native molecular weight of cocosin was estimated to be 326000. Electrophoretic analysis revealed one set of 2 closely migrating bands at approximately 34,000 (acidic polypeptides) and another set of 2 bands at 24000 (basic polypeptides). Each set consisted of one darkly stained band and one lightly stained band. Preliminary N-terminal amino acid sequencing of the 34kD protein band gave the following sequence. SVRSVNEFRXE.

Cocosin was readily extracted by 0.35 nM NaC1. In the absence of â mercaptoethanol, the 55kD band representing the complexed subunit species was heavily stained indicating the presence of disulfide linkages in the molecule. All the bands tested positively for the presence of carbohydrate moieties using periodic acid-Schiff's reagent. Quanti-Scan analysis showed that cocosin comprised 80% of the total globulins. **(Author's abstract)**

Keywords: *Coconut, 11S globulins, Cocosin*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 380
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0051

Kinetic and parametric study on enzymatic aqueous extraction process of pili kernel oil (*Canarium ovatum* ENGL.)

Pham, Chay B., Demafelis, Rex B., Morada, Fiel Ethel A.

Pili nut is one of the most important oil seeds of commercial value in the Philippines. Pili oil was superior in quality as compared to coconut oil. This study was carried out to optimize the process conditions of the enzymatic extraction of pili kernel oil and to determine the quality of pili kernel oil fromthe enzymatic extraction process.

The effect of enzymes, pH, temperature, reaction time, agitation speed, substrate concentration and enzyme concentration on the oil yield was optimized in batch process in the stirred tank bioreactor equipped with controller and monitor systems. The oil yield was 93.4% as compared to the oil obtained by solvent extraction, at the extraction conditions of pH 7.0, 45^{o}C, 300 rpm agitation speed, 1:8 (kernel:water, w/w) ratio and 4% enzyme concentration.

Results show that the reaction rate of oil extraction from pili kernel was greatly dependent on the enzyme concnetration. At optimum process conditions, the reaction rates for both catalyzed and uncatalyzed extractions are: (a) for the uncatalyzed reaction: $r_s = 0.0546\ C_s$ and (b) for the catalyzed reaction: $rs = 0.281\ C_S.C_E$; where C_S = amount of oil in the substrate; C_E = enzyme concentration. **(Author's abstract)**

Keywords: *Pili, Kernel oil, Enzymatic extraction process, Kinetic and parametric study*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 368-369
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0052

Kinetics of shear band formation and propagation in glassy polcarbonate deformed in simple shear

Gopez, Adolfo Jesus R.

A technique involving surface marking of simple shear test specimens was used to investigate the formation of shear bands in polycarbonate. Plane simple shear testing was done to produce a single shear band in the test specimen. Testing was done at ambient temperature (T = 23 + 1 oC) and at a constant reference shear strain rate (¿ = 3 10-3 s-1). Results showed that the shear band formed at yield and then propagated in two stages: first by elongation and later by widening. On the shear stress vs shear strain curve, the elongation stage corresponded to a stress drop after yield and the widening stage corrsponded to plastic deformation with a low apparent strain hardening rate. Observation with markers showed that upon retesting, a previously deformed specimen no longer formed a shear band at yield. Instead it deformed uniformly and homogeneously. End effects were also explored. The results of this study confirm previously obtained results in the preliminary testing of polycarbonate. Shear band formation and propagation were related to a defect theory of plastic deformation takes place when there are enough elementary defects or when these defects are made to move at the right velocity. Shear band formation was then explained to be the consequence of the difficulty with which elementary defects could be formed. **(Author's abstract)**

Keywords:

Philippine Engineering Journal, Volume No. 5 Issue No. 2, 1-32
(Filipiniana Analytics)
Fil(S) TA4 P532 5/2 1984

0053

Knowledge and attitudes on condom use among male Filipino adolescents

Redoble, Yvonne, Nancho, Rosa Ma

Data were collected from 91 male fourth year high school students in Araulo High School to identify predictors of condom use during sexual intercourse. Students completed a self-report survey that assessed demographic data, knowledge, and attitudes on condom use. Using the analysis of maximum estimates, three factors were identified as associated with condom use. Peer and media influences and the attitudes of partners towards condom use were noted to be statistically significant in the adolescents' intent to use condom during sexual intercourse. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 85-90
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0054

Lead uptake and growth responses in *Pistia Stratiotes Linn*. (Quiapo)

Espinosa, Rosario S.

Pistia stratiotes was cultured in hydroponics solutions amended with three different lead (Pb) levels - 2ppm, 4ppm and 8ppm [Pb in the form of Pb (No)]. AAS analysis revealed that Pb accumulation in the plant tissue (BCF) increased with increasing Pb levels in the culture solutions. Pb accumulation had caused the development of chlorotic leaves and decreases in the fresh biomas of the plants. However, there was no interference of the Pb accumulation on the growth responses of Pistia in terms of moisture, chlorophyll, and protein contents. These findings imply that P. stratiotes might be useful in heavy metal decontamination process in industrial and domestic wastewaters. These responses also indicate thepotential of Pistia as a lead scavenger and bioremediation tool in the aquatic environment. **(Author's abstract)**

Keywords: *Pistia stratiotes, Lead (Pb), Lead uptake, Growth responses, Heavy metal accumulation, Lead pollution, Lead toxicity, Lead scavenger, Bioremediation tool*

The Manila Journal of Science, Volume No. 4 Issue No. 1, 16-22
(Filipiniana Analytics)
Fil(S) Q1 M314 4/1 2001

0055

Two lectins from the leaves of mahogany, *Swietenia macrophylla* KING: Isolation, purification and partial characterization

Rodelas, Abigail Joy D., Lacsamana, Marivic S., Merca, Florinia E.

Lectins are carbohydrate-binding proteins or glycoproteins of non-immune origin that can agglutinate cells and/or precipitate glycoconjugates. This study reports the presence of lectins in some Meliaceae species and the purification and partial characterization of two lectins from the leaves of *Swietenia macrophylla* King (large-leafed mahogany).

Crude leaf extracts of twelve Meliaceae species were screened for lectin activity using the hemagglutination assay. Eight of these species namely, *Azadirachta indica* (neem), *Dysoxylum cumingianum* (tara-tara), *Melia azedarach* (chinaberry/paraiso), *Melia dubia* (bagalunga), *Sandoricum koetjape* (santol), *Swietenia macrophylla* King (large-leafed mahogany), *Swietenia mahogany* (small-leafed mahogany) and *Toona calantas* (kalantas) gave positive results. The strongest lectin activity was observed in the crude leaf extract of *Swietenia macrophylla* King.

The lectins in the mature leaves of *Swietenia macrophylla* King were isolated by extraction with 0.02 M phosphate buffer containing 0.15 M NaC1, pH 7.2, and purified by sequential ammonium sulfate fractionation and gel permeation chromatography on Sephadex G-150.

The two purified lectins from the mature leaves of *Swietenia macrophylla* King namely, Lectin 1 and Lectin 2, were both non-blood type specific because they agglutinated all human

blood types (A,B,O and AB) However, only Lectin 1 was able to agglutinate the calf, swine and carabao erythrocytes used in the study. Hapten inhibition assay using all four human blood types showed that the sugar specificity of Lectin 1 was directed towards several sugars such as L-(+)-arabinose, D-(+)-mannose, D-(+)-galactose, á-L-rhamnose, methyl-á-D-mannopyranose, D-(+)-glucosamine, sucrose and â-D-(-)-fructose while the agglutination reaction of Lectin 2 was not inhibited by any of the sugars tested. Both lectins were found to be glycoproteins containing 0.50% and 1.57% carbohydrate, respectively.

SDS-PAGE gave two protein bands for Lectin 1 with estimated molecular weights of 210 and 200 kD. For Lectin 2, only one protein band was observed with a molecular weight of approximately. **(Author's abstract)**

Keywords:

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 379-380
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0056

A life away from home: Pregnancy at the Caesarean Section Scar

Manzanero-Galvan, Noemie M., Teotico, Angelita R.

Pregnancy of the caesarean scar is one of the rare types of ectopic pregnancy. it is a pregnancy implanted on a previous Caesarean Section (CS) scar. The case presented aimed to report the demography, pathophysiolology, clinical presentation, most appropriate methods of diagnosis and management, with their implications in clinical practice for this rare case of ectopic pregnancy. This is a 30 years of age Gravida 3 Para 1 (1-0-1-1) who developed pregnancy of the CS Scar after full term delivery via the abdominal route. Patient wanted to save her uterus contemplating for future pregnancy. Bioethics committee was consulted. A conservative management thru methotrexate injection was done. After the first cycle of the drug, there was no resolution of the placenta and a live pregnancy was noted. Patient was scheduled for another course of methotrexate therapy, but opted to undergo surgical hysterectomy. A thorough study on the best management of Cesarean scar pregnancy is needed in order to preserve fertility and reduce morbidity. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 43 Issue No. 1, 25-29
(Filipiniana Analytics)
Fil(S) Q181 P56 43/1 2010

Mean lifetime measurement of the 14 keV state in the transition of ^{57}Co to ^{57}Fe

Garcia, Merlita C., Bacala, Angelina M.

In the beta decay of ^{57}Co to ^{57}Fe the de-excitattion of the second excited state to the first excited state gives off a 122 keV gamma ray photon while the de-excitation of the first excited state to the ground state gives off a 14 keV gamma ray photon. In this decay made the emission of the gamma photons are in cascade and are then considered to be coincident. Lifetime measurement uses the principle of the method of coincidence.

Two different detectors were used: a 2" in diameter by 2" thick scintillator to detect the 122 keV gamma photon and a 1" in diameter by 0.25" thick scintillator to detect the 14 keV gamma photon. Using the Nuclear Instrumentation Modules (NIM) and the Computer Automated Measurements and Control (CAMAC) modules such as the Analog to Digital Converters (ADC) and the Time to Digital Converters (TDC) with their proper calibrations, and a macro in fortran, the energy spectran of the particles of interest incident on these detectors were viewed in the monitor of a personal computer and the time between the detection of these two energies determined. The ADC and the TDC spectra were analyzed using the ROOT data analysis system for histogramming and fitting.

Results showed that the individual time spectrum for each set of data taken on different times gave a mean lifetime value for the 15 keV state which agrees well with an internationally accepted value of 141 ns.

From these results it can be seen that Nuclear Instrumentation Modules (NIM) and the Computer Automated Measurement and Control (CAMAC) modules available at the MSU-IIT High Energy Physics Laboratory are capable of measuring lifetimes of nuclear states which are less than a second. **(Author's abstract)**

Keywords: *Lifetime, Gamma photons, Scintillator, Photomultiplier, NIM, CAMAC, ADC, TDC, Energy spectrum, Time spectrum*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 352-353
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

Mechanism of glue penetration in plywood bond formation
Villaflor, Armando A.

The pathways and depths of glue penetration in plywood as a function of assembly time, species, sapwood or hearthwood were tested on five species: almaciga (*Agathis philippinensis* Warb.), apitong (*Dipterocarpus grandiflorus* Blco.), palosapis (Anisoptera thurifera Blco. BI), red lauan (Shorea negrosensis Foxw), and Spanish cedar (Cedrela odorata L.). The phenolic resin adhesive became mobile during simultaneous applications of heat and pressure due to lowering of the surface tension of its water molecules, so that the adhesive penetrated the pores or vessels, tracheids, resin ducts, and lathe checks.

The degree of rasin penetration, as determined by a fluorescence microscope in incident ultraviolet light, was highest at 5-minute and lowest at 80-minute assembly times. The depth of glue penetration in softwood was less than that of heartwood due to their anatomical dissimilarity. The differences in the magnitude of glue penetration between sapwood and heartwood were attributed to the presence of tyloses and/or smaller pores or tracheids in the latter. Bond formation in plywood with both high wood failure and shear strength was obtained at relatively low penetration. **(Author's abstract)**

Keywords: *Substrate, Glueline, Flourescence, Ultraviolet light, Assembly time, Sapwood, Heartwood, Tyloses, Shear strength, Wood failure*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 38-43
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0059

A method of sampling tracheid cross-sectional dimensions in coniferous woods
Lantican, C.B., Hughes, J.F.

A randomization procedure for sampling tracheid cross-sectional dimensions within individual samples of early wood and latewood was described. The application of variance component analysis in the estimation of sample sizes was demonstrated and tested. It was found that the estimates of the means of the samples used in the study are of high precision and well within the limit of 10% acceptable in wood anatomy studies – an indication of the efficacy of the procedure used for estimating sample sizes. **(Author's abstract)**

Keywords: *Pinus caribaea*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 14-20
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0060

Microelectronics design for the Philippine Electronics Industry: An essential for global competitiveness

Deoma, Aileen Joy A., Tabangcura, Michelle Marga C., Sabido, IX, Delfin Jay M.

Microelectronics has become an integral part of the Philippine economy, with electronics exports being the country's top dollar earner for the past few years. However, there are more aspects to consider in this technology, and a shift in our country's efforts may be needed for the Philippine electronics industry to survive. This paper offers a brief introduction on Microelectronics design and its importance, and tackles the present status and weaknesses of the local electronics industry. Strategies that the government and the academe have begun to adopt to address these weaknesses will also be presented. Finally, the paper offers recommendations and future directions necessary for the country to survive and thrive in the global new economy. **(Author's abstract)**

Keywords: *Philippine electronics industry, Microelectronics, Philippines*

Philippine Journal of ICT & Microelectronics, Volume No. 1 Issue No. 2, 45-48
(Filipiniana Analytics)
Fil(S) T7800 P535 1/2 2002

0061

Microsporogenesis and icrogametogenesis in *Pittosporum resiniferum* Hemsl. (Petroleum nut plant)

Tolentino, Vivian S., Zamora, Prescillano M.

This study aimed to trace the series of events that takes place during male sporogenesis and gametogenesis and to classify the type of development in Pittosporum resiniferum. The differentiation of the male reproductive structure was also studied. For the process of microsporogenesis and microgametogenesis, smears of pollen from the anther was used and prepared. The modified paraffin technique was followed in the study of the development of the microsporangium.

Results showed that the young anther had a homogenous mass of meristematic cells bounded by an epidermis. As the anther primordium became four-lobed, a 3 cell wide hypodermal archesporium became differentiated in each of the four lobes and the cells showed dense cytoplasm and conspicuous nuclei. The archesporial cells divided periclinally forming a parietal layer of cells towards the outside and the primary sporogenous layer of cells towards the inside. The primary parietal cells divided periclinally and anticlinally giving rise to the endothecium, middle layer and tapetum. The primary sporogenous cells underwent a fw mitotic divisions,

enlarged and differentiated to form the microspore mother cells. The microspore mother cells underwent meiosis to form the microspore tetrads, which were tetrahedral in arragement. Cytokinesis is by furrowing and is of the simultaneous type. Each of the microspore tetrads separated, enlarged, and finally differentiated. Each microspore underwent nuclear divisions. The first nuclear division gave rise toa large vegetative cell and a small generative cell. The second division, which involves only the generative cell, gave rise to two sperm cells. The pollen grain was shed in a three-nucleate stage. The pollen grains are tricolpate with smooth exine and on inner intine. Abnormal pollen grains, which were shriveled in shape, were also observed.

Results from the study can be used as atool in determining sterility/frtility in pollen grains, which can be used as baseline data in genetic engineering methods. It can also provide baseline data for use in research on pollen gene expression in the isolation and characterization of genes involved in pollen development. **(Author's abstract)**

Keywords: *Archesporial cells, Endothecium, Exine, Gametogenesis, Generative cell, Intine, Microspores, Sporogenesis, Tapetum, Tricolpate, Vegetative cell*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 330-331
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0062

Mode of action of isoquinuclidine alkaloids from tropical yam, *Dioscorea hispida* SCHLUSSEL against rice armyworm, *Pseudaletia separata* larvae

Banaag, Alexie B.

Alkaloids have been studied intensively because of their medicinal importance and great diversity of structure and pharmacological activity.

This paper reports the effect of two alkaloids (dioscorine and dioscorine N-oxide) on the behavior of rice armyworm, *Pseudaletia separata*.

Several chemical components isolated from the rhizome of tropical yam, *Dioscorea hispida* have been found to have insecticidal and antifeedant activities to insect. Nothing is known about the mechanism of action of the isolated chemical of this tropical plant.

The behavioral effects of chemical components such as dioscorine and dioscorine N-oxide were examined against rice armyworm, *Pseudaletia separata*. The effects of the two alkaloids were compared to synthetic insecticides such as cartap, dichlorvos, and nicotine.

Isolated chemicals from *Dioscorea hispida* (dioscorine and dioscorine N-oxide) were found to have depressive effects against rice armyworm. These effects were similar to those of larvae

treated with cartap. Hyperactive symptom was observed in dichlorvos and nicotine-treated larvae but not in larvae treated with the two alkaloids. **(Author's abstract)**

Keywords: *Dioscorea, Armyworm, Pseudaletia, Isoquinuclidine, Alkaloids*

Transactions of the National Academy of Science and Technology Philippines, Volume No. Issue No. , 377
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0063

Morphology and anatomy of the barks of Philippine erythrina and intsla species

Figarola, D.B., Quimbo, L.L.

The morphology and anatomy of the bark of nine Philippine species were studied to find out what components and/or characters of their barks differentiate the genus *Erythrina* from the genus *Intsia* and to determine which anatomical and morphological characters could serve to delimit the different species undr each genus.

Results showed that bark physical features in combination with the arrangement, average radial diameters, and lengths of sieve tybe members, phloem parenchyma cells, and phloem fibers; seriation and cell types of phloem rays; types of scleroids and occurrence of deposits, are of value in the identification and taxonomic treatment of the *Erythrina* and *Intsia* and their included species. **(Author's abstract)**

Keywords: *Bark taxonomy, Secondary phloem*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 56-63
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0064

Mosfet dosimetry for radiotherapy interface measurements

Bengua, Gerard, Rozonfeld, Anatoly, Metcalfe, Peter

An n-channel Metal Oxide Semiconductor Field Effect Transistor (MOSFET) was used to investigate the dose distribution near interfaces. The MOSFETs were irradiated in 5x5cm^2 and 10x10cm^2 radiation feild with 6MV x-rays and 12MeV electron beams from a Varian 2100c linear accelerator. The dosismeters were operated in an active mode, biased gate, during irradiation. Two different air cavity geometries were modeled using solid water sheets. An Attix

chamber and sheets of Gafchromic films were used to measure the dose near and at the interfaces. Results obtained by these detectors were used as benchmarks for data comparison. Additionally the results from an ADAC-Pinnacle dose planning system and EGS4 Monte Carlo simulation of the dose build up and build down effects for tissue-air-tissue and tissue-lung interfaces have been simulated.

Dose measurements for tissue-lung interface were carried out using an anthropomorphic phantom made from plastic water and inserts of lung phantom material. Depth increments od as small as 100ìm enabled the detailed measurement of dose at the interfaces by utilizing the MOSFET dosimeter. In all cases, the effects of the loss of electronic equilibrium and the reduced backscatter due to the existence of inhomogeneities were shown.

Interface dose distribution obtained by the MOSFET dosimeters were within 5% to 6% of the results of the Attix chamber measurements and Monte Carlo EGS4 simulation results. Comparison of the dose distribution near interfaces generated by the ADAC-Pinnacle planning computer system and those experimentally measured showed that the former everestimates the dose near the interface (<2mm from interface) by around 7% for small cavity sizes ($2x2x30cm^3$) irradiated with $5x5cm^2$ field size and about 12% for a large cavity sizes ($2x2x30cm^3$) using the same field size.

Present inhomogeneity correction algorithms have been found to predict dose distributions where tissue-lung interface is involved to a reasonable accuracy (3%) compared with experimental results.

The good agreement between the data obtained by the MOSFET with that of Attix chamber, Radiochromic film and Monte-Carlo EGS4 simulated data indicated the viability of its use as a clinical dosimeter for interface dose measurements. **(Author's abstract)**

Keywords: *MOSFET, Interface, Inhomogeneity, Monte-Carlo EGS4, Planning computer, Radiochromic film, Dosimter, Dose, Cavity, Attix chamber*

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Fil(S) Q149. P5 N25 v.23 2001

0065

A new alkaloid predicted as intermediate in the biogenesis of the Pandanus alkaloids from Pandanus amaryllifolius ROXB.

Lopez, Daisy, Ichikawa, Tomotake, Takayama, Hiromitsu, Kitajima, Mariko, Aimi, Norio, Nonato, Maribel G.

Mature leaves of Marikina grown Pandanus amaryllifolius Roxb. collected quarterly throughout the year 1999 yield crude alkaloid fractions of similar TLC profile. Alkaloids were

detected in the dichloromethane, and n-butanol fractions obtained after extraction of the crude extract with solvents of different polarity (Hexane, dichloromethane and n-butanol). After a series of chromatographic purification, the dichloromethane yield five alkaloids.

A mid-polar alkaloid from the DCM fraction which was further purified by MPLC gave ^{1}H and ^{13}C NMR spectra identical to the secondary amine intermediate proposed in the biomimetic synthesis of Pandamarilactonine-A and –B [1]. These two alkaloids together with Pandamarilactone-1 [2] were also found in the dichloromethane fraction. Further 2-D NMR spectra of the secondary alkaloid confirmed its structure. This secondary amine is predicted biogenetically to be the possible intermediate of the reported *Pandanus* alkaloids. **(Author's abstract)**

Keywords:

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 377-378
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0066

Non-alkaloid components detected in tropical yam, *Dioscorea hispida* SCHLUSSEL

Banaag, Alexie B., Honda, Hiroshi, Matsuyama, Shigeru, Matsuda, Kazuhiko

Chemical analyses and structural elucidation of the naturally occuring active chemical components are very important for finding application, directly or as lead compounds or as new pest control agents.

Extracts of non-alkaloids were prepared by extracting the rhizomes of *D. hispida* with methanol, concentrated and re-extracted with ether. The ether extract was then concentrated by the same procedure above and subjected to open column chromatography eluted with different solvents. Mass spectra of non-alkaloid fractions were analyzed by 5890 Series II Plus Gas Chromatography and M-80B High Resolution mass spectrometer (in direct inlet mode).

Non-alkaloid chemicals from *Dioscorea hispida* which significantly controlled the activities of insect pest, *Plutella xylostella* L. (DBM) were identified. These activities affects insect's behavior as feeding deterrents, inhibitors of growth and development, and are also toxic against DBM Larvae.

These non-alkaloid chemicals were identified to be phthalate (compound 1), and unsaturated fatty acids (compounds 2 and 3). **(Author's abstract)**

Keywords: *Dioscorea, Non-alkaloid, Plant extracts, Diamondback moth, Unsaturated fatty acids*

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Issue No. , 376
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0067

Nonimmune hydrops fetalis: A review of 5 years' experience

Gamutan, Kathleen Grace C., Lucero-Tan, Flerida

Objective: To review the incidence and neonatal outcome of nonimmune hydrops fetalis in our local setting over the past 5 years (1997-2001).

Study Design: Descriptive, analytical.

Setting: Department of Obstetrics & Gynecology, MCU FDTMF Hospital

Method: We reviewed maternal and neonatal charts of 22 cases of nonimmune hydrops fetalis diagnosed after 20 weeks age of gestation over a 5-year period. Neonatal survival was correlated with the etiology and the use of intrauterine fetal therapy. The Fisher Exact test was applied to determine the statistical significance of both correlations.

Results: The incidence of nonimmune hydrops fetalis in our center was 1:348 births per year. Overall perinatal mortality was 84.2%. Toxoplasmosis, rubella, cytomegalovirus, herpes simplex, or TORCH infection were the most common cause of nonimmune hydrops fetalis in our study. There were 5 etiologies identified - TORCH (50%), thalassemia (13.6%), cardiomegaly (13.6%), congeital anomalies (4.5%), and idiopathic (18.2%). There was a good correlation betwen neonatal survival and those who were diagnosed with CMV alone ($p < 0.05$). However, there was no significant correlation between neonatal survival and the other etiologies as mentioned. ($p > 0.05$). The application of intrauterine fetal therapy was not significantly associated with survival of the newborn. ($p>0.05$).

Conclusion: This study showed a high incidence of nonimmune hydrops fetalis in our center. Therapeutic management of hydrops fetalis is dependent on etiology. Neonatal survival appears to increase with nonimmune fetal hydrops caused by CMV infection alone. With the use of intrauterine fetal therapy. neonatal survival may or may not be increased. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 35 Issue No. 1, 15-24
(Filipiniana Analytics)
Fil(S) Q181 P56 35/1 2003

0068

Notes on fruit consumption of the Philippine Bulbul (*Hypsipetes philippinus*) and its quality as a seed disperser

Schabacker, Jens, Curio, Eb

The Philippine Bulbul (*Hypsipetes philippinus, Pycnonotidae*) is, by virtue of its relative abundance, the most common frugivorous bird in primary and secondary forests in the West Visayas, Philippines. This paper compiles data on 49 tree species used for their fleshy fruits by the Philippine Bulbul. Additional more detailed observations were made on one tree each of four fig (*Ficus* sp.) species as well as a number of other fruit-eating forest birds.

Bulbuls feed in general on small fruits of up to 20 mm in diameter. Depending on tree species, they eat 66-82% of the fruits which they pluck from the source tree and drop only a minor proportion into the ground. Only less than 9-22% of fruits harvested are carried away from the source tree in the bird's beak. Since birds stay in the near vicinity of an exploited tree, the fraction of fruits carried over long distances seems to be small. However, of those many seeds ingested on and near a source tree, a substantial fraction may be dispersed over longer distances upon passing the gut. The bulbul benefits a fruiting tree through seed dispersal since it ingests all seeds by swallowing the fruits whole. Both this species and other frugivorous birds handle (eat, drop, carry) fruits in distinct ways irrespective of the tree species on which they feed. Thus, birds of up to eight species, including the bulbul, exploiting the same fig species differ significantly from each other in the manner of handling mentioned. This translates into quality differences among those birds as seed dispersal agents. Being a generalist frugivore, and because of its abundance, the Philippine Bulbul may be among the most important seed dispersers in this region. Other forest birds, through being in part more specialized on fruits, appear to rank lower as seed dispersers for a number of reasons. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 43 Issue No. 1, 59-82
(Filipiniana Analytics)
Fil(S) AS538 S46 43/1 2002

0069

On orbitals of a class of permutation groups

Ponsones, Rigor B.

In this article, the author determines the number of distinct orbitals of a known subgroup of the wreath product of the symmetric groups S_m and S_r acting on W = {1, 2, . . . , mr}, where m, r

> 1. Furthermore, he shows that every non-trivial orbital of this group is symmetric. This article is intended for graduate students who are doing group theory. **(Author's abstract)**

Keywords:

The Manila Journal of Science, Volume No. 1 Issue No. 2, 33-35
(Filipiniana Analytics)
Fil(S) Q1 M314 1/2 1998

0070

Osmotic stress increased in plant regeneration of old rice callus

Aldemita, Rhodora R., Avellanoza, Eleanor S., Ilar, Glen, Rosario, Marischelle M.

Increase in rice production will entail the continued development and use of high yielding inbreds, hybrids and new plant type lines. In support of this strategy, genetic engineering for improved pest resistance will also focus on these genotypes. Optimization of conditions to increase plant regeneration in these genotypes was conducted as a prerequisite for successful genetic engineering. Tissue culture factors such as the type of explant, genotype, selection conditions, and artificial culture media were studied. However, plant regeneration is greatly affected by co-cultivation with A. tumefaciens. Old, unregenerable cells of three cultivars were subjected to different osmotic conditions that include physical and chemical osmoticants. Addition of sorbitol, mannitol, and exposure to drying conditions of the laminar flow hood increased the plant regeneration of unregenerable transgenic cells by three-fold. This finding will be very useful in succeding attempts to regenerate transgenic plants with economically-important characteristics. **(Author's abstract)**

Keywords: *Oryza sativa, Genetic engineering, Agrobacterium tumefaciens, Sorbitol, Mannitol, Plant regeneration*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 326
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0071

Outdoor test facility for solar flat-plate collectors

Ramos, Henry J., Reyes, Edgardo S.

An outdoor test facility based on the open-loop design has been developed for determining the efficiency of solar flat-plate collectors. The applicability and adoption of the various published standards on collector testing like the ASHRAE, AFNOR, DIN/BSE, EIR and CSIRO

under actual Philippine climatological conditions are discussed. Features of the developed test facility are described and results obtained using one of the published standards are presented. **(Author's abstract)**

Keywords:

Philippine Engineering Journal, Volume No. 5 Issue No. 2, 33-47
(Filipiniana Analytics)
Fil(S) TA4 P532 5/2 1984

0072

Phenotypic diversities of coconut (Cocos nucifera L.) populations in Bangladesh

Islam, Md. N., Borromeo, T,H., Rzzaque, M.A.

Genetic diversity of coconut populations in Bangladesh was assessed from June 2000 - October 2002. Twenty two sample sites were selected following the coarse grid sampling method. A suitable sized map of Bangladesh was obtained and grids of approximately 40 x 40 km were marked following latitude and longitude divisions/degree. Population in each grid was identified according to the name of the village where it was located. Multivariate analysis, including principal component analysis, clustering and D^2 statistics were carried out to assess morphological variation of the populations. D^2 values ranged from 52.48 to 921.48 indicating high variability between populations in different areas. Population from Chinashukhania was found to be different from Buikara (921.48) and Bhola (900.64). These populations wer located in different geographic regions of the country. Similarity was observed in two geographically close population Babugonj and Uzirpur (38.01). The first two principal components accounted for 91% of the total diversity. Fruit characteristics of principal component 1 has the highest contribution on the total variation. The populations were grouped into six clusters. The inter-cluster value indicated maximum distance between Clusters II and IV followed by Cluster III and V. Populations in Cluster V were found to be homogeneous while Cluster III was heterogeneous. Thus the populations could be used as parent(s) in hybridization for getting desirable traits. Cluster VI had highest fruit weight, husk weight and liquid endosperm weight while Cluster IV had highest fruit weight, husk weight, and liquid endosperm weight while Cluster IV had highest nut weight, nut weight without liquid endosperm, shell weight, liquid endosperm weight and meat weight. Utilization of available coconut variability may greatly improve the fruit and nut characters through hybridization and selection. **(Author's abstract)**

Keywords:

The Philippine Journal of Coconut Studies, Volume No. 32 Issue No. 1-2, 13-22
(Filipiniana Analytics)
Fil(S) SB401 C6 P5 32/1-2 2007

0073

Poly(3-methyl thiophene)-modified electrode for electrochemical determination of dopamine

Vergara, Regina Aileen May V., Binag, Christina A.

Dopamines occur naturally in our body. Dopamine is localized in certain regions of the central nervous system where it is an important neurotransmitter. Detection of dopamine in the human body is of great importance to neuro scientist.

A poly(3-methylthiophene) modified (P3MTp) electrode offers substantial improvements in voltammetric sensitivitiy towards dopamine. Thin films of P3MTp have been electrochemically coated onto a platinum electrode and used for dopamine measurements. This P3MTp modified electrode enhances the oxidation peak current of dopamine while voltammetric response of ascorbic acid peak potential is greatly attenuated compared with that of a bare electrode. Surface morphology of the electrode has been analyzed with SEM while the elemental composition of the modified electrode surface has been studied using XPS analysis. **(Author's abstract)**

Keywords: *Dopamine, Poly(3-methyl thiophene), Ascorbic acid, Cyclic voltammetry, Surface morphology*

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Issue No. , 372-373
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0074

A polypyrrole-based pH sensor characterized by flow injection analysis

Abaya-Perez, Milagros A., Binag, Christina A.

A conducting Polypyrrole-based pH sensor by flow injection potentiometry was developed and characterized. The electroactivation parameters optimized for polymerization consisted of 0.1 M pyrrole monomer in 0.1 M phosphate buffer (pH 7.0), and bovine serum albumin (3.0 mg) as dopant. A current density of 9.02 mA cm^{-2} was applied to the platinum wire (0.102 mm Ö) for a 5-minute galvanostatic deposition. The polypyrrole coated-pH sensor was placed in a fabricated wal jet perspex glass cell. Its potentiometric response against a Ag/AgCl reference electrode was monitored using universal buffer solutions at working pH range of 3-10. Optimization of flow injection variables such as nature, concentration, and pH of carrier solutions and the length of the manifold's line tubing were investigated.

The Polypyrrole-based pH transducer was characterized electrochemically and the feasibility of the sensing device under the established working conditions was evaluated. The pH sensor showed a sub Nernstian response (m = -31.8 mV/pH), a good Pearson's correlation coefficient

(linearity, r = -0.996) and a highly reproducible response (RSD = 1.803%). The sensor showed low hysteresis (Äm = -3.8mV/pH) and minimal drift at pH 7 (RSD = 0.443%) and at pH 10 (RSD = 0.708%). The sensor is highly selective (k_{ij} > 10-7) in the presence of Na^{+1}, K^{+1}, Mg^{+2}, Ca^{+2}, Ac^{-1}, and $NO3^{-1}$ ions. The sensor's lifetime for a period of two months revealed a 3-fold decrease in the sensitivity, from –28.6 mV/pH to –10.3mV/pH. **(Author's abstract)**

Keywords: *Polypyrrole, pH sensor, Conducting polymer, Potentiometry, Nernstian*

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Issue No. , 369
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0075

Polythiophene and polypyrrole thin films as radiation sensors

Alguno, Arnold C., Bantaculo, Ancelie, Castillon, Ancelie, Bacala, Angelina M., Miyata, Hitoshi, Biogroup2

Radiation detectors play a vital role in understanding what makes up matter and in the development of various fields of science especially in medical and physical sciences. The most commonly used material in radiation detectors is silicon (Si) which provides high efficiency in radiation detection.

However, when the large detector is needed, Si cannot be used because it is to difficult to make large silicon crystals, and it is also very expensive to make a large silicon semiconductor detector.

This research explored the possibility of using conducting polymers that are organic semiconductors as radiation sensors that could replace silicon.

Polythiophene and polypyrrole thin freestanding films were prepared through electrochemical polymerization by passing a constant electric potential across indium-tin oxide and platinum-plated titatium plate electrodes. These electrodes were immersed in an electrolytic solution containing thiophene and pyrrole, lithium teraflouroborate (electrolyte salt) and acetonitrile (solvent). The resulting films were dedoped in pure acetonitrile at a higher negative bias potential for a longer time. Polypyrrole and polythiophene sensors were fabricated using the corresponding thin films prepared. Aluminum mylar shets and gold sheets were attached to both ends of the sensors that served as electrodes. The voltage-current (V-I) curves showed evident responses when they irradiated with ultraviolet (UV) light illumination, Strontium 90 (^{90}Sr) beta ray and Nd:YAG laser. Signals coming from these sensors established good ohmic relationship and conductivities were found to be in the orders of magnitude of 10^{-10} to 10^{-5} $S.cm^{-1}$. This study shows that signals obtained with the polymers were similar to those from using Si-PIN photodiode. **(Author's abstract)**

Keywords: *Readiation sensor, Dopant concentration, Conductivity, Polythiophene, Polypyrrole, Tetraflouroborate, Solvent, Electropolymerization, Freestanding film, Conducting polymer*

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Issue No. , 350-351
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0076

Potentiometric iodide-selective electrode based on conducting polyaniline membrane

Santiago, Karen S., Binag, Christina A.

Doping is necessary during the electrochemical oxidation of conducting polymers in order to achieve electroneutrality. This study involves the use of a dopant in fabricating an inorganic anion sensor, specifically the iodide-selective electrode (I-SE) based om polyaniline (Pan) film.

In devising the iodide sensor, electrochemical polymerization was carried out using the following optimized conditions: 1:1 mole ratio of aniline monomer and potassium iodide, 0.10M potassium hydrogen phthalate buffer solution at pH 4, 30-minute polymerization time without stirring, platinum wire support and 9.34 mA cm^{-2} current density.

The sensor showed a hyper-Nernstian response of –73.05 (m) and a linearity of 0.9855 (r^2) at a concentration range of 1.96 x 10^{-5} to 9.56 x 10^{-3} M I^-, and an average response time of 2.2 minutes. Through cyclic voltammetry, the growth of Pan onto a platinum disc was monitored which exhibited its oxidized form at X0.9 V. Its membrane has been likewise investigated via Scanning Electron Microscopy (SEM) and X-ray Photoelectron Spectroscopy (XPS) that showed the semi-fibrous and elemental compositions of Pan, respectively. The characteristics of the devised Pan-based potentiometric I-SE proved its wide applicability in industrial and biological purposes. **(Author's abstract)**

Keywords: *Polyaniline, Conducting polymer, Potentiometric sensor, Nernstian, CV, SEM, XPS*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 370
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0077

The prevalence of hepatitis C virus infection among pediatric patients with chronic liver disease at UP-Philippine General Hospital

Tejam-Baclayon, Melvina, Gabriel, Elizabeth P.

To determine whether as association exist between HCV infection and chronic liver disease, a cross-sectional descriptive study of patients with chronic liver disease was done. Fifty-three patients between 3 months and 17 years were included. The most frequent diagnosis was chronic viral hepatitis (34%). Their serum samples were tested for anti-HCV and mean age was 4.89 yrs. with M:F ratio of 1.25:1. Prothrombin time was normal but liver enzymes and serum bilirubin were elevated. Total protein and serum albumin were decreased. Percutaneous liver biopsy in 4 cases showed early biliary cirrhosis, chronic hepatitis with cirrhosis, sinusoidal cholestasis, and neonatal hepatitis-like changes. The following risk factors were identified as: history of previous hospitalization, parenteral exposure, blood transfusion, household exposure, or alcohol intake. Subjects were grouped into high risk, if they had 3 or more risk factors, low risk if they had 2 or less & no risk factors. If they had no identifiable risk factors six were in the low risk while 3 had no risk factors. Using the Pearson correlation coeffient, no significant correlation was noted between HCV infection and sex, age, and number of risk factors. Many do not come from well-defined risk groups. Further studies must be done on the epidemiology of HCV infection and to evaluate preventive measures towards HCV infection. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 17-24
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0078

Production of activated carbon from pili (*Canarium ovatum* ENGL.) nutshells by ammonium chloride activation

Movillon, Jovita L., Demafelis, Rex B., Valencia, Sixto A., Prometila, Michael Angelo B., Gomez, Madelaine V.

Present technology regarding the utilization of pili nut into activated carbon (AC) is yet to be determined and explored. Zinc chloride is commonly used as the activating agent but for this study, ammonium chloride was tested because it is readily available, inexpensive, and its low sublimation temperature of 330^{o}C made further extraction of activating agent unnecessary. The main objective of the study was to produce activated carbon from pili nutshells by ammonium chloride $(NH_4)Cl$ activation.

Crushed and sieved sutshell (obtained from Sorsogon, Albay) was carbinized in pyrolyzer and activated in a muffle furnace. The activated carbon samples were subjected to direct activation and a two-step activation.

Results showed that the charcoal yield ranges from 20.9 to 30.4%, 31.8 to 40.6% and 30.3 to 34.6% for untreated, direct activation and two-step activation process, respectively. The highest

and lowest yield occured at temperature of 400°C and 800°C, respectively. The direct activation process provided a better yield compared to untreated and two-step activation process. However, the direct activation carbon gave higher moisture content and ash content compared to two-step activated carbon. In terms of fixed carbon, the untreated carbon has the lowest value (28.1%) while the two-step activated carbon (88.7%) has the highest value. The bulk density of untreated carbon, direct activated carbon, and two-step activated carbon are 0.546, 0.449, and 0.489 g/ml, respectively. The two-step activation at 800°C gave the highest iodine number of 305.9 mg/g but the value is still substandard compared to commercial carbon that ranges from 600 to 1100 mg/g Iodine Number. Further characterization and parametric studies regarding the production of activated carbon from $(NH_4)Cl$ activation are recommended. **(Author's abstract)**

Keywords: *Activated carbon, Pili nutshells, Chemical activation, Ammonium chloride activation*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0079

Production of crude insecticidal sucrose esters from palm kernel oil

Acda, Reynaldo L., Conde, Desiree G.

Crude insecticidal sucrose esters were produced from palm kernel oil through saponification, acidification, fatty acid chloride formation and acid chloride-sucrose reaction. The effect of varying the amount of concentrated HCl (2 ml, 4 ml, 6 ml, 8 ml, 10 ml, and 12 ml) per 10 g of palm kernel oil soap sample at 95°C on the fatty acid yield, the effect of increasing the amount of thionyl cloride (using 0.025 mol, 0.07 mol, 0.05 mol, 0.1 mol, and 0.125 mol) per 10 g fatty acid or 0.05 mole fatty acid (as lauric acid) on the acid chloride formation, the fatty acid (as lauric acid) on the acid chloride formation; and the efficacy of crude insecticidal sucrose esters on whitefly were determined.

The results showed that palm kernel oil saponified with 35° Be caustic soda (soap 1) yielded 16.84% free fatty acid and caustic potash (soap 2) with similar concentration in ethanol yielded 17.64% free fatty acid using 10 ml of concentrated HCI. Using various amount of thionyl chloride (1:2 fatty acid-thionyl chloride molar ratio) giving 11.2 g and 15.3 g fatty acid chloride from soap 1 and 2, respectively. Sucrose ester yield presented a high conversion of 72.91% and 76.32% based from the sucrose and acid chloride reaction.

Whitefly bioassay results showed that an average of 122 minutes, 100% mortality of whiteflies occured. There was a significant difference between methanol, crude sucrose esters from soap 1 (ISE I) and crude sucrose esters from soap 2 (ISE II). No significant difference between ISE I and ISE ii as the results were subjected to a 5% level of significance (á). **(Author's abstract)**

Keywords: *Palm kernel oil, Insecticidal sucrose esters, Whitefly bioassay*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0080

Root development of *Albizia falcataria* (L.) Fosb. seedlings

Dalmacio, Roberto V.

The weight of the roots and shoot of Moluccan sau, *Albizia falcataria*, (L.) Fosb., seedlings were measured on the 1st, 2nd, 4th, 6th, 8th, 10th & 12th week after sowing. The tap root and shoot length ratio decreased as the age increased starting on the 4th week. The 1:1 ratio was estimated to have occured on the 23rd day. The root-shoot weight ratio, however, increased as age increased but the balance was never obtained during the study. **(Author's abstract)**

Keywords:

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 35-37
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0081

Root rot swietenia macrophylla king. seedlings

De Guzman, E.D., Eusebio, E.C.

A root rot disease affecting mahogany, *Swietenia macrophylla* King, seedlings is becoming a serious problem in the Philippines. The important symptoms include wilting, browning and curling of the leaves; necrosis at the base of the stem; and decay of the root system.

The incidence of the disease during the last 3 years ranged from 1% to almost 50%. Two isolates of fungi were consistently isolated from diseased seedlings. **(Author's abstract)**

Keywords: *Mycelium, Sclerotium, Conidiophores*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 64-65
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0082

Rotavirus and afebrile seizure: The missing link found

Caro, Glovelyn S.

Objective: To raise awareness on the neurologic manifestations of a common gastrointestinal pathogen.

Design: Case Report

Setting: Department of Pediatrics

Case Summary: This is a case of a 2-year old girl admitted due to upward rolling of the eyeballs and stiffing of extremities. Four days prior to admission, she had four episodes of non-projectile vomiting of previously ingested milk. There was no other associated sign or symptom. Three days prior to admission, she was no longer vomiting but had 4 episodes of yellowish to greenish, non-mucoid and non-blood streaked watery-based stools. She was brought to a private physician and was advise oral rehydration solution which she tolerated. The diarrhea persisted, prompting another consult one day prior to admission. She had normal urinalysis and was told to continue the ORS as needed. A few hours prior to admission, she had upward rolling of eyeballs and stiffening of all extremities lasting for 2 minutes. She was to the ER and was subsequently admitted. She had 2 previous admissions for seizures: benign febrile convulsion secondary to acute gastroenteritis. She was seen by a neurologist and was worked up. However, her EEG blood count, stool examination, urinalysis and electrolytes were all normal. This 2-year old girl had a history of recurrent seizures associated with diarrhea. She had no neurological deficit after each occurrence.

Above case presented with afebrile seizures during episodes of diarrhea. Patient did not have significant electrolyte disturbance and the stool was positive for rotavirus antigen.

The first report of central nervous system involvement after rotavirus infection was made in 1978. Since then, this association has been described by several authors. Studies have reported various frequencies of CNS involvement in children with acute rotavirus gastroenteritis.

Conclusion: This case was reported with recurrent seizures associated with diarrhea on a 2 year old girl. The physical and neurologic examinations were normal. The stool exam was positive for rotavirus antigen. In the evaluation of afebrile seizures, we must be aware of common pathogens with rare manifestations. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 43 Issue No. 1, 21-24
(Filipiniana Analytics)

0083

The smallest non-associative inverse property loop and some generalizations

Carrascal, Alexander S.

The smallest non-associative loop with *inverse property (IP)* is of order 7. Up to isomorphism, this is the only IP loop of that order. This unique loop possesses interesting properties that can be generalized for the construction of IP loops of higher order. These generalizations led to the discovery and construction of several special families of IP loop of order 7 is the smallest member. These special families include IP loops of order *(1) $n = 3m - 2$, $m \geq 3$; (2) $n = 4m - 1$, $m \geq 2$, and (3) $n = 2^k - 1$, $k \geq 3$*. The properties of the IP loops of order $n = 3m - 2$ *and* $n = 2^k - 1$ can be conbined together to construct an IP family of order $n = (2k-1)m - 2^k + 1$, where $k \geq 3$ *and* $m \geq 3$. Moreover, each of these families could be further generalized to construct other families of IP loops. Finally, a particular member of one family can be used as a subloop in the construction of a higher order ember of that family or another family. **(Author's abstract)**

Keywords: *Non-associative loop, Inverse property (IP)*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0084

Solstices in the tropics

Roleda, Robert C.

This paper shows geometrically the diurnal motion of the sun in the tropics, especially during solstices. It is shown that while daytime is longest during summer solstice, in the tropics the sun is not found at its highest point on the same day. Unlike other regions, the noontime tropical sun shifts between north and south in the course of a year. This paper also presents a method for calculating the lengths of daytime and nighttime, and for calculating when a tropical sun would be at the zenith. **(Author's abstract)**

Keywords:

The Manila Journal of Science, Volume No. 1 Issue No. 2, 43-48
(Filipiniana Analytics)
Fil(S) Q1 M314 1/2 1998

SSADM system data modeler: A data modeling tool

Magboo, Ma. Shiela A.

Data models help ensure a good database design. However, most data modeling tools are either pure data modeling tools or have some sort of integration but is too costly for most people. To solve this problem, the author created SSADM System Data Modeler, a computer-aided software engineering (CASE) tool that supports both top-level and bottom-level approach to data modeling. The tool conforms to the nations used in Structured Systems Analysis and Design Method (SSADM) Version 4+, a technique popular in the United Kingdom that supports the analysis and design phases of information systems development [Goodland, 1995].

The objective of this study is to identify the basic data modeling features that data designers look for and to show that SSADM System Data Modeler satisfies most of these basic features.

The author enumerated the list of data modeling features of SSADM System Data Medeler and tested each to verify that the tool is indeed capable of performing the indicated features. These features include tha ability to (a) create data representation using Logical Data Models (LDM) consistent with the syntactical rules of specific method, in this case SSADM; (b) edit description about entities, relationships and attributes which further illustrate the objects, their properties and interrelationships with other objects; (c) perform normalization up to Third Norma Form; (d) integrate the results of top-level and bottom-up approach to data analysis; (e) provide consistent environment to prevent the user from performing invalid actions; (f) create the database structure of the corresponding diagram in MS Access; (g) automatically update the diagram and corresponding database whenever an operation such as create, edit or delete of entitie, relationships or attributes is performed; (h) generate error messages in case of diagram inconsistencies; (i) help facilitate to describe how to use the software; (j) print the diagram as well as other documents supporting the diagram.

SSADM System Data Modeler satisfies most of the expectations, however, it falls short on the following aspects: (a)database platform it creates; (b) its inability to convert a legacy database to another platform; (c) the notation it supports; and (d) the number of users if accomodates. Although it has a capability to create a database structure from the resulting diagram, the resulting database platform is limited to Microsoft Access. It has no reengineering features to convert a legacy database into another platform. It supports only one notation, the SSADM notation, which is not as widely used as the other notations. It does not support the Unified Modeling Language (UML) notation which is the de factor standard for object-oriented analysis and design. It is also stand-alone, not multi-user like what most data designers want. However, despite all these limitations, SSADM System Data Modeler is still able to accomplish most of the features of a basic stand-alone data modeling tool. The resulting software can then be refined later to address most, if not all the identified limitations. **(Author's abstract)**

Keywords: *Data modeling, Computer-aided software engineering (CASE), Logical data structure (LDS), Logical date model (LDM), Entity relationship diagram (ERD), Structured systems analysis and design method (SSADM)*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 265-257
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0086

Static and dynamic hugoniots of $ZnSe_xS_{1-x}$ single crystals

Tiong-Palisoc, Shirley

Static phase transition points of Znse and $ZnSe_xS_{1-x}$ (0.40 d" x d" 1) single crystals in the high pressure region are determined based on the transformation pressures of Bi I-II, Bi III-V and ZnS using the cubic anvil method where the pressure-induced variation of resistance is measured. The transition pressures of the samples vary linearly with the composition of ZnS in the $ZnSe_xS_{1-x}$. The shock compression curves of $ZnSe_{0.85}S_{0.15}$ single crystals are also investigated. The pressure -particle velocity Hugoniot is found to agree with the corresponding Hugoniots of ZnS and ZnSe up to the phase transition point. The P-V isotherm of $ZnSe_{0.85}S_{0.15}$ derived from the $U_s - U_p$ Hugoniot is consistent with the calculated P-V curve based on Bridgman's static data of ZnS and ZnSe. **(Author's abstract)**

Keywords: *Dynamic, Static, ZnSexS1-x, Hugoniot, High pressure, Phase transition, Cubic anvil, Shock wave, Bridgman, Semiconductor*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 373
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0087

Strength Evaluation of flexible securing systems for ship's deck-stowed containers

Vea, Reynaldo B.

The seaway forces acting on ship's on-deck containers, the elements of strength of containers and their securing gear and the equations characterizing the behavior of flexible securing systems are discussed. An algorithm that generates points for a container stack weight diagram, for use by ship deck officers, is presented. **(Author's abstract)**

Keywords:

Philippine Engineering Journal, Volume No. 5 Issue No. 2, 48-65
(Filipiniana Analytics)
Fil(S) TA4 P532 5/2 1984

0088

Structural analysis of commercially important polysaccharides from Philippine Seaweeds

Aguilan, Jennifer T., Chainani, Edward T., De Jesus, Armando H., Dancel, Ma. Cristina A., NiÃ±onuevo, Milady R., Pasuelo, Marites J., Dayrit, Fabian M.

This paper aims to present studies on the structural analysis of commercially important polysaccharides such as *kappa (k-)* and *iota (i-)* carragenan obtained from major sources of Philippine seaweeds such as *Kappaphycus alvarezii, K. cotonii, Kappaphycus* sp. *"sacol"* variety and *Eucheuma denticulatum*.

The polysaccharide content of fresh seaweeds was analyzed in situ using FT-IR microscope. Film samples of carrageenan extracts were also prepared from native and alkali modified extract and analyzed using the FT-IR spectrophotometer. Results obtained from both techniques were found to be comparable. The absorption peak observed at 845 cm^{-1} was characteristics of the sulfate groups at C-4 position of the galactopyranosyl resideu of the *k*- carrageenan extracts from all three *Kappaphycus* species. On the other hand, absorption peaks observed at 805 cm^{-1} and 845 cm^{-1} correspond to the sulfate groups found at the C-4 position of the galactopyranosyl residue and at the C-2 position of the 3, 6-anhydrogalactopyranosyl residue from the *i*-carrageenan extracted from *E. denticulatum*.

One dimensional ^{1}H and ^{13}C NMR experiments were also performed on the native and alkali modified extracts obtained from the four seaweeds species studied. The anometric signal due to C-1 of the 3, 6-anhydrogalactopyranose unit (*k*-A1) at 95.2 ppm is the major identifying features of the *k*-carrageenan bearing seaweeds such as the three *Kappapycus* species studied. The anometric signal due to C-1 of the 3, 6-anhydrogalactopyranose unit (*t*-A1) at 91.9 ppm is the major identifying feature of the *i*-carrageenan bearing seaweeds such as the *E. denticulatum* studied. Information on the presence of minor polysaccharide components detected from the ^{1}H and ^{13}C NMR were also reported.

The monosaccharide constituent analysis was performed by preparing alditol acetate derivatives by partial reductive hydrolysis of the carrageenan extracts. The glycosidic linkage was determined from partially methylated alditol acetate samples. All derivatized samples were analyzed using the GC-FID and GC-MS. Results show that a ratio of 43.2 (%):48.7(%) of 3, 6-anhydrogalactose: galactose content on the average were obtained from the three *Kappapycus* species while a ratio of 29.6(%):63.8(%) was obtained for *E. denticulatum*. This shows that major monosaccharide components are a galactose and a 3, 6-anhydrogalactose which are actually the suger units which from the disaccharide repeating unit of carrageenan. Results from the methylation or linkage analysis show that for all three *Kappapycus* species the major components are 41.4% 1,4,5-tri-O-acetyl-2-mono-O-methyl-3,6-anhydrogalactitol and 48.6%

1,3,4,5-tetra-O-acetyl-2,6-di-O-methylgalactitol was obtained for *E. denticulatum*. The results show and confirm that the type of linkage is a 1 '! 3 linked galactopyranosyl residue and 1 '! 4 linked 3, 6-anhydrogalactopyranosyl residue. **(Author's abstract)**

Keywords:

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Issue No. , 374-375
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0089

A study on the mosquito repellant effect of *Blumea Balsamifera* (Sambong)

Pascual, Charisse G., Romero, Karen, Regachuelo, Dulce, Patricio, Anne Marie, Rom, Nyvi Lou, Quinto, May Faye, Manalaysay, Gladys, Pabalan, Karmina, Parreno, Charmaine, Peralta, Aubrey, Pilongo, Jasper, Reyes, Maureen, Salvador, Rene Mari, Tionghoy, Annal Lizza, Virola-Leh, Mary Ann

Objective: To determine the repellant effect of *Blumea balsamifera* (Sambong) leaves on mosquitoes.

Setting: MCU-FDTMF

Study Design: Experimental

Methodology: The study wasÂ divided into 2 stages. The first stage was the preparation and production of the mosquito coil from sambong leaves. The second stage. which was the experiment proper, was done in indoor and outdoor setting. This was the time when the mosquito coil made from sambong leaves was compared with the commercially available mosquito coil based on two criteria, namely: the mosquito repellant property and the time elapsed before the mosquito repellant effects were observed.

Results: Regarding the mosquito repellant property there was no significant difference between sambong and commercially available mosquito coil on different trial set up (p value > 0.05). Based on the time elapsed before the mosquito repellant effect were observed, there was a significant difference noted, with the mosquito coil made from sambong leaves taking effect earlier compared with the commercially available mosquito coil (p. value < 0.01).

Conclusion: The study revealed that the mosquito repellant effect of sambong and commercially available mosquito coil was comparable. The mosquito coil made from sambong leaves was more effective having a shorter time elapsed before it takes effect compared with the commercially available mosquito coil. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 35 Issue No. 1, 32-38
(Filipiniana Analytics)
Fil(S) Q181 P56 35/1 2003

0090

Survival and growth of vitex parviflora juss grown in various potting media

Lasmarias, Victoria T., Aumentado, Generosa C., Bucad, Armando U.

Molave, *Vitex parviflora* Juss., seedlings were potted in 7" x 8" polyethylene bags in 10 different soil media. Eighteen weeks after potting, the sand and humus mixture (equal volume) appeared to be the best medium in terms of height grown, percentage survival and shoot-root ratio. Ordinary garden soil (OGS) and humus (1:1) mixture, and OGS and sand (2:1) mixture were the next two desirable media. Humus performed best in height growth, but had the highest shoot-root ratio which was undersirable. Sawdust and sand did not appear to be suitable soil media. **(Author's abstract)**

Keywords: *Molave, Shoot-root ratio*

The Pterocarpus: A Philippine Science Journal of Forestry, Volume No. Issue No. , 21-24
(Filipiniana Analytics)
Fil(S) SD1 P95 v.1 1975

0091

Synodic periods of moons and planets

Roleda, Robert C.

Periods of moons and planets are often expressed relative to stars. Called the sidereal periods, these offer the advantage of expressing the quantities in common units, allowing for easy comparison. There are instances, however, when one might want to know the periods of moons and planets as seen from the planets themselves. For example, the Pathfinder mission to Mars require solar power for its varous activities. Hence observations are taken only during Martian day time. This paper presents ways of translating sidereal periods to synodic periods. **(Author's abstract)**

Keywords:

The Manila Journal of Science, Volume No. 1 Issue No. 2, 37-42
(Filipiniana Analytics)
Fil(S) Q1 M314 1/2 1998

0092

The advertisement calls of two endangered species of endemic Philippine frogs: Platymantis spelaeus and P. insulatus (Anura; Ranidae)

Brown, Rafe M., Dolino, Cynthia N., Alcala, Ely, Diesmos, Arvin C., Alcala, An

We provide the first published accounts of the acoustic mate-recognition signals of the Negros cave frog, *Platymantis spelaeus*, and the Gigante Island frog, *P. insulatus*. Both species are endemic to the Visayan Pleistocene Aggregate Island Complex (and are from Negros and Gigante islands, respectively), and both species are considered to be at some level of vulnerability of extinction due to the activities of humans in their very restricted geographical ranges.

On the limestone outcrops of the Municipality of Basay in southern Negros Island, *P. spelaeus* calls in and around caves and crevies of porous limestone karst. The mating calls of males of the species are unusually complex, consisting of paired calls of two separate (=notes) each. Each note is a tonal frequency arc, and one portion of the second note is vibrational and amplitude modulated. In paired calls, the first note of the second call possesses relatively rich harmonic structure (up to five distinct harmonics of the fundamental frequency); remaining notes may have up to three harmonics.

The Gigante Island group endemic *P. insulatus* still persists despite near complete removal of original vegetation on the islands in this small land-bridge archipelago. *Platymantis insulatus* calls from crevices and small cave openings in limestone cliffs and outcrops following heavy rains. The mating call of this species is pulsed and highly amplitude-modulated, consisting of a long pulse train, with a gradually increasing pulse rate and decreasing interpulse interval throughout the call until concluding with an extremely rapid final burst of pulses. Each pulse possesses four distinct frequency components and two separate subpulses; examination of expanded waveforms indicates that each pulse is also a brief descending frequency sweep.

We compare the mating calls of each species to other taxa in the previously-defined species group to which each belongs and we note call characteristics that uniquely diagnose each species. Call bioacoustics are powerful techniques for studying species-specific behavioral and neurophysiological attributes of Philippine frogs; we expect that several more endemic Visayan species may be discovered in the near future through on-going application of these techniques to problems in Philippine frog taxonomy and behavioral ecology. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 43 Issue No. 1, 91-109
(Filipiniana Analytics)
Fil(S) AS538 S46 43/1 2002

0093

The impications od decentralization for integrated coastal manangement sustainability in the Philippines

Sievanen,

In 1991, the Philippines passed the Local Government Code (LGC) which transferred many coastal management responsibilities from the Central Government to Local Government Units (LGUs). Based on a decentralization framework proposed by Cohen (1999), this paper compares two case study sites to determine the effects of two forms of decentralization on coastal management outcomes and resulting sustainability implications. Mabini-Tingloy, a popular tourist destination, is used to represent a case of "institutional pluralism" while Bais bay is used to illustrate a case of a "distributed institutional monopoly." While decentralized approaches are often critiqued for limited resources, failure to encourage commitment of local officials, lack of coordination between groups, and low local-level technical and managerial capacity, this paper argues that a situation of institutional pluralism has the potential to better allow non-central and private sector institutions and firms to carry out task-related roles more accountably, effectively, and efficiently than governmental institutions holding monopolies over public sector tasks. In the Philippines, these institutions must have a good relationship with the LGU since LGUs have a great deal of political power in the current framework. Task will be carried out more accountability, effectively, and efficiently in situations with an accountable private sector, political space necessary to accomplish public sector task, and an expressed agenda to accomplish these task. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 44 Issue No. 1, 230-264
(Filipiniana Analytics)
Fil(S) AS538 S46 44/1 2003

0094

Thyrotoxic periodic paralysis (TPP): The MCUH savior faire

Samoy, Elmer P., Mainimtim, Eva Marie T., Adlao, Julius, Bartolome, Vincent, Pabilonia,

Objectives: To determine the prevalence of Periodic Paralysis among Filipino patients diagnosed with thyrotoxicosis at MCU-FDTMF Hospital. To determine the epidemiologic characteristics, seasonal occurance, characteristics of paralytic attacks, and the precipitating factors associated with the disease.

Research Design: Descriptive.

Setting: Department of Internal Medicine, MCU-FDT Medical Foundation and Hospital.

Sample Population and Methodology: A review of the medical records of 72 patients admitted at MCU-FDTMF Hospital with a final diagnosis of Periodic Paralysis, Hypokalemic Periodic Paralysis, Familial Periodic Paralysis or Thyrotoxic Periodic Paralysis was done from January 1997 to October 2002. The medical history, physical and neurological exam findings, and laboratory work-ups (serum K+ and thyroid function test) were tabulated and analyzed. Sixty-seven records were available for review, and 16 cases had an unequivocal biochemical evidence of thyrotoxicosis. Of the 16 records, 12 had the final diagnosis of TPP.

Result: The mean age of the patients was 32 years old, with a 15:1 male to female ratio. The initial attacks were common in the early morning (68.75%) and during the warmer months of the year, February to May (56.25%). The mean duration of the paralytic attack was 28.19 hours. All patients had bilateral lower extremity involvement, and 56.25% had concomitant bilateral upper extremity involvement with lesser intensity. Majority (75%) had moderate muscle weakness with motor grade of 2-3/5. The precipitating factors were strenuous activity, eating salty foods and cold exposure. Cardiac rhythm disturbances noted were atrial fibrillation, non-specific ST-T wave changes and incomplete right bundle branch block. All patients had hypokalemia upon admission and had normokalemia upon recovery of motor function. Majority (50%) received potassium replacement only. Others received a combination of ß-blocker with potassium replacement and or an anti-thyroid drug. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. Issue No. , 25-31
(Filipiniana Analytics)
Fil(S) Q181 P56 35/1 2003

0095

The tongue: A rare site of extrapulmonary TB

Magboo, Arthur T.

Objective: This case report aims to present a rare site of extrapulmonary tuberculosis in the oral cavity and its improvement after therapy.

Design: Case report

Setting: Out-Patient Clinic, Department of Otolaryngology, MCU-FDTMF Hospital

Case Summary: A 65-year old male consulted at the out-patient clinic because of an ulcerating mass in the tongue of 3 years duration. Clinical features would suggest a malignancy but after incisional biopsy, histopathologic findings revealed caseation necrosis which was compatible

with tuberculosis. Radiographic examination of the chest revealed a far advanced disease with cavitations. After a few weeks of anti-Koch's therapy, a remarkable improvement was observed.

Conclusion: Tuberculosis of the tongu is a rare clinical presentation of extrapulmonary tuberculosis which may be overlooked by physicians. By maintaining a high index of suspicion and awareness of its prevalence. TB of the head & neck can be managed successfully such as in this case. **(Author's abstract)**

Keywords:

Philippine Scientific Journal, Volume No. 35 Issue No. 1, 39-44
(Filipiniana Analytics)
Fil(S) Q181 P56 35/1 2003

0096

Utilization of local materials for the manufacture of fireclay refractories

Franco, Samuel S.

Fireclay is a basic refractory consisting of primarily hydrated alumino silicates with a silica (SiO_2) content of up to 78% and an alumina (Al_2O_3) and other minor constituents remaining not more than 38%. Fireclay materials vary widely in composition and in properties. Generally, firebricks based on kaolin show higher refractoriness and load resistance. Increase in the porosity of firebrick reduces the amount of spalling that occurs. Resistance to chemical attack is reduced with increasingly porosity. It is believed that a higher Al_2O_3 content increases the resistance to attack by molten materials that contact the refractory materials.

Local clay materials and river sand were used in the formulation of the different refractory bodies. To increase the porosity and refractoriness of the refractories, local materials were used like saw dust, rice hull ash and coal. The proportions of the organic materials range from 2 to 10%. The refractories were fired at 1050^{o}C, 1150^{o}C and 1200^{o}C. Slabbing was used in the making of refractories.

Local clay materials were found to be suitable for the manufacture of refractories for the construction of kilns of low firing ceramic products as well as for bakeries.

The porosity and the degree of refractoriness of the materials are directly proportional to the organic content. However, the strength of the refractories is inversely proportional to the organic materials added. The firing temperature of 1150oC was found to be the optimum temperature for firing refractories for local application. **(Author's abstract)**

Keywords:

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 366
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0097

Utilization of local red clay for the production of terra cotta by slip casting

Rivera Virtudazo, Raymond V., Pugat, Coronalyn, Puyaoan, Alma, Tamayo, Bernie, Esquierdo, Cristeta, Apollo, Ben Ezra, Dejeto, Rodrigo V.

Majority of local red-firing clays do not fit the slip casting method because red clays have a very complex behavior.

The study of casting properties of local red clays is deemed important to address the need of ceramic small company to find local red clay casting bodies with stable rheological properties, behavior and low production cost. The development of local red clay with identified fillers will provide a relative inexpensive raw materials or finish product and create additional income to the community.

This research study focused on the development in casting behavior of the local red clay (Ilocos Norte) for Nangguyudan red clay, Macayepyep red clay and Baligat red clay. Slip casting method was used in order to evaluate the experimental red clay (Nangguyudan, Macayepyep and Baligat red clay) for the development of Terra Cotta Product.

Result of the study show that Nangguyudan and Macayepyep red clays exhibit good casting properties based on the fluidity, physical properties and the experimental product that was produced in the research study. However, Baligat red clay can be costable at formulation 70:30 (clay – sand ratio) provided that it will follow specific procedure for casting methods. **(Author's abstract)**

Keywords: *Fluidity, Local red clays, Slip casting, Terra cotta*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 364-365
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0098

Validity indices of clinical parameters in predicting lumbar puncture yield in children with febrile seizures

San Nicolas, Jr., Nicanor P., Lukban, Marissa B.

To determine the extent at which clinical information can serve as tools in predicting lumbar puncture (LP) yield, children between 3 months to 6 years who visited the UP-PGH Pediatric Emergency Room for their first episode of seizure associated with fever were prospectvely evaluated. A total of 50 patients were included in the study. Eleven (22%) cases of meningitis were diagnosed. The relation of clinical parameters with meningitis in terms of predicting LP yield was assessed using combined pooled correlation matrix (Pearson's, Point-Biserial, Phi-coefficient) and regression analysis. The following were significantly correlated with abnormal CSF results: (1) duration of fever > 3 days; (2) the presence of anorexia, vomiting and sleep disturbances; (3) a physician consult within 48 hours prior to seizures; (4) the presence of ear discharge; (5) abnormal neurologic findings like nuchal rigidity and focal signs; (6) level of consciousness; and (7) occurance of seizures at the Emergency Room. Among these factors, the presence of anorexia, vomitting and sleep disturbances; the presence of ear discharge and a depressed level of consciousness were found to be independently associated with LP yield. **(Author's abstract)**

Keywords:

Postgraduate Pediatrics, Volume No. 12 Issue No. 1, 7-16
(Filipiniana Analytics)
Fil(S) RJ1 P67 12/1 1996

0099

Varanus mabitang, a rare monitor lizard from Panay Island and a new conservation target

Gaulke, Maren, Curio, Eberhard, Demegillo, Arnold, Paulino, N

Despite its huge size (minimal total length of 175 cm), the Varanus mabitang became known to science only in 2001. According to present knowledge, this blackish, arboreal lizard is confined to forested areas of NW and W Panay. It has a vegetarian diet, consisting of fruits and leaves of different forest plants. Due to the restricted range and its specialized habits, the Mabitang is a threatened species. Its protection is directly correlated to the protection of its habitat. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 43 Issue No. 1, 24-41
(Filipiniana Analytics)
Fil(S) AS538 S46 43/1 2002

Viscosities of pure and binary mixtures of methyl laurate, methyl myristate and methyl palmitate at 30, 40, 50, 60, 70, 80, 90 ^{o}C

Saquing, Carl D., Arquiza, Apollo C., Azul, Jeff

The viscosity was measured for the pure, binary mixtures for the lauric, myristic and palmitic methyl esters (ME) and mixture for at least five MEs, at temperatures 30, 40, 50, 60, 70, 80, 90^{o}C and a pressure of 1 atm using a capillary flow method equipped with a Ubbelohde viscometer. The data measured already are many (about 80 data points) and of exceptional quality, having relative standard deviations not exceeding 4.0% representing at least three trials for each data point.

Results showed that viscosity decreased with increasing temperature, but increased with increasing chain length. The measurements were correlated with Fulcher and Andrade equations for pure MEs, and Arrhenius and Nissan-Grunberg equations for binary mixtures. All the equations gave a very satisfactory fit to the viscosity of the pure and liquid mixtures studied. In each case, no percentage difference was greater than 4% between experimental and calculated results.

A generalized equation and a graph relating viscosity to the number of carbon atoms and temperature were developed. Such an equation and graph would be useful in predicting the viscosity of any methyl ester given the number of carbon atoms and temperature. Initial results manifest that very good prediction is achieved at higher temperatures, while more improvements are to be desired at lower temperatures. This may be due to the fact that non-idealities by virtue of stronger molecular interactions are more pronounced at lower temperatures. Further studies are being done to incorporate this in the model. The Grunberg-Nissan interaction energy constants are also reported, along with their analyses.

Finally, the viscosity of the methyl ester mixture produced from coconut oil was found to be closest to the binary mixture of 70% methyl laurate and 30% methyl myristate, hence can be a good approximation to the multicomponent mixture. **(Author's abstract)**

Keywords: *Viscosity, Ubbelohde, Viscometer, Methyl esters, Methyl laurate, Methyl myristate, Methyl palmitate, Mathematical model, Equipment design, Generalized equation, Carbon atom*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

Visual fruit preferences of Visayan Tarictic Hornbills, *Penelipides panini panini* (Bucerotiformes: Bucerotidae), and musky fruit bats, *Ptenochirus jagori* (Megachiroptera: Pteropodidae), in cafeteria experiments

Luft, Stefan, Tacud, Benjamin, Urbina, Henry, Geronimo, F

Cafeteria-choice experiments revealed preferences of Visayan Tarictic Hornbills (*Penelopides panini panini*) and Musky fruit Bats (*Ptenochirus jagori*) for test fruits with different wavelength reflection characteristics. Preferences for certain colors were assessed by offering artificially colored fresh fruit cubes of banana pulp ('test fruit'). Findings indicate that white hornbills preferred red and blue test fruits, fruit bats showed a preferrence for yellow and red test fruits. Although fruit bats are color blind, reflection properties of fruits might support visual guidance for foraging bats under dim light conditions. Samples of reflectance measurements of 'typical' bat and bird fruits in the wild are given. **(Author's abstract)**

Keywords:

Silliman Journal, Volume No. 43 Issue No. 1, 42-58
(Filipiniana Analytics)
Fil(S) AS538 S46 43/1 2002

0102

Voltammetric determination of lead and mercury using carbon paste electrodes modified with water hyacinth, *Eichhornia crassipes* (MART) SOLMS.

Hernandez, Princess C., Santos, Jose H., Revilleza, Ma. Jamela R., Flavier, Maxima E.

Water hyacinth, *Eichhornia crassipes* (Mart.) Solms., considered as one of the world's worst weeds, can cause reduction of water flow and restrictions in commercial fishing. However, these plants were reported to accumulate metal ions, a property explored in the present research to address monitoring of heavy metals. This study describes the use of a carbon paste electrode modified with the roots of *Eichhornia crassipes* (CPEMEC) for the determination of heavy metals such as lead and mercury by differential pulse anodic stripping voltammetry (DPASV). Water hyacinth obtained from Laguna de Bay was freeze dried to preserve the integrity of the metal-binding sites. The modifier was mixed with carbon powder in a 1:5 ratio and mineral oil added to form a paste. This was packed inside a 2-mm diameter polyethylene tube and a copper rod was inserted to provide electric contact. The CPEMEC was used in the voltammetric measurements of Pb(II) and Hg(II) in aqueous solutions. For lead analysis, the sensitivity and detection limits were found to be 6 ìA/10^{-6} M and 3.0 x 10^{-9} M, respectively. On the other hand, mercury (II) analysis gave a sensitivity of 10 ìA/10^{-6} M and a detection limit of 1.2 x 10^{-8} M. Voltammetric response was optimized with respect to electrode composition, accumulation time, deposition time, pH, and deposition potential. DPASV using the modified electrode was used in the analysis of actual laboratory samples. The result obtained by DPASV was compared with standard AAS method and was found to be 30% lower. The abilityh of water hyacinth to accumulate metals was attributed to the ion-exchange properties of various functional groups present in the plant material. The ion exchange capacity of *Eichhornia crassipes* roots was also

determined and found to be 2.72 G 0.21 meq/g using atomic absoption spectrometry (AAS). **(Author's abstract)**

Keywords: *Anodic stripping, Voltammetry, Carbon paste electrodes, Heavy metal analysis, Chemically-modified electrodes, Ion-exchange voltammetry*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

AGRICULTURE

0103

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*

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

0104

Assessment of costs and benefits of a carbon sequestration project in mangrove plantation

Camacho, Leni D., Carandang, Antonio P., Camacho, Sofronio C., GevaÃ±a, Dixon T., Pulhin, Florencia B., Combalicer, Edwin A., Paras, Floribel D., Rebugio, Lucrecio L.

Payments for environmental services, such as carbon sequestration, propose a win-win solution in climate change mitigation and poverty alleviation. Recognizing the potential economic benefits that can be derived in establishing a carbon sequestration project, a cost and benefit study was done in a mangrove plantation site in northern Bohol, Philippines. Twelve sample plots were established to assess carbon stocks. Three carbon prices were used to determine the net incremental benefits at different ages (15, 20 and 40 years old) of plantations, namely, 10, 15 and 20 USD/ton. Correspondingly, the net present values (NPV) of plantations at different ages and prices were computed. Additionally, the internal rates of return (IRR) were computed for each price of carbon. By estimate, the community will receive negative NPVs if the purpose of the plantation establishment was solely devoted to carbon market at USD 10 per ton and at i = .08. The NPV starts to become positive at USD 15.0/ton at year 20 to 50. At price USD 20, all NPVs are positive. These values indicate that the feasibility of establishing mangrove plantation for carbon market alone is very sensitive to carbon price, *i.e.* at prices below USD 15.0 per ton, the plantation project would not be feasible. Similarly, if the interest rate will increase to 16 percent, the project would become only feasible at price USD 20.0/ton. Consequently, the IRR obtained were 5%, 14% and 50% for prices USD 10, USD 15 and USD 20, respectively. At prevailing market rates of interest at 8.0 percent, the project would not be feasible at USD 10.0 carbon price. **(Author's abstract)**

Keywords: *Agriculture, Carbon stock, Conservation, Economic value, Mangrove plantation, PES*

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0105

Banahaw de dolores after a five years of restricted public access: its water quality and socio-economic status of the community

Enal, Maria Luisa A., Jolongbayan, Rey M.

In 2004, certain areas of Mount Banahaw were declared closed to public access by the Protected Area Management Bureau of the Department of Environment and Natural Resources(PAMB-DENR). This declaration was made to restore the ecosystem integrity from the deterioration caused by unregulated human activities. As a major watershed in Quezon and Laguna, this resource needs restoration activities to ensure that the water sources in the area can regain their intended use before it is re-opened to the public. Water quality assessment was conducted in the three major water sources (Kristalino, SalamingBubog and Suplina Falls) in the closed area from September 2010 to August 2011 using physical and

bacteriological parameters. The impact of closure on the socio-economic of Barangay Kinabuhayan, the community nearest to the closed area, was also determined. Results revealed that water from Banahaw de Dolores was generally cold (18.2ºC-21ºC) with near neutral pH (6.37-7.76) and low levels of chemical contaminants (43.1-45.4 ppm total dissolved solids, TDS). Coliform analysis showed that SalamingBubog Falls has overall status of Class AA, while Kristalino Falls and Suplina Falls have Class Astatus based on the water quality criteria set by DENR. This indicates that the water sources have regained their beneficial use as public supply of water after five years of moratorium.Survey showed that 93% of the households in the community are dependent on the mountain for their livelihood. Because farming activities were not affected by the closure, only 12% of the residents (porter/guide and store owners) reported a decrease in income due to the moratorium.Despite the perception among residents that closure did not affect their living condition,data indicated that 60% of themremained below the poverty line based on the 2011 poverty threshold. It is recommended that the local government of Dolores should initiate livelihood programs to empower the community through income diversification.**(Author's abstract)**

Keywords: *Agriculture, Barangay Kinabuhayan, Mt. Banahaw de Dolores closure, Water quality, Socio-economic, Protected area*

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0106

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

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Many Filipinos suffer from cancer, atherosclerosis, and other degenerative diseaseswhich 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 prepard 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 pteriodogarden 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*

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0107

Characteristics of local goat's milk and suitability in cheese production

Yap, Marilyn T., Davide, Clara L., Peralta, Cleofe N., Sarmago, Ione G., Sarmago, Leah E.

The physical properties and gross composition of 72 individual raw milk samples from purebred goats and 14 from graded goats were analyzed. Twenty three batches of bulked goat's milk were also analyzed for composition and separately made into fresh soft cheese, Blue, Camambert Cheddar and Edam cheeses in comparison with cow's milk. Cheese yield, composition and sensory qualities were evaluated.

Breed influenced the gross composition and physical properties of goat's milk, the purebred Anglo-Nubian goat giving milk with higher fat, total protein, ash, acidity, viscosity and freezing point than those of the purebred Toggenburg and Alpine goats. Alpine goat's milk was lowest in most of the components studied but highest in pH value. Regardness of breed, the individual goat's milk averaged 3.72% fat, 3.14% protein, 11. 78% total solids, 0.83% ash, 0.134% acidity, and pH 6.69.

Milk from graded goats (50% native x 50% Alpine. Toggenburg, or Anglo Nubian) was richer in milk constituents and had higher values for the physical properties than the purebreds.

Except for a slightly higher protein, ash and total solids, gross composition of the bulked Anglo Nubian goat's milk was comparable with that of bulked cow's milk. Cow's milk is yellowish-white but goat's milk is white with an indistinct odor which turns into a "goaty" flavor on longer storage.

Goat's milk has a shorter coagulation time but its cheese yield and composition were comparable with those of cow. Goat cheese texture was generally coarse and color was paler.

Flavor intensity of the ripened goat cheeses was stronger and less preferred, but overall sensory qualities were acceptable.

General characteristics of goat's milk ate quite similar to those of cow's milk and it is highly suitable for the local manufacture of fresh soft cheese and ripened Cheddar, Edam. Blue and Camembert cheeses and therefore may be expoited to expand the domestic cheese industry. **(Author's abstract)**

Keywords: *Agriculture, Goat milk, Cheese production, Breed*

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0108

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 charateristics of the male parent dominatly showed in the progenies like color and the size of tail. (**Author's abstract**)

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

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0109

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*

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0110

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*

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0111

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. Moreever, 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*

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0112

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 mistitis 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*

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0113

Detection of putative tungro resistance genes in rice through mRNA differential display

Romero, Gabriel O., Solis, Renando O., Uera, Raynato B.

Tungro continues to be the most devastating rice disease, affecting many of the modern varieties including the widely popular IR64. This study aims to identify and clone the genes for resistance against rice tungro virus (RTSV), the primary causal viral agent, to be used in the genetic engineering of tungro resistance (R) in the modern varieties. We have identified potential R-related genes from examining the differentially displayed messages between two near-isogenic

lines namely, TN1 (susceptible) and T1-11-8 (resistant). T1-11-8 contains the resistance gene(s) from an Indian landrace ARC11554. At 21 days after sowing, the R and S plants were inoculated with viruliferous green leafhopper for three days under mylar cage. At 20 days after inoculation, the R and S plants were phenotyped by ELISA method. At 21 days after inoculation, RNA was extracted and subsequent cDNA synthesis, PCR amplications and gel electrophoresis were performed. Together with oligo (dT)G, four out of 20 arbitrary primers showed differential PCR products between the T1-11-8 (R) and the TN1 (S) lines on the agarose and polyacrylamide gels. The R-specific bands may represent R-related genes and are now under intensive cloning efforts. **(Author's abstract)**

Keywords: *Rice tungro spherical resistance, PCR, ELISA, ARC11554, TN1, Agriculture*

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0114

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*

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0115

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*

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0116

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*

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0117

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.*

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0118

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. As 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*

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0119

Enhancing the use of indigenous irrigation systems and practices

Taclan, Lorcelie B.

This study was conducted to identify existing indigenous irrigation structures and practices of the farmers in Ilocos Norte during the wet and dry seasonsof 2012 to document these practices, to explore the importance of such practices to water conservation and management, and to design an enhancement program for the use of such systems. The study areas considered were upland and coastal barangays of Pasuquin, Ilocos Norte. Farmer leaders and senior citizens within the identified study areas were interviewed regarding the existence and use of water conservation practices
and its importance to water management. Ocular inspection and documentation were done on the identified structures.Results showed that: 1) there exists traditional irrigation systems used by farmers in the study areas. Irrigation structures such as earthen canals, farm reservoirs lined by rocks, and earthen reservoirs within the farm itself were built and used generations back; 2) farmers employed both natural and man-made structures to impound and use water during both the rainy and dry seasons; and 3) water management practices included the use of mud to control water from the farm ditch to the field in the absence of gate valve structures.Enhanced productivity of these systems can relieve pressure on surrounding areas. The sustainability of indigenous irrigation systems is thereby directly linked to the environmental sustainability of the watersheds of which they form a part.From a social and cultural perspective, the institutional arrangements embedded in traditional irrigation systems are important both to the political stability of the immediate region, and for the cultural integrity of the people whose land is to be irrigated. **(Author's abstract)**

Keywords: *Agriculture, Traditional, Modern, Irrigation systems, Practices, Ilocos Norte*

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0120

Environmental fate lambda cyhalothrin in lowland rice area

Agulto, Ireneo C., Simon, Samuel R.

The use of insecticides in lowland rice farming is considered as a major contributor to contamination of the environment. It is therefore of utmost importance to determine the environmental fate of insecticides for the formulation of effective water management practices in order to minimize its adverse effect on the environment and to the community. Paddy plots with

dimensions of 12m x 12m were setup for this experiment and were sprayed with lambda-cyhalothrin insecticide. Water samples were collected on day 1, 2, 3, 5, 9, and 14 after the insecticide application. Samples were brought to the National Pesticide Analytical Laboratory for analysis. The results reveal that there is a non-linear trend in the decrease of lambda-cyhalothrin insecticide concentration in the paddy water. One day after the application, the insecticide concentration in the paddy water was reduced by 35.52% from the initial concentration. Two and three days after the insecticide application, the concentration was reduced by 97.75% and 98.42%, respectively. On the fifth day, there was no more insecticide residue found in the paddy water. Hence, in order to prevent or minimize insecticide contamination of bodies of water near the paddy field areas, lowland rice farmers should ensure that the paddy water is properly contained and should not be drained from the field up to five days after the application of insecticide. **(Author's abstract)**

Keywords: *Agriculture, Environmental fate, Irrigated rice area, Insecticide concentration, Lambda-cyhalothrin, Water management practices*

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0121

Evaluation of bio-waste mixtures and ratios to improve organic fertilizer production

Pastor, Floramante C., Pastor, Corazon Diana A., Legaspi, Noralyn B.

The most eco-friendly option to manage generated biodegradable waste is to convert these into a valuable resource, one of which is organic fertilizer (OF). However, because of the diversity of these wastes, appropriate mixture combination coupled with the right ratio are necessary considerations in the conversion process because this can facilitate faster decomposition, improve nutrient composition, and offer better recovery rate. Considering these as the criteria, eight mixture combinations and ratios of bio-wastes were evaluated, as follows: OF_1 - 55% plant debris (PD): 35% animal manure (AM): 10% carbonized rice hull (CRH); OF_2 - 35% PD: 55% AM: 10% CRH; OF_3 - 90% fresh plant debris (FPD): 0% AM: 10% CRH; OF_4 - 40% saw dust (SD): 50% AM: 10% CRH; OF_5 - 30% PD: 30% AM: 30% SD: 10% CRH; OF_6 - 40% AM: 50% PD: 10% CRH; OF_7 - 50% AM: 40% PD: 10% CRH; and OF_8 - Vermicomposting. Results showed that OF_1, OF_3 and OF_8 are preferred as the best conversion/production options because these have the highest NPK content (2.15%, 2.00% and 1.95% N, respectively; 3.55%, 3.50% and 1.06% P, respectively; and 1.45%, 2.75% and 2.12% K, respectively); fastest decomposition period (2 to 2.5 months); and highest recovery rate (50 to 70%), except OF_3 which gave only 50%, which is attributed to the composition of the mixture (90% FPD). These also gave better return of investment (ROI) ranging from 37% to 43%. These findings suggest that factors such as different bio-waste materials, mixture combinations, and

ratios affect OF production with respect to quality, duration of production, and recovery rate. **(Author's abstract)**

Keywords: *Agriculture, Organic, Fertilizer, Biodegradable, NPK, Decomposition*

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0122

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*

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0123

Genotypic differentiation in *Microlaena stipoides* populations: morphological and ecological patterns

Magcale-Macandog, Damasa B., Whalley, Ralph D.B.

Patterns of divergence among four *Microlaena stipoides* populations growing in association with four perennial grasses, *Lolium perenne* [M (Lpe)], *Poa pratensis* [M (Ppr)], *Dactylis glomerata* [M (Dgl)] and *Phalaris aquatica* [M (Paq)], in permanent pastures were examined. Of the four associated populations, M (Lpe) and M (Paq) had shorter but broader leaves and larger, heavier grains. M (Ppr) had narrower leaves, more tillers and smaller grains. M (Ppr) had the fastest rate of seed germination at 25 C while seeds of M (Paq) had the slowest germination rate.

M (Ppr) showed greatest vegetative and reproductive growth under 6% light intensity while M (Dgl) showed greatest tolerance to full light. M (Paq) and M (Dgl) showed higher tolerance to water stress than M (Lpe) and M (Ppr). Amplified polymorphic DNA fingerprints showed that M (Ppr) had the greatest divergence in the DNA banding patterns.

The patterns of variation showed that local population differences occurred among *M. stipoides* populations growing with different neighboring perennial grasses in a permanent pasture. These variations may have evolved through natural selection resulting from competitive interactions with associated perennial grasses, variation in light intensity, water availability or other factors in the environment. **(Author's abstract)**

Keywords: *Agriculture, Natural selection, Plant populations, Light intensity, Water stress tolerance, DNA fingerprinting, Microlaena stipoides*

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0124

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*

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0125

Growth performance of Batino (*Alstonia macrophylla* L.) inoculated with different mycorrhizal fungi under nursery and field conditions

Aggangan, Nelly S., Rocamora, Patrick M.

The Caliraya-Lumot-Cavinti watershed area needs immediate reforestation in order to sustain the water required for the hydroelectric power. The soil has a pH of 3.5-5.5, and is deficient in nutrients, in particular nitrogen and phosphorus. Thus, the growth of plants is stunted. Arbuscular mycorrhizal (AM) fungi play an important role in promoting growth and seedling survival in this type of soil condition. Batino (*Alstonia macrophylla* L.) is a fast growing indigenous tree species with good wood for a variety of wood products. However, it is not known which AM fungi are most suited for batino. One month-old batino seedlings were inoculated with ten AM (unidentified species under the genera *Glomus, Acaulospora* and *Enthrophospora*) fungi including Mykovam™. The growth of this reforestation species was monitored for four months at BIOTECH's nursery, UPLB and then outplanted in a grassland in the Caliraya-Lumot-Cavinti watershed area following RCBD. Under nursery conditions, the growth of seedlings mycorrhizal with eight out of ten AM fungi studied was better than the control. Under field conditions, the top four AM fungi that promoted higher height increment were: Surigao (2.16x), G19 (2.12x), Mykovam™ (2.05x) and G49 (2.01x), compared to the control (12cm). The KFRI fungus gave lower (-7%) height and stem diameter increment than the control. Surigao increased stem diameter increment by 4.07x, G19 by 4.25x, Mykovam by 4.52x, and G49 by 3.92x, over the control (3.54cm). Mykovam gave the highest leaf and root P concentrations and the lowest was the control. In conclusion, AM fungi coded as

Surigao, G19, G49 and Mykovam™ can be used to inoculate batino seedlings for reforestation in grasslands in the Caliraya-Lumot-Cavinti watershed area. **(Author's abstract)**

Keywords: *Agriculture, Glomus, Acaulospora, Enthrophospora, Biofertilizer, Mykovam TM*

0126

Growth responses of kawayan tinik (*Bambusa blumeana*) seedlings using different levels of bamboo biocharand organic fertilizer

Malab, Stanley C., Batin, Charlie B.

The ever increasing demand for bamboo, particularly for kawayan tinik or *Bambusa blumeana*, along with the very limited number and poor quality of bamboo poles available to supply the bamboo industry has made it imperative to enhance bamboo productivity through the use of high quality bamboo planting materials to produce good quality poles for the bamboo industry. The production of quality planting materials is affected by various factors which influence the growth and development of the seedlings. The use of organic fertilizers and soil enhancers are necessary to improve growth and survival of bamboo seedlings. This study aims to: (1) determine the effect of bamboo biochar in the growth of kawayan tinik seedlings; (2) determine the effect of bamboo biochar to the soil as conditioner; and (3) determine and recommend the best level of mixture of bamboo biochar and organic fertilizer. The experiment was laid out in randomized complete block design (RCBD) with four replicate and four treatments. Bamboo biochar has been found to have an influence in the growth and survival of the
bamboo seedlings. Seedling grown in pots with a combination of ¾ bamboo biochar and ¼ organic fertilizer had the highest growth measurements and survival counts compared to the other treatments. The same treatment had also a significant impact in terms of the soil's chemical properties, specifically on the increase of macronutrients (NPK) and organic matter content. The best potting mixture combination for the rapid increase in growth and survival of bamboo seedlings was the combined effect of ¾ bamboo biochar and ¼organic fertilizer for the production of high quality bamboo planting materials. **(Author's abstract)**

Keywords: *Agriculture, Bamboo, Biochar, Soil conditioner, Chemical properties, Organic fertilizer*

0127

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

Andriano, Berenice T., Tanduyan, Serapion N., Pasaje, Genes M., MuaÃ±a, 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*

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0128

Influence of watering regimes to the rooting performance of banaba (*Lagerstroemia speciosa* Linn.)

Marin, Rico A.

Banaba tree is used to beautify parks due to its attractive flowers and medicinal value. A study was conducted to evaluate its rooting performance under various watering regimes. It was carried-out in a randomized complete block design with four replications. Treatments include daily watering (T1), watering every 3 days (T2), watering every seven days (T3), and watering

once the plants show signs of wilting (T4). Two-month old seedlings with average height of 8 cm were potted in 5" x 7" polyethylene bags using loamy soil. Initial data were taken from the seedlings prior to the establishment of the study. Findings revealed that water stressed treatment (T4) had the highest length gain of the primary root at 3.225 cm. On the other hand, T1 had the lowest at 0.663 cm. Regarding percent survival, no significant difference was shown among treatments but T1 was highest at 90 % while water stressed treatments (T3 and T4) were lowest at 80 %. In terms of the number of lateral roots, treatments under water stress (T3 and T4) had slightly higher production with 4.24 and 4.07, respectively, while, the daily watering (T1) had only 4.06. On shoot-root ratio, significant differences were observed among treatments with the water stressed (T4) having the greatest at 1.308. Root-shoot ratio of T1 was 0.968 while T3 and T4 had 0.915 and 0.865, respectively. Findings imply that water-stressed plants concentrated more of its growth development on the root system rather than on the above ground parts. Root-shoot ratio is usually correlated with seedling quality. For forest trees, potential seedlings for planting must have a root-shoot ratio between 0.5 to 1. **(Author's abstract)**

Keywords: *Agriculture, Lagerstroemia speciosa, Water stress, Watering regimes, Rooting performance, Root-shoot ratio*

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0129

New irrigated lowland rice variety, PSB Rc 74 (Aklan)

Rice Varietal Improvement Program Team, University of the Philippines Los BaÃ±os (UPLB)

PSB Rc 74, popularly known as Aklan, is an irrigated lowland rice variety released by the National Seed Industry Council in 1998. In the advanced yield trials it had a yield advantage of 16.1% over IR 72 in six locations and 15.5% and 16.4% over IR 72 and PSB Rc 4 in 20 additional locations, respectively, during the wet season trials. It matures in 115 days with mean plant height of 96 cm, slightly taller than IR 72. Its responses to pests and diseases are comparable to those of IR 72. Its grain has better quality. **(Author's abstract)**

Keywords: *Agriculture, Irrigated lowland variety, National cooperative test, Rice*

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0130

Life history and host range of the mango pulp weevil, *Sternochetus frigidus* (Fabr.) in Palawan, Philippines

De Jesus, Louella Rowena A., Gabo, Richard R.

The life history of the mango pulp weevil, *Sternochetus frigidus* (Fabr.), was studied in Puerto Pricesa City, Palawan, the only area in the Philippines where the pest has been reported. Total development of *S. frigidus* in 'Carabao' mango from egg to adult stage is 32 days with five larval instars. The female lays eggs singly on the fruit peel and covers it with secretions, which hold the eggs in place. The five larval instars develop inside the fruit. The adult remains in its pupal cell inside the fruit until the latter is fully rotten, in an average of 37 days. Seventy percent (70%) of the adult weevils are able to exit from the fruit by boring a hole directly opposite the pupal cell. The rest are tapped inside the dried and rotten fruit, which leads to death. The weevil infested 'Mampalang', 'Carabao', 'Wani', 'Katchanita', 'Pico', and 'Apple' mango in Palawan. It did not infest other fruit crops. **(Author's abstract)**

Keywords: *Agriculture, Mango pulp weevil, Sternochetus frigidus, Biology, Palawan, Philippines*

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0131

Mangrove community structure as influenced by mining activities in Claver, Surigao del Norte

Jumawan, Jess H., Demetillo, Meljan T., Seronay, Romell A.

Surigao del Norte was identified as one of the municipalities with highest mangrove cover in the Philippines. However, the province also has active mining activities as it is blessed with rich mineral resources. The aim of the study was to determine the mangrove structure after decades of mining in the area. Specifically, the objectives were to conduct inventory of mangroves and associated species, biodiversity assessment, vegetation analysis, and regeneration of seedlings and saplings. There were 6 quadrats established with an area of 400 m^2. Within the quadrat, 3 regeneration plots were laid. Biodiversity indices, vegetation analysis and regeneration success were determined. Multivariate analysis was used to generate an ordination of the mangrove community. Bray-Curtis similarity index was constructed and the resulting matrix submitted to single linkage clustering and non-metric multi-dimensional scaling (nMDS). PRIMER 6 and BioDiversity Pro softwares were used in the analyses. The results showed 16 mangroves and 11 associated species observed. Dominance was highest in quadrat 3, Shannon's diversity in quadrat 1 and supported by the rarefaction analysis, evenness in quadrat 4, and species richness in quadrats 1, 2 and 6 with 9

species observed. The species distribution of pooled samples was random (P=0.04). Vegetation analysis revealed 3 species with highest importance values and these were: *Lumnitzera littorea* (68.76%), *Bruguiera sexangula* (44.42%), and *Scyphiphora hydrophyllacea* (40.29%). *Bruguiera gymnorrhiza* gave excellent seedling regeneration. All saplings gave poor regeneration condition. Similarity index revealed quadrats 4 and 5 separated from other groups at 87.7%, followed by quadrats 1 and 2 at 67.6%. The matrix was projected into nMDS overlaid with biodiversity indices showing 0.01 stress value. **(Author's abstract)**

Keywords: *Agriculture, Biodiversity, Assessment, Multivariate analysis, Regeneration, Importance values*

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0132

Mapping salinity tolerance genes in rice (*Oryza sativa* L.) using RFLP and SSSLP analyses

Bonilla, Philbert S., Dvorak, Jan, Mackill, David, Deal, Karin, Gregorio, Glenn

A molecular map of rice chromosome 1, consisting of 11 restriction fragment length polymorphisms (RFLP) and eight simple-sequence length polymorphisms (SSLPs), was constructed using a population of F_8 recombinant inbred lines (RILs) of rice to map the major gene and quantitative trait loci involved in salt tolerance. The mapping population originally consisted of 80 RILs from the extreme tails of a population of 276 RILs developed via single seed descent from an intercross between the genetically divergent parents Pokkali and IR29. Pokkali is salt tolerant while IR28 is salt susceptible. The RFLP and SSLP markers were in the same order as in the published reference maps, thereby implying the reliability of the constructed map based on this particular RIL population. The integrated map of RFLP and SSSLP markers had a total of 129.9 cM, with an average interval size of 6.8 cM. Two RFLP markers, C52903S and C1733S, with 10.1 and 22.6 cM distance, respectively, flanked the major gene, Saltol. Two microsatellite markers RM23 and RM140 flanked the Saltol gene with 16.4 and 10.1 cM distance, respectively. PLABQTL for quantitative trait loci analysis was used to detect quantitative trail loci (QTL) associated with salinity tolerance (low Na^+ absorption, high K^+ absorption, and low Na^+/K^+ absorption ratio) in chromosome 1. A common QTL for these three quantitative traits was observed within a 50 to 65 cM segment of the integrated map with a peak Log of Odds (LOD) score greater than 6.7. RM140, a microsatellite marker, and C52903S, a RFLP marker, flanked the QTL peak within 1.9 cM. Using basic information derived from this study, further fine mapping using BAC libraries in a large backcross population (BC_3F_4) will be done. (**Author's abstract**)

Keywords: *Agriculture*

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0133

Method for testing osmotic effect of salinity on leaf elongation rate (LER) of rice seedlings

Bonilla, Philbert S., Tsuchiya, Mikio, Setter, Timothy L.

A series of experiments were initially conducted to develop a method of producing optimum growth of axenic whole plants inside test tubes. LER of rice plants inside test tubes using the developed protocol was comparable to thet of plants in the open bath up to the third-leaf stage. The protocol produced microorganism-free plants and enabled comparison between effects of high molecular weight sugars and NaCI for several days without contamination.

The developed method worked well in determining the osmotic effect of NaCI and showing that growth reductions during salinity can be partly explained by the osmotic effect of NaCI. At high salinity, low osmotic potential of the medium can reduce growth. Decrease in LER of seedlings grown in 300 mOs NaCI or mannitol within 5 d suggests that the osmotic effect of NaCI can last for several days. Moreover, the NaCI stressed Nona Bokra plants fully recovered within 24 h after the concentration was reduced from 300 mOs to 2 mOs and had higher LER than the control within 2 d. **(Author's abstract)**

Keywords: *Agriculture, Axenic plants, Leaf elongation rate, Neutral osmotica, Osmotic adjustment, Rice, salt tolerance*

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0134

Methods of conducting field experiments in hillylands

Gomez, Arturo A.

Research methods of field experiments in the hillylands must address the following important features: a) wide variations among experimental plots; b) even wider variations among plots and among farms; c) measurement procedures that are inexpensive and allow for a much larger number of samples; and d) replications. The above are particularly imporatant for evaluating soil and water loss whose measurements are associated with higher errors. Examples of procedures

for measuring soil loss, evaluating sustainability and conducting on-farm trials are presented. **(Author's abstract)**

Keywords: *Agriculture, Hillylands, Field experiments, Sustainability, Sloping land*

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0135

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 detrrmine 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'=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*

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0136

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 F_1 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 *Xa*4, *Xa*7 and *Xa*21 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 F_1 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*

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0137

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*

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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*

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0139

Performance of broilers fed diets using an analog of peruvian fish meal

Mateo, Carmencita D., Centeno, Josephine R., Billena, Mylen S.

Three hundred fifty (350) day-old male broiler chicks were used to evaluate the substitution of Peruvian fish meal (PFM) with a fish meal analog (FMA) in various proportions. Substituting FMA for PFM on an equal weight basis significantly ($P < 0.05$) increased body weight gain and improved feed efficiency of chicks during their first 21 days of life. Chicks fed 100% PFM (control) compensated for their slower weight gain and lower feed efficiency during the growing period. This resulted in similar chick performance among all dietary treatments during the entire duration of the trial. The economic evaluation of the different diets shows that the FMA can be a substitute for PFM without reduction in performance. **(Author's abstract)**

Keywords: *Agriculture, Fish meal, Fish meal analog, Feed conversion efficiency, Feed cost per kilo gain, Nutrient analysis*

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0140

Phenology as tool in predicting pest incidence of Ilocos white garlic in Ilocos Norte

Galacgac, Evangeline S., Lutap, Leticia A., Acosta, Charito G.

The study on the phenology and pest incidence at different phenophases of Ilocos white garlic was conducted to determine the appropriate time of applying pest management strategies based on the phenological events of this crop. Purple blotch (*Alternaria porii*) and Cercospora leaf spot (*Cercospora duddiae*) began to have a slight damage as early as the development of the 10^{th} leaf (later part of bolting stage) and 11^{th} leaf (early part of pre-harvest stage), respectively when there was an occurrence of rainfall or when relative humidity was $\geq$88%. These diseases spread rapidly reaching a very high level of damage when the relative humidity was consistently higher than 90% but did not progress rapidly when the relative humidity was below 85%. Likewise,

these diseases occurred with slight damage during the development of the 15th leaf (later part of pre-harvest stage) when the relative humidity was consistently below 85%. There was no occurrence of these diseases during the vegetative and early bolting stages of the plants even if there was high relative humidity (>90%) and occurrence of rainfall. Mite damage (called tangle top) appeared as early as the development of the 4th leaf (vegetative stage) when there was a change (low to high) in air temperature of about 1°C or more. **(Author's abstract)**

Keywords: *Agriculture, Phenology, Pest management, Garlic, Diseases, Phenophases*

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0141

Philippine wild rices: diverse and disappearing

Borromeo, Teresita H.

The genus *Oryza* comprises two cultivated and 22 wild relatives distributed in different geographic areas. In the Philippines there are four wild relatives of the cultivated rice species *Oryza sativa: O. rufipogon, O. officinalis, O. minuta* and *O. meyeriana. O. minuta* can only be found in the Philippines and Papua New Guinea. Wild species offer unique opportunities for rice breeders to exploit certain special traits absent in the cultivated forms. They are endowed with genes for resistance to important rice pests and diseases like brown planthopper, blast and bacterial leaf blight.

The characteristics, ecology, and distribution of the four wild rice species in the country are described. Data on morpho-egronomic characters indicate that the Philippine wild rices are diverse and could be exploited for the development of improved rice varieties. Howevr, populations of wild rice species are now disappearing. In 1963 *O. minuta* was abundant in Sorsogon, Leyte and Zamboanga but none was found in these areas in the recanvass of wild rice populations in 1992. *O. officinalis* was abundant in Zamboanga and was grown in South Cotabato and Bukidnon in 1963. Although it was no longer found in these areas in 1992, it has been found growing in previously unreported sites in South Cotabato and Zamboanga.

Recanvass of collection of the samples of remaining populations of the wild rices must be given priority in a protection program. Characterization, evaluation and documentation similarity become essential components of sustainable conservation and utilization programs. **(Author's abstract)**

Keywords: *Agriculture, Wild rice, Genetic erosion, Plant genetic resources, Genetic diversity, Oryza minuta, Oryza rufipogon, Oryza officinalis, Oryza meyeriana*

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0142

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)*

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0143

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 (Fst = 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*

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0144

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 internationaly, 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 od 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*

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0145

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/m^2s. 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*

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0146

Seagrass contribution to blue carbon stocks in the Philippines

Gevana, Dixon T. , Carandang, Antonio P., Im, Sangjun

Like other marine ecosystems, seagrasses play a vital role in enhancing blue carbon stocks. Blue carbon pertains to carbon that is stored and sequestered in mangroves, salt marshes, and seagrass meadows. Seagrasses are ribbon-like subtidal plants that are usually found along intertidal zones, particularly in areas where there is pooling of water during low tide. Globally, they cover 0.1% (18 million ha) and contribute 12% (20 Pg) to the total organic carbon buried in the ocean. To estimate the carbon stocks of a typical seagrass site in the Philippines, standard quadrat sampling was done in Banacon Island, Bohol to collect plant and sediment samples for biomass and carbon density analysis. Banacon Island is the largest man-made mangrove in Asia and is one of the key biodiversity conservation sites in Sulu Sulawesi Seascape. By estimate, seagrass plants contain a carbon stock of about 1.84 tC ha^{-1}. Three seagrass species were identified namely, *Halophila ovalis, Cymodocea rotundata* and *Enhalus acoroides*. Among these, *E. acoroides* was the most common. On the other hand, carbon stock in sediment was larger at 57.32 tC ha^{-1}. Contributing much to this value is the thick sediment layer observed that ranged from 56 cm to 100cm. Overall, seagrass meadows of Banacon Island contribute to about 59 tC ha^{-1}, a value that justifies their conservation, in addition to countless ecological services that they also provide to marine organisms and humans. By rough estimate, the Philippine seagrass meadows (27,282 sq km) contain 161 Mt of carbon stock. **(Author's abstract)**

Keywords: *Agriculture, Blue carbon, Carbon stock, Climate change, Forest conservation, Seagrass meadow*

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0147

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 differst ecosystems within this region which merits further investigation. **(Author's abstract)**

Keywords: *Agriculture, Dulong, Clupeidae, 16S rRNA, Species composition, Connectivity*

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0148

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*

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0149

Slow-mildewing resistance to *Peronosclerospora philippinensis* (weston) shaw in corn (*Zea mays* L.)

Raymundo, Avelino D., Escobido, Encarnacion O., Calilung, Jr., Bienvenido J.

Different sources of resistance genes, both indigenous and from other countries, were evaluated against *Peronosclerospora philippinensis* (Weston) Shaw using epidemic parameters. A slow-mildewing type of resistance, which appeared to be mainly due to delayed onset of both local and systemic types of infection, reduced infection rate and lowered areas-under-the-disease-progress curves. These parameters, all expressions of quantitative resistance, should be considered in selecting and breeding for a higher level of resistance to *P. philippinensis* in corn. **(Author's abstract)**

Keywords: *Agriculture, Area-under-the-disease-progress curve, Downy mildew, Infection rate, Peronosclerospora philippinensis, Slow-mildewing resistance*

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0150

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 scare. 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*

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0151

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*

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0152

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 though 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*

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0153

How sustainable is organic agriculture in the Philippines?

Maghirang, Rodel G., De La Cruz, Reynaldo, Villareal, Reynaldo L.

Organic agriculture has continued to grow substantially despite the world economic crisis. It is now being viewed as an additional option to conventional or 'chemical' agriculture and not just for the niche market. But uncertainties remain that it can be an alternative option that could feed the world. The reported organic area in the Philippines is just 52,500 hectares but the government support for organic agriculture became more emphatic and accelerated in 2010 with the passing of the "Organic Agriculture Act of 2010" or RA 10068 which provides for its development and promotion in the country. Being an advisory body for science and technology policies and issues, the National Academy of Science and Technology has subsequently conducted discussions addressing the assessment of the status of organic agriculture in the Philippines. Organic pioneers and leaders in their respective fields presented papers related to the issue of 'How Sustainable is Organic Agriculture'. The organic practitioners provided relevant data on the advantages of organic agriculture on income in the case of rice and sugarcane with yields comparable to conventional farming. The need for more research and the help of the scientific community in improving the technologies in organic agriculture were also highlighted

specially on livestock and poultry. The paper on health took a different route of dealing on food safety concerns rather than directly on organic produce. But organic agriculture in its present state is still far from its full potential. Given the meager formal support throughout its supply chain including input supply, production and Research and Development on seeds, nutrient and pest management. Thus direct comparison of organic agriculture with conventional agriculture does not appear to be valid. Overall it is well accepted that organic agriculture is sustainable on the ecological aspect but sustainability on the financial and the social/cultural aspects are still being questioned.There is optimistic prognosis for organic agriculture, but the numerous challenges of agronomic, economic and cultural nature must be addressed more substantially. This would require long term support from research institutions, a strong extension system and a committed public in sharing with the costs of organic agriculture given its multi-functionality benefiting everyone. **(Author's abstract)**

Keywords: *Agriculture, Organic Agriculture Act of 2010, RA 10068, Organic agriculture, Livestock, Poultry*

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0154

Sustaining ecological services for agricultural productivity, sustainability and competitiveness

Lasco, Rodel, Cruz, Rex Victor, Lansigan, Felino, Rola, Agnes, Tabios, III, Guillermo

Philippine agriculture is dependent on natural ecosystems for its productivity, competitiveness and sustainability. The last century witnessed massive destruction of terrestrial, wetlands, and marine ecosystems in the country. This has adversely affected agriculture productivity. Provision of water from watersheds has been impaired and soil resources have been degraded. There is a need to engage in massive rehabilitation activities in the country's watersheds. Biodiversity resources are being decimated. This could have long term impacts on sustainability of agriculture production. The ability of natural systems to regulate climate has been impaired. However, there is potential for carbon sequestration in forests. Natural ecosystems can also help small holder farmers adapt to a changing climate. There is need to re-examine policies and institutions so that ecological services are restored and enhanced. One promising approach is through the use of rewards and incentives to conserve natural ecosystems and the services they provide. **(Author's abstract)**

Keywords: *Agriculture, Ecological services, Agricultural productivity, Sustainability, Competitiveness*

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0155

Total economic valuation of key mangrove services in the Philippines: the case of Bohol and Palawan

Carandang, Antonio P., Camacho, Leni D., Dizon, Josefina T., de Luna, Catherine C., Camacho, Sofronio C., GevaÃ±a, Dixon T., Peras, Rose Jane J., Pulhin, Florencia B., Paras, Floribel D., Rebugio, Lucrecio L.

Total economic value (TEV) was used to estimate the values of different mangrove goods and services in Palawan and Bohol. Contingent valuation method (CVM) and travel cost method (TCM) were done to determine biodiversity and recreational values. Results showed that the highest direct use value per year was estimated at P/25.521 million for Kamuning site, Palawan compared to â‚±21.784 million for Banacon site, Bohol. For both sites, the highest benefit came from shrimp farming with P 8.1 million and â‚± 4.3 million, respectively. Mollusk catch gave higher benefits to Kamuning (â‚± 17.65 million per year) than in Banacon (â‚± 2.362 million). Benefits from crabs and fish catch were higher in Banacon (â‚±6.6 million and â‚± 3.2 million, respectively) than in Kamuning (â‚± 0.604 million and â‚± 0.166 million, respectively). Nipa thatch was the second highest benefit for Kamuning amounting to â‚± 2.4 million. Contingent valuation analysis revealed a willingness to pay (WTP) of â‚± 44/month per individual in both sites. The different factors affecting WTP include education, income and information. Recreation value of mangroves was estimated at â‚± 83,079 in Banacon and â‚± 2,769 in Kamuning. Overall, mangrove forests have multiple benefits to communities. It is important to consider that mangrove management be devolved to local communities for better resource accountability. **(Author's abstract)**

Keywords: *Agriculture, Economic valuation, Ecotourism, Mangrove, Sustainable management, Willingness to pay*

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0156

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*

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0157

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*

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0158

Varietal response to lime and tolerance of soybean to acidic soil conditions

Samonte, Henry P., Baquireza, Cecilia J., Ocampo, Apolonio M.

In soils with extreme to very strong acidity, yields of soybean are generally low. The common acid soil infertility factors that adversely affect the growth of soybean in these soils are high levels of aluminum and manganese. This study was therefore conducted to evaluate the tolerance of soybean cultivars to increasing levels of aluminum and manganese and to determine the response of soybean to increasing pH as affected by liming.

Twelve entries were evaluated in pot experiments for their tolerance to increasing rates of aluminum applied on a very strongly acidic Antipolo clay. In three pot experiments where the cumulative rate of aluminium application increased from 0 to 1480 ppm, the following entries consistently showed high dry matter and relative yields: CES Sy 152-51 , CES Sy 154-21 and CES Sy ISS-52.

The varieties Clark 63 , UPL Sy-2 and TK-5 were also observed to have some tolerance to pH 4.1 and 3.2 me A1/100g but absolute yields were lower.

The two field screening experiments on a Lipa clay loam treated with 0 to 530 ppm A1 showed that Clark 63, and UPL Sy-2 were more tolerant than the other entries. The relative and absolute yields were consistently higher even at pH 4.2 and 3.92 me A1/100g.

The entries identified to be more tolerant to high rate of Mn (375 ppm) were CES Sy 97-63, Clark 63 and TK-5. These showed consistently higher dry matter yield and relative yield at 231 ppm exchangeable Mn for two cropping seasons.

Varieties that are not appreciably affected by an increasing pH upon the application of lime are considered to be tolerant to the initial acidic condition of the soil and to the range of acidity that was developed with liming. It was observed that TK-5, BPI Sy-2 , and CES Sy 97-63 were less affected by a pH of 4.7-6.9 and exchangeable A1 of 0.01 to 1.1 me/100g. **(Author's summary)**

Keywords: *Agriculture, Lime, Tolerance, Soybean, Acidic soil*

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Fil(S) Q179.9 N32 41/1-2 1989

0159

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*

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Watershed characteristics and water resource quality
Taclan, Emson Y., Taclan, Lorcelie B.

Understanding the watershed, determining what needs to be restored and protected requires an understanding of its natural features, how it is used and its environmental quality.The study was conducted in the Parang River Basin, Pasuquin, IlocosNorte to determine the watershed characteristics and its water resource quality, specifically the following:area length of the main stream, slope of the main stream, perimeter of the watershed, length of the streams, stream density, stream orders, length of perennial streams, drainage area and density, stream frequency, basin relief, and the ruggedness number.Interviews were also conducted among the residents of the area. Each age group was represented and was randomly selected from the population.Research results revealed that the Parang River Basin has been used for irrigation, drainage, and recreation for several centuries, despite having a high level of salinity (2000.0 milligram per liter electrical conductivity (EC) or ppm), compared to the threshold level of less than 1000.0 ppm EC. It must be noted that the basin is 7.0 km from the coastline; however, the tip is atPapatawen Falls of the same barangay. Papatawen Falls is very saline, 4000.0 ppm EC and the drainage area is the Parang River. The river basin has a 150 ha service area.Existing deep and shallow tube wells used by farmers had an alarming salinity level at an average of 1500.0 ppm EC. Watershed characteristics measured are within the normal values.Comprehensive research studies on surface water management strategies are recommended to determine possible mitigation strategies. **(Author's abstract)**

Keywords: *Agriculture, River basin, Watershed, Water quality, Ilocos Norte, Water resource*

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0161

Watershed vulnerability assessments of Makiling-Banahaw geothermal area, Philippines
Luna, Amelita C., Maligalig, Susana M.

CHEVRON Geothermal Philippines Holding Inc. (CGPHI) is operating within watershed areas that are supporting multiple uses other than geothermal power generation. This is the first study that undertake an assessment of environmental conservation areas and practices that would enable CGPHI management to plan and implement specific interventions and provide key information on environmental conservation areas and practices within the ecological influence areas using remote sensing/GIS and rapid watershed appraisals. The study revealed that Mak-Ban area straddles seven sub-watershed areas that drain from Mt. Makiling and Mt. Bulalo towards the southern shores of Laguna Lake. Greater proportion of the ecological influence areas are covered with vegetation canopies ranging from low to high density. The vegetation cover and land use in the area includes intact natural forests (mossy forest, lowland dipterocarp forest), secondary

forests, coconut plantations, fruit orchards, banana plantations, as well as grassland areas. The study also revealed that it is considered critical areas because of elevation and slope are the upper slopes of Mt. Makiling, Mt. Bulalo and Mt. Olila. Relatives to CGPHI facilities, all slopes of Mt. Bulalo poses threat, with the greatest towards the western slopes because of more facilities that would be affected. Vegetation cover can help mitigate the risks inherent in steep areas and good things about the steep areas around CGPHI is that they are currently under vegetation cover, except for Mt. Bulalo, whose summit areas are degraded as well as its southern slopes. **(Author's abstract)**

Keywords: *Agriculture, CGPHI, Ecological influence areas, Environmental conservation practices, Forest-based cropping systems, Watershed vulnerability*

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0162

Wood anatomy of naturally grown Philippine teak (*Tectona philippinensis* Benth. & Hook. *f.*)

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

Filipino scientist and educators intend to utilize fully the country's endemic forest tree species like Philippine teak (*Tectona philippinensis* Benth. & Hook.f.) of the family Verbenaceae. The species is predominantly found in dry and exposed ridges of Lobo, Batangas. The wood of Philippine teak is classified as comparatively heavy and durable and can be a substitute for molave (*Vitex parviflora* Juss.). The residents of Batangas utilize them for posts and general construction often substituting it for molave. Its potential as first class timber has not yet been investigated. Studies of the basic wood anatomical and morphological characteristics will lead ultimately to the optimum utilization of the species. Macroscopic observations and other physical attributes showed that the wood of Philippine teak is light yellow, grain is slightly wavy and texture is fine, glossy, hard, and heavy. Fiber mensuration indicates that Philippine teak is medium-sized and thin-walled. Rays are observed to be of two kinds: uniseriate and multiseriate and are classified as extremely low. Philippine teak wood can be differentiated from teak (*Tectona grandis* L. *f.*) with the former having smaller pores and thinner rays. The most common anatomical features of the two Tectonas are the presence of whitish deposits and tyloses. Being heavy and hard wood species with relative density at 0.710 is an indicator that Philippine teak has strong potential for structural timber. This study addresses a gap in technical information that will lead to harness the potential of the Philippine teak, lead to establishment of plantations to maximize the full utilization of Philippine teak, not only in raw form, but also in engineered and other finished products. **(Author's abstract)**

Keywords: *Agriculture, Tectona, Philippine teak, Lobo, Batangas, Wood anatomy*

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0163

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 vilatilization. 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. Inbreads 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*

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BIOLOGY

0164

Accumulation of tannin idioblasts around the vascular tissues of *Medinilla magnifica* (Melastomataceae): implications for a plant's systemic defense

Robil, Jan Lorie M., Tolentino, Vivian S.

Histological localization of tannin idioblasts in vegetative and reproductive organs of *Medinilla magnifica* was investigated. Histochemical tests confirm that tannin idioblasts are densely accumulated around vascular tissues of almost all structures of the plant. In the vegetative organs, tannin idioblasts conspicuously ensheath major and minor vascular bundles of the leaves and they heavily outline the interior of the vascular cylinder of the stems. The same pattern of accumulation was observed in the reproductive organs where tannins densely surround the vascular tissues of the flower, reaching even up to the funiculus of the ovules and the filament of the anthers. The presence of tannins in plants has long been interpreted as an important systemic defense against pathogens. Hydrolysable tannins have been proven to exhibit signiûcant antimicrobial activity against a number of pathogens, including *Botrytis cinerea*, a necrotrophic fungus that affects many plant species. Various studies have determined that *M. magnifica* contains a considerable amount of hydrolysable and condensed tannins. The distinct pattern of histological localization of tannins in *M. magnifica* suggests advanced systemic defense of the plant against infection which could be a good prospect for future investigations. **(Author's abstract)**

Keywords: *Biology, Medinilla magnifica, Tannin idioblasts, Vascular tissue, Hydrolysable tannins, Plantâ€™s systemic defense*

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0165

Actinomycetes as biocontrol agent against panama disease causing *Fusarium oxysporum*

Papa, Irene A., Zulaybar, Teofila O., Moreno, Patrick Gabriel G., Zarate, Jocelyn T.

Fusarium oxysporum sp cubense tropical race 4 (Foc TR4) is a highly virulent form of Foc that attacks primarily the Cavendish variety of banana, a major export product of the Philippines. The study sought to evaluate the potential of actinomycetes to control Foc. Actinomycetes for biocontrol were isolated from soil samples in mangrove areas in Quezon and Bataan. Screening for biocontrol activity was initially done by agar plug and cup cylinder bioassays against Luzon isolates of Foc. Selected best isolates were then assayed against pure isolate of Foc TR4 that was obtained from Lapanday Foods Corporation through the University of Southeastern Philippines, Tagum City, Davao Oriental. Eighty-two out of a total of 199 actinomycetes isolated showed activity against the Luzon isolate of *F. oxysporum*. Six of these had e”18.0 mm zone of inhibition by agar

plug assay. Five of these isolates gave high activity by cup cylinder assay with isolates AQ6, AQ30 and AQ121 as the best three isolates inhibiting *F. oxysporum* by 21.0 mm, 22.0 mm and 20.5 mm, respectively. The three best isolates selected also showed good biocontrol activity against Foc TR4. Bioassay of AQ6, AQ30 and AQ121 gave 24.6 mm, 20.2 mm and 19.0 mm zones of inhibition, respectively in the agar plug assay and 8.3 mm, 12.0 mm and 13.7 mm, respectively for the cup cylinder assay. Combinations of the three isolates yielded an inhibition of 13.5mm by cylinder cup assay. The present study showed the effectivity of actinomycetes in controlling Foc TR4 *in vitro*. These findings led to the formulation of biocontrol using actinomycetes for greenhouse and field tests to manage the disease and prevent further spread of Foc TR4. **(Author's abstract)**

Keywords: *Biology, Actinomycetes, Biocontrol agents, Fusarium oxysporum, Panama disease, Agar plug assay*

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0166

Alkaloid field survey and laboratory assay of Philippine flowering plants in selected areas of Luzon

Aguinaldo, Alicia M., Claustro, Alicia L.

A field survey was made of the occurence of alkaloids in flowering plants of selected areas of Luzon. Approximately 350 plants were tested in the field and collected for hebarium specimens. Positive tests, rated on +1 to +4 basis, were obtained for 25 plants. For most of the positive species, chemical assays on the dried plant material were made using the methods for thin layer chromatographic screening and proximate analysis. **(Author's abstract)**

Keywords: *Biology, Alkaloid, Chemical assay, Hebarium specimens*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 624-634
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0167

Antagonistic plants for the management of the root-knot nematode, *Meloidogyne graminicola* in rice-onion system

Gapasin, Ruben M., Miller, Sally A., Ranchez, C. V.

A microplant experiment with the following treatments: *Tagetes* sp., two species of *Crotalaria* (C. *incana* and C. *mucronata*). rice and fallow, was conducted to determine the effects of *Tagetes* and *Crotalaria* plants on the population and development of the rice root-knot nematode, *Meloidogyne graminicola*. In the two trials conducted, it was observed that no galls were formed on the roots of *Tagetes* and *Crotalaria* plants 60 and 90 days after soil infestation. The rice plants however, had a mean root gall of 305.70 at harvest (90) days. Onion grown on the plots planted previously with *Tagetes* and *Crotalaria* did not show root galls, however, galls were observed in onion planted in microplots previously planted with rice. Fresh weight of onion were higher in *Tagetes* and *Crotalaria*- treated plots compared to the plots planted to rice and the clean fallow treatments. however differences were insignificant. This could be due to the nematode
control and to the added fertility when the biomass of these plants was incorporated in the soil before onion was planted. Rice planted in these treatments showed significant reduction in the number of galls and nematode density in the soil after 60 days. These results showed that planting *Tagetes* sp. or *Crotalaria* spp. in nematode-infested soil is effective and also feasible in managing the rice-knot nematode. **(Author's abstract)**

Keywords: *Biology, Antagonistic plants, Root-knot nematode, Meloidogyne graminicola, Tageles, Crotalaria incana , C. macronata, Fallow, Rice, Onion*

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0168

Anti-angiogenic property of the aqueous extract of *Canarium ovatum* leaves using cam assay

Chan, Billy A., Cajuday, Lilibeth A.

The aqueous leaf extract (ALE) of *Canarium ovatum* was evaluated for possible anti-angiogenic effect in the duck (*Anas platyrynchos*) embryos using chorio-allantoic membrane (CAM) assay. In the study, *C. ovatum* ALE at 1, 10 and 100 μg/mL was administered *in ovo* at day 3 of incubation using a modified windowing technique. Results revealed a significant inhibition in blood vessel formation in all the *C. ovatum* ALE treated samples in a dose dependent manner compared to the control group given with double distilled water only. The embryos treated with the highest dose (100 μg/mL) exhibited much reduction in primary blood vessel count and secondary blood vessel thickness resulting in relatively smaller embryos. The findings confirm the anti-angiogenic activity of *Canarium ovatum*. Further studies are warranted to determine its active components, the possible mechanism of action and therefore establish its potential as an antitumor agent. **(Author's abstract)**

Keywords: *Biology, Aqueous leaf extract, Canarium ovatum, Anti-angiogenic, Anas platyrynchos, Chorio-allantoic membrane assay*

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0169

An assessment of the morphological system of classification of Philippine Acanthamoeba isolates by riboprinting

Pilar, Anna Victoria C., Enriquez, Gloria L., Matias, Ronald R.

Acanthamoeba spp. is a group of free-living, ubiquitous amoebae that are the causative agents of keratitis and granulomatous amebic encephalitis. Due to problems encountered in the identification of *Acanthamoeba* isolates based on the current morphological system of classification, other methods have been employed in detrmining the correct species designations of *Acanthamoeba* isolates. Riboprinting (PCR/RFLP) is one of the most recent methods which involves restriction digestion of PCR products after amplication of the mitochondrial and nuclear small subunit (SSU) r RNA gene. Eight Acanthamoeba environmental isolates were obtained from Baguio (Bag), Mt. Arayat (MA), Tanauan Batangas (MB), Misamis Oriental (MO), Puerto Princesa (PP), Sierra Madre (SM), Tugegarao (TS) and Novaliches (W4). These were studied based on morphological characteristics, isoenzyme analysis, and Riboprinting. These were also identified through PCR using genus- and species-specific primers. All isolates exhibited the characteristics of morphological Group II (polygonal cysts). Data from isoenzyme analysis and Riboprinting were analyzed using cluster analysis. Grouping based on cyst morphology correlated well with isoenzyme analysis and Riboprinting. MA, MB, MO, and PP could belong to a different species based on morphology, 18S Riboprinting, isoenzyme analysis, and PCR identification using species specific primers. W4 was found to be very similar to the reference strains *A. castellani* (Ma) and *A. polyphaga* (Jones). SM could belong to another species that is related to the Castellani group on morphology, isoenzyme analysis, and PCR identification using species-specific primers. However, further studies would have to be done on Bag and TS for species identification.

In determining the correct species designation of asexually reproducing organism susch as *Acanthamoeba*, both morphological and molecular data should be incorporated. A classification scheme based on these data would be provide information regarding the diversity of various *Acanthamoeba isolates*. **(Author's abstract)**

Keywords: *Acanthamoeba, Keratitis, Riboprinting, RFLP, Small subunit (SSU) rRNA gene, Isoenzyme analysis, Cluster analysis, Cyst morphology, Biology*

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Fil(S) Q149. P5 N25 v.23 2001

0170

Biology and ecology of the Lake Taal sea snake, *Hydrophis semperi*

Garcia, Vhon Oliver S., Papa, Rey Donne S., Diesmos, Arvin C.

We studied the basic biology and ecology of the endemic Lake Taal Sea Snake (*Hydrophis semperi*) in Lake Taal, Philippines. Despite its conservation status (vulnerable), it is scientifically understudied. This study provides baseline scientific information on the unique sea snake species occurring in freshwater habitat. Gill net trapping was primarily employed during the sampling period (June-November 2012). Morphometric data were gathered from snake samples with live snakes tagged and released, and dead samples extracted of its gut content. Environmental parameters (*e.g*., water temperature, light intensity, conductivity) were also collected for multivariate analysis. Out of 112 snakes, mostly collected from the south basin, only 24 individuals belonged to *Hydrophis semperi*. No sea snake was caught in the north basin of the lake. The remaining samples (n=88) were identified as the Little File Snake (*Acrochordus granulatus*) with one recapture from tagged samples (n=33). Snake captures reflect the relatively lower abundance of *H. semperi* and the high capturability of *A. granulatus*. Identification of snake gut contents reveal that *H. semperi* feeds on three families of fish (Gobiidae, Hemiramphidae, and Anguillidae). The sympatric *A. granulatus* were found to contain prey items belonging to only one family (Gobiidae).Prey items found in the gut of the endemic sea snake species suggest that it is a gape-limited generalist predator. *In-situ* observations reveal that *H. semperi* exhibits a "surface-arch" movement distinct from *A. granulatus* when surfacing from underwater. Further observations suggest that both species are strongly associated with rocks and crevices. Higher conductivity values present at the mouth of the river near the lake reflect the marine origins of the lake and its volcanic nature which may have created the conditions which are suitable for the survival of *H. semperi*. This study provided insights for further investigation. **(Author's abstract)**

Keywords: *Biology, Hydrophiinae,, Hydrophis, Lake Taal, Freshwater, Sea snakes*

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0171

Biomass degradation activity of fungi isolated from sugarcane bagasse under solid state fermentation

Calica, Dane Mikhael S., Tapac, Ian Greg D., Birginias, Ma. Concepcion B., Madigal, James Paul T., Agrupis, Shirley C.

Conversion of lignocellulosic biomass to ethanol as biofuel is a viable option to address problems of energy economics and environmental concerns. Residual non-food biomass from the agricultural sector like sweet sorghum serves as a promising alternative feedstock for ethanol production. In nature, fungi contribute significantly to the decay of biomass by producing lignocellulolytic enzymes. In this study, two strains of fungi isolated from sugarcane bagasse were evaluated for their biodegradation activity on sweet sorghum bagasse under solid state fermentation. Two fungal strains were isolated from decomposing sugarcane bagasse. One fungal strain (F1) exhibited the characteristics of an ascomycete, having a light green color with loose septate conidiophores. The other strain (F2) had spores distinct from basidiomycetes. Stalks of sweet sorghum were collected from the MMSU Sweet Sorghum project. Samples were dried, cut, and ground to 40 mesh. Samples were inoculated with individual spores of the two fungi. Incubation was carried out at 27°C on a rotary shaker (160 rev/min) for 30 days. Analyses of the biomass constituents of the extractive-free stalks -cellulose, hemicellulose, and lignin - was carried out before and after, following the TAPPI standard procedures. Treatment inoculated with F1 showed a decrease of cellulose, hemicellulose, and lignin at 19.30%, 3.67%, 1.03%, respectively, while F2 treated samples showed a decrease in cellulose (12.46%), hemicellulose (4.55%), and lignin (3.26%). Both fungi showed potential for biodegradation of sweet sorghum bagasse. **(Author's abstract)**

Keywords: *Biology, Lignocellulosic biomass, Ethanol, Sweet sorghum, Fungi, Biodegradation*

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0172

Biomass degradation activity of indigenous fungi isolated from banana stalk under solid state fermentation

Tapac, Ian Greg D., Calica, Dane Mikhael S., Birginias, Ma. Concepcion B., Madigal, James Paul T., Agrupis, Shirley C.

In solid state fermentation, lignocellulosic biomass is converted to carbohydrates which can be further fermented for the production of ethanol. The main purpose of this study was to determine the biodegradation activity of two indigenous fungi to banana using solid state fermentation. The fungi used in this study were isolated from decomposing sugarcane bagasse. One of the fungi (F1) used in this study has the characteristics of an Ascomycete. It is light green and its conidiophores are septate and are loosely branched. Its conidia are smooth, pale green and spherical in shape. The other fungus (F2) used in this study showed the characteristics of

Basidiomycota spores. Banana pseudostem was ground to 40 mesh size. The samples were then inoculated with the spores of the two fungi using standard protocols in inoculating fungi for Solid State Fermentation. After 30 days of incubation, the lignocellulosic biomass of the samples were analyzed using TAPPI standard procedures. The samples treated with F1 showed a decrease in lignin, cellulose and hemicellulose at 1.05%, 18.70%, and 4.2%, respectively. The samples treated with F2 showed a decrease in lignin, cellulose and hemicellulose at 2.09%, 16.34%, and 2.2%, respectively. Consequently, both the fungi showed biodegradation activity on the banana pseudostem. **(Author's abstract)**

Keywords: *Biology, Solid state fermentation, Banana, Fungi, Biodegradation, Basidiomycota, Ascomycota, Ethanol*

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0173

A botanical study of some underexploited medicinal plants

Roderos, Remedios R., Reyes, Pauline T., Toledo, Dawn P.

Four underexploited species of plants with medicinal value namely, *Centella asiatica* (Linn.) Urban. *Heliotropium indicum* Linn., *Phyllanthus niruri* Linn. and *Stachytarpheta jamaicensis* (Linn.) Vahl were studied. These plants are common weeds found in waste lands.

Ethnobotanical information, particularly from inhabitants of Capiz and Isabela, revealed that these plants are extensively utilized in rural areas for the treatment of numerous skin diseases (*C. asiatica*), respiratory diseases (*H. indicum*), liver diseases (*P. nitruri*) and digestive system disorders (*S. jamaicensis*). Morphological and biochemical data deemed valuable in the medical and pharmaceutical fields for scientific study and identification of active components were obtained. Histochemical tests showed that vegetative as well as reproductive parts of all the species were positive for alkaloids, tannins, glucosides and saponins. Protein profiles of the different plant organs and isozyme banding patterns of leaf proteins were generated using polyacrylamide gel electrophoresis (PAGE). **(Author's abstract)**

Keywords: *Polyacrylamide gel electrophoresis, Alkaloids, Tannins, Saponins, Glucosides, Ethnobotanical, Isozyme, Biology*

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0174

Cadmium uptake in *Synechococcus aquatilis* (Reynaud) strain SY01

Vallarta, Jr., Ruperto C., Cao, Ernelea P., Sibal, Yvette Rosario B.

Cadmium uptake in *Synechococcus aquatilis* (Reynaud) Strain SY01 showed a biphasic behavior, with an initial rapid passive cell wall interaction phase and a later slow intracellular cation uptake process. The cell wall uptake process followed Michaelis-Menten kinetics. The apparent K_m of the uptake system was 38.89 μM, a relatively high affinity K_m value compared to other metal uptake systems. Fitting of experimental data to the Langmuir and Freundlich adsorption isotherms showed that binding of cadmium to the cell surface was monolayer and/or multilayer, although the monolayer adsorption was more probable, as exemplified by a high correlation coefficient. This could be explained by the presence of a strong primary binding site which was responsible for a monolayer adsorption and a weak secondary binding site which could be responsible for a multilayer adsorption. The uptake process was found to be relatively specific for cadium. Equimolar amounts (200 μM) of cobalt, nickel, magnesium, and copper did not significantly affect cadmium uptake. *Synechococcus aquatilis* Strain SY01 cells also showed an efflux mechanism for cadmium, although the amount of excluded cadmium was insignificant compared with the amount of adsorbed cadmium in the cell wall. **(Author's abstract)**

Keywords: *Biology, Kinetics, Adsorption, Cadmium, Synechococcus, Cell wall*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 2, 39-46
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Fil(S) Q1.A3 S4 10/2 1998

0175

Characterization of two species of *Hylocereus* Britton and Rose (Dragon Fruit) through morphoanatomy and histochemistry

Jacalan, Diana Rose Ylanan, Dela Cruz, Reggie Yadao

Hylocereus or dragonfruit is an exotic fruit, which is gaining popularity in the Philippines due its high antioxidant content. Its taxonomic classification however is vague. The morphological, anatomical and histochemical properties of *Hylocereus undatus* (white-fleshed) and *H. polyrhizus* Britt. & Rose (red-fleshed) were elucidated.Both species of Hylocereus are climbing or hemi-epiphytic cacti with triangular, branching, succulent, green and spinous stems. Their root system is adventitious. The flowers are white in color, night blooming, large, bell-shaped, epigynous, and perfect. Fruits are berry type, with scales and numerous seeds. The two species can be distinguished by several characteristics. *H. undatus* has brown undulate stem margin, less spinous leaves, cream to white flower petaloid color, yellowish green sepaloid color, fruit pulp color is white and not sweet. For *H. polyrhizus*, the stem margin is green and straight, leaves are

more spinous, petaloid color is white or yellow, sepaloid color is pinkish-red, purple to violet, fruit pulp color is magenta and sweet. *H. polyrhizus* has more scales (mean = 31) than *H. undatus* (mean = 21). *H. undatus* topmost scale is longer (mean = 5.05 cm) than *H. polyrhizus* (mean = 4.19 cm). In terms of anatomy, the two species are very similar. Transection of the roots and stems show eustelic type of stele, collateral vascular bundle and uniseriate root epidermis. Young aerial roots have pith and more xylem ridges than young terrestrial root in both species. Stem epidermis is multiseriate. Root and stem cortex are parenchymatous and multiseriate with secretory canals. The red dragon fruit (*H. polyrhizus*) generally contains more phytochemicals than the white dragon fruit (*H. undatus*). This includes alkaloids, tannins, saponins, amygdalin, organic acids and fats and oils. It is concluded that the two plants are of the same genus but of different species. **(Author's abstract)**

Keywords: *Biology, Hylocereus, Dragon fruit, Morphology, Anatomy, Histochemical test*

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0176

Chromosomes of gobies from Taal Lake, Luzon

Masagca, Jimmy T., OrdoÃ±ez, II, Jose A.

Despite the great diversity of freshwater forms in the Philippines, the Cytogenetics of riverine and lacustrine populations of fishes is still unexplored. This on-going study on the Cytogenetics of freshwater teleosts in the CALABARZON Area, Luzon Island focuses on the chromosomal complements of naturally occurring gobies (including eleotrids) to benchmark future studies in fish genetics and chromosomal evolution.

Fish specimens of an eleotrid, snakehead gudgeon (*Ophieleotris aporos*) and two species of gobiids, tank goby (*Glossogobius giurus*) and rock goby (Glossogobius celebricus) were obtained from Taal Lake and rivers of Cavite for this investigation. A routine solid tissue technique with conventional staining was used in preparing metaphase cells from head kidneys of fish specimens. Different concentrations of colchicines and sodium nitrate for hypotonization were tried to get the appropriate amount in arresting cells at metaphase stage.

Initial findings indicate that *O. aporos* and *G. giurus* both showed diploid chromosome number of 2n=46 similar with the eleotrids: *Oxyeleotris marmoratus, Eleotris acanthopomus* and *Dorminator maculatus*. The snakehead gudgeon, *O. aporos* has a tentative *Nomen Fondemental* (NF) of 48 (2 bi-armed chromosomes and 44 mono-armed chromosomes), while *G. giurus* has NF of 46, confirming the previous works. The other goby (*G. celebricus*) inclusive in the present study, has a tentative diploid chromosome number of 2n = 44. **(Author's abstract)**

Keywords: *Fish chromosomes, Gobies, Taal lake, Cytogenetics, Teleosts, Eleotrids, Diploid chromosomes, Biology*

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0177

Cloning and sequencing of the LYS3 gene encoding homoaconitase in *Penicillium chrysogenum*

Teves, Franco G., Casqueiro, Javier B., Raymundo, Asuncion K., Martin, Juan F.

Two completely different biosynthetic pathways for L-lysine exist in nature. The diaminopimetic acid pathway is observed in green plants, bacteria and some phycomycetes. Yeasts and filamentous fungi synthesize L-lysine through the a aminoadipic acid (a-AAA) pathway. While much has been known about the latter pathway in yeasts, so little is known about it in filamentous fungi in terms of the genes involved and its regulation. In *Penicillium*, only two genes in the pathway have been cloned so far. It is therefore imperative that more studies on the molecular genetics of the a-AAA pathway be undertaken for a clearer picture of this unique biosynthetic pathway. We have cloned the *lys3* gene from *Penicillium chrysogenum* by complementation of a lysine-requiring strain of *P. chrysogenum* called the L2 mutant with a clone from a genomic library. This clone carries a 4.3 kilobase pairs (kbp) of DNA fragment constructed on the plasmid vector pAMPF9L. Complementation was confirmed by plasmid rescue and re-transformation of the L2 mutant. A restriction map of the complementing fragment was prepared and sub-clones were constructed using pBluescript KS+/SK+ in two orientations for sequencing. Computer-aided assembly of contigs generated a 3.412 kbp sequence with an open reading frame (ORF) size of 2.406 kbp. Comparison with homologues in DNA databases world-wide revealed that the cloned *lys3* gene encodes for homoaconitase, the enzyme that functions in the second and third steps in the a-AAA pathway. The gene contains one intron and several putative regulatory sequences. Results are highly significant not only because the *lys3* gene encoding homoaconitase is the first to be cloned in Penicillium but also because of the existence of putative functional domains in the gene based on sequence analysis. **(Author's abstract)**

Keywords: *L-lysine, Alpha-aminoadipic acid, Penicillium chrysogenum, lys3 gene, Cloning, Complementation, Genomic library, Homoaconitase, Restriction map, Domains, Biology*

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0178

Combining ability analysis of white corn genotypes for nitrogen use efficiency in irrigated and moisture-limiting conditions using the sand culture technique

Ripalda, Roanne R., Ocampo, Apolonio M., Quimio, Celsa A.

We report the results of combining ability analysis of a full diallel mating design of eight white corn inbreds. This study was conducted to identify superior genotypes in terms of nitrogen use efficiency under irrigated and moisture-limiting conditions. We evaluated 36 progenies comprising 8 selfs (parentals) and 28 F_1 hybrids for NUE, plant dry matter, plant height, and root volume during the vegetative stage using sand culture technique. We employed three levels of nitrogen (*i.e.*, 0, 60 and 120 kg/ha) and two water treatments (*i.e.*, irrigated and drought-imposed) in a split-split plot in completely randomized design with three replications under greenhouse conditions. We analysed the data on plant dry matter for combining ability using Griffing's method 2 (model 1). Analysis of variance showed that the performance of the genotypes tested for NUE, plant dry matter, plant height, and root volume vary across nitrogen and water treatments. Combining ability analysis revealed that CML377 has the highest General Combining Ability estimate (GCA = 0.0553) among the rest of the parentals, which implies that it would contribute to good plant dry matter production in a wider array of crosses. We noted that CML377 was a common parent for the two F_1 hybrids that perform consistently well in various nitrogen and water treatments. These F_1 hybrids were also among those that attained the highest SCA estimates for all genotypes that were evaluated. The components due to SCA (0.0335) were found to be higher than that of GCA (0.0014), which means that the portion of the genetic effects due to dominance is higher than the additive portion. We recommend CML377 as parental for generating subsequent single-cross combinations in white corn breeding for drought tolerance. **(Author's abstract)**

Keywords: *Biology, White corn, Combining ability analysis, Nitrogen use efficiency, Drought, Sand culture technique*

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(Filipiniana Analytics)
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0179

Comparative diversity of ground-dwelling ants (Hymenoptera:Formicidae) in two permanent plots in Makiling Forest Reserve, Los Baños, Laguna, Philippines

Luna, Amelita C., Pascual, Jennifer N., Balatibat, Juancho B.

The study of comparative diversity of ground-dwelling ants done in Mt. Makiling Forest Reserve aimed to assess and compare the diversity of PFLA 1 and 3. Data collection was conducted through pitfall trapping and active searching of ants. There was a total of 14 species of ants collected in PFLA 1 and 3. Four species were identified as follows: *Anoplolepis gracilipes* (Formicinae: Plagiolepidini); *Diacamma* sp. (Ponerinae); *Odontomachus infandus*, and *Odontomachus* sp. (Ponerinae). Other species remained unidentified. Results showed that *Odontomachus infandus* was the most dominant species in PFLA 1 while Unidentified Species 2 was the most dominant species collected in PFLA 3. After computing the different diversity measurements, PFLA 1 was found to be more diverse than PFLA 3. The *t*-test showed that PFLA 1 and 3 had significantly different species diversity. It is recommended that more studies about ant diversity be conducted which will further contribute to biodiversity studies. **(Author's abstract)**

Keywords: *Biology, Anoplolepis gracilipes, Diacamma sp., Ground-dwelling ants, Odontomachus infandus, Odontomachus sp.*

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0180

Comparative study on the flowering pattern, flower and pollen morphology of *Cassia fistula* Linn. and *Cassia alata* Linn. (Fabaceae)

Caminero, Hidvard O., Acma, Florfe M., Sinamban, Evangeline B., Opiso, Jennifer G.

Pollen grains of the species of the family Fabaceae are easily transported by wind and may cause many allergies like asthma, allergic rhinitis, and hay fever. This study was conducted to compare the flowering pattern, flower, and pollen morphology of *Cassia fistula* Linn. and *C.alata* Linn. Similarities in qualitative characters in both species in flower and pollen morphological characters were observed. Similarities in floral morphology include the type of flower, floral symmetry, internodal elongation in flower, calyx, corolla, attachment of filament to anther lobe, and length of stamens. They differ in the type of inflorescence which is spike in *C. alata* and pendulous raceme in *C. fistula*, form of corolla in *C. fistula* is rosaceous while caryophyllous in *C. alata*. The attachments of filament to anther lobe are all basifixed. For pollen morphology, the species differ in the shape which is circular in *C. fistula* and triangular in *C. alata.* The flowering pattern of *C.*fistula and *C.alata* showed similarities in the months when flowers are numerous, but they differ in the duration and frequency of flowering. *C. fistula* flowered numerous during March–May and September-November, 2-3 times in a year with the average duration of 35 days, while in *C. alata*, it flowered numerous during March–May and September-December, 3-4 times in a year with an average duration of 38 days. **(Author's abstract)**

Keywords: *Biology, Cassia fistula, Cassia alata, Pollen grains, Flowering pattern, Flower*

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0181

Comparison - continuous process of lysine production using immobilized and free cells of *Corynebacterium glutamicum*

Pham, Chay Binh, Odiamar, Reynaldo V.

Different gelling agents were used to immobilize viable cells via either alginate or κ-carrageenan gel beads. Based on cell leakage from the gel beads, oxygen and glucose diffusion coefficients and toxicity of the gelling agents, $SrC1_2$ was found to be the best for the immobilization of microbial cells not only in alginate but also in carrageenan beads. Using Sr-carrageenan gel beads, a lysine concentration of 12.5 g/L was reached in the continuous fermentation with a productivity of 0.75 g lysine/L.h.

To overcome problems of low mass transfer commonly encountered in imobilized aerobic cell fermentation, continuous L-lysine production using free cells in a stirred tank bioreactor coupled with a ceramic membrane was developed. Without ceramic membrane, batch fermentation with *Corynebacterium glutamicum* (wild type) exhibited a volumetric productivity of 0.18 g lysine/L. h. with a maximum lysine concentration of 9.4 g/L. When a ceramic membrane was coupled continuous lysine fermentation process at a dilution rate of 0.6 h^{-1} increased volumetric activity of 1.83 g lysine/L. h. and a maximum concentration of 30.5 g/L were obtained. **(Author's abstract)**

Keywords: *Biology, Continuous lysine production, Corynebacterium glutamicum, Free cells, Gelling agent-SrCl2, Immobilized cells*

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0182

Conserving threatened and endemic fruit bats in isolated forest patches in Cebu with notes on new records and rediscoveries

Paguntalan, Lisa Marie J., Jakosalem, Philip Godfrey C.

A survey of fruit bats in five isolated forest patches (Alcoy forest, Dlaguete forest, Tabunan forest, Mt. Lantoy in Argao, and Carmen forest) in Cebu island, Philippines was conducted from

February 2001 to January 2004 using mist nets for small to medium sized fruit bats and direct roost observations for flying foxes. A total of twelve species of fruit bats composed of six threatened species, six endemic species and four new island records (Golden-crowned flying fox Acerodon jubatus, Harpy Fruit Bat Harpyionycteris whiteheadi, Philippine Pygmy fruit bat Haplonycteris fischeri, and Large flying fox Pteropus vampyrus) were documented bringing the total record of cebu to 13 species of fruit bats. Roosting colonies of flying foxes monitored over two years have shown marked reduction in roost counts indicating increased disturbance. Despite the relative difference in forest sizes, the smaller forest patch of Dalaguete recorded the highest number of fruit bats as compared to the larger forest in Alcoy. However, bat species (Harpy fruit bat and Philippine Pygmy fruit bat) more intolerant to habitat disturbances were captured only in Alcoy. Hunting, cutting of trees for charcoal, and habitat loss were among the major threats observed. **(Author's abstract)**

Keywords: *Biology, Endemic fruit bats, Isolated forest, Cebu, Acerodon jubatus, Harpyionycteris whiteheadi, Haplonycteris fischeri, Pteropus vampyrus*

Silliman Journal, Volume No. 48 Issue No. 2, 81-94
(Filipiniana Analytics)
Fil(S) AS538 S46 48/2 2007

0183

Cutaneous bacteria of frogs collected from Mt. Palay-palay Mataas na Gulod National Park, Cavite for anti-chytridiomycosis activity

Eda, Adria Rae Abigail R., Diesmos, Arvin C., Chan, Merab A.

Chytridiomycosis is a disease in amphibians caused by a chytrid fungus *Batrachochytrium dendrobatidis* and has been implicated as the causal agent of mass mortality and amphibian extinctions. Mitigating strategies are thus among the major concerns in the conservation of amphibian population and biodiversity worldwide. Reports have shown that microorganisms found on the skin of amphibians may combat chytridiomycosis. In this study, cutaneous bacteria from frogs were isolated and examined for anti-chytridiomycosis activity. Eight species of frogs were collected in Mt. Palay Palay Mataas na Gulod National Park in Cavite - a site positive for the presence of chytrid fungus - including *Hylarana similis, Limnonectes woodworthi, Occidozyga laevis, Platymantis mimulus,P. corrugatus, P. dorsalis,Rhacophorus pardalis,* and *Polypedates leucomystax*. Bacteria were isolated from the skin of frogs by swabbing both the ventral and dorsal surfaces of the body and inoculation in R2A agar and incubation at 23±3ºC for 24 hours. Chytrid fungus was determined by swabbing the ventral surface of the frog and inoculated in 1% tryptone agar incubated at 23±3ºC for 5-7 days. Isolated bacteria were tested for potential inhibitory properties against chytrid fungus. Results showed that some cutaneous bacteria of frogs have potential property to inhibit the growth of chytrid fungus *in vitro*.Skin bacteria of frogs may contribute to their defense and immunity against the lethal chytridiomycosis. **(Author's abstract)**

Keywords: *Biology, Cutaneous bacteria, Chytrid fungus, Batrachochytrium dendrobatidis, Chytridiomycosis, Frogs*

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0184

Cytogenetic effects of medicinal plants for diabetes (aqueous plant extract or tablet) on human leukocytes treated in vitro

Mendioro, Merlyn S., Cu, Jonathan S., Gruezo, Krisilex Anthony G., Palma, Marites C., Villamael, Luisa N., Tandang, Rosalina N.

The cytogenetic effects of aqueous extracts from bark of "duhat" (*Syzygium cumini* L.), leaves of "damong maria" (*Artemesia vulgaris* L.) and periwinkle (*Catharanthus roseus* L.) and tablet of "ampalaya" (*Momordica charantia* L.) were determined using human leukocytes cultured in vitro. Three to four drops of blood from five to seven volunteers aged 20-21 were cultured in chromosome medium with 0.3% and 5% sterile extracts. Milotic index was obtained by counting 500 cells per treatment while chromosomal aberrations were observed in at least 50 cells. Mean mitotic indices using the three medicinal plant extracts were reduced significantly as the concentrations of treatments were increased. For artemesia, the control showed a mean mitotic index of 16.86% and 22.95 and 25.96% for periwinkle leaves and "duhat" bark, respectively. 'Ampalaya" tablets did not significantly affect the mitotic index. Loose sister chromatids, gaps and breaks were the chromosomal abnormalities observed. The frequency of cells with no chromosomal aberration was reduced from 66.67 to 36.00% for Artemesia leaves, 97.00 to 79.00% for periwinkle and 94.00 to 81.00% for "duhat" bark. Artemesia periwinkle and "ampalaya" significantly induced chromosome condensation. Mean frequency reached 45.00%. Results indicated that all four medicinal plants are possible mutagens. "Duhat" bark is a mitotic inhibitor and as such can be tapped as possible tumor growth suppressor. **(Author's abstract)**

Keywords: *Biology, Leukocytes, Mitotic index, Cytogenetic effects, Mitotic inhibitor, Periwinkle, Mutagenic, Syzygium cumini L., Catharanthus roseus L., Momordica charantia L., Artemesia vulgaris L.*

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0185

Cytogenetic effects of sambong (*Blumea balsamifera* L.) tablets on human leukocytes cultured *In vitro*

Rabe, Rannie R., Lapitan, Delinia G., Azote, Candy B., Eusebio, Artemus F., Mendioro, Merlyn S., Villamael, Luisa N., Tandang, Rosalina N.

Cytogenetic effects of sambong (Blumea balsamifera L.) tablets, a diuretic medicinal drug were determined on human leukocytes cultured in vitro. Four concentrations (%) (0, 0.5, 1.0, and 1.5) were tested on 20 year-old male blood donors while concentrations (%) 0, 2.0, 3.0, and 5.0 were tested on 40 years old and above donors. The concentrations tested on young donors did not significantly affect mitotic index (0.140, 0.125, 0.111, and 0.104 for control, 0.5, 1.0 and 1.5, respectively). Mean frequency of cells with chromosomal breaks, gaps, loose sister chromatids and condensed chromosomes was low. Mean frequency of cells with gap was 0.019 for 0.5% and 0.039 for 1.5% with break was 0.005 for control and 0.039 for 1.5% and with loose sister chromatids was 0.034 for control while 0.074 or 1.5%. Concentrations tested on older donors significantly decreased the mitotic index; 0.122, 0.079, 0.072 and 0.041 for control, 2, 3, and 5%, respectively. No significant differences on mean frequency of cells with chromosomal aberrations were noted. Mean frequency of cells with gap was 0.019 for control and 0.021 for 5%. The number of cells with break remained low (0.014 for control and 0.019 for 5%). The same observation was noted for cells with condensed chromosomes (0.089 for control and 0.116 for 5%). Results indicate that *B. balsamifera* is not a mutagen since it exhibited no chromosome-damaging effect on human leukocytes. **(Author's abstract)**

Keywords: *Cytogenetics, Mitotic index, Chromosomal aberrations, Sambong, Blumea balsamifera, Loose sister chromatids, Breaks, Gaps, Condensed chromosomes, Mutagen, Biology*

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(Filipiniana Analytics)
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0186

Determination of carbohydrates in Philippine plant foods

Escueta, Elias E., Erni, Celia C.

Proximate analysis of 20 vegetable sample showed that the largest portion of the sample is moisture. It was observed that the dry matter was largely composed of carbohydrates. The other four components; ash, crude fat, crude protein and crude fiber were comparatively small.

Estimation of caloric content of the sample shows that vegetables are not very good sources of energy with the exception of gabi which has relatively very high caloric content.

Extraction with alcohol proved that the unavailable carbohydrates are greater than the available carbohydrates in almost all of the samples although the ratio of available and

unavailable carbohydrates varied from sample to sample. This shows that vegetables are better supplier of bulk to the diet than being an energy source.

Two of the available carbohydrates have been determined while the other are presently being analyzed. Total sugars obtained are relatively small so are reducing sugars.

The samples will be analyzed for unavailable carbohydrates as soon as determination of the available carbohydrates is completed. **(Author's summary)**

Keywords: *Biology, Carbohydrates, Dry water, Vegetable , Caloric*

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(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0187

Determination of folic acid in fortified foods and folate in some Philippine vegetables based on the developed and validated methods of analyses

Castillo, Leah N., Noel, Marissa G.

Microbiological assay has been regarded as the reference method in the analysis of folates and folic acid (FA) in foods, but trends in analytical chemistry towards simple and less time-consuming analytical methods set forth other reliable type of analysis. High-performance liquid chromatographic analysis with UV detection at 280 nm was developed and validated to determine the FA content of fortified foods. The analytical method involves FA extraction with phosphate buffer or amylase treatment after buffer extraction (for samples with carbohydrate bound-FA) and analysis with HPLC. A limit of detection of 0.0524ppm, limit of quantitation of 0.1747ppm, and an average correlation coefficient (r) of 0.998 were obtained during in-house method validation. The repeatability and intermediate precision were also evaluated based on relative standard deviation and found to be 3.91% and 10.97%, respectively. Recovery of the test results was established at 81% to 97%, while the accuracy of the method was verified using SRM 1849. The validation parameters obtained indicated that the method is fit for use in the determination of folic acid in food. Fifteen fortified food samples available in the market were analyzed using the validated method and revealed that the folic acid contents of most of the samples tested were lower than those indicated in their nutritional labels. On the other hand, 5-CH_3-THFA, 5-CHO-THFA and THFA in seven green leafy vegetables were also assessed through extraction by tripleenzyme digestion with amylase, protease, and conjugase but only 5-CHOTHFA and THFA were successfully quantified by HPLC. Extracts of alugbati, malunggay, and swamp cabbage were subjected to LC-MS analysis for reevaluation but no mass fragments similar to standards were obtained. **(Author's abstract)**

Keywords: *Biology, Folates, Folic acid, Reversed-phase high performance liquid chromatography, In-house method validation, Fortified foods*

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0188

Development of a nucleic acid-based monoclonal antibody technique for the detection of the bacterial wilt organism in banana in the Philippines

Exconde, Severina B., Raymundo, Asuncion K., Espino, Teresita M.

A method for detecting the bacterial wilt organism, *Ralstonia solanacearum*, in banana was developed. This was based on monoclonal antibodies (MABs) generated using a polymerase chain reaction (PCR) product, M114, for enhanced specificity. The DNA fragment plus methylated bovine serum albumin (MBSA) was used as immunogen in contrast to the conventional method utilizing whole bacterial cells or other bacterial antigens in producing antibodies for the detection of a plant pathogen. Two of the five monoclones produced were the source of the MAB. The activity and specificity of the developed MAB were confirmed through cross reactivity tests against 12 different genera of bacterial pathogens, 10 species of *Pseudomonas*, and banana and non-banana isolates. None of the tested bacterial genera cross-reacted with the developed MAB and only one species of *Pseudomonas, P. maltophilia*, showed cross reaction with the antibody. However, no PCR amplification in its DNA using M114 primers was observed in this species. Some tomato strains that were established to also infect bananas cross-reacted with the produced antibody. In the sensitivity tests of produced banana monoclonal antibodies, the detection limit for whole cells in culture and in soil was 1 x 10^7 cells mL-^{1} and for lysed cells 1 x 10^5 cells mL^{-1}. **(Author's abstract)**

Keywords: *Biology, Bacterial wilt, Banana, Detection, Monoclonal antibodies, Nucleic acid, Ralstonia solanacearum*

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(Filipiniana Analytics)
Fil(S) S19 P53 83/2 2000

0189

Developmental anatomy of oil cells, oil glands and juice sacs in the fruit and seed of *Citrofortunella microcarpa* Bunge (calamansi) and its implications on the utilization of citrus peel and seed waste

Tolentino, Vivian S., Andutan, Raul Martin Brien C., Eustaquio, Jerico Daniels C.

There are several reports on the uses of *Citrofortunella microcarpa* (calamansi) juice which varies from medicinal, culinary, and industrial, but few studies have been reported on the uses of the exocarp (fruit peel), juice sacs, and seed. Investigating their uses can convert a waste material into a product. The essential oils present in the rind and seeds are one example. This study on the development of the oil cells, oil glands, and juice sacs of the calamansi fruit and seed at different stages of development was carried out to maximize the extraction of oil for use as fragrance and to minimize peel and seed wastes. Samples were subjected to ethanol-xylol for dehydration and clearing. Nile blue sulfate was used for histochemical tests and image analysis was done to obtain measurements. Results showed that the count of oil glands in a 1 mm^2 area decreases as the surface area of the fruit increases. As the fruit ages, the oil glands also mature and increase in size, from 1% in young fruits to 45% in mature fruits, which allows them to store more essential oils. Also, an increase in the seed size of the fruit as it ages may imply a higher oil storage capacity in larger seeds due to an increase in the total number of oil cells. The fragrance of the essential oils extracted from the exocarp and juice sacs had the distinct fragrance of limonene although varying in strength. It was also observed that the seed extract had the distinct bitter aroma of limonoids. **(Author's abstract)**

Keywords: *Biology, Oil glands, Oil cells, Juice sacs, Essential oils, Limonene, Limonoids*

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(Filipiniana Analytics)
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0190

Discourse on the methods of science

Velasco, Jose R., Alejar, Arcelia A., Dionisio-Sese, Maribel L.

The paper presents a bird's-eye view of the development of scientific methods. Compared with the relatively flexible methods used in natural history studies, the experimental method is less flexible because conditions in the trials are more rigidly controlled. However, increased precision in the experimental method has enabled the physical sciences to advance tremendously, making major contributions to the theory and the practical arts. Limitations of the methods are also pointed out. The essence of scientific research is cursorily presented. **(Author's abstract)**

Keywords: *Biology, Empirical observation, Experimentation, Rational thought, Research, Scientific method*

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Fil(S) S19 P53 83/2 2000

0191

Diversity of cicadas in three selected mountains of Mindanao, Philippines

Mohagan, Alma B., Mohagan, Dave P., Baguhin, Leonil Jun B., Galan, Gloria L., Batabatan, Christopher G.

Diversity of cicadas in three selected mountains of Mindanao namely: Mt. Musuan, Mt. Kitanglad and Mt. Hamiguitan. Cicadas are considered for study being biomass converters and indicator of a forest quality. They are dependent on trees for shelter. Hence its diversity indicates habitat quality. This paper aimed to provide information on cicada species composition and species level-diversity in three selected mountains of Mindanao. Data generated may be used for species monitoring, distribution, biogeography and conservation of cicadas. Belt transect, time constraint, transect walk sampling, light trap, malaise trap and pan traps were employed from April 2011 to May 2012. We captured a total of 21 species of cicadas: 8 from Mt. Musuan, 9 from Mt. Kitanglad and 17 from Mt. Hamiguitan. Species diversity level using Shannon-Weiner index showed low level in all sites. In Mt. Musuan H'0.697, Mt. Kitanglad H'0.965 and Mt. Hamiguitan H'1.063. Highest species richness was observed in Mt. Hamiguitan, lowest in Mt. Musuan. Bray-Curtis analysis on species composition showed that all sites are unique habitat for cicadas. This result suggests that cicada species has specificity for habitat. The locals utilize cicadas for food, bait for fishing and for forecasting weather conditions. They also recognized that cicadas are worthy for conservation as they indicate forest quality. **(Author's abstract)**

Keywords: *Biology, Diversity, Cicadas, Mountain, Mindanao, Species composition*

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0192

Diversity of endogenous banana streak badnavirus (BSV) species in national and southeast asian musa germplasm collection

Herradura, Lorna E., Dela Cueva, Fe M., Balendres, Mark Angelo O., Consignado, Jyko S., Dinglasan, Eric G.

Banana Streak Virus (BSV) is the most widely distributed and considered potentially the most threatening among the viruses of banana because viral sequences are already integrated in the Musa genome and becomes pathogenic (episomal BSV). In determining the frequency and distribution of endogenous BSV sequences across the national and Southeast Asian germplasm collections, the accessions were indexed through standard PCR and multiplex PCR using BSV F1/R2 and species-specific primers, respectively. Results showed the presence of three known BSV species in the collection, namely: Mysore, Goldfinger, and Imove. These species were strongly associated with B and AB genomes. Accessions/cultivars with unknown BSV sequences will be further characterized. **(Author's abstract)**

Keywords: *Biology, Banana streak virus, Endogenous BSV, Episomal BSV, Multiplex PCR*

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0193

Diversity of odonata: the local way of assessing water quality in Lake Pinamaloy, Don Carlos and Dologon Spring, Mindanao, Philippines

Mohagan, Dale Joy B., Mohagan, Alma B., Cordero, Merly Joy L., Ellevera, Yllana Glocel, Israel, II, Mary Vianey Geroncia R., Montecillo, R

Water quality assessment of Lake Pinamaloy and Dologon spring, Bukidnon was conducted using diversity indices of Odonata species to provide information as to whether species composition, diversity and status of odonata in the vicinity of Lake Pinamaloy and Dologon Spring can be used by locals in assesing water quality. A total of 3 families, 11 genera, and 18 species of Odonata are found in Lake Pinamaloy, and 3 families, 13 genera, and 20 species are found in Dologon Spring. The species diversity in Odonata in Lake Pinamaloy and Dologon Spring are low: H'0.66 and H'0.875, respectively. Field biotic index (FBI) showed medium water quality for both (50.7 and 60, respectively). Species richness of Odonata was higher in Dologon spring with forest fragments and less human activities near the source. Two endemic species were listed and Odoanata are unevenly distributed in the two sites. Distribution varied in two sites with different vegatation types, degree of light penetration, presence of microhabitats and quality water. The results suggest that Odonata can be useful in assessing and monitoring water quality in the absence of ecological kits. The local communities can be empowered to creating water conservation culture, especially when they recognize that Odonata are sensitive indicators for testing water quality. **(Author's abstract)**

Keywords: *Biology, Odonata, Diversity, Water quality, Mindanao, Philippines*

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0194

DNA fingerprinting and genetic diversity analysis of Philippine saba (*Musa balbisiana Colla*) Cultivars using microsatellite markers

Doloiras, Arnelyn D., Garcia, Roberta N., Lalusin, Antonio G., Tecson-Mendoza, Evelyn Mae

Saba (*Musa balbisiana* Colla) is an endemic crop and one of the most important cultivars of banana grown in the Philippines. In recognition of the importance of Philippine Saba as a source of food, it is essential to identify Saba cultivars with good fruit quality and high potential for processed food and industrial application. Microsatellites markers were used to generate DNA fingerprints and to characterize the genetic diversity among 14 Philippine Saba cultivars. A total of 45 primer pairs obtained from INIBAP (International Network for the Improvement of Banana and Plantain) were tested for PCR amplification and polymorphism across the 14 Saba cultivars. Of these primers, 19 were polymorphic markers and two were monomorphic markers. A total of 67 alleles were generated, with a mean of 3.5 alleles per locus, ranging from 2 to 8 alleles. The resolving power of molecular markers measured as the Polymorphism Information Content (PIC) ranged from 0.05 to 0.94. The dendrogram using UPGMA-SAHN cluster analysis based on microsatellite amplification and polymorphism showed that the Saba cultivars clustered into ten groups at the 88 % similarity level. Cluster analysis separated the cultivars of *Musa balbisiana* Colla from genotypes of *Musa acuminata* Colla. The 19 polymorphic SSR primers were shown to be able to identify and differentiate the 14 Saba cultivars. The results of this study provide useful information for proper identification of Saba cultivars suitable for specific needs of the industry. **(Author's abstract)**

Keywords: *Biology, Saba, Musa balbisiana, Microsatellites, Polymorphism, Genetic diversity, DNA fingerprinting*

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0195

Double-stranded (ds) RNA isolation and molecular characterization from three wild-type and nine reduced genome complement strains of *Rhizoctonia solani* isolates

Domingo, Doreen D., Bharathan, Narayanaswamy, Bawingan, Paulina A.

The presence of dsRNAs in pathogenic fungi can either increase or decrease their pathogenicity depending on the type and concentration of dsRNA present in them. This study utilized 12 isolates of *Rhizoctonia solani* for isolation and molecular characterization of dsRNA: three wild type strains that are heterokaryons (RS 29, RS 114 and TE2-4) and nine reduced-genome complement strains or mutants (RS 29.5, RS 29.6, RS29.7, EGR4, EGR7, 123E, T2, TOM7, and strain 115) that are homokaryons. The presence of dsRNAs from four age groups of *R. solani* (25-day old, 50-day old, 75-day old and >75-day old) was determined. The dsRNAs were characterized according to their sensitivity to DNAse and RNAse and size fractionation based on electrophoretic mobility. All age-group samples showed dsRNA in the homokaryon isolates EGR4 and T2. Also, 50-day old age-group samples showed dsRNA in RS 29. Moreover, >75-day old samples showed dsRNA in RS114 and TE2-4. Observed sizes of dsRNA ranged from 2.1 kbp (T2) to 3.3 kbp (EGR4); concentration of the isolates varied from 0.065 ug/uL to

3.16 ug/uL. Interestingly, dsRNA of TE2-4 was found to be a candidate for specific quantitation using a dual-labeled oligonucleotide probe. **(Author's abstract)**

Keywords: *Biology, Rhizoctonia solani, dsRNA, Heterokaryon, Homokaryon, Fungi*

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0196

Effect of blending low sulfur diesel fuel with coconut methyl ester on the engine performance characteristics of a single cylinder, 4 stroke diesel engine

Yoshida, Koji, Argamosa, Felipe, Hizon, Rey, Zapanta, Carlos

The use of Coconut Methyl Ester (CME) as a fuel has already been established (Arida, 1981) however, ther is no widespread acceptance by the public because of its high cost as compared to ordinary petroleum diesel fuel and limited supply. The passage of the Philippine Clean Air Act has opened a window of opportumityu for the utilization of CME because it is an environment friendly fuel and is renewable.

The purpose of the research is to determine the feasibility of using CME as a diesel fuel blend that would help in reducing the smoke emission of diesel engines to meet the standard set by the Philippine Clean Air Act. With the high cost of CME and due to its limited supply (Tan et al., 2001), this research has concentrated on utilizing low blend of CME in diesel fuel. A test conducted using a single cylinder diesel engine (bench test) at the Nihon University of Japan was undertaken to determine the engine performance using low blend of coconut methyl ester. Based on the test results conducted at Nihon University, Japan uses 1%, 5%, 10%, 20% and 100% CME in diesel which shows a 50 to 60 percent reduction in smoke emission, a NOx reduction of 20% and a power reduction averaging 20%. Also, it was observed that the emission performance characteristics of 1%, 5%, 10% and 20% CME blend in diesel showed no significant differences with each other. **(Author's abstract)**

Keywords: *Biology, Single cylinder diesel engine, Fuel consumption rate, Nitrogen oxide emission, Smoke emission, Carbon monoxide emission, Torque*

Philippine Journal of Industrial Education & Technology, Volume No. 14 Issue No. 1, 15-27
(Filipiniana Analytics)
Fil(S) T61 P53 14/1 2004

0197

The effect of storage temperature (4 °C) on the activity of isolated bacteriophage against *Salmonella* spp. isolated from raw chicken

Avena, Mary Anne Claudine, Gumafelix, Rose Elaine, Mamuric, Gillian Anthony, Pastoral, Anna Kristina, Santos, Ramon Arvin, Papa, Donna May

Salmonella is a gram-negative, rod-shaped, motile, non-spore forming bacterium which causes diarrhea to septicemia that is usually contracted through consumption of contaminated foods. Outbreaks of salmonellosis are a perennial problem especially in the poultry industry where alternatives to chemicals to battle this bacteria have been investigated. Bacteriophages,which are capable of lysing*Salmonella* by penetrating through their cell membrane and disrupting their metabolic processes have been explored as an alternative, considering they are safer to use. *Salmonella* Havana was isolated from raw chickens, following the ISO method 6579:2002. A bacteriophage, designated as Bacteriophage A3CE, capable of lysing *Salmonella* Havana was isolated from soil. When the ratio of bacteriophage to *Salmonella* Havana was 10 or more (MOI >10), the number of *Salmonella* Havana was reduced by > 90%, 6 hours after the bacteriophage reached its maximum burst size at room temperature. The same experiment was conducted at 4°C. Results showed that there is no significant difference between the activity of the isolated bacteriophage at room temperature and at 4 °C ($P > 0.05$). Thus, Phage A3CE was effective in reducing the amount of *Salmonella* Havana at both temperature conditions which makes it a promising alternative agent against the said bacterium. **(Author's abstract)**

Keywords: *Biology, Salmonellosis, Salmonella, Raw chicken, Bacteriophage, Storage temperature*

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(Filipiniana Analytics)
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0198

The effects of salinity on survival and growth of tilapia *Oreochromis niloticus* exposed at various ages

Casauay, Arsenia C., Gamboa, Christopher P.

Tolerance of tilapia, essentially a freshwater fish, to artificial seawater acclimation based on survival and growth at 1, 11, 21, 31, and 41 days post hatching was determined. Optimum survival (100%) was observed in fry exposed to seawater very soon after hatching. Survival rates of 56.67, 76.67, 90, and 93.33% were observed for fry acclimated at 11, 21, 31, and 41 days post-hatching, respectively; indicating a trend towards increased tolerance with age. There was no further statistically significant deviation ($P<0.05$) as compared to survival of non-acclimated control (96.67%) starting 31 days post-hatching. There were no significant effects on the growth of fish surviving through 61 days post-hatching. **(Author's abstract)**

Keywords: *Biology, Tilapia, Artificial seawater, Acclimation, Fry, Hatching*

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(Filipiniana Analytics)
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0199

Electron microscope analysis of sexual induction in a fissiparous planarian, *Dugesia ryukyuensis*

Cabrera, Jocelyn, Herrera, Annabelle A., Kobayashi, Kazuya, Hoshi, Motonori

Minced flatworm *Bdellocephala brunnea*, was fed to the asexual mixoploid biotype *Dugesia ryukyuensis* (Okinawa-Hiroshima strain) to determine if the asexual worm could be sexualized. Six weeks feeding led to full development of the reproductive organs of *Dugesia*. Ultrastructural observations showed features previously unreported in worms of the same group. **(Author's abstract)**

Keywords: *Biology, Dugesia ryukyuensis, Bdellocephala brunnea, Sexualization, Asexual worm, Mixoploid biotype*

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(Filipiniana Analytics)
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0200

Embryonic development of "Hanga"

Tolentino, Vivian S., Zamora, Prescillano M.

"Hanga" or *Pittosporum resiniferum* Hemsl. is a potential alternative source of energy because of the petroleum-like properties of the oil from the fruit which is comparable to petroleum due to the presence of dihydroterpene and n-haptene (Bacon 1909; Noble 1978). The study was conducted to trace and describe the different stages of development of the embryo from globular to the mature stage. The modified clearing technique using NaOH and chloral hydrate was used. Seeds were removed from the fruits and the embryos in the seeds were isolated. The embryos were measured with a - micrometer eyepiece using a BH-2 Olympus epifluorescent microscope. Morphological and anatomical descriptions were used as criteria for classifying the embryos in different stages. Stage 1 had embryos which were small an globular in shape. In stage 2, the embryos were in the early-heart shape, with cotyledons developing. In stage 3, the embryos were in the mid-heart shape with developed cotyledons. A suspensor, at the

base of the embryo was observed. In stage 4, the late-heart shape, the cleavage between the cotyledons was deeper and the cotyledons more rounded at their tips. The primary tissues (protoderm, procambium, and the ground meristem) were well defined.

One embryo per seed was noted. Approximately 80 to 90% of the seeds dissected showed the presence of an embryo. The presence of an embryo and its developmental stage are not directly related to seed size. **(Author's abstract)**

Keywords: *Biology, Embryo, Suspensor, Procambium, Dihydroterpene, n-heptane, Cotyledons, Protoderm, Ground meristem Hanga, Pittosporum resiniferum*

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0201

Evaluation of the glycemic effect of *Parameria laevigata* (A, Juss) moldenke in normal and alloxan-induced diabetic juvenile mice (*Mus musculus* L.)

Cajuday, Lilibeth A., Amparado, Edna A.

The rise in the incidence of diabetes has been alarmingly rapid in both developed and developing countries. In developing countries medicinal plants have always played a significant role in the maintenance of health and management of diseases. In the Philippines, there are many plants with reported antidiabetic property but are not scientifically tested yet. Using male mice as model organism, the ethanolic extract from the leaves of *Parameria laevigata* was tested for hypoglycemic activity in both normoglycemic and alloxan-induced diabetic mice. The extract reduced blood glucose levels (BGL) in a dose-dependent manner. When given to normal and alloxan-diabetic mice, the extract at 100 mg/kg bw reduced the level of hyperglycaemia by 20% and 45%, respectively, 1 hr after treatment compared to controls. Moreover, a significant reduction in BGL was noted in diabetic mice 2 and 3 hrs post treatment ($P<0.05$) at a dose of 50 mg/kg bw. These results clearly indicate that the ethanolic extract from the leaves of *P. laevigata* has high antidiabetic potential in a dose-dependent manner. Further characterization of the active components of these plants is warranted to understand the mechanism of its hypoglycemic action. **(Author's abstract)**

Keywords: *Biology, Alloxan, Antidiabetic, Hypoglycemic, Normoglycemic,, Parameria laevigata*

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0202

Expressions dynamics of genes implicated in limb development

Mangahas, Paulo Miguel F., Sajise, Sheila C., Palmes-Saloma, Cynthia

The vertebrate limb is an outgrowth of the embryonic body wall, consisting of the mesenchyme derived from the somites and the somatic portion of the lateral plate mesoderm, surrounded by an extodermal jacket. The formation of the limb is controlled by a complex set of molecules such as those belonging to the Transforming Growth factor ^{2} (TGF^{2}) superfamily, Fibroblast Growth Factors (FGFs), Homeobox (Hox), retinoic acid and Chondromodulin-1 (Chm-1), that interactively promote axis formation, stimulate growth, and pattern the individual skeletal elements. In order to study the expression dynamics of some of these genes, we performed wholemount ribonucleic acid (RNA) *in situ* hybridization analyses on different stages of mouse embryos and excised limb buds. The procedure consists of cloning the complementary DNAs (cDNAs) of the genes encoding for bone morphogenetic protein^{-4} *(BMP4), Wnt, Shh* (Sonic hedgehog), *N-myc and Chm-1* into a plasmid vector with flanking T3 and T7 RNA Polymerase binding sites and utilizing these sites to transcribe *in vitro* digoxigenin-labeled sense and antisense RNA probes for hybridization to target messenger RNAs (MRNAs). Our results show that these various genes exhibit a spatio-temporal pattern of expression in the developing mouse limb bud. For instance, *N-myc* expression is detected early in the limb bud mesenchyme in an increasing proximodistal gradient with peak expression levels at embryonic days 9.5-10 after which its expression is rapidly down-regulated. On the other hand, *Wnt* mRNA expression is confined to the ectoderm while that *BMP-4* is found in the anterior and posterior regions of the limb bud encompassing the antero-posterior organizer center, the zone of polarizing activity or ZPA. *Chm-1* is thelatest gene to be expressed and its mRNA is confined mainly to regions of presumptive digits where cartilage condensations are confined. The expressions dynamics of these genes have been correlated with their roles in either promoting chondrogenesis or in controlling the fates of various cell types in the vertebrate limb. **(Author's abstract)**

Keywords: *Vertebrate limb development, mRNA in situ hybridization, Bone morphogenetic protein, Chondromodulin, Transforming growth factor b, Sonic hedgehog, Biology*

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Fil(S) Q149. P5 N25 v.23 2001

0203

Extraction and characterization phenolic antioxidants from calamansi peel, coffee husk and cacao pod husk

Sapin, Arsenia B., Ramirez, Teresita J., Sedano, Susan A., Soriano, Juan Paolo E.

Phenolic compounds from calamansi peel, coffee husk and cacao pod husk were extracted using a cheap solvent. The extracts were evaluated for their antioxidant capacity by 2,2-

diphenyl-1-picryl-hydrazyl (DPPH) radical scavenging assay and ferric ion reducing antioxidant power (FRAP) test. Antimicrobial property and High Performance Liquid Chromatography (HPLC) analyses were also conducted. The DPPH radical scavenging activity of the phenolic extracts (PE) were in the order: cacao husk PE > coffee husk PE > calamansi peel PE. Both extracts from cacao and coffee husks were better free radical scavengers than the synthetic reference antioxidants, butylated hydroxyl-anisole (BHA) and butylated hydroxyltoluene (BHT), but that from calamansi peel was not. The reducing power of the extracts, on the other hand, were in the order: coffee husk PE > cacao husk PE > calamansi peel PE. Based on DPPH assay and reducing power test, cacao and coffee husks appeared to be excellent sources of natural antioxidants but not calamansi peel. Phenolic extract from calamansi peel, however, exhibited better antimicrobial activity against some organisms than the two extracts. Results of HPLC analysis showed that per 200 mg powder, there was 0.8 ng caffeic acid in cacao pod husk; 0.3 ng caffeic acid and 0.9 ng chlorogenic in coffee husk; and 1.1 ng p-coumaric acid and 1.3 ng sinapic acid in calamansi peel. **(Author's abstract)**

Keywords: *Biology, DPPH assay, FRAP test, Phenolic compounds, Antioxidants, Calamansi*

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0204

Fiber morphology and recovery, chemical composition and pulp properties of abaca (*Musa textilis* Nee) cv. Inosa harvested at different stages of stalk maturity

Moreno, Luz O., Protacio, Calixto M.

The morphological, chemical, physical and pulp properties of abaca fibers cv. Inosa harvested at different stages of stalk maturity was investigated to determine the suitability of the fibers in the production of pulp and paper products and to explore the possibility of getting maximum extractable fibers from abaca leafsheaths using different stripping methods. The fibers were extracted using the mechanical spindle stripping and the modified spindle stripping methods. Abaca cv. Inosa at 8-10 months old (young) already possess the inherent desirable characteristics of fibers for pulp and paper, such as extremely long fiber cells (over 3 mm), thin cell walls, low runkel ratio (less than 0.70), high flexibility coefficient, and high slenderness ratio. The morphological dimensions of fibers taken from young stalks were already comparable to fibers taken from mature stalks (18-24 months old). Fibers from 8-10 months old abaca already possessed the desirable chemical pro perties for pulping as shown by the characteristic low lignin and ash content, high alpha-cellulose, holocellulose, and hemi-cellulose contents, comparable with those from intermediate and mature stalks. The average pulp recovery, Kappa number, and viscosity of pulp were higher in all the three stages of stalk maturity compared to Laylay and Linawaan cultivars. The maximum fiber yield potential of the abaca cv. Inosa was not yet attained at early stage of maturity. Fiber yield of 8-10 months old abaca stalks was only 21% to

32% of those obtained from mature stalks, but usage wise, the fibers are already suitable for pulp and paper production. Fiber recovery was significantly increased by almost 100% using the modified spindle stripping method resulting in a 64% increase in net income compared to the standard stripping method. **(Author's abstract)**

Keywords: *Biology, Fiber morphology, Chemical composition,, Pulp properties, Inosa, Stalk maturity*

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0205

Four new combinations from the Philippine endemic *Canthium* Lam. (Rubiaceae): evidences from nuclear and plastid DNA sequence data

Magdaleno, Carizza Marie M., Pacia, Joseph Alvin T., Quiogue, Kim Karlo C., Wong, Annie Eliza D., Yayen, Krysten Marie R., Arriola, Axel H., Alejandro, Grecebio Jonathan D.

Canthium Lam. (Vanguerieae, Rubiaceae) forms a polyphyletic assemblage based on current phylogenetic studies. The genus is presently delimited to include species with spines. In contrast, several Philippine endemic species of *Canthium*, such as *C. gynochtodes, C. oblongifolium, C. obovatofolium,* and *C. oligophlebium* do not possess spines. This raises a question on the true generic identities of these *Canthium* species. In this first molecular study of Philippine *Canthium*, the plastid (*trnL-F* region) and nuclear (ITS region) DNA were sequenced and assembledtogether with the previously published sequences of Vanguerieae to determine its phylogenetic position and true generic affiliations. The majority-rule consensus tree of the Bayesian inference showed a well-supported clade of the whole Vanguerieae. Interestingly, *Canthium oligophlebium, C. obovatifolium,* and *C. oblongifolium* were nested within the *Pyrostria* clade (PP=1.00), while *C. gynocthodes* was in *Psydrax* (PP=0.76). These molecular results strongly corroborate with the morphology of *Pyrostria* and *Psydrax*, leading to the establishment of two additional genera in the Philippine's biodiversity. Four novel combinations from the Philippine *Canthium* are here proposed. **(Author's abstract)**

Keywords: *Biology, Canthium, ITS (nrDNA), Philippine endemic, Pyrostria, Psydrax, trnL-F (cpDNA)*

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0206

Frequency of a mitochondrial DNA 9-bp deletion phenotype in Philippine ethnolinguistic groups

Miranda, Jasmin Jiji, Paraguison, Rubigilda, Datar, Francisco

The advent of DNA analysis has provided anthropologists, historians, and geneticists an objective method of assessing variation among peoples, superseding many classical anthropological, linguistical, and even biological methods. In human genome diversity research, length changes in human mitochondrial DNA (mtDNA) serve as potentially useful markers for inferring the evolutionary history of populations. A 9-bp mtDNA deletion located in the intergenic region between the COII gene and the lysine Asian populations. Using PCR technology, the presence and frequency of the 9-bp mtDNA deletion phonotype was determined in two major linguistic populations in the Philippines, Tagalog (f=38%) and Cebuano (f=24%), and an Ivatan ethnic community (f=56%). While these data fall within the observed ranges for other Philippine populations, it is interesting to note that these differ from those previously reported for other Asia-pacific populations. The anthropological implications may therefore be further studied by including ethnolinguistic populations in the Philippines and contributing the data to global genetic matrices. **(Author's abstract)**

Keywords: *Mitochondrial DNA, Philippine ethnolinguistic groups, Biology*

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0207

Fruit color as an indicator of seed germination, seedling performance and oil content of *Jatropha curcas* L

Batin, Charlie B.

The escalating prices of imported crude oil by the Philippines prompted the government to develop measures to help the country reduce its use of fossil fuels through greater utilization of indigenous energy resources. One of the species identified as a potential source of biofuel for biodiesel production was *Jatropha curcas* L. This study sought to: (1) document the changes of fruit color from the time the flower emerged until the fruit becomes black; (2) determine the fruit color of jatropha that yields the highest oil content for the production of biodiesel; and (3) assess the performance of jatropha seeds selected based on fruit maturity relative to germination capacity and seedling growth. The experiment was laid out in Randomized Complete Block Design with four treatments and three replications. Changes in fruit color starting from the development of fruit until the color turned black were documented for a period of 34 days using the Royal Horticultural Color Chart (RHCC). Seeds produced during the dry season had higher oil content than seeds produced during the wet season. Seeds taken from yellow fruits had the

highest oil yield in both seasons. Seeds taken from black colored fruits during the dry season and dark yellow for the rainy season are recommended for better germination and growth. Fruit maturity was been found to have an influence on the germination capacity, growth performance of jatropha seeds and seedlings, and percentage crude fat content. The best maturity color of jatropha for oil yield production was yellow for both seasons. Black fruits were the most promising in terms of germination and growth performance. **(Author's abstract)**

Keywords: *Biology, Jatropha curcas, Fruit color, Crude fat content, Oil yield, Seed germination*

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0208

Functional elucidation of contig 34 of *Marsupenaeus japonicus* to white spot syndrome virus (WSSV) by dsRNA interference

Tare, Maria Violeta, Maningas, Mary Beth B., Shitara, Aiko, Kondo, Hidehiro, Hirono, Ikuo

The genome of the kuruma shrimp, *Marsupenaeus japonicus*, is thus far incomplete, yet it may hold many answers to the immunity response of the shrimp to different pathogens, including White spot syndrome virus (WSSV), one of the most destructive viral diseases among crustaceans, causing one hundred percent (100%) mortality within 3 to 7 days of infection. Contig 34 of *M. japonicus* was found to be homologous to the WSSV genome and might play a role in the infectivity of the virus. To verify this, RNA was extracted from shrimp samples for gene expression, followed by dsRNA synthesis, and interference by injection. Experimental samples were challenged with WSSV, while PBS and GFP were used as controls. Mortality data revealed that contig 34 inferred some protective effect with a survival rate of 32% at Day 5 p.i. **(Author's abstract)**

Keywords: *Biology, Host-virus, WSSV, RNAi,, Kuruma shrimp, Contig*

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(Filipiniana Analytics)
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0209

Functionality of *Lentinus tigrinus* (Bull.) Fr., an edible basidiomycete from the Philippines

Dulay, Rich Milton R., Arenas, Minerva C., Kalaw, Sofronio P., Reyes, Renato G., Cabrera, Esperanza C.

Filipinos are now searching for organic foods with important nutrients and multifunctional activities, which are termed as nutraceuticals. The bioactive components of edible mushrooms have emerged as natural sources of compounds that are antioxidant, antibacterial, antihypercholesterolemic, anti-diabetic, antiviral, and antifungal. Our team has been continually searching for Philippine wild edible mushrooms with nutraceutical potential. One of the candidates is a white wood-rotting basidiomycete, the *Lentinus tigrinus* (Bull.) Fr. Recently, the optimum cultural conditions and production technology for this mushroom were established. In this study, we determined the antibacterial and hypoglycemic activities of *L. tigrinus*. *In vitro* antibacterial assay showed that the ethanolic extract of fruiting body and the immobilized secondary mycelia had high antibacterial activity against *Staphylococcus aureus*. The administration of lyophilized hot water extract of the fruiting body (both 100 mg/kg and 250 mg/kg dosages) to diabetic-induced mice significantly lowered the glucose level by 26.9% on the third week, which was comparable to the anti-diabetic agent glibenclamide. With these significant biological properties, *L. tigrinuscan* be considered as natural source of safe nutraceutical. **(Author's abstract)**

Keywords: *Biology, Lentinus, Nutraceutical, Functionality, Mushroom, Diabetes*

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0210

Fungal endophytes from mangroveleaves and stems: sources of metabolites with antimicrobial, antioxidant, and cytotoxic activities

Balete, Marc Jason C., Guerra, Tasha Adelle F., Puzon, Franco Y., Querubin, Spencer O., Tanglao, Roxane Jane S., Moron, Llewelyn S., Bungihan, Melfei E., dela Cruz, Thomas Edison E.

The search for new drugs recently taps fungal endophytes associated with tropical plants. In this study, fungal endophytes from stems and leaves of Philippine mangroves (MFE) were grown *in vitro* for the mass production of bioactive secondary metabolites. Eighteen MFE crude culture extracts were then tested for their antimicrobial, antioxidant, and cytotoxic activities. Results showed that six MFE exhibited inhibitory activities (11-16 mm ZOI) against at least one of the nine test microorganisms. The crude culture extracts were more active against gram-positive than gram-negative bacteria as shown by the paper disk diffusion assay. Cytotoxic activity using the brine shrimp (*Artemmia salina*) lethality assay showed that six of the MFE killed at least 50% of the test organism at a concentration of 100 ìg. One MFE exhibited 100% brine shrimp lethality. Of the seven MFE extracts tested for their antioxidant activity using DPPH assay, only four showed 40-52% radical scavenging activity. Our research study highlighted the potential of fungal endophytes from Philippine mangroves as sources of metabolites with pharmaceutical importance and for novel drug discovery. **(Author's abstract)**

Keywords: *Biology, Bioassay, Biological activities, In vitro culture, Mangrove fungi, Secondary metabolites*

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0211

Genetic diversity analysis of pili (*Canarium ovatum* Engl.) using cross-species amplification of simple sequence repeats

Sandoval, Carlo Miguel C., Garcia, Roberta N., Tecson-Mendoza, Evelyn Mae

Pili (*Canarium ovatum* Engl.) has its center of diversity in the Bicol region. Due to a high degree of open pollination, pili trees grown from seeds exhibit variability in many important horticultural characters. This study used Simple Sequence Repeat (SSR) markers from papaya (*Carica papaya*) and Chinese white olive (*Canarium album*) to assess the genetic diversity of 95 pili accessions obtained from the collections of the Crop Science Cluster (CSC): UPLB, DA Pili Research and Technology Center, Tabaco, Albay, and three private pili farms in Barangay San Rafael, Bulusan, Sorsogon. Five SSR primers (SSR12, SSR31,*Cas*C120, *Cas*A131 and *Cas*C183) produced high quality, polymorphic PCR products from genomic DNA. Thirty seven alleles were obtained using the five SSR primer pairs with an average of 7.4 alleles per marker. The average Polymorphism Information Content (PIC) of the five primers was 0.7660 which indicated their capability to detect and quantify genetic diversity in *C. ovatum*. Cluster and ordination analyses using NTSYSSpc software gave three major clusters at 0.60 similarity coefficient. Group I consisted of mostly IPB-CSC accessions, some accessions from Pili Drive (PD)-CSC and two varieties, Katutubo and Laysa. Group II was mostly PD-CSC genotypes with some Bicol accessions. The other five registered varieties - Lanuza, Magayon, Mayon I, Orolfo and Magnaye - clustered together forming Group III. Cross-species amplification of SSR markers successfully revealed the high genetic variation among the pili genotypes studied. **(Author's abstract)**

Keywords: *Biology, Pili, Genetic diversity, Simple sequence repeats,, DNA markers, Canarium*

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0212

Genetic Plasticity of Lepidoptera

Barrion, Adelina A., Barrion, Aimme Lynn A.

Lepidoptera, the second largest order of insects, consists of 140,000 butterflies and moths uniquely distinguisged through their overlapping scales on wings, legs and most body parts. Their colorful appearance and elegant beauty earned popular appeal to collectors and hobbyists, howevet, their larvae are serious pests of agricultural crops. Ecological success of butterflies and moths is attributed to their genetic plasticity facilitated by specialized modes of reproduction and genetic systems. lepidopterans' modes of reproduction include sexual reproduction and regressed sexuality = parthenogenesis, telytokous parthenogenesis which can be either automatic or apomictic. Genetic systems of lepidopterans include mendelian inheritance; halokenetic chromosomes with modal haploid number (n) of 31 capable of Robertsonian fusions and fissions; ZW >ýC?ý : ZZ >ýX?ý sex-determining system; achiasmatic meiosis and somatic polyploidy. The variations and adaptations of lepidopterans are products of evolutionary mechanisms such as genetic drift (e.g. bottlenecks and Founder's effects), mutations, migrations, selections, and effects of environmental factors. The summative product is genetic plasticity of Lepidoptera. **(Author's abstract)**

Keywords: *Butterflies, Lepidoptera, Moths, Insect genetics, Chromosomes, Reproduction, Parthenogenesis, Holokinetic, Evolution, Genetic plasticity, Biology*

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0213

Growth performance of red algae *Gracilaria sp.* using long line and net cage method

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A study was conducted in Simbuco, 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 (T_1) and net cage method as treatment 2 (T_2). 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, T_1 had a mean weight (g) of 213.62 while T_2 was only 77.69. After 45 days, the total weight (g) and length (cm) of *Gracilaria* sp. increase with a mean of 347.35 (T_1) compared to T_2 of 83.34 only. Analysis of variance showed that T_1 had significantly higher growth than the net cage method ($P<0.01$). In total length (cm), T_1 had a mean length (cm) of 22.22 while T_2 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 T_1 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*

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0214

Heritability of facial shapes among Maranaos in Lanao del Sur

Torres, Mark Anthony J., Diampuan, Sittie Farhana C., Manting, Muhmin Michael E., Tabugo, Sharon Rose E., Demayo, Cesar G.

The Maranaos are one of the tri people in the Philippines who engage in intermarriage. This study sought to identify aspects of the shapes of the faces which have high probability of being inherited or transmitted to the offspring of Maranao couples. A total of 240 individuals (from 40 families) from different clans in Lanao del sur took part in the study. Digital images were used and following standard procedures and then analyzed using the method of geometric morphometrics. A total of 39 landmark points were digitized and the X and Y coordinates of these points were used as input for relative warp analyses. Tests for correlation between the relative warp scores of the faces of parents and their offpring were used as measure of heritability. Results showed significant correlation in the shapes of the faces of mother and their sons (P-value = 0.04); in the shapes of the jaws of mothers and her offsprings (Mother-daughter: 3.71E-05; Mother-son: 4.04E-08); and the jaw of the father and his daughter (P-value: 0.018). The results of the study are discussed in the light of possible modes of inheritance of the shapes of the face and that of the jaw. Maternal inheritance and the influence of maternal effect genes are explored as possible explanation for the observed correlation in the shapes of the faces of mothers and her progenies. **(Author's abstract)**

Keywords: *Biology, Geometric morphometrics, Heritability, Facial shape, Maranao*

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0215

The immunomodulatory effect of *Exiguobacteria* sp. isolated from shrimp gut on growth and survival of Macrobrachium rosenbergii challenged with shrimp pathogens

Alenton, Rod Russel R., Alenton, Marycris R., Azores, Maria Cristina C., Bansil, Ma. NiÃ±a Jenina C., Catapang, Jennifer Mari E., Pamittan, Michelle Charissa G., Maningas, Mary Beth B.

The use of alternative disease control measures such as the utilization of probiotics is widely studied nowadays for efficient management of shrimp aquaculture. This study examined the effect of the pre-isolated bacteria on the growth and immune responses of *Macrobrachium rosenbergii* against viral (White Spot Syndrome Virus) and bacterial (Vibrio spp.) pathogens. In addition, the median lethal dosage (LD_{50}) of WSSV and *Vibrio* spp. was determined. Furthermore, the analysis on *Exiguobacteria* sp. as potential probiotic was done through the determination and comparison the immune parameters such as the weight, survival, Total Hemocyte Count, and Phenoloxidase Activity of the experimental and controlled samples. The treatments included the following: *Exiguobacteria* sp. and *Bacillus* sp. separately incorporated to commercial
shrimp feed, both of which were fed for 14 days and 21 days, and commercial feed with no addition of probiotics (control). Results showed that both BS (*Bacillus* sp.) and Exi (*Exiguobacteria* sp.) treatments affected ($P<0.05$) the growth and exhibited increase in survival of *M. rosenbergii* as compared to that of the control group. This investigation suggested that *Bacillus* sp. and *Exiguobacteria* sp. are affective probiotics in rearing *M. rosenbergii* based on enhancement of growth and survival rate against *Vibrio* spp. **(Author's abstract)**

Keywords: *Biology, Probiotics, Macrobrachium rosenbergii, Exiguobacteria sp., Bacillus sp., White spot syndrome virus (WSSV)*

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0216

Influence of elevated CO_2 and photon flux density on growth, carbohydrate content and survival of pinus radiata shoot cultures supplied with varying sucrose levels

Chan, Merab A., Conroy, Jann

The observation that sucrose supply increased growth, despite the presence of CO_2 in the headspace during the light period and provision of higher photon flux density (PFD), indicated that carbohydrates were limiting at 350 mL CO_2 L^{-1}. Hence in the present study. CO_2 in the

headspace was enriched to 2,000 μL L^{-1} to investigate whether sucrose could be eliminated from the media and fully autotrophic Pinus radiate plants produced in vitro. In the first experiment, sucrose was supplied at 0, 3 and 6% at a PFD of 150 μmol m^{-2} s^{-1}. Dry matler production and shoot height were greatly enhanced by CO_2 enrichment at all sucrose levels indicating that CO_2 L^{-1} and the number of senescent shoots were reduced. Increasing the sucrose supply from 0 to 3% stimulated growth even at elevated CO_2. On the assumption that more photosynthetic reducing power may have been required to fully develop autotrophy , the PFD was raised to 280 μmol m^{-2} s^{-1} in the second experiment and sucrose was supplied as in the first experiment. Substantial improvement of growth was achieved with a combination of high PFD and elevated CO_2 showing that these factors could partially substitute for an external sucrose supply. Maximum growth was achieved at 6% sucrose, 280 μmol photons m^{-2} s^{-1} and 2,000 μL CO_2 L^{-1}. The requirement for extra sucrose was observed despite a large accumulation of starch at high CO_2. Although the reason for this starch accumulation is unknown it may prove beneficial at planting out. **(Author's abstract)**

Keywords: *Biology, Pinus radiata, Vitrification, Photon flux density, CO2, Autotrophy, In vitro, Sucrose, Senescent, Shoot culture*

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0217

Influence of LP-3G3 probiotic foods on the distal gut bacterial flora of mice (*Mus musculus* L.)

Balolong, Marilen P., Arroyo, Mary Joy J., Fabiculana, Patt Rissa S., Libed, Arianne O., Loma, Kevin A., Villafuerte, Andrew M., Villena, Juan Paolo S., Balolong, Jr., Ernesto C., Dalmacio, Leslie Michelle M.

Pediococcus acidilactici (LP-3G3), a lactic acid bacterium, can be formulated into functional foods for preventing and managing lifestyle associated diseases such as obesity. To initially assess the efficacy and safety of LP-3G3 as a probiotic, the influence of LP-3G3 probiotic foods on the distal gut (colon) bacterial flora of mice was determined. Locally formulated chocolate bar and drink containing LP-3G3, Yakult probiotic drink containing *Lactobacillus casei* strain Shirota (LcS) and Orlistat® were orally administered to groups of standard diet (SD)-fed and high-fat diet (HFD)-fed BALB/C mice. The bacterial profile was obtained through PCR and denaturing gradient gel electrophoresis (DGGE) and analyzed using Dice's index of similarity. The bacterial community members were identified through rDNA sequencing. Baseline distal gut bacterial diversity in HFD-fed mice was greater than the SD-fed group. Upon feeding with LP-3G3 chocolate bar, the distal gut bacterial flora of HFD-fed mice became less diverse. LP-3G3 chocolate-fed mice had more diverse distal gut bacterial flora compared to the Orlistat-treated and the untreated mice. LP-3G3 probiotic drink had a greater effect than Yakult in shifting the distal gut bacterial flora of HFD-fed mice to the SD-type. However, LP-3G3 probiotic drink and Yakult had little effect on the distal gut bacterial flora of SD-fed mice. Orlistat had a similar

effect as Yakult in all treatment groups. *Pediococcus acidilactici* had a greater influence than *Lactobacillus casei* strain Shirota on the distal gut bacterial flora, inhibiting the growth of Firmicutes bacteria which increased in number due to a HFD. **(Author's abstract)**

Keywords: *Biology, P. acidilactici, Probiotics, Gut bacteria, rDNA, DGGE*

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0218

Inventory of asteroidea species in Jasaan, Misamis Oriental, Northern Mindanao

Samaniego, Lorelie Gloria A., LeaÃ±o, Emmanuel Pacheco, Balacuit, Mel Gilbert G.

This study was conducted to assess the sea star population in three selected barangays of Jasaan, Misamis Oriental. The specific objectives of this study were: 1) to collect and identify the Asteroidea species present; 2) to determine the species abundance and diversity; and 3) to determine some physico-chemical parameters in the study stations. Three study stations located in Solana, Bobontugan and San Antonio were established, each with a 100m^2 plot divided into 100 quadrats about 35-45 m from the shore. Asteroidean species present were counted, collected, and preserved for identification and classification. Sampling was done twice. Photographs of the sea stars and study sites were taken. Physico-chemical conditions during the time of sampling were recorded. Species importance value was computed based on the relative density and relative frequency of the species. There were four species of Asteroidea collected with a total of 74 individuals: Acanthaster planci, *Linckia laevigata, Culcita novae-guinea,* and *Nardoa tuberculata*. In Solana, the most dominant and the most frequently observed was *N. tuberculata* (IV=1.270, f=0.075); in Bobontugan and San Antonio, the dominant species was *L. laevigata* (IV=0.951, f=0.075 and IV=1.378, f=0.065, respectively). Among the three stations, the most diverse was Bobuntugan (H=0.458). The physico-chemical conditions of the three areas did not vary much. pH was 8 and the water was clear, with a slight range of water temperature (27-30°C). The substrate of the three areas was almost the same: coralline, rocky and sandy. Similar associated organisms were found in three areas, except in San Antonio which had tall and abundant *Sargassum*. Based on the Shannon-Wiener diversity classification, species diversity in the three study areas was relatively low with a mean value of 0.402. **(Author's abstract)**

Keywords: *Biology, Inventory, Asteroidea species, Abundance, Diversity, Jasaan, Misamis Oriental*

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0219

Isolation and characterization of *Acetobacter diazotrophicus* (Gillis) in *Saccharum officinarum* L., *S. spontaneum* L., and *Erianthus* sp.

Gonzalez, M. S., Barraquio, W.L.

The nitrogen-fixing endophytic *Acetobacter diazotrophicus* was isolated from washed roots and stems of 11 out of 25 varieties of sugarcane (*Saccharum officinarum* L.) grown in various locations in the Philippines. It was also isolated from the roots of sugarcane related plants, *Saccharum spontaneum* L. and *Erianthus* sp. This is the first report of its isolation from these two grasses, increasing its known host plants from five to seven. The bacterial isolates produced indoleacetic acid and catechol-type siderophore, and their identities were confirmed by polymerase chain reaction with a species-specific oligonucleotide primer. The isolation of the organism from only the undiluted samples and our many failed attempts to detect and enumerate it culturally in diluted samples may suggest that its population in Philippine sugarcane cultivar is quite low. **(Author's abstract)**

Keywords: *Biology, Acetobacter diazotrophicus, Endophytic, Erianthus, Nitrogen fixation, Saccharum officinarum L., Saccharum spontaneum L., Sugarcane*

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0220

Jackfruit bronzing disease in the Philippines is caused by *Pantoeastewartii* (Smith) Mergaert *et al*.

Gapasin, Ruben M., Borines, Lucia M., de la Cruz, Carlos S., Garcia, Renila P., Advincula, Christine T.

Jackfruit bronzing, an unreported disease affecting jackfruit, is characterized by yellowish-orange to reddish discoloration of the affected pulps and rags of the fruit. The disease etiology is the scope of this study. The pathogen was isolated from infected jackfruit, and pathogenicity was conducted. The pathogen was characterized and identified based on its cultural and morphological characteristics, staining reactions, physiological, biochemical characteristics, and other plant inoculations. Initial identification was confirmed through DNA analysis through polymerase chain reaction using *Pantoeastewartii*-specific primers. The bacterium produced a yellow pigment in culture; Gram negative; non-motile; slightly pleomorphic;facultatively anaerobic short-rods; measuring 1-2 um in length; catalase positive;able to hydrolyze gelatin and starch but not tween80; produced acid from glucose, galactose, fructose, sucrose and maltose but not from lactose; did

not produce hypersensitivity to tobacco; caused pits but not soft rot on potato discs; and infected corn producing the same symptom as bacterial wilt or Stewart's disease. PCR analysis confirmed the cause as Pantoeastewartii or *Pantoeastewartii* subsp. *stewartii* (Smith) Mergaert *et al*.,(formerly *Erwiniastewartii*) (Smith) Dye, the same bacterium that causes bacterial wilt or Stewart's disease of corn. **(Author's abstract)**

Keywords: *Biology, Bronzing, Disease, Etiology, Jackfruit, Pantoeastewartii*

0221

Kinetics study and substrate optimization for the growth of *Pediococcus acidilactici* 4E5 by batch fermentation

Funtanilla, Karren T., Calapardo, Marilou R., Del Barrio, Marilyn C., Elegado, Francisco B.

Pediococcus acidilactici 4E5 isolated from "burong tilapia" is a bacteriocin-producing microorganism which inhibits growth of pathogenic microorganism which can be used in biopreservation processes. For large scale production, alternative low-cost nutrients as media components were investigated. Cheese whey, soybean meal extract and baker's yeasts were used as carbon-source, nitrogen-source and yeast extract-substitute, respectively. The Central Composite Design was used to predict the optimum growth of *P. acidilactici* 4E5 in the modified low-cost media. The media formulation consisting of 1.3% carbon, 2% nitrogen and 5% yeast extract gave the highest average viable cell count of 8.875 x 10^7 CFU/mL. Having obtained the best media formulation for the growth of 4E5, kinetics study of 4E5 in low-cost growth medium was done. Media for kinetic study consisted of sugarcane molasses as carbon source at concentrations (1.3%, 3.15%, and 5%) with nitrogen (2%) and yeast extract (5%). Parameters such as pH, viable cell count, % titratable acidity, and total sugar were determined during the 12-hour fermentation.Results showed pH and total sugar concentrations decreased with fermentation time. An indication of the growth of 4E5 and subsequently, lowering of pH due to presence of lactic acid in the medium. The specific growth rate was determined. The growth of *P. acidilactici*4E5 was best described by the Moser Model yielding a ìmax value of 0.173319 hr^{-1} and *Ks* value equal to 4744.6141 ìg/mL. **(Author's abstract)**

Keywords: *Biology, Pediococcus acidilactici, Central composite design, Fermentation, Kinetic study*

0222

Kinetics study and substrate optimization of *Lactobacillus plantarum* BSBY batch fermentation

Reglos, Arvi Jane S., Calapardo, Marilou R., Del Barrio, Marilyn C., Elegado, Francisco B.

An optimization study of modified medium was done to predict the optimum substrate compositions necessary for the growth of *Lactobacillus plantarum BS*. Using Central Composite Design, the medium compositions were varied with values ranging from 1.3-5% w/v total sugars, 0.6-2% w/v nitrogen, and 2-5% w/v yeast extract, respectively. Cheese whey was used as the carbon-source, soybean meal extract as the nitrogen-source. The optimum viable cell count (7.56696 x 10^7 CFU/mL) was obtained in media consisting of 1.3% total sugars, 2.0% nitrogen, and 5.0 % yeast extract.The three medium components used all had significant effects on the growth of *L. plantarum BS*.The growth kinetics of *L. plantarum BS* in cheese whey was also studied. Total sugar concentrations of 2.3%, 4.15%, and 6.0% w/v were prepared with 2.0% nitrogen and 5.0% yeast extract. Total sugar consumption, pH, and viable cell count were monitored at regular interval for 10 hours. Substrate consumption was highest at 4.15% total sugars where the bacteria had the highest viable cell count equal to 7.75 x 10^{10} CFU/mL,and even higher than the growth in de ManRogosa-Sharpe (MRS) broth, a defined media for lactic acid bacteria. pH dropped as fermentation time progressed. The kinetic model that best descibed the growth of *L. plantarum BS* in cheese whey was the Moser Model. The calculated kinetic parameters were μ_{max} equal to 0.365557hr^{-1} and K_s equal to1429.698 mg/mL having R^2 equal to 0.97913. **(Author's abstract)**

Keywords: *Biology, Lactobacillus plantarum, Central composite design, Growth kinetics*

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0223

Leaf methanolic extract of *Ardisia* sp. inhibits angiogenesis in the duck *Anas platyrhynchos* chorioallontoic membrane

Salvador-Membreve, Daile Meek C., Herrera, Annabelle A.

The present study was conducted to evaluate whether the methanolic extract of *Ardisia* sp. can effectively inhibit angiogenesis in the duck chorioallontoic membrane. Different concentrations of *Ardisia* sp. (2, 4, and 6 mg/ml) were topically applied in the duck chorioallantoic membrane. Histochemical analysis of CAM and histological analysis of the heart were conducted. There was a significant difference between the treatments and the control group,

but there were no significant differences of the mean vascular densities between doses. Histochemical analysis of the chorioallantoic membranes using alcian-blue stain showed that the intensity of the stain is less in the treated samples. There were no abnormalities observed in the gross morphology of the duck embryos and in the histology of the hearts. This work showed that the methanolic extract of *Ardisia* sp. has potential anti-angiogenic property. **(Author's abstract)**

Keywords: *Biology, Ardisia sp, Anti-angiogenic, Ardisia leaf methanolic extract, Chorioallontoic membrane assay, Angiogenesis*

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0224

Lentinus squarrosulus (Mont.) singer and *Polyporus grammocephalus* Berk.: newly domesticated, wild edible macrofungi from the Philippines

de Leon, Angeles M., Reyes, Renato G., dela Cruz, Thomas Edison E.

Lentinus squarrosulus (Mont.) Singer and *Polyporus grammocephalus* Berk. are wild, edible macrofungi utilized as food by the indigenous Aeta tribes in Botolan, Zambales. Domestication of these wild edible mushrooms is thus necessary to render these fungi available all year round for food and other purposes. In this study, the two edible macrofungi were grown *in vitro* using different indigenous culture media, grain spawning materials, and combinations of rice straw and sawdust formulations for its secondary mycelial growth and mass production of fruiting bodies. Results showed that secondary mycelial growth was observed best on coconut water-*gulaman* medium. Sorghum seeds and/or corn grits also yielded very luxuriant mycelial growth at shortest incubation period of 6 days for *L. squarrosulus* and 7 days for *P. grammocephalus*. Highest biological efficiency (7.83%) was noted in 100:400 rice straw:sawdust formulation for *L. squarrosulus*. In contrast, highest biological efficiency (2.91%) was recorded for *P. grammocephalus* at 400:100 rice straw:sawdust formulation. The macrofungi reported in the study are new additions to the record of successfully domesticated wild, edible macrofungi in the Philippines. **(Author's abstract)**

Keywords: *Biology, In vitro cultivation, Mycelial growth, Indigenous media, Grain spawns, Fruiting body production*

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0225

Light-mediated response of *Anabaena* sp. strain BATG-01 to salt stress

Cao, Ernelea P., Conopio, Mark Arthur S., Gayao, Louie Leonides M., Platon, Petrocelli O.

Cyanobacteria or the blue-green algae are important constituents of tropical agricultural fields. They are mostly capable of nitrogen fixation. They are also reported to exhibit considerable tolerance to salt and osmotic stress. Salinity, as a consequence of organic and industrial pollution, is a critical deterrent to agriculture since it reduces crop yield. Salt-tolerant strains of cyanobacteria have been used for the reclamation of saline soils, particularly rice paddy fields. Light has also been postulated to play an important role in the adaptation of cyanobacteria to different environmental stresses (Leukart and Hanelt 1995).

The main objective of this study is to determine whether varying light periods would affect the response of a cyanobacterial isolate from Batangas, *Anabaena* sp. strain Batg-01. Cultures of the isolate were grown under four different light regimes; Set 1 (24 h high: 0 h dark), Set II (16 h light: 8 h dark), Set III (12 h light: 12 h dark), and Set IV (8 h light: 16 h dark). The growth rate and generation time was computed for each set-up. DMRT analysis showed that set-Up III had the highest growth rate and subsequently the shortest generation time. The cultures were then treated with 240 mM NaC1 (the maximum concentration that allows growth of the cyanobacterium based on previous studies) upon reaching the mid-log phase. After 0, 4 and 8 hours of salt-treatment, proteins were extracted, quantified and visualized for the presence or absence of salt stress proteins (SSP). Results showed that light influenced the synthesis of SSPs that are produced as a response to salt stress such that more proteins were synthesis of SSPs that are produced as a response to salt stress such that more proteins were synthesized in cultures exposed to longer light periods. **(Author's abstract)**

Keywords: *Cyanobacteria, Blue-green algae, Salt stress, NaC1, Light, Salinity, Growth rate, Generation time, DMRT analysis, Salt stress proteins, Biology*

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0226

Macroinvertebrates as water quality bioindicators of Sebasi river in Ozamiz City, Philippines

Labajo, Yunalyn I.

Sebasi River is the water source for domestic, commercial and agricultural needs of several barangays in Ozamiz City. Due to climate change and continuous human related activities, water quality and aquatic organisms are threatened. This descriptive research was conducted to

determine the status of upstream, midstream and downstream of the river using macroinvertebrates which are useful biological indicators of change in the aquatic ecosystems. Physico-chemical parameters (air and water temperatures and pH) were measured using standard field methods. Dip and kick-net methods were used to sample macroinvertebrates. Organisms were categorized depending upon their tolerance to organic pollution (sensitive, somewhat sensitive, and tolerant). These were then subjected to biotic index. Results showed that air and water temperatures and pH values were still within the tolerable range. Based on macroinvertebrates, the upstream had total index value of 29 that signified excellent water quality, midstream with total index value of 15 (fair), and downstream with total index value of 8 (poor). This implied that the cleanest water can be found at the upstream while the most impure water is found in the downstream. An environmental protection and proper management of natural resources program in Sebasi River should be implemented. (**Author's abstract**)

Keywords: *Biology, Water quality, River, Bioindicators, Macroinvertebrates*

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0227

Microbial decomposition of leaf litter on the mangroves of Punta Sulong, Baliangao, Misamis Occidental, Western Mindanao

LeaÃ±o, Emmanuel Pacheco, Quimpang, Victoria T., Magday, Laarni Faye J.

This study was conducted in the mangroves of Punta Sulong, Misamis Occidental to: 1) determine and describe the physical properties of the leaf litter; 2) determine the microbial decomposition rate of mangrove leaf litter; 3) compare the rate of microbial decomposition of the two study stations; and 4) describe the site in terms of its substrate, pH, peat depth, rainfall and temperature. Two study stations were established in the mangroves of Punta Sulong, wherein each station was subdivided into two zones, front and back. Yellowing leaves of dominant and co-dominant species of mangroves were collected. A 1mm mesh nylon window screening net was used for the three-litterbag harvest within a period of 42 days. Leaf biomass was estimated wherein ODW=[0.508+0.211] x [fresh wt.]. Results showed that as the number of days of decomposition increased, a change in the color of the leaves occurred, which is evidence that leaching had occurred. After several weeks these were already fragmented to small pieces and others were highly disintegrated. Leaf thickness of Rhizophora leaves had a mean of 0.58mm and hardness with a mean of 17.88g. Leaf hardness showed significant correlation to microbial decay (P=0.0241). Leaf biomass loss was higher at the back zone which had 7.52g (20.73%) as compared to the front zone which had only 6.50g total loss (19.31%). Station 1 (along Kawayan River) showed a higher biomass loss with a mean of 8.00g (23.98%) as compared to Station 2 (along Dioyo River) which had a mean total loss of 6.12g (16.72). Rate of biomass loss in Station 1 was also higher (0.19g ODW/day) than Station 2 with only 0.14g ODW/day. The rate

of biomass loss in both stations of the mangroves of Punta Sulong, Misamis Occidental was 0.17g ODW/day. **(Author's abstract)**

Keywords: *Biology, Microbial decomposition, Leaf litter, Mangroves, Punta Sulong, Baliangao, Misamis Occidental*

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0228

Microbial extraction of pectin from calamansi peel

Ramirez, Teresita J., Sedano, Susan A., Soriano, Juan Paolo E., Sapin, Arsenia B.

Pectin is a widely used polysaccharide due to its gelling and emulsion stabilizing properties. Calamansi peel, a waste product was explored as source of pectin in the study. Current practice in the extraction of pectin involves the use of heat and acid which is not safe for the environment. Thus, extraction of pectin by microbial means was explored. *Saccharomyces cerevisiae* BIOTECH 2030 exhibited highest protopectin solubilising activity (1.2g crude dried pectin/50ml filtrate). Fermentation conditions for microbial extraction of pectin from calamansi peel using *S. cerevisiae* 2030 include substrate concentration of 7 g peel per 80 mL water, inoculum age and level of 24 hrs and 5%, respectively. The microbially extracted pectin from calamansi peel had galacturonic acid content comparable with commercial pectin. **(Author's abstract)**

Keywords: *Biology, Calamansi peel, Pectin, Yeast, Protopectin, Fermentation*

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0229

Molecular authentication of spermacoceae S.L. (Rubiaceae) species from Western Panay Peninsula using multi-locus DNA barcodes reveal a new Philippine endemic species of *Hedyotis* L.

Aguas, Vincent Leonell D., de los Angeles, Celestine Joan U., Manzano, Francesca Marie V., ParuÃ±gao, Angelo Miguel P., Vertudez, Ara Noraene B., Chavez, Jayson G., Alejandro, Grecebio Jonathan D.

The introduction of DNA barcoding as a technology to discriminate land plants has been restrained by the lack of consensus as to what genetic markers will be used to serve as universal standards in facilitating species identification. Throughout its taxonomic history, the circumscription of the primarily herbaceous tribe Spermacoceae *sensu lato* of the family Rubiaceae has been the subject of disputes among plant systematists due to its anatomical and morphological heterogeneity, leading to problematic authentication of its taxa. In this paper, we used two non-coding (*rps*16 intron, *trnL-F* intergenic spacer) loci of the chloroplast DNA to test the possibility of their use as barcodes to validate Spermacocean species of the Western Panay Peninsula. Ten accessions were sequenced from five collected samples and were included in a data matrix comprised of 78 and 81 Spermacoceae GenBank accessions for *rps*16 and *trnL-F*, respectively. Single locus resolution ranged from 0-11.48% (*rps*16) to 0-17.68% (*trnL-F*), while the combined loci revealed reasonable success rate of 35.13%. In addition, comparison of the sampled dioecious *Hedyotis panayensis* to extant type specimens supported our proposal for a novel Philippine endemic. **(Author's abstract)**

Keywords: *Biology, Biodiversity, DNA barcoding, cpDNA, Flora, Spermacoceae*

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0230

Molecular cloning identification and characterization of rice *DSS* gene encoding a cytochrome-P450 implicated in gibberellin biosynthesis

Undan, Jerwin R., Abe, Akira, Tamiru, Muluneh M., Yoshida, Kentaro, Kosugi, Shunichi, Takagi, Hiroki, Undan, Jesusa Q., Terauchi, Ryohei

Gibberellic acid (GA) is a phytohormone that controls many aspects of plant development. In this study, we successfully cloned and characterized rice *DSS* gene encoding a cytochtome-P450 (CYP450) involved in various plant metabolisms. The gene was isolated via map-based cloning from dwarf mutant with small seeds and dark green leaves (*dss*) from *Oryza sativa ssp. japonica* cultivar *Hitomebore* population that had been treated with ethyl-methanesulfonate. The gene locus was mapped in chromosome 3 using simple sequence repeats (SSR) and In-del markers to about 117 kb using the F_2 segregating plants from the cross between mutant and the *Indica* cultivar *Kasalath*. Comparing the delineated sequence of the mutant to a reference sequence, *Hitomebore* found a base change (A→T) which resulted in an amino acid change from glutamic acid to valine. GFP fusion confirmed that it was localized in the endoplasmic reticulum, as observed in other CYP450 gene families involved in mediated stage of GA biosynthesis. Phytohormone assay revealed that the *dss* mutant had a positive response to GA, informatively important for exploring the gibberellins' molecular mechanism using the *dss* mutant. The transformants from RNAi had reduced transcript level and exhibited dwarf phenotype. Accordingly, overexpression of the *DSS* gene strongly confirmed that the gene indeed controls plant architecture in rice. (**Author's abstract**)

Keywords: *Biology, Gibberellic acid,, Phytohormone, Cytochrome-P450, Map-based cloning, RNAi*

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0231

Molecular phylogeny of Philippine *Blechnum* L. (Blechnaceae) based from *trn*L-*trn*F (cpDNA) sequence data

Amoroso, Victor B., Laraga, Socorro H., Alejandro, Grecebio Jonathan D.

The genus *Blechnum* L. (Blechnaceae) comprises 20 taxa (17 species and 3 subspecies) of the Malesian region, 8 of which can be found in the Philippines. Recent molecular studies involving the genus have failed to include Philippine representatives. In this first molecular phylogenetic study on Philippine (PH) *Blechnum*, the trnL-*trn*F (cpDNA) regions were sequenced and analyzed together with the previously published related sequences from the GenBank. Specifically, the present study intended to reassess the monophyly of the genus *Blechnum* and the phylogenetic relationships of the PH *Blechnum* with New Zealand (NZ) and other overseas Blechnaceae species. Two-hundred ninety out of 983 aligned nucleotide positions (29.50%) were found to be parsimony-informative characters. The strict consensus tree revealed a paraphyletic *Blechnum* as other genera (*Doodia, Sadleria,* and *Stenochlaena*) are nested within the genus. Interestingly, the PH *B. egregium* is more closely related to the South American *B. brasiliense*. These two *Blechnum* species formed a subgroup together with all the sampled *Doodia* species. Similarly, the two sampled *B. orientale* formed a subgroup with *Sadleria and Stenoclaena*. The rest of the PH *Blechnum* species have high affinities with the NZ and Australian species. **(Author's abstract)**

Keywords: *Biology, Blechnaceae, Philippine Blechnum, Molecular phylogeny, trn L- trn F*

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0232

Morphoanatomy of *Vivipara costasa* Quoy and Gaimard (Mollusca: Viviparidae) during early development

Baoanan, Zenaida G., Pagulayan, Imelda F.

The early development of the freshwater gastropod snail, Vivipara costata Quoy and Gaimard, was characterized by observing the live embryos in the following series: 1-cell stage, 2-cell stage, 4-cell stage, 8•cell stage, morula stage, blastula stage, gastrula stage, trochophore stage, early veliger stage, veliger at start of torsion, veliger at 90° torsion, veliger at 120° torsion, veliger at post-torsion, and juvenile stage. The trochophore larval stage was subdivided into 3 substages with different sizes and distinctive characteristics.

The fertilized egg contained a small amount of yolk making the embryo transparent until late veliger stage. Cleavage was spiral. Cleavage cavity and polar lobes were absent. The blastula had a wide blastocoele. Gastrulation was by invagination. There was reduced ciliation in the prototroch of trochophore larva and apical tuft was absent. The veliger larva was of the dominant larval type.

The actual age of the embryos was not determined in this study because they were contained within the brood pouch of the mother and so the different stages were categorized based on their morphological features and relative sizes. The derivatives of the three germ layers namely, the ectoderm, mesoderm , and endoderm, were determined by histological sections using the paraffin method.

The anatomical shifting in the positions of some larval organs relative to their point of origin was attributed to torsion during differential growth . These changes included the shifting of: the heart, kidney, and ureter contained in the visceral sac from the right to the left side; the anus from left to right; the mantle cavity from posterior to anterior; and the crossing over of the right and left intestinal ganglia. **(Author's abstract)**

Keywords: *Biology, Vivipara costasa, Morphoanatomy, Embryogenesis, Organogenesis, Trochophore, Veliger, Torsion, Viviparous, Histology, Conchology*

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Fil(S) Q149.P5 N25 v.22 2000

0233

Mutagen-induced chromosome lesions: Findings among filipino jeepney drivers

Enriquez, Ma. Luisa D., Postor, Irene Q., Cheng, Christine R., Hamoy, Geohana L., Santos, Doris R., Natividad, Filipinas F.

Drivers of public utility vehicles particularly jeepneys which are not airconditioned are constantly exposed to the hazards of pollution. In this study, jeepney drivers were chosen to provide initial data on the possible effects of this exposure on the sensitivity of choromosomes. Thirty-five (35) Filipino jeepney drivers were chosen to participate in this study. Peripheral blood samples were collected and cultured following the routine 72-hours microculture technique. Five hours before harvest, the cells were exposed to bleomycin, a radiometic agent. Mutagen-induced chromosome lesions indicate the responses of the cells to the clastogenic

effects of mutagen. These effects are measured in terms of the average number of chromatid lesions or breaks per cell (b/c). The mean b/c in the drivers group is 1.46 while that of the control group is 0.75. Results also show that 77.14% of the drivers showed a b/c value higher than 1.0, which is established as the borderline for mutagen sensitivity. In the control group, only 22.8% have a b/c value higherthan 1.0. Since sensitivity to mutagens is an indirect measure of DNA repair capacity, results of this study indicate that drivers of jeepneys may have a high risk of acquiring environment-induced cancer. **(Author's abstract)**

Keywords: *Mutagen, Chromosomes, Bleomycin, Pollution, DNA repair capacity, Chromatid breaks, Jeepney drivers, Biology*

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(Filipiniana Analytics)
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0234

Nodulation among legumes and non-legume species dominant in the Philippine rangelands

Orlida-Aguilar, No

The research study reports on the extent of nodulation among legumes in the Philippine rangelands. The work deals with qualitative and morphological features of the nodule (shape, size, color, texture), location and distribution within the root system.

Data on legumes in the Philippines (Quimbo, 1977, Aguilar, 1980), show that there are 21 genera and 62 species for Mimosaceae, 28 genera and 94 species for Caesalpinaceae; and 74 genera and 231 species for Papilionaceae.

Survey of legumes on rangelands (Aguilar, 1979), gives a total of 173 species consisting of 10 genera and 13 species for Mimosaceae; 6 genera and 20 .species for Caesalpinaceae; 50 genera and 140 species for Papilionaceae.

Banados and Fernandez (1 954), did the first study on the extent of nodulation among legumes of the Philippines and worked on 91 species in 54 genera. Consolidating their data with the, present study indicated that 32 out of 62, or. 50% of species for Mimosaceae have been examined for nodulation; 14 out of 94, or. 14% for Caesalpinaceae and 78 out of 231 or 30% for Papilionaceae. **(Author's abstract)**

Keywords: *Biology, Genera, Mimosaceae, Caesalpinaceae, Papilionaceae*

NRCP Research Bulletin, Volume No. 41 Issue No. 1-2, 71-106
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/1-2 1989

0235

A novel Philippine freshwater cyanobacterium with thermostable broad spectrum antibiotic activity

Reyes, Charles Jourdan F., Fernandez, Riel Isaac M., Yao, Patrick Raymond O., Bataan, Robert Anthony M., Abisado, Rhea G., Calugay, Ronie J.

Antibiotic-resistant infections continue to be one of the most dreaded global health threats today. To identify potential new and endemic sources of novel drugs, 20 microalgal isolates from selected Philippine water ecosystems were investigated. The microalgal extracts were screened for antibiotic potential against *Staphylococcus aureus* and *Escherichia coli* using the Kirby-Bauer test. The 16S rDNA of the cyanobacterium from Pagsanjan, Laguna, which showed antibiotic activity was sequenced. The cytosolic fraction was able to inhibit the growth of *S. aureus*(average microbial index of 3.67). If boiled, the cytosolic fraction was also able to inhibit the growth of E. coli(average microbial index of 1.92). Preliminary minimum inhibitory concentration of the crude extracts showed strong antimicrobial activity as well as thermostability even after a 10^{-4} dilution and boiling for 5 minutes. Phylogenetic analysis based on the 16s rDNA showed the Pagsanjan isolate to be most closely related to an uncultured gamma proteobacterium (98% maximum identity). While this prokaryote was formerly deemed viable but not culturable, results suggest that the culture techniques used in this study allowed axenic cultivation of the prokaryote under laboratory conditions. This study presents a novel Philippine cyanobacterium isolate with thermostable broad spectrum antibiotic activity. We envision the crude extract, if further purified, to become a potential new drug against antibiotic resistant bacterial pathogens. **(Author's abstract)**

Keywords: *Biology, Cyanobacteria, Antibiotics, Antibiotic resistance, Cytosolic fraction, Pagsanjan*

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

0236

Nutritional and physical culture conditions for mycelial growth and fruiting body production of two strains of *Ganoderma lucidum* (Leys.) Karst

Lagasca, Adrianne Joy L., Dulay, Rich Milton R., Kalaw, Sofronio P., Reyes, Renato G.

Ganoderm lucidum (Leys.) Karst belongs to the group of Basidiomycetes. The fruiting body is glossy reddish- orange to brownish black color with definite stalk attach to the cap. It is usually found growing on dead trunks of trees in the forest. This study evaluated the optimum culture conditions for secondary mycelial growth and fruiting body performance of the two strains (*Munoz* and *Cuyapo*) of *G. lucidum*, with special reference to the influence of nutritional factors (different indigenous culture media), physical factors (pH, aeration, illumination and

temperature), locally available granulated spawning materials (sorghum seeds, palay grains and feed conditioner), and rice straw based substrate formulation. Results revealed that regardless of the strain type, the most suitable culture conditions for mycelial growth of *G. lucidum* was coconut water gulaman at pH 7, incubated in unsealed plates, either dark or lighted at room temperature condition. Corn grit produced the very thick mycelia growth and shortest incubation period with a mean of 6.0 days. Furthermore, 7 parts rice straw + 3 parts saw dust combination produced the heaviest fruiting bodies (15.85g) and highest biological efficiency (4.70%). The *Munoz* strain produced heavier fruiting bodies and higher biological efficiency than *Cuyapo* strain. **(Author's abstract)**

Keywords: *Biology, Ganoderma lucidum, Munozand Cuyapostrains, Indigenous culture media, Physical factors, Secondary mycelia*

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(Filipiniana Analytics)
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0237

Observation on the growth and survival of nipa (Nypa fruticans Wurmb) seedlings under different salinity concentrations

Alcala, Marilyn T.

The primary objective of this study was to determine the effects of salinity on the growth and morphology of the nipa palm (Nypa fruticans). The field study was done in Binicuil, Kabankalan, Negros Occidental, in the months of January to October, 2007. Six plots each measuring 10m x 10m and separated from each other for 100m were observed during this period of time. The physico-chemical parameters measured were soil and water salinity, soil and water pH, and soil texture. Laboratory experiment on nipa seedlings was also conducted for 34 weeks to observed the effects of salinity on the growth of nipa seedlings. In the field, the mature nipa palms in the six plots showed variations in morphological characteristics, but these variations were not significant. The results of the field survey showed that most seedlings were found in plots with 0-15 ppt, but no seedlings were found in the sampling plots with 30.42 ppt salinity. The results in the field are confirmed by the experimental results showing that the growth was fastest at 0 ppt salinity in terms of the increase in the number and length of petioles, leaves, and roots. The growth of young seedlings of Nipa palms appears to be most rapid at salinities much lower than 30 ppt., especially from 0-15 ppt. It is recommended that nipa farmers plant nipa at lower salinities in silty to sandy loam soils. **(Author's abstract)**

Keywords: *Biology, Nypa fruticans Wurmb, Nipa palm, Salinity*

Silliman Journal, Volume No. 48 Issue No. 2, 95-109
(Filipiniana Analytics)

0238

Occurrence of *Caligus pelamydis*, a parasitic copepod, on local teraponid fishes

Lopez, Nellie C.

Among the parasitic crustaceans that have been reported to cause mrtality of fish hosts are species of Caligus. Caligid copepods are mainly parasitic on marine fishes; with increased aquaculture of marine fishes, the economic impact of these parasites will also increase. Teraponid fishes found in the coastal waters of the Philippines include *Pelates quadrilineatus* (Bloch) and *Terapon jarbua* (Forskål) locally called *bagaong* or *babansi*. They enter brackishwaters and freshwaters. Because of their migratory habit and the present practice of culturing fish in coastal areas, it is possible for terapons to enter fishponds or cages and for their parasites to infect cultured fish. Examination of *P. quadrilineatus* and *T. jarbua* obtained monthly from fishermen and fish vendors in La Union, Metro Manila, and South Cotabato resulted in the recovery of *Caligus pelamydis* from the gills and buccal cavity. Prevalence of infection in *T. jarbua* ranged from 19.6% (Divisoria Market) to 37.5% (La Union), In *P. quadrilineatus*, only those from La Union were infected. Parasite burden in *T. jarbua* ranged from 1-13; for *P. quadrillineatus*, 1. **(Author's abstract)**

Keywords: *Biology*

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0239

Optimization of fermentation medium of Philippine actinomycete fpr insecticidal assay

Zulaybar, Teofila O., Alcantara, Edwin P., Papa, Irene A, Porcalla, Jamaeca M., Cayabyab, Jamel P., Bayot, Aileen, Galvez, Vida

Biopesticides have been gaining increased attention and interest among those concerned with developing environmentally friendly and safe integrated insect management. This study sought to evaluate different available and cheaper carbon and nitrogen sources as substitute for production of bioactive compound from Philippine actinomycete for biopesticides. The fermentation medium of actinomycete sp. was optimized to elevate the yield of fraction with insecticidal activity. The effect of independent variables of medium composition, corn starch substitution with molasses, and corn steep liquor with coconut paring meal and whey were investigated. The brine shrimp assay showed that the medium substituted with molasses had the highest number of dead shrimp (94%) after 3 days of fermentation and killed 95% of mosquito

larvae after 4 days of fermentation. However, the actinomycete isolate was not effective against corn borer even with the control and substituted medium. Thin layer chromatography showed the separation of bioactive compound in different substituted media. The present study showed the effectivity of Philippine actinomycetes in controlling mosquito larvae using modified media but not effective against corn borer. **(Author's abstract)**

Keywords: *Biology, Actinomycetes, Mosquito larvae, Fermentation medium, Agar plug assay*

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(Filipiniana Analytics)
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0240

Orchid flora of Mt. Apo and Mt. Kitanglad long-term ecological sites in Mindanao Island, Philippines

Buenavista, Dave P., Acma, Florfe M., Ga-as, Jerome B.

Orchids are among the most attractive and highly priced plants harvested in the mountains of Mindanao. Unfortunately, several species are already endangered and threatened due to habitat destruction, over- collection and illegal trade. Taxonomic studies are therefore badly needed to identify and assess the status of this economically important flora. Floristic studies were conducted in one-hectare permanent plot established in Mt. Kitanglad, Lantapan and Mt. Apo, Kidapawan. Fieldwork inventory of orchid flora were conducted for *ex-situ* propagation and conservation. Field collections and documentation were made for taxonomic verification of the plant materials. Results gave a total of 15 species of orchids belonging to 11 genera. Species richness was higher in Mt. Kitanglad with 13 species, while Mt. Apo was represented with 10 species. Eight species were found to be common in the two mountain ecosystems. *Mycaranthes* and *Cryptostylis* species were found only in Mt. Apo while *Cystorchis, Stichorkis, Hippeophyllum,* and *Pinalia* species were unique to Mt. Kitanglad. *Dendrochilum, Agrostophyllum,* and *Crepidium* were the most dominant in both sites. On-going *ex-situ* conservation of dwindling orchid populations was initiated for more effective conservation. **(Author's abstract)**

Keywords: *Biology, Species richness, Orchids, Ex-situ conservation, Long-term ecological sites, Mindanao*

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(Filipiniana Analytics)
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0241

Ovarian development of *Atherinomorus endrachtensis* from Taal Lake, Batangas and *Decapterus macrosoma* from Quezon Province

Gorospe, Vanessa Eve M., Bundoc, Mary Rose L., Lopez, Nellie C.

The silverside, *Atherinomorus endrachtensis* (Quoy and Gaimard), locally known as guno, is one of the economically important fish species found in Taal Lake, Batangas province. About twenty female specimens of guno were collected monthly from the lake for nine months (November 1999 to July 2000) to study its ovarian development.

Fefteen to twenty specimens of *Decapterus macrosoma* (Bleeker), commonly known as round scad, were obtained monthly from July 1999 to February 2000 from the coastal waters of Lucena, Quezon.

Histological sections of the ovaries of the two fishes showed the presence of oogonia chromatin nucleolar stage, perinucleola stage, yolk vesicle stage, vitellogenic and ripe oocytes. These were seen occurring in the ovaries simultaneously. However, ripe oocytes were only observed during the month of August in *D. macrosoma*. The monthly mean values of the Gonadosomatic Index (GSI) of *A. endrachtensis* were highest in the months of February and July. On the other hand, the GSI values of *D. macrosoma* peaked during the month of August. Present findings indicate that A. endrachtensis and *D. Macrosoma* are multiple spawners. **(Author's abstract)**

Keywords: *Biology*

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0242

Partial sequences of the mitochondrial 16s rRNA and cytochrome B genes of Loriculus philippensis (Philippine hanging parrot) from different locations in the Philippines

Hedreyda, Cynthia T., Tahimic, Candice Ginn T., IbaÃ±ez, Vinzon C., Lagman, Angel, Gonzalez, Juan Carlos T., Imbao, Roselle

Molecular data on wildlife species in the country could be used in understanding their taxonomic relationships and thus could also be valuable in evaluating the conservation status of the species. The research was aimed at developing a DNA-based procedure to study the Philippine Hanging Parrot or Colasisi (*Loriculus philippensis*), an avian species endemic to the Philippines. One to three parrots were obtained from Laguna, Negros, Davao, Leyte, and Cebu. Extraction of total DNA from avian blood samples was optimized based on reported procedures

of Seutin, Kirby, Wang and their co-workers. Extracted DNA was successfully used for restriction enzyme digestion and Polymerase chain reaction. Parameters for the optimized PCR amplication of mitochondrial 16s rRNA and cytochrome b of the samples used were determined. Amplified products of about 600 and 350 bp for the mitochondrial *16s rRNA and cyt b* gene, respectively, were cloned into the pUC18 or pUC19 plasmid vectors for DNA sequencing. Partial sequences of the mitochondrial genes were obtained and sequence analyses were performed including homology searches, DNA sequence alignment, and construction of genetic distance tree using Phylip ver 3.573. This paper reports the partial DNA sequences for Colasisi obtained from Laguna, Negros, Davao, Leyte, and Cebu. Although avian blood samples were limited to just one to three birds from each location, partial DNA sequences of the 16s rRNA and cytochrome be genes from these birds were determined and suggest greater than 90% homology among Colasisi from different places in the country. There is a need, however, for obtaining complete sequences for genes studied and to get phenotypic and geographical data in order to fully assess their phylogenetic relationships. More importantly, this study has shown that the molecular-based characterization of avian species is feasible and that the procedure can be performed in the country. **(Author's abstract)**

Keywords: *Loriculus philippensis, PCR, Cytochrome b gene, 16s rRNA gene, Genetic distance tree, Biology*

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0243

Philippine *Bacillus* as agent of control against *Ralstonia solanacearum*

Raymundo, Asuncion K., Papa, Irene A, Zulaybar, Teofila O.

Ralstonia solanacearum (Smith) (formerly called *Pseudomonas solanacearum*) is a devastating soil-borne pathogen that is widely distributed and considered a major limiting factor in the production of many crop plants around the world. *R. solanacearum* is the causal agent of bacterial wilt, a very destructive disease in tomato, banana, potato, eggplant, and some ornamentals. Although much progress has been made in the understanding of the biology of the pathogen, the disease continues to pose serious problems to farmers, particularly in the tropical and sub-tropical countries, like the Philippines. Application of chemical pesticide is still the method of control of *R. solanacearum*. But because of the health and environmental concerns, the use of microbes to control has been very significant in recent years. This research involved isolation and screening of *Bacillusas* control agent against bacterial wilt-causing pathogen, *Ralstonia solanacearum*. A total of 400 *Bacillus* isolates from soil were screened for their antibacterial activity against *R. solanacearum* (E. F. Smith) using agar plug method. Among the 135 *Bacillus* isolates that inhibited *R. solanacearum*, isolates BB142 and BC 152 showed the highest *in vitro* inhibition at 28.7mm and 32.8mm, respectively. Greenhouse experiment showed

that the mixed antagonists, BB 142 and BC 152 proved to be the most effective against *R. solanacearum*. Infected tomato plants, root-dipped in mixture of both BB 142 and BC 152 isolates showed no incidence of wilting even after 16 days of inoculation. Biochemical and morphological characterization identified the *Bacillus* isolates BB142 and BC 152, as *Bacillus subtilis*. **(Author's abstract)**

Keywords: *Biology, Ralstonia solanacearum, Biocontrol, Bacterial wilt, Bacillus, Agent of control*

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0244

Phytoplankton, macroinvertebrates and riparian, channel, and environmental (RCE) inventory of the freshwater systems within platinum group metals corporation (PGMC), Claver, Surigao Del Norte

Jumawan, Joycelyn C.

The Platinum Group Metals Corporation (PGMC) is one of the many nickel mines in Claver, Surigao del Norte. Two freshwater biological studies had been conducted within its vicinity in the last 10 years: a baseline study in 2002 and a biological assessment in 2010. The present study was performed as a follow-up assessment of the status of the freshwater systems in the mining site by making an inventory of the plankton and macroinvertebrates while performing a riparian, channel and environmental evaluation. This study showed the absence of phytoplankton, the appearance of pollution-tolerant hemipterans and chironomids and confirmed the paucity in macroinvertebrate species reported in 2002. All five freshwater stations within the mine site obtained poor ratings using the riparian, channel, and environmental evaluation compared to the 2010 study where at least 1 station was given a fair rating. Immediate remedial action is recommended to enable natural systems to reverse the degradation of the freshwaters. **(Author's abstract)**

Keywords: *Biology, Freshwater biology, Mining, Pollution, Phytoplankton, Macroinvertebrates*

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0245

Preliminary report of anurans in two mountain ecosystems in Bukidnon, Mindanao, Philippines

Coritico, Fulgent P., Buenavista, Dave P., Sinamban, Evangeline B., Mohagan, Alma B.

A field survey of anurans was conducted in two mountain ecosystems in the province of Bukidnon, Mt. Kiamo, Malaybalay and Mt. Pantaron range, from January to December 2012. Field sampling was performed using a combination of belt transect, opportunistic and random sampling techniques. Field investigations were done across vegetation and elevation gradients from 750-1,500 meters above sea level (masl), which include an agro-ecosystem, montane, and mossy forests. Baseline data on species richness, local distribution, conservation status, and microhabitat preferences of anurans were determined and documented. The study revealed 21 anuran species belonging to five families and 15 genera, 52% of which were endemic in the Philippines. Moreover, four noteworthy Mindanao island endemic species identiried, namely: *Ansonia muelleri, Leptobrachium lomarudom, Megophrys stejnegeri,* and *Rana grandocula*. Eight species of anurans were common to both mountains. As to the conservation status, the two vulnerable species recorded were *A. muelleri* and *M. stejnegeri*, whereas *Limnonectes magnus* was categorized as near threatened. A majority of the anurans was observed in the ground microhabitat especially in the leaf litters, fallen and decaying logs, while some species were collected near the bodies of water, such as rivers and streams which are associated with the indigenous Manobo inhabitants. The results of the survey show that the richness of anurans in the two-mountain ecosystem is high and more species are likely to be found. It is recommended that this two-mountain ecosystem be declared as protected area in order to conserve the endemic and threatened species and ecosystem as a whole. **(Author's abstract)**

Keywords: *Biology, Species richness, Anurans, Microhabitat, Endemic, Mindanao*

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0246

Production and enzymatic modification of fiber from cacao pod husk and its utilization as bakery ingrdient

Ramirez, Teresita J., Sedano, Susan A., Soriano, Juan Paolo E., Sapin, Arsenia B.

The cacao processing industry generates 10 tons of husk (fresh weight) from each ton of dry cacao seeds which present serious disposal problem to the cocoa industry. Its utilization as source of dietary fiber was the objective of this investigation. On a dry matter basis, the dietary fiber components consist of about 13% hemicelluloses, 11% cellulose, and 24% lignin. Analysis of functional properties showed that fiber from cacao skin has more absorptive power in both water and oil, higher swelling power and starch solubility. Glucose dialysis retardation index (GDRI) analysis of fibers showed comparable values with the fiber-rich powders from asparagus by-products, rice bran, guar gum and psyllium powder. Enzymatic treatments involving

cellulases, xylanases and pectinases showed changes in the functional properties, total phenolic content, and GDRI of enzymatically-modified fibers. Utilization in cookies and cupcake formulations showed acceptable sensory qualities up to 20% flour substitution with cacao husk flour. Increase from 10% to 20% resulted to increase in crude fiber content by about 36% in cookies and 67% in cupcakes. Increase in total polyphenols by 57% was also observed. **(Author's abstract)**

Keywords: *Biology, Cacao pod husk, Dietary fiber, Enzymatic treatment, GDRI, Polyphenols*

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0247

Production of protein-enriched banana peelings for animal feed ingredient

Pham, Chay Binh, Dante, Jennifer A.

High carbohydrate. low protein, and high tannin contents of banana peeling wastes from the food processing company disposal around the country posed several environmental problems for the social health communities. These raw materials could be beneficial to food companies if it will be processed into animal feed. The objective of this study is to convert the high tannin-carbohydrate into more digestible protein feed ingredient using solid state fermentation (SSF) process.

A total of 44 selected fungal strains and isolates were screened for protein enrichment of banana peelings with low tannin and more soluble substances of products. The criteria of selection were the whitish color rapidity of growth in the SSf process, high protein content, and no toxic compounds in the final product. The following microbial strains obtained were *Aspergillus niger* BIOTECH 3104, and its auxotrophs 1031 and 1032B, *A. niger* BIOTECH 3105 and *A. oryzae* BIOTECH 3078 and KBN616.

Based on the protein, the crude protein (CP) content of dried product from banana peelings fermented with *A. niger* BIOTECH 3104 had increased from 7.24% in raw material to 31.90% in the fermented products after 3 days of SSF process. On the other hand, the water soluble substances increased from 22% in the raw materials to 32% in final product. Feeding toxicity study on mice revealed that 50% substitution of soybean meal by protein-enriched banana peelings in their diets could be formulated without adverse effects on the growth performance of mice during the feeling trial. **(Author's abstract)**

Keywords: *Biology, Bioconversion, Banana peeling wastes, Aspergillus niger BIOTECH-314, High protein product, Animal feeds*

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0248

Radical scavenging activities and TLC-Guided bioautography of the SC-CO_2 extract of *Ganoderma applanatum*

Jose, Mark Anthony I., Teves, Franco G., Madamba, Maria Riena Suzette B.

Supercritical carbon dioxide (SC-CO_2) extracts from the fruiting bodies of *Ganoderma applanatum* were characterized by reverse phase high performance liquid chromatography (HPLC) and fourier transform infrared spectroscopy (FTIR), and its antioxidant compounds were determined through DPPH Radical Scavenging Assay and TLC-guided bioautography. Theextracts were found to be essential oils in 10 mPa and secondary metabolites in 20 & 30 mPa. The DPPH assay, which determines radical scavenging activity, showed that the SC-CO_2 extracts have antioxidant activity in the following order: 10 mPa < 30 mPa < 20 mPa < ascorbic acid. Results of TLC-bioautography using 2.54 mM DPPH showed that the compounds have antioxidant property through the changed in color of the extracts in the TLC plate. These results suggest that the extracts serve as a source of compounds with radical scavenging activity that can be used as antioxidants aside from its traditional uses. **(Author's abstract)**

Keywords: *Biology, Ganoderma applanatum, SC-CO2 extracts, Reverse-phase HPLC, FTIR, DPPH radical scavenging assay, TLC-guided bioautography*

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0249

Repetitive sequence-based PCR and identification of DNA markers in selected lactic acid bacteria strains

Jimeno, Blessie T., Saguibo, Jennifer D., Perez, Maria Teresa M., Calapardo, Marilou R., Mercado, Margarita A., Elegado, Francisco B.

Repetitive sequence-based PCR were done to determine the DNA profiles of bacterial isolates with beneficial properties and to identify species and strain-specific markers. A total of 22 bands were scored in nine *Lactobacillus plantarum* isolates and *Lb. plantarum* ATCC 8014. Repetitive Extragenic Palindromic (REP) primers generated nine types of profiles in ten *Lb. plantarum* strains demonstrating the usefulness of REP sequences in strain differentiation. Two bands, with

sizes ranging from 0.38 to 0.55 kb, were present in all strains tested and thus could serve as markers for the species. Isolate F39 obtained from fermented guava leaves was most closely similar to two isolates from a fermented meat product. However, no strain specific marker for F39 was observed in its REP profile. Though highly similar profiles were observed between Lb. fermentum FM7 and *Lb. fermentum* F36, a 1.4 kb band differentiated F36 from FM7. Compared to REP sequences, the distribution of Enterobacterial Repetitive Intergenic Consensus (ERIC) sequences in Lb. plantarum strains was conserved, with a total of six common bands in all *Lb. plantarum* strains tested. Among the three repetitive sequence-based PCR, BOX A1R demonstrated the most conserved DNA profile in *Lb. plantarum*. No unique nor differential DNA marker could be detected for F39 in its BOX profile. Its usefulness in *Lb. plantarum* species identification relies on the presence of five bands. On the other hand, for *Lb. fermentum* F36, a very intense 3.3 kb band, which was not present in FM7, is a potential DNA marker for the strain. (Author's abstract)

Keywords: *Biology, rep-PCR, DNA marker, Lactic acid bacteria, Lactobacillus plantarum, Lactobacillus fermentum*

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0250

Screening of a galactose-specific lectin gene in Bauhinia purpurea L. through PCR analysis

Panes, Vivian A., Abalos, Karen Therese S., Soller, Joel Josef S., Chan, Mary April B., Yeo, Fe Daisy H.

Lectins constitute a class of proteins that bind reversibly to mono- and oligosaccharides. Studies conducted on lectins support the claims of its antiviral, anti-bacterial, anti-fungal and anti-insect activities. Although lectins cannot alter the structure and permeability of the cell membrane and cannot change the normal intercellular activity of bacteria through its attachment to extracellular glycans on bacterial cell walls, lectins can inhibit bacterial activity by blocking their motility. Because lectins are able to recognize and bind to glycoconjugates of animal cell membranes, lectins are used in glycoconjugate isolation, as well as in studying cell structures and blood typing. Their ability to precipitate or agglutinate cells also make them of great use in immunology, cancer research and toxicity studies. In the present study, genomic DNA from the leaves of *Bauhinia purpurea* L., commonly known in the Philippinesas butterfly tree,was extracted. Genomic DNA was amplified usinglectin gene primers through the Polymerase Chain Reaction. PCR amplification yielded a single band with a molecular weight of 1,636 bp. This result is parallel to the finding of the lectin gene identified in Brazilian *Bauhinia variegata*. Itsuggests that the *B. purpurea* widely grown in the Philippinesmay bea source of the lectin protein which is of great interest due to its carbohydrate-binding activity. Sequencing of the PCR products for the lectin gene is underway. **(Author's abstract)**

Keywords: *Biology, Lectin, Glycoconjugate, Bauhinia purpurea, Immunology, Gene*

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0251

Species composition and abundance of snails (Gastropoda) in Mt. Malambo, Davao District Philippines

Selpa, Eric Claire, Mohagan, Alma B., Galan, Gloria L., Baguhin, Leonil Jun, San Juan, Gladys Lynn

Mt. Malambo is a petit mountain along the highway of Datu Salumay, Marilog, Davao District. It has peak elevation of 1,379 meter above sea level (masl) and is covered with original or native plants in the fragmented montane forest at the base and mossy near the top. Transect survey for snails was conducted on the western slope to provide information on snail species composition. A total of 6 snail species under one family of snail were listed at the total of 82 individuals. The most abundant species was *Cyclophorus presto* (n=30) and the least abundant species was *Leptopoma perlycidum* (n=5). Mt. Malambo is home for 6 species of snails. The effort to conserve the snail species will also conserve the forest and the fireflies therein as they are food for the fireflies and for ecological balance. **(Author's abstract)**

Keywords: *Biology, Species composition, Abundance, Snail, Mt. Malambo, Philippines*

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0252

Survey of Philippine plants for insecticidal activity II. biological activity of flower and leaf extracts from six species of plants on insects

Morallo-Rejesus, B., Tantengco, G.B.

The volatile oils from the flowers and leaves of *Lantana camara* L. and *Caesalpinia pulchemma* Swartz and leaves of *Tithonia diversifolia* A. Gray and *Tagetes erecta* L. were topically evaluated on eight insect pests. Based on the LD_{50} values, the order of decreasing toxicity on the insects is: *Musca domestica* > *Spodoptera exempta* > *Dysdercus cingulatus* > *Plutello xylostella* > *Sitophilus zeamais* > *Spodoptera Iitura* > *Rhizopertha dominica* > *Tribolium castaneum*. The oils were not toxic to Ostrinia furnacalis. The oils from the flowers were more toxic than the leaf oils except on *S. exempta* and *R. dominica*. The water extracts, likewise, exhibited antifeedant effect on *P. xylostella* but not repellency.

The volatile oil from *L. camara* has eight components while *C pulcherrima* and *T. erecta* have seven each.

The oil from *Azaduachta indica* A. Juss is non-toxic to all the aforementioned insects.

The flavonoid from *C. pulcherrimo* flower was non-toxic against the insects used while the alkaloid from *L. camara* seeds is non-toxic against *D. cingulatus*. **(Author's abstract)**

Keywords: *Biology, Lantana camara L., Caesalpinia pulcherrima Swartz, Tithonia diversifolia A., Tagetes erecta L., Musca domestica, Spodoptera exempta, Dysdercus cingulatus, Plutella xylostella, Sitophilus zeamais, Spodoptera litura, Rhizopertha dominica, Tribolium castaneum, Ostrinia furnacalis*

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0253

Survival rate of female white mice *Mus musculus domesticus* treated at various monosodium glutamate concentrations

Jamodiong, Angelyn T., Mugot, Bella C.

A completely randomized design (CRD) experimental set-up was conducted to determine the survival rate of *Mus musculus domesticus* at various concentrations of monosodium glutamate (MSG). Adult female white mice from 20 inbred strains were used as test organisms. Four different treatment groups of free-access oral drinking solutions at various MSG concentrations were prepared, namely: T_1=74%, T_2=55%, T_3=37%, T_4=18%; T_5 was the control group that contained only distilled water. In each group, there were four replicates that were caged individually. Each mouse received normal food diet and 20 mL of drinking solution daily at 7:30 AM for 30 days. The volume of the solution consumed by each mouse 24 hours later was then measured. Survival rate of the mice were determined. Statistical analysis was carried out using Analysis of Variance (ANOVA) to determine if there were significant differences in the mean intake for the 30-day period of observation, between and among the experimental groups and the control group. To determine which groups differ, Tukey HSD was utilized for multiple comparisons. Results showed that the F value of 31.300 was highly significant at alpha=0.01; that is, at 99% confidence that there were significant differences between the groups. From the results there were no significant differences between the mean MSG intake among the four treatment groups; however, the mean MSG intake of the four treatment groups differed significantly from the control group. This implied that the higher the concentration of MSG solution consumed, the lower the survival rate, as given by a correlation value of -0.5777, or equivalently, a determining factor of $(-0.577)^2$ x 100% = 33.29%. This means that the concentration of MSG solution significantly affects survival rate of the white mice. **(Author's abstract)**

Keywords: *Biology, Monosodium glutamate, Oral drinking solutions, Oral intake, White mice, Treatment, Mortality, Survival rate*

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0254

Synergistic effect of chemical and ultraviolet irradiation on the biodegradation of low density polyethylene (LDPE) by *Aspergillus oryzae*

Cruz, Marie Gene, Ongpin, Monica Bea, Chan, Benjamin O., Chan, Merab A.

The ability of *Aspergillus oryzae* to degrade low-density polyethylene (LDPE) was tested with chemical and ultraviolet (UV) radiation pre-treatments. The degree of degradation was measured after 45 days incubation in Zchapek's broth medium with *Aspergillus oryzae*. LDPE plastic strips (1 in x 4 in) were soaked in 0.01% potassium permanganate solution for 48 hours and exposed to UV-A radiation for 120 hours. Elongation length, maximum force required to tear plastic and physical changes of the plastic material were noted. Results show a synergistic effect of chemical and UV pre-treatment, implicating the highest degradation result with 43.56% reduction of the maximum force needed to break the material and 84.26% reduction in the elongation length at break. With UV pre-treatment alone, there was only 35.81% reduction in maximum force and 70.02% reduction in elongation length. With chemical pre-treatment alone, a reduction of 31.88% in maximum force and 76.96% in elongation length were observed. Elongation length at break had been statistically proven significant at 5% level. Based on the analysis, both the chemical treatment (p= 0.011) and UV irradiation (p= 0.019) have a direct effect on the elongation length of the samples. It is therefore apparent that LDPE can be degraded through fungal exposure, provided that sufficient chemical and mechanical pretreatments are administered. **(Author's abstract)**

Keywords: *Biology, Biodegradation, Aspergillus oryzae, Low-density polyethylene (LDPE), UV irradiation, Potassium permanganate*

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0255

Synergy effects of biofertilizers Mykovam™ and Bio-N™ on growth and survival of indigenous tree species in a grassland in Cavinti, Laguna

Anarna, Juliet A., Aggangan, Nelly S.

Indigenous tree species are priority planting materials for the National Greening Program of the Department of Environment and Natural Resources. Areas for reforestation are marginal grasslands where plant growth is stunted and seedling survival is low. BIOTECH's biofertilizer such as Bio-N™ (containing N-fixing bacteria) and Mykovam™ (contains phosphorus and other nutrients absorbing mycorrhizal fungi) can increase seedling growth and survival in such areas. No studies have been done to determine the synergy effects of these biofertilizers on trees. Narra (*Pterocarpus indicus*), salago (*Wikstroemia lanceolata*), kisubeng (*Sapindus saponaria*), and tuai (*Biscofia javanica*) seedlings were either uninoculated or inoculated with Mykovam and outplanted in a grassland in Cavinti, Laguna after four months at BIOTECH, UPLB. Bio-N was added during outplanting. During outplanting, the Mykovam inoculated tuai, salago, kisubeng, narra, and salago exhibited better growth than the control. Mykovam inoculated indigenous tree species were 3 to 26% taller than the control. Four months after outplanting, seedling survival was 100% except the uninoculated salago (5% mortality). Synergy effects of the two biofertilizers were observed on salago and narra. Mykovam+Bio-N increased stem diameter of narra by 53% as compared with Mykovam (32.5%) and BioN (15%). Bio-N+Mykovam promoted the highest number (n-32) of branches in salago followed by those inoculated with Mykovam alone (n=24). BioN promoted the greatest increase in height (17%) of tuai. In kisubeng, Bio-N and Mykovam applied singly gave the greatest increase in stem diameter (20 and 18%, respectively) and the lowest (7%) was in Mykovam+Bio-N treatment. In conclusion, narra and salago inoculated with combined Bio-N™ and Mykovam™ gave the best growth and can be recommended for a successful reforestation in grasslands in Cavinti, Laguna. **(Author's abstract)**

Keywords: *Biology, Mycorrhizal fungi, Narra, Salago, Kisubeng, Tuai*

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0256

Teratogenic potential of cyanobacterium (*Nostoc commune*) on white mice (*Mus musculus*)

Untalan, Suzzeth M.

This study focused on the teratogenic potential of cyanobacterium *Nostoc commune* on white mice (*Mus musculus*). The dominant lethal test was employed through feeding using 20%, 40%, and 80% of *N. commune*. Sixteen mature females and eight mature males were randomly assigned into three experimental groups and a control. The female mice were sacrificed on the 19th day of pregnancy. Dunnett's Test and one-way ANOVA were used for the statistical analysis. It was found out that *Nostoc commune* has teratogenic potential. Eighty percent yielded

the highest % dead implants, %females with resorption, and lowest gestation index, fertility index, and implantation index. There was a decrease in gestation index, implantation index, fertility index, and an increase in % dead implants and % females with resorption. Statistically, there was no significant difference on gestation index and implantation index between the experimental and control groups, but there was a significant difference in the fertility index, % dead implants, and % females with resorption. **(Author's abstract)**

Keywords: *Biology, Teratogen, Teratogenicity, Nostoc, Cyanobacterium, White mouse*

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0257

Tissue culture technique for clonal propagation of nipa palm (*Nypa fruticans* Wurmb., arecaceae)

Lapitan, Victoria C., Nicolas, Katrina Leslie C., Rasco, Jr., Eufemio T.

In the Philippines, nipa palm is becoming an important source of industrial and many other derivative products. Recently, research on nipa has focused on its potential use as a biofuel crop because it has several advantages compared with other biofuel-alcohol crops. However, making industrial alcohol from nipa is hampered by the availability of superior planting materials in a large quantity. *In vitro* clonal propagation is a promising alternative for producing large quantities of uniform planting materials of high quality. This is the first attempt to develop *in vitro* clonal propagation technique for nipa using embryos from mature fruits of nipa. Sterilization of explants using 5.25% NaClO with 5 drops of Tween20 for 20 minutes gave the best result among the four sterilants tested with 90% decontamination. MY3 (Euwens, 1978), N6 (Chu et al., 1975), and MS (Murashige and Skoog, 1962) basal media with different concentrations of 2,4-D, Ki, and IAA in different combinations were evaluated for shoot induction and root formation. To prevent the tissues from browning, all media were supplemented with 0.25% activated charcoal. MY3 medium supplemented with 7.0 mg/L 2,4-D generated the most number of germinated plantlets. The embryos germinated after three weeks in culture and eventually developed into green plantlets. Plants with 3-4 leaves were transferred into different rooting media. Root formation was observed on MS medium with 5.3 mg/L 2,4-D. Clonal propagation was performed by cutting the plantlets longitudinally along the shoot apical meristem into four sections and cultured in the regeneration medium. The results of this experiment indicated that it is possible to produce 200 seedlings from one seed of nipa in one year at 80% survival rate through *in vitro* clonal propagation, while conventionally it takes at least 5-6 years to generate 15-36 seedlings at 60-93% germination rate. **(Author's abstract)**

Keywords: *Biology, Nypa fruticans, Nipa palm, In vitro clonal propagation, Alcohol, Biofuels*

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(Filipiniana Analytics)
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0258

Transcripts and clone contig mapping within 13q32, a susceptibility region for bipolar disorder and schizophrenia

Reyes, Gloria D., Corona, Wilson, Ferraren, Dilberto, Detera-Wadleigh, Sevilla D., Minje, Virginia D.

Recently, independent reports highlight the importance of chromosome 13q32 as possible location for genes that may underlie bipolar disorder and schizophrenia, indicating a possible overlap of susceptibility locus. To obtain a fine resolution of loci mapping in this region and determine positional candidate genes, a high resolution physical map was assembled using bacterial artificial chromosome (BAC) cloning system. Unique transcripts 9Expressed sequence tags, ESTs) and linked markers D13S1252 and D13S1271 found within the region were used as primers in isolating by PCR 25 BAC clones which were eventually used to assemble a clone contig within the ~2 cM interval stSG9874-D13S1267. The BAC contig reduced the physical distance of the interval from 2.4 Mb to ~600-800 kb. *Not*1 digestion of BAC DNA released inserts and revealed 12 *Not*1 sites reportedly associated with CpG islands marking location of multiple active transcribing units. The terminal ends of selected BAC clones were sequenced to obtained 19 new end sequences, 14 of which were found to be novel and five showed homologies in the databases. The sequences are nearly 100% homologous with random sequences in high throughout genome sequences (HTGS) in Genbank. New sequence tagged sites (STSs) generated become new landmarks that increase loci resolution and serve as template for further dissection of the region.

Considered as first positional candidates were the transcripts and genes that were localized nearest the linked markers. The presence of *EB12* (Epstein Barr virus induced gene 2), a G protein-coupled receptor involved in phospatidylinositol (P1) pathway, supports *IMPA2*, one of the key enzymes of this signaling pathway, as a strong candidate gene. One of the candidate ESTs in NIB529, a novel EST expressed in the brain that elicited a low homology to a microtube-associated protein (MAP). NIB529 was used to initially extend cDNA towards the 5' end as an attempt to obtain the full-length cDNA sequence using random amplication of CDNA ends (RACE)-PCR coupled with database search. The refined physical map showing positional candidates is a valuable resource for facilitating the precise localization and identification of candidate genes for these diseases and for other diseases linked to these regions. **(Author's abstract)**

Keywords: *Bipolar disorder, Schizophrenia, ESTs, BAC, 13q32, Biology*

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0259

Trapping study of winged aphid vectors of plant viruses in Benguet and Liliw, Laguna

Calilung, Venus Cristina Joaquin

Trapping of aphids to sample vector species in flight was conducted at baguio Experimental Station, Mountain State Agricultural College, Benguet, and Liliw, Laguna from 1979 to 1982 at the first two sites, and from 1981 to 1982 at the latter site.

Six vector species were caught consistently in sufficient numbers to warrant the plotting of their flight patterns. These species were *Aphis citricola* van der Goot, *Aphis craccivora* Koch, *Aphis gossypii* Glover, *Brachycaudus helichrysi* (Kaltenbach), *Lipaphis erysimi* (Kaltenbach), and *Myzus persicae* (Sulzer).

Sixty seven other species were caught in lesser numbers. Of these, twenty three are vector species which were trapped in varying numbers. The total number of species recorded from all the trapping sites was 73, fifteen of which are new records for the Philippines. **(Author's abstract)**

Keywords: *Biology, Aphid, Aphis craccivora Koch, Aphis gossypii Glover, Aphis citricola van der Goot, Brachycaudus helichrysi (Kaltenbach), Lipaphis erysimi (Kaltenbach), Myzus persicae (Sulzer)*

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BOTANY

0260

Anthurium breeding

Rosario, Teresita L.

A total of 92 cross-pollinations were made among selected *Anthurium andraeanum* cultivars and hybrids including some cross-combinations with *A. warocqueanum* and *A. crystallinum*, two foliage type anthuriums. Forty-two fruiting spadices were collected; 15 yielded seedling populations which flowered and were evaluated both morphologically and chromosomally. Although there were apparent differences especially in the color and shape of spathe, the flower characteristics o f hybrids did not vary remarkably. The basic chromosome number is 15, like the cultivars.

From among the crosses made, Kaumana x Kaoniwan proved outstanding. It gave most of the promising selections in various shades of red including the newly-introduced 'Gloria Angara.' The ability to produce suckers was observed to be maternally-inherited.

Plantlets were obtained from callus produced by hybrid seeds grown in modified Murashige and Skoog's culture medium. Upon flowering, uniform characteristics were observed in all plants. **(Author's abstract)**

Keywords: *Botany, Anthurium andraeanum, A. crystallinum, A. warocqueanum*

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0261

Hybrids of *Allium cepa* L. *x Allium fistulosum* L. analyzed using random amplified polymorphic DNAS (RAPDS)

Duka, Evan Marcelo A., Enriquez, Marileth U., Lu, Chien-an, Engle, Liwayway M.

Random amplified polymorphic DNA (RAPDS) was used to verify the interspecific hybrids of *Allium cepa* L. and *Allium fistulosum* L. Polymorphic RAPD markers were identified. Forty primers were initially used, from which thirty-one generated scorable bands. Of these, only thirteen primers showed polymorphism among the parents of the five crosses. These were then used to analyze and verify the progenies of each cross.

Hybrids of Cross CF 54 had a total of twenty-six bands, fifteen from the female and nine from the male parent. Two bands did not seem to come from either parent. Results of FC 45 cross had sixty total bands, twenty four from the female and thirty six from the male parent. Hybrids of CF 19 cross had fifty-one total bands, eighteen from the female and twenty eight from the male parent. Five bands did not seem to come from either parent. CF 1 progenies had sixty two bands, twenty four from the female and thirty three from the male parent. Again, five bands did not seem to have come from either parent. Results of CF 16 showed twenty bands, ten from each parent. The details of these crosses are hereby presented.

Results proved that RAPDS is a suitable method in verifying interspecific hybridity between the two *Allium* species. (**Author's abstract**)

Keywords: *RAPDS, Allium fistulosum, Polymorphic bands, Interspecific hybrids, Allium , Hybrids, Onion, Botany*

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0262

The life history and phenology of *IPS Calligraphus* germar in Benguet Province

Zamora, Rogelio A., Lapis, Era

The life history and behavior of *Ips calligraphus* (Germar) were studied in Benguet province to obtain information that are necessary in the formulation of control measures.

Results showed that the insect which was first observed to infest Benguet pine (*Pinus kesiya* Royle ex Gordon) in Baguio City had spread to nearby localities where pines are planted. It is now considered as one of the major insect pests of pine stands in the provinces of Benguet. Abra, Ilocos Norte, Nueva Vizcaya, Nueva Ecija, Zambales, Mt. Province and Kalinga-Apayao. It has also included as its host other species of pines that are propagated in Northern Luzon such as *P. merkusii*, *P. oocarpa* and *P. Carinbaea.*

The life cycle of the insect ranged from 15 to 23 days, i.e., egg to adult. Flight studies on the insect showed that pheromones attract *I. calligraphus* to infest its host in all the cardinal directions. The initial concentration of attack is confined at the lower portion of the hosts' stunk progressing upwards through time. There are instances, however, where the insect was observed boring the trunk of its host at 8 m above the ground level. More adult Ips were observed flying from midmorning through the afternoon. It was also noted that logs exposed in the open are infested earlier than those exposed under the canopy of pine trees.

The sex ratio (male:female) of emerging brood ranged from 1:1.3 to 1:1.7) in both study sites indicating the production of more females than males.

The least bark area of the host wherein the insect could reproduce was determined to be 25 cm^2.

Forest fires influenced the behavior of the insect because burned trees are weakened that they were easily infested and get killed. **(Author's abstract)**

Keywords: *Botany, IPS Calligraphus, Pinus kesiya, I. calligraphus, P. merkusii, P. oocarpa, P. caribaea*

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CHEMISTRY

0263

Adsorption of vocs by carbonized okra stalks

Duldulao, Maricel N., Watanabe, Hiromu, Kamaya, Yasushi, Suzuki, Kyoji

Volatile organic compounds (VOCs) have become the focus of environmental health researches due to their role in indoor air pollution, called the sick building or sick house syndrome. The search for novel gas adsorbents has led to potential applications of lignocellulosics and waste biomass, such as kenaf, hay, peanut hulls, sawdust, and others. The okra stalk (*Abelmoschus esculentus* Moench syn. *Hibiscus esculentus* L.) was carbonized, activated, and tested for its potential in adsorbing VOCs specifically, formaldehyde, toluene, and xylene. Characterization of the okra stalk in its raw and carbonized form was done. Its ability to adsorb vapor, and mesoporosity and microporosity were also evaluated. VOC adsorption was determined by closed chamber method using a vaccuum desiccator. The concentration of VOC in the chamber was measured using Formaldemeter hTV and corresponding Gastec indicator tubes. Adsorption of gases particularly polar and non-polar VOCs onto carbonized and activated okra stalks was shown to be promising, particularly with formaldehyde adsorption, which may be due to the hydrophilicity of formaldehyde and the ability of carbonized okra to retain vapor. Further, the okra stalks adsorbed better than the commercial activated carbon. A higher rate of adsorption was observed from the non-activated samples which could indicate that the number of polar sites on the carbon surface decreased with activation. On the other hand, non-polar VOC adsorption (toluene and xylene) showed that okra stalks activated at 800! and 900! adsorbed better than its non-activated counterpart. **(Author's abstract)**

Keywords: *Chemistry, VOC, Adsorption, Okra stalks, Charcoal, Formaldehyde*

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0264

Application of digital imaging colorimetry to the determination of metal ion concentration in aqueous solution

David, Kresta Muluken R., Salcedo, Alan Rodelle M.

Digital imaging colorimetry (DIC) is an alternative method for quantitative measurements in analytical chemistry, wherein accessible digital devices and images that employ the RGB color space are used. In this study, DIC was employed to quantify Co(II), Ni(II) and Cu(II) in aqueous solution. The study was carried out using a digital camera designed in a fixed position over an improvised light box set-up. The acquired image was digitized on the RGB color space using Adobe Photoshop. Then, calibration curves for each of the metal ions was constructed by plotting the concentration of metal ion against the selected digitized color values under

optimized conditions (*i.e.*, camera distance and filter color). The highest linearity and sensitivity for each calibration curve was found to be associated with the digitized color value (R, G or B) complementary to the color of the metal ion solution. The dynamic linear range for each calibration curve was from 0.10 M to 0.60 M of the metal ion, and the linearity and sensitivity were 0.992 r^2 and -291.6 G-value/M for Co(II); 0.996 r^2 and -114.6 Rvalue/M for Ni(II); and 0.997 r^2 and -161.0 R-value/M for Cu(II). These calibration curves were comparable with those constructed using the conventional spectrophotometric method. **(Author's abstract)**

Keywords: *Chemistry, Digital imaging colorimetry (DIC), Colorimetric sensing, RGB color coordinate, Co(II), Ni(II), Cu(II), Spectrophotometric method*

0265

Aqueous and metal-free asymmetric aldol reactions organocatalyzed by chiral 2-pyridylimidazolines: a green approach towards stereoselective C-C bond formation

Baltazar, Aileen, Macabeo, Allan Patrick G.

Among the frontier challenges in the 21st century is the development of asymmetric reactions with excellent enantioselectivity and atom economy. After the birth of proline-catalyzed asymmetric carbon-carbon bond forming reactions, an explosion of various organocatalytic methodologies have been reported. Among the organocatalyst manifolds, the catalytic utility of 2-imidazolines has been less explored. In this study, various 2-pyridylimidazolines were screened for their catalytic activity towards direct asymmetric Aldol reaction. The chiral catalysts were synthesized through iodine-promoted oxidative condensation and cyclization of 2-pyridine carbaldehyde (or 2,6-pyridine dicarbaldehyde) with chiral 1,2-diamine derivatives in excellent yields. Various catalytic parameters were optimized to determine the best reaction condition, such as catalyst loading, temperature, reaction time, and solvent. The best conditions which gave excellent enantioinduction (up to 99:1 enantiomeric ratio) and yield were observed with brine as the solvent, a one hour reaction period at room temperature, and 10 mol% as the minimum catalyst load. Thus, our study demonstrates a green and sustainable approach en route the asymmetric construction of β-hydroxy carbonyl structures. **(Author's abstract)**

Keywords: *Chemistry, Organocatalysis, 2-pyridylimidazolines, Aldol reaction, Asymmetric catalysis*

0266

Assessment of heavy metal (arsenic, cadmium, lead and mercury) contents of commonly consumed seafood and products by Filipino adults in Metro Manila

Briones, Dave P., Dumag, Rosemarie J., Flores, Zailla P., Portugal, Teresita R.

Fish consumption is the main route of heavy metal exposure to humans which poses health risks if taken in large amounts. This study aims to validate methods of analysis for heavy metals, to prepare in-house food reference materials, and determine exposure assessment of commonly consumed seafood and products in Metro Manila. Validation data showed that the methods for analysis of heavy metals (arsenic, cadmium, mercury and lead) are fit for intended use. Mean correlation coefficients for heavy metals detection were between 0.99943 – 0.99977. Mean limits of detection were 0.3470 ppb, 0.1043 ppb, 1.8099 ppb and 0.2970 ppb for As, Cd, Hg and Pb, respectively. The Horwitz ratio was used for the test of method precision. The data showed that the method precision was less than the recommended Horwitz ratio (d"2). Highest levels of heavy metals were found in dried Indian sardine (9.282 ug/g As) and dried anchovy (0.273 ug/g Cd, 0.154 ug/g Hg, and 0.208 ug/g Pb). On the other hand, lowest levels were found in tilapia (0.044 ug/g As), shrimp (0.0003 ug/g Cd), canned sardines 1 (0.007 ug/g Hg), and mussel (0.028 ug/g Pb). Heavy metal contents of seafood and products were lower than the provisional tolerable weekly intake. The target hazard quotients for all the seafood and products also showed values less than 1, which suggests that health risks were insignificant. In conclusion, analysis of the heavy metal contents of seafood and products revealed that the values were below the provisional tolerable weekly intake by these metals indicating that no risk is posed by the consumption of fish most commonly eaten by Filipino adults. **(Author's abstract)**

Keywords: *Chemistry, Heavy metals, Validation, Target hazard quotient, Provisional tolerable weekly intake, Arsenic, Cadmium, Lead, Mercury*

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0267

Biomolecular and chromatographic chemical fingerprinting of secondary metabolites *Moringa oleifera* Lam. obtained through supercritical-Co_2 extraction

Mehid, Joan B., Teves, Franco G., Madamba, Maria Riena Suzette B., Malaluan, Roberto M.

Moringaoleifera is one of the most important food plants with potential nutraceutical value deserving complete characterization beyond phytochemical analysis. DNA-binding assay using a two-dimensional thin layer chromatography (2D-TLC) combined with Supercritical-CO_2

Extraction (SCE) can abbreviate the screening for target bioactive compounds by eliminating the use of voluminous toxic solvents and zeroing in on control of gene expression.The leaves, seeds, and roots of M. oleifera were extracted using Supercritical-CO2(SC-CO_2) with pressures of 10, 20, and 30 megaPascals (mPa). The extracts were screened for DNA binding property using two-dimensional thin layer chromatography (2DTLC) in a solvent system of ethyl acetate and toluene (90:10 v/v). Extracts from seeds and roots at 10 mPa showed affinity to DNA with Rf ratios (Rf value without DNA/Rf value with DNA) of 0.647 and 0.789, while the seed extracts at 20 mPa gave an Rf ratio of 0.818. All extracts from the leaves showed the same organic compounds of oleic acid, erucic acid, ethylene/acrylic acid, and polyvinyl stearate as shown by Fourier-transform Infrared (FT-IR) spectroscopy. The seed and root extracts at various pressures displayed varied functional groups. The HPLC chromatograms of all extracts showed at least one peak at 15 minutes running time.Combined DNA-binding assay and SC-CO_2 extraction prove to be an efficient system for high throughput screening (HTS) for target bioactive compounds, with a high degree of purity as shown by HPLC chromatograms. The various organic compounds partially identified by FT-IR deserve further investigation with respect to their biological functions. **(Author's abstract)**

Keywords: *Chemistry, 2D-TLC, SC-CO2, FT-IR, HPLC, Moringa oleifera*

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0268

Bisphenol a sensor based on electropolymerized molecularly imprinted polymer (E-MIP)

Apodaca, Dahlia C., Ponnapati, Ramakrishna, Pernites, Roderick B., Del Mundo, Florian R., Advincula, Rigoberto C.

The application of electrochemical impedance spectroscopy in designing a chemical receptor using electropolymerizable terthiophene and carbazole monomers for the imprinting of bisphenol A, a known endocrine disrupting chemical has been demonstrated. The copolymers of bifunctional monomers of –COOH from the carbazole derivative and -OH functional group from terthiophene were found to possess good molecular recognition properties than when these respective monomers were singly electropolymerized. As in any electropolymerized films for sensing applications, a compromise of thickness and efficient formation of pre polymer complexes must be achieved in order to ensure maximum rebinding of the template molecules. Cyclic voltammetry offers a simple means of depositing sensor films directly onto substrate surfaces while the Electrochemical Impedance Spectroscopy (EIS) technique provides a versatile means of measuring the amount of template bound to the polymer matrix. In this study, the EIS has been demonstrated to give extensive information related to the permeability and thickness of the polymer material deposited on the surface that may used in advancing technologies relating to sensing via reversible surfaces through electric potential control and to development of dynamic surfaces for advanced sensing technology. The E-MIP sensor may have advantages in

environmental monitoring of bisphenol A in aqueous analyte/pollutant samples. **(Author's abstract)**

Keywords: *Chemistry, Sensing, Imprinting, Electropolymerization, EIS, Copolymer film, Bisphenol A*

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0269

Blood lead analysis by anodic stripping voltammetry coupled with metal-exchange reagent sample pre-treatment

Monlinong, Jason Paul C., Portilla, Ma. Cristina B., Paclibar, Ronna Mae G., Pascual, Cherrie B.

Lead is ubiquitous and diagnosis of exposure to this toxic metal can be challenging as symptoms of lead poisoning may mimic other disorders. There is a need for a more sensitive technique with fast turnaround time. Lead in human blood samples was analyzed by anodic stripping votammetry (ASV) following sample pretreatment with a metal-exchange reagent. The voltammetric analyzer used was E-Chem/Powerlab electrochemical system with thin mercury film, Ag/AgCl and platinum electrodes. The lead stripping peak appeared at the potential of -0.45 V in acetate buffer of pH 4.5. The optimum volume ratio of metal-exchange reagent to blood sample used was 2.9 mL: 100ìL. Repeatable results were obtained in the analysis of blood spiked with lead (100-500 ìg/L). The intra-batch and inter-batch coefficient of variance (CV) values were 7.8% and 12%, respectively. Linear responses (i_p vs. Pb conc.) were obtained for low Pb conc. range (100-500 ìg/L) and high Pb concentration range (1.00 to 5.00 mg/L). The limit of detection (LOD) and the limit of quantitation (LOQ) were 9.00 ìg/ L and 29.0 ìg/L, respectively. The % recovery ranged from 109.3 to 129.0%. Results of ASV analysis of five human blood samples gave values ranging from 1.23-35 ìg/dL (vs. reference value of 20.0 ìg/dL). The use of a metal-exchange reagent in the study was shown to be a promising alternative sample pre-treatment method for the measurement of lead levels in human blood. **(Author's abstract)**

Keywords: *Chemistry, Lead, Anodic stripping voltammetry, Metal-exchange reagent, Sample pre-treatment, Blood*

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0270

Consolidated bioprocessing of sugarcane (*Saccharum officinarum*) bagasse to ethanol using rumen fluid

Madigal, James Paul T., Ulep, Roque A., Agrupis, Shirley C.

Cellulosic ethanol is an environmentally friendly and renewable transportation fuel produced from a wide array of feedstocks, including non-food plant materials, such as agricultural wastes, dedicated energy crops such as switchgrass, sugarcane bagasse, and wood products. This study was conducted to determine the potential of sugarcane bagasse as a substrate for ethanol production in Single Stage Consolidated Bioprocessing (SSCBP). Specially, it sought to determine: 1. the biodegradation activity of rumen fluid microorganisms in the major biomass fractions (hot water extractives, lignin, hemicellulose and cellulose) of sugarcane bagasse, 2. the deconstruction of cellulose to glucose with time, and 3. the fermentability of 2nd generation sugar from bagasse to bioethanol. Glucose released and ethanol produced were monitored from day 1 to day 12. Three concentrations of rumen fluid – 1% 10%, and 20% - were used in the experiment. The positive degradation effect of the different concentrations of rumen fluid was very evident. Hot water extractives, lignin, hemicellulose and cellulose were reduced to 29.33%, 13.33%, 33.33%, and 58.67%, respectively. Glucose content after rumen fluid treatment decreased with time. At day 6, it yielded 2.33% on dry biomass and was progressively reduced to 1.17% in day 12. Saccharification efficiency was highest from day 6 to day 8 at 4.57% - 5.56%. The results indicate the potential of rumen fluid microorganisms in SSCBP for the biodegradation of sugarcane bagasse for cellulose ethanol production. **(Author's abstract)**

Keywords: *Chemistry, Consolidated bioprocessing, Cellulosic ethanol, Biomass constituents, Cellulosic biomass, Saccharification, Lignocellulosic biomass*

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0271

Controlled drug delivery constructed using inkjet printing

Santiago, Karen S., Campbell, Toni E., Shepherd, Rod, Razal, Joselito M., Sevilla, III, Fortunato B., Wallace, Gordon G.

Controlled drug delivery promotes the best efficient therapeutic effect of a medication in a patient. It involves delivering the drug in the proper dosage at the proper time at the site where it is needed. Several approaches have been developed to achieve this goal, including oil-in-water emulsion solvent evaporation, wet spinning, and compression-heat moulding. However, these methods require tedious procedure and result in a big amount of chemical wastage. In this study, the feasibility of using inkjet printing (IJP) in distributing dexamethasone (DEXP) throughout biodegradable poly(lactic-co-glycolic acid) (PLGA) platforms was investigated. The printed

structures were rendered three-dimensional (3D) by simply rolling the 2D. These were then investigated for use as sustained delivery reservoirs. Release studies showed a minimal initial burst release, with a sustained release over an extended time period. Empirical modelling showed a good agreement with experimental *in vitro* release data. In conclusion, ink jet printing can be used to produce spatially resolved patterns that provide control over the release profile obtained. The preparation technique offers a simple procedure with a minimal amount of material waste. **(Author's abstract)**

Keywords: *Chemistry, Inkjet printing, Drug release, Biodegradable polymer, Dexamethasone, Controlled drug delivery*

0272

Development of an optical detection device for ammonia in water

Sucgang, Raymond J., Conanan, Aida P., Bonifacio, Arianna Marie A., Dela Rosa, Nikko Angelo L., Panado, Jezelle C., Rafailes, Ma. Cherry L.

The objective of this study is the fabrication of a handheld, simple to use optical detection device which detects and quantifies ammonia contamination in water. The sensor is based on irreversible color changes that occur subsequent to the reaction of the Rochelle salt and Nesslers reagents with ammonia which gives off a flesh color. The sensor uses LED light source shining on an LDR which is connected to a circuit supplying a constant voltage. When the colorimetric reaction has taken place, light shines through a vial containing the sample, and onto a light-sensitive circuit. A clear tube of water is the BLANK and has zero absorbance. A fraction of the incident light that is blocked by the sample can be used for quantitative determination of ammonia in water. The ammonia concentration is related to the absorbance reading, following Beer's law. The amount of incident and transmitted light are expressed in voltage units, by a voltmeter. The sensor shows outstanding response over the range of 0.1 to 10 ppm concentrations of ammonia. Excellent sensitivity and linearity (R^2=0.91) has been achieved using the sensor, working with 5 replications per particular concentration. The practicality of the sensor has been demonstrated by using it for the field determination of ammonia in water from different sites in Aklan. The other features of the sensor include: ease of manipulation, low cost, ruggedness, versatility, and adaptability for use for other analytes for as long as there is a color change after the analyte-reagent reaction. (**Author's abstract**)

Keywords: *Chemistry, Sensor, Ammonia, LED, Voltage, Detection device*

0273

Enhanced electrocatalytic activity of pulse deposited Pt particles dispersed on pedot-modified Au electrode towards ethanol oxidation

Mendoza, Maria Krisandra L., Tongol, Bernard John V.

Poly(3,4-ethylenedioxythiophene) (PEDOT)-modified Au electrodes were electrochemically prepared via potentiodynamic polymerization using 0.01 M EDOT and 0.10 M $HClO_4$ on a Au substrate at a potential range from 0.0 to 1.10 V (vs. Ag/AgCl). The PEDOT-modified Au electrode was electrochemically characterized in a monomer-free 0.10M $HClO_4$ electrolyte. The surface morphology was probed using Scanning Electron Microscopy (SEM). Platinum particles dispersed on PEDOTmodified Au electrodes were prepared in two steps: (1) aqueous electropolymerization of EDOT, and (2) pulse deposition of platinum. Pulse deposition of Pt nanoparticles was carried out using the following optimized parameters: -30 mA/cm^2 of pulse current with 0.2 s on-time and 0.4 s offtime at 700 pulses. Electrocatalytic activity of the prepared Pt/PEDOT/Au electrode was evaluated towards ethanol oxidation using 1.0 M ethanol in
0.10 M H_2SO_4 electrolyte solution from E = 0.0 V to E = 0.90 V (vs. Ag/AgCl) at a scan rate of 100 $mV \cdot s^{-1}$. The CV profile of the prepared nanocomposite shows an anodic peak at E = +0.700V which is an indication of the presence of platinum. Examination of the surface morphology of the Pt nanoparticles (Pt NPs)/PEDOT/Au-modified electrode revealed welldispersed platinum particles on the polymer matrix with a diameter of less than 100 nm. Enhancement of the electrocatalytic activity towards ethanol oxidation was observed in pulse-deposited platinum particles compared to potentiodynamically deposited platinum particles on PEDOT-modified Au electrode. **(Author's abstract)**

Keywords: *Chemistry, Poly(3,4-ethylenedioxythiophene), Electropolymerization, Pt nanoparticles, Pulse deposition, Electrocatalysis*

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0274

Fabrication and characterization of conducting polythiophene and poly (3-methylthiophene) modified sensors

Binag, Christina A., Jabon, Jelyn J., Cu, Glenn Wesley S., Cui, Karina Milagros R.

Conducting polymer, an organic material with both electrical and mechanical properties had gained its popularity as potentiometric electrode. This kind of electrode has the advantage of being robust, and with higher mechanical strength. In this study, conducting polymers such as polythiophene (Pyp) and poly(3-methylthiphene) (P3MTp) were developed by electrochemical polymerization. The optimum polymerization conditions for P3MTp monomer, and 30s polymerization time. While the optimized polymerization conditions for PTp were 0.1 m thiophene (Tp) monomer, 10 mL chloroform, Pt solid support, 1 mA current, 0.1 $MC10_4$ dopant, and 20 s polymerization time.

The PTp-coated [H] sensor exhibited sub-Nernstian response (335.42 + 3.80 mV/ph) and good linearity (-0.9925) over hydrogen ion concentration of 10^{-3} to 10^{-10} M. The 3MTp-based electrode gave a sensitivity response of -47.56 $\pm$ 2.51, V/pH with linearity of -0.0.99775 towards [H] in concentration range of 10^{-3} to 10^{-10}M. The potentiometriccharacteristics of the sensor include calibration curve, memory effect, electrode lifetime, hysteresis, electrode drift, and electrode selectivity. Scanning electron microscopy (SEM) was used to study the electrode surface composition was characterized by X-ray photoelectron spectroscopy (XPS). **(Author's abstract)**

Keywords: *Chemistry, Polythiophene, Poly (3-methylthiophene), Conducting polymers, Electropolymerization, pH potentiometry, Sensor, Cyclic voltammetry, XPS, SEM*

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0275

Humic substances from Manila Bay and Bolinao Bay sediments

Llaguno, Elma C.

The C,H,N, composition of sedimentary humic acids (HA) extracted from three sites in Manila Bay and six sites in Bolinao Bay yielded H/C atomic ratios of 1.1-1.4 and N/C atomic ratios of 0.09-0.16. The Manila Bay HA's had lower H/C and N/C ratios compared to those from Bolinao Bay. The IR spectra showed prominent aliphatic C-H and amide I and II bands. Manila Bay HA's also had less diverse molecular composition based on the GC-MS analysis of the CuO and alkaline permanganate oxidation products of the humic acids. **(Author's abstract)**

Keywords: *Chemistry, Sedimentary humic acid, Manila Bay, Bolinao Bay, CuO oxidation, Alkaline permanganate oxidation, IR, Elemental analysis*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 9 Issue No. 1-2, 7-15 (Filipiniana Analytics)
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0276

Optimization study on the dilute acid pretreatment and enzyme sacharification of the macroalgae *Sargassum* spp. for ethanol production

Borines, Myra G., de Leon, Rizalinda I., Jose, Wilfredo I., Rollon, Analiza P., MontaÃ±o, Marco Nemesio E., Cuello, Joel L.

A promising alternative non-food feedstock for bioethanol is macroalgae, not only due to their fast growth rate and large biomass yield but also because the Philippines is already one of its major global commercial producers. This study focused on the optimization of the acid pretreatment and enzyme saccharification of the macroalgae *Sargassum* spp. using the Response Surface Methodology (RSM). The dried and ground *Sargassum* was treated with H_2SO_4 to final concentrations of 0 to 6.36% (w/v) at solid loading of 10% (w/w) at varying temperatures (111 to 129°C) and reaction time (0.16 to 1.84 hr). The acid-treated biomass was subjected to enzyme saccharification using cellulase and cellobiase at pH 4.8 at a temperature of 50 °C and 100 rpm in a water bath shaker for 48 hrs. The total reducing sugars and glucose of the samples were determined by the DNS (dinitrosalicylic acid) method and high performance liquid chromatography, respectively. Results showed that the effects of temperature, acid concentration and reaction time on glucose released were statistically significant ($p < 0.05$) with the increase in acid concentration from 0.1 % (w/v) to 1.0 % (w/v) to be the least significant. For maximum reducing sugar and glucose yields, the predictive model provided the optimum conditions of 3.36 to 4.15% (w/v) H_2SO_4, 115 °C and 1.44-1.50 hrs. This optimal pretreatment conditions, as well as the conditions employed in enzyme saccharification, are relatively milder compared to that of terrestrial biomass. **(Author's abstract)**

Keywords: *Chemistry, Acid pretreatment, Bioethanol, Enzyme saccharification, Macroalgae, Sargassum*

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0277

Preliminary study on the production of fuel grade anhydrous ethanol using activated zeolite as dehydrating agent

Ulep, Roque A., Agrupis, Shirley C., Valencia, Magdalena A., Abenes, Fiorello B.

A 5-stage column, packed with activated Zeolite, was successfully used to produce absolute ethanol from reflux-distilled hydrous ethanol. This study was a follow up on our successful exploratory experiments to produce azeotropic ethanol from first and second generation feedstocks. We sought to develop a column to produce anhydrous ethanol in order to comply with the Philippine National Standards (PNS) as prescribed in the Biofuels Act of 2006. Our initial attempts in this process included the use of non-polar solvents to form a ternary azeotrope

for reflux distillation, and the use of various desiccants, none of which proved satisfactory in the absolute dehydration of hydrous ethanol. We report here the successful production of anhydrous ethanol from an assembled 5-stage column packed with 100 grams of activated zeolite as dehydrating agent. Three phases of operations of the column was performed. In Phase 1, 500-ml of reflux-distilled ethanol with 89 % v/v ethanol is poured into the column and 446 ml with 96.2 % v/v ethanol was collected. In Phase II, the same column was used and packed with the same dehydrating agent. A 500 ml feedstock with 95 % v/v ethanol was poured into the column and an average of 475.2 ml was recovered with 99.5 % v/v ethanol. In Phase III, the recovery of absorbed ethanol in the column was attempted. To do this, a 150 ml of distilled water was poured into the column and 102 ml was recovered with 12.2 % v/v ethanol. The preliminary results of these studies indicate that the improvised 5-stage dehydrating column is effective, more economical and easier to operate than ternary azeotropic distillation as well as the use of other dessicants. The simplicity of the system enables less supervision of technicians working in the lab. **(Author's abstract)**

Keywords: *Chemistry, Ethanol, Absolute, Azeotrope, Hydrous, Anhydrous*

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0278

Production of plant oils and methyl esters using the supercritical fluid extraction method

Briones, Annabelle V., Pondevida, Josie L., de Vera, Carlos, Mallillin, Armando T., Mendoza, Charlene, Carandang, Maricar, Hermosura, Lilibeth C., Esperanza, Ramon C., ValdecaÃ±as, Melchor C.

The oil from jatropha seeds and grated coconut meat can be effectively extracted by supercritical carbon dioxide. Extractions were conducted using a SCFE equipment, Model: 46-19360-60Hz equipped with Super pressure Compressor 6000 PSI Motor Driven. The extraction temperature and extraction pressure significantly affected the extraction rate of SFE. The fatty acid profile of jatropha oil was composed of oleic, linoleic, palmitic and stearic fatty acids, while the fatty acid profile of coconut oil was composed of caprylic, capric, lauric, myristic, and palmitic acid, with lauric acid as the most predominant. Methyl esters can be produced by *in situ* supercritical methanol transesterification directly from the jatropha seeds and grated coconut. Operating conditions were: reaction temperature/ pressure (70°C/7000-8000 psi). Ratio of methanol to weight of ground jatropha seeds was 1:2. As the temperature increased, the crude biodiesel and FAMEs yields also increased. The method is a single-step process, where the usual oil extraction process is avoided. In addition, because this process does not require a catalyst as in the usual method, the purification of products after transesterification reaction is much simpler. Therefore, this new process can offer an alternative way to convert jatropha seeds and coconut meat directly to methyl esters by a simpler and shorter production process eliminating waste products. The use of supercritical fluid extraction (SCFE) has gained attention in the production of oils and methyl esters due to the use of carbon dioxide supercritical fluid solvent.

It is cheaper in price, a nonflammable compound, and O_2-free, thus protecting samples against any oxidative degradation. **(Author's abstract)**

Keywords: *Chemistry, Supercritical fluid extraction, Jatropha oil, Methyl ester, Supercritical methanol, Transesterification*

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0279

Putative allergens in GMO *versus* conventionally-bred rice

Gavarra, Anna Mae S., Rumbaoa, Rowena Grace O., Deocaris, Chester C., Deocaris, Custer C.

This study used *in silico* approach to screen nascent allergens in GMO and conventionally-bred rice. The protein sequences that were analyzed were taken from published data from various studies on GMO and conventionally-bred rice. To determine allergenicity of the proteins,allergen databases and algorithms, such as Allermatch, Algpred and Appel were used. The analysis revealed the following putative allergenic proteins for the GMO rice, namely: cysteine proteinase precursor, putative germin A, glycosyl hydrolases, and subtilisin-like serine proteinase, an unknown protein, and late embryogenesis abundant for the conventionally-bred rice. The proteins that computationally showed allergenicity are related to stress and defense response, metabolism, and storage and degradation of proteins. **(Author's abstract)**

Keywords: *Chemistry, Allergens, GMO, Bioinformatics, Food safety assessment*

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0280

Rapid determination of five artificial sweeteners in beverages by high performance liquid chromatography

Cabanilla, Carl Vincent D., Castillo, Leah N., Udarbe, Mildred A., Apilado, Ruby J.

Artificial sweeteners are increasingly used in a wide range of commercial beverages. Most of these sweeteners have a maximum allowable concentration prescribed by international and local standards. Ensuring proper implementation of existing regulations requires reliable quantitative analytical methods to measure sweeteners in beverage matrices. Here, we present the results of a

single-laboratory validation of two methods for the rapid determination of five authorized artificial sweeteners in beverages using high performance liquid chromatography with ultraviolet and refractive index detection. The procedure involved extraction of acesulfame-K (ACS-K), aspartame (ASP), neotame (NEO), saccharin (SAC), and sucralose (SUC) with a buffer solution followed by chromatographic analysis. Samples containing ACS-K, ASP, NEO, and SAC were analyzed using HPLC-UV with gradient elution at 220 nm while separation of SUC was achieved by HPLC-RI. The calibration curve was linear in the concentration ranges of: 50 to 500 ìg/mL ACS-K, 80 to 800 ìg/mL ASP, 15 to 150 ìg/mL NEO and SAC, and 100 to 1,000 ìg/mL SUC. The limits of detection (and quantification) for ACS-K, ASP, NEO, SAC, and SUC were 8.2 (27.3) ìg/mL, 13.0 (43.5) ìg/mL, 2.8 (9.5) ìg/ mL, 3.8 (12.5) ìg/mL, and 5.5 (18.4) ìg/mL, respectively. Repeatability and intermediate precision tests showed relative standard deviations and Horrat ratios generally lower than the maximum acceptable values. Analysis of reference materials yielded results that fell well within the acceptable concentration range. Recoveries from samples spiked at low, medium and high concentrations ranged from 99 to 109 percent. The developed inhouse methods were found suitable for rapid quantitative determination of five artificial sweeteners in beverages. **(Author's abstract)**

Keywords: *Chemistry, Artificial sweetener, Beverage, High performance liquid chromatography, Buffer extraction, Method validation*

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0281

Solvent-free sonochemical synthesis and antifungal activity of 1-alkyl-3-methylimidazolium bromide [RMIM] Br ionic liquids

Perez, Ser John Lynon P., Arco, Susan D.

Opportunistic fungal infections pose a continuous threat to human health and life. In recent years, there has been a considerable increase in occurrence and severity of candidiasis, an infection caused by the fungus *Candida albicans*. Moreover, the widespread and increased use of antifungal drugs has resulted in the development of resistance to these drugs. This has given rise to the challenge of developing novel and promising antifungal agents for clinical use. Azole-based drugs inhibit the enzyme associated in ergosterol synthesis and eventually hinder fungal growth. This study explored the one-pot synthesis of a series of 1-alkyl-3-methylimidazolium bromide [RMIM]Br ionic liquids through a sonochemically-mediated reaction of 1-methylimidazole and alkyl bromides (RBr) under solvent-free conditions. High product yields were obtained for all syntheses (>94%) under mild conditions (2-5 hours at 20-30°C). The success of the synthetic method was confirmed through ^{1}H-NMR, ^{13}CNMR and FT-IR spectroscopy. All products were tested for antifungal activity against *C. albicans* with clotrimazole and water as positive and negative controls, respectively. At a definite

concentration, ILs having C_4,C_6, C_8, C_{12}, and C_{16} alkyl chain lengths exhibited antifungal activity with antimicrobial indices of 0.1, 0.2, 1.5, 2.3, and 2.5 against *C. albicans*, respectively. No inhibition activity was observed for [C_2MIM]Br. The results showed that an increase in the alkyl chain length corresponds to an increase in the antifungal activity of the ionic liquids. **(Author's abstract)**

Keywords: *Chemistry, Ionic liquid, Solvent-free, Sonochemistry, Antifungal agent, Candida albicans, Medicinal chemistry*

0282

Synthesis and characterization of hyperbranched and star-shape copolymers of poly(N-vinylcarbazole) using a raft inimer

Atayde, Jr., Eduardo C., Felipe, Mary Jane L., Arco, Susan D., Advincula, Rigoberto C.

New materials with complex architectures, such as hyperbranched and star-shape copolymers, continue to be an interesting field of polymer science due to their intriguing properties and complicated synthetic routes. While many researchers have reported the successful synthesis of this type of polymers, there remains a need to develop simpler synthetic procedures that would produce these materials. This study introduces a facile synthesis of star-shape copolymers of poly(N-vinylcarbazole) [PVK] through a two-step process. The first involves the synthesis of a hyperbranched PVK core by polymerizing N-vinylcarbazole with 2-(methacryloyloxy)ethyl 4-cyano-4-(phenylcarbonothioylthio) pentanoate (CPP-HEMA) inimer through Reversible Addition Fragmentation Chain Transfer (RAFT) living radical polymerization. The inimer serves both as an initiator and as a branching point. The second step involves the copolymerization of the hyperbranched PVK core with another monomer N-isopropylacrylamide (NIPAM) using RAFT. The hyperbranched core in this step serves as macroinitiator from which polymer arms consisting of NIPAM would emanate. Successful synthesis of the star-shape polymer was confirmed through ^{1}H-NMR, Gel Permeation Chromatography, Fluorescence Spectrophotometry, Thermogravimetric Analysis and FT-IR Spectroscopy. The degree of branching for the hyperbranched structure was computed to be 0.65 and the number of polymer arms that emanated from the core was ascertained as 45 per hyperbranched core. Surface morphologies and aggregation patterns of the copolymer in different solvents like were also studied and correlated. **(Author's abstract)**

Keywords: *Chemistry, Hyperbranched, Star-shape polymer, RAFT, Inimer, PVK*

0283

Synthesis and characterization of molecularly imprinted polymer using trans oleic fatty acid as template

Fuertes, Rosario T., Yu, Derrick Ethylbhert C., Ebarvia, Benilda S.

Labelling of trans fatty acid (TFA) content in foods is mandatory in many countries. The impact of TFA content in food labels prompts analytical laboratories to address outstanding issues on trans fatty acid analysis. In this work, a molecularly imprinted polymer (MIP) using trans oleic fatty acid methyl ester (FAME) as template was prepared by precipitation polymerization method using methacrylic acid as functional monomer, trimethylolpropane methacrylateas cross-linking agent, 2,2-azobis (isobutyronitrile) as the radical initiator, and dichloromethane as porogen. A non-imprinted polymer (NIP) was also prepared. Template removal was done by soxhlet extraction using methanol-acetic acid (9:1 v/v) as the extraction solvent. The binding properties of trans oleic FAME imprinted polymers were evaluated in different solvent systems by equilibrium experiments. Scatchard plot analysis in heptanes revealed that there were two classes of binding sites populated in the imprinted polymers which indicated that the polymer possesses heterogeneous binding sites distribution. The stronger affinity binding type exhibits dissociation constant (K_d) 10 times smaller than that of the weaker type with binding capacity of 48.04ugtrans oleic FAME/mg MIP. The resulting Freundlich isotherm further demonstrated the heterogeneity of the binding sites of the MIP, with heterogeneity index “a”equal to 0.4758.Polymer characterization was done by scanning electron microscopy (SEM) and Elemental analysis (Combustion Method) to support the imprinting and rebinding process of trans oleic acid.This MIP is a potential adsorbent material for the solidphase extraction (SPE) of trans oleic acid in food. **(Author's abstract)**

Keywords: *Chemistry, Molecularly imprinted polymer, Trans oleic acid, Precipitation polymerization, Scatchard plot, Freundlich isotherm*

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0284

Use of chromatographic techniques for the detection of marijuna in urine samples.

Portilla, Ma. Cristina B., Pascual, Cherrie B.

Marijuna a hallucinogen, is one of the most commonly used dangerous drug in the Philippines. The major psychoactive component is tetrahydrocannabinol, which could be monitored in urine. Differebt chromatographic techniques (Thin Layer Chromatography, High Performance Liquid Chromatography and Gas Chromatograpy-Mass Spectrometry) were develop to detect marijuana in urine sample. After collection, the urine sample was prepared by basic hydrolysis and the drug was extracted using liquid-liquid extraction. Different fractions were utilized for TLC, HPLC and GC-MS analysis. In the TLC method, R_f of marijuana was found at ~0.68 and limit of detection at 60 ng/ml. Marijuana was detected at 215 nm, in the HPLC method, with a retention time of ~12.0 min. Prior to GC-MS analysis, the marijuana extract was changed to its trimethylsily1 derivative. Electron impact was used as the ionization mode. Selected ion monitoring (SIM) was used to confirm the presence of the parent metabolite of marijuana, 9-Carboxy-11-nor-Ä^9-tetrahydrocannabinoid, by monitoring the diagnostic ions 371, 473, 488. The retention time was found at ~11.9 min and a cut-off level of 60 ng/ml were used to confirm positive urine samples.

The method developed is used for routine hospital screening and confirmation of marijuana in urine. **(Author's abstract)**

Keywords: *Marijuana, Hallucinogen, Chromatography, TLC, HPLC, GC-MS, Dangerous drugs, Urine, Tetrahydrocannabinol, Chemistry*

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Issue No. , 347
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0285

Variecolactol: a new sestertrpene lactone from the sclerotia of Aspergillus auricomus (Gueguen) saito

de Guzman, Florecita S., Gloer, James B., Wicklow, Donald T., Dowd, Patrick F.

Variecolactol (1), a new sesterterpene lactone related to variecolin (2), has been isolated from the organic extracts of the sclerotia of *Aspergillus auricomus*. Structure determination of this compound was achieved primarily through HMQC, HMBC, and NOESY experiments. The known compounds dihydropenicillic acid (3) and penicillic acid (4) were also isolated from *A. auricomus*. **(Author's abstract)**

Keywords: *Chemistry, Aspergillus auricomus, Sclerotia, Sestertrpene*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 1, 1-5
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/1 1999

COMPUTER SCIENCE

0286

Towards a Filipino-centric for digital input devices through automated hand anthropometry

Magno, Katrina Joy H., Pabico, Jaderick P.

We conducted an anthropometric survey of the hands of 91 respondents coming from different parts of the Philippines. Our purpose was to come up with an initial profile of the Filipino hand that may be used to design computer keyboards, and other digital input devices that will fit the Filipino groups based on gender, age, and the type of location of origin (rural or urban). To provide solution to the time, consistency and accuracy problems brought about by following a meticulous process in manual anthropometry, we developed a computer-based process by combining techniques in machine vision and digital image processing to furnish anthropometry researchers a fully automated system that is fast, yet provides consistent and accurate body measurements. The result was the anthropometric data of the hands of Filipinos based on gender, type of location of origin, age group, height and weight. We compared the anthropometric data with the mean dimension of standard desktop computer keyboards, products which are usually imported and may have been optimally designed for other nationalities. We found out that the Filipinos whose hand measurements fall below the 25th percentile will not be able to comfortably make several key combinations. Because of this, we recommend that product designers and importers use the anthropometric profile of the Filipino hand so that they will be able to provide the Filipinos with fit, useful, comfortable, and safe digital input devices. **(Author's abstract)**

Keywords: *Computer science, Hand anthropometry, Filipino-centric keyboard, Machine vision, Digital image processing, Automation*

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(Filipiniana Analytics)
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ECOLOGY

0287

Immobilization of toxic heavy metals from academic waste

De Ocampo, Noel T.

Stabilization/solidification is known as the immobilization of reforming toxic heavy metals to reusable material. Stabilization is a process by which contaminants are fully or partially bound by the addition of supporting media, binders, or other modifiers. Solidification is a process

employing additives by which the physical nature of the waste is altered during the process.

The concentrations of cadmium, copper, lead, manganese, mercury, and nickel was established utilizing Atomic Absorption Spectrophotometry (AAS). Varying proportions of waste, cement, fine aggregate, and coarse aggregate were mixed and solidified in metal cylindrical molds. Simulated leaching of toxic heavy metals was conducted and the amount of contaminants was determined using AAS. The compressive strengths of both control• and experimental specimens were established utilizing the Universal Testing Machine. Scanning Electron Microscopy (SEM) confirmed the binding mechanism between cement and contaminants.

The SEM result supports the comprehensive strength and leaching data. It further confirmed that cement can immobilize the toxic heavy metals in academic waste. Whether in combination with cement alone, or with cement and aggregates, academic waste in liquid or solid form can be solidified to produce specimens with highly acceptable comprehensive strengths. **(Author's abstract)**

Keywords: *Ecology, Immobilization, Solidification, Stabilization, Leaching, Contaminants, Concrete, Toxic heavy metals, Academic waste, Comprehensive strength, Solidified waste*

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Fil(S) Q149.P5 N25 v.22 2000

EDUCATION

0288

Collaboration among an academic institution local communities, and local government units in protecting wildlife and forest habitats in Southwestern Negros Island, Philippines

Alcala, Ely, Hisona, Jireh, Dulla, Jemuel, Velasco, Joseph Benedict

A community-based forest resource protection program was established in Cauayan and its adjacent areas in southwestern Negros from 2001-2007. The program was preceded by research done by an academic institution, the results of which were used as a basis for establishing the Cauyan watershed reserve, a 6,000ha area that includes the forests of two *barangays* (villages), Pinamayan and Inayawan. This paper presents the processes employed in establishing a community-based forest protection program and some strategies used to mitigate illegal activities, to improve biodiversity awareness among the stakeholders, and to promote community and local government participation. **(Author's abstract)**

Keywords: *Education, Academic institution, Local communities, Local government units, Protecting wildlife and forest habitats, Southwestern Negros Island, Philippines*

Silliman Journal, Volume No. 48 Issue No. 2, 71-80
(Filipiniana Analytics)
Fil(S) AS538 S46 48/2 2007

0289

Development and formative evaluation of a laboratory manual in general chemistry 1 (Chem 111)

Araneta, Fely L., Pescones, Terily R.

A laboratory manual in General Chemistry 1 was developed for use for the first year enginering technology students at the Technological University of the Philippines – Taguig. The 12 experiments included in the manual were tried-out to determine whether the activities were doable within the time frame of a regular laboratory class, and whether the instruction were comprehensible and easy to follow. The manual was evaluated by chemistry experts, teachers and students on these aspects: objectives, usefulness and relevance, comprehensibility, materials and equipment, and ease in performing the experiments. Feedback from the try-out and the formative evaluation were considered in the revisions of the experiments and the manual as a whole. The overall rating of the three sets of evaluators revealed that they strongly agreed on the objectives of the experiments, the usefulness and relevance of the laboratory activities and the features of the manual, the comprehensibility of the language used and the procedural instructions, the availability of the materials and equipment used in the experiments, and the ease in performing the experiments. It could then be conducted that the manual contains experiments that are designed to develop/enhance the students' science process skills, are relevant to the chemistry topics discussed in the lecture and provide appropriate applications of concepts and principles, and that the manual has features that would help students perform the experiments properly and safely. **(Author's abstract)**

Keywords: *Education, General chemistry 1 (Chem 111) , Laboratory manual, Development and formative evaluation*

Philippine Journal of Industrial Education & Technology, Volume No. 14 Issue No. 1, 73-100
(Filipiniana Analytics)
Fil(S) T61 P53 14/1 2004

0290

A human rights mechanism for ASEAN

Padilla, David J.

Regional intergovernmental human rights mechanisms have been established by regional international organizations in most of the world. The Council of Europe, by treaty, created the European Court of Human Rights. The Organization of American States established, by treaty,

the Inter-American Commission on Human Rights and the Inter-American Court of Human Rights. The African Union has also established an African Commission on Human and People's Rights as well as the African Court of Human and People's Rights. Asia has no overarching regional international organization. However, ASEAN recently adopted a Charter that is now being ratified by the ten founding member states. The Charter contemplates the creation of an eventual regional human rights mechanism for human rights. This prospect is the culmination of the efforts of ASEAN's working group on human rights, composed of government representatives, non-governmental human rights organizations and academicians. **(Author's abstract)**

Keywords: *Education, Human rights, ASEAN , Academicians, Organization*

Silliman Journal, Volume No. 48 Issue No. 2, 51-70
(Filipiniana Analytics)
Fil(S) AS538 S46 48/2 2007

0291

Predictors of teaching competence and training needs of student teachers in industrial education in selected state universities

Caparas, Helen D.

Quality education has always been a point of emphasis in the educational system. This makes a paramount concern specially to the teacher training institutions. On this premise, the study was conducted to determine the competence level of student teachers, and their training needs at selected State Colleges and Universities of Metro Manila. Areas of competence that were considered in the study are teaching skills, classroom management skills, communication skills with leamers, and human relations skills. The respondents were the student teachers and their cooperating teachers. Findings showed that the student teachers' level of competence is very satisfactory with an overall mean of 3.211 and 3.154 as perceived by the student teachers and cooperating teachers, respectively. Results also showed that training needs of the student teachers along other competence areas and skills are very necessary as perceived by themselves and necessary as perceived by the cooperating teachers, with an overall mean of 2.63, and 2.45, respectively. The variable shop laboratory facilities is a significant positive predictor of student teachers' communication skills with the leamers, and the library is the significant positive predictor of the students teachers' human relations skills. As a whole, the student teachers' competency is significant and positively influenced by the adequacy of shop laboratory facilities, and library study area and facilities. **(Author's abstract)**

Keywords: *Education, Teaching competence, Training, Student teachers, Industrial education*

Philippine Journal of Industrial Education & Technology, Volume No. 14 Issue No. 1, 58-72
(Filipiniana Analytics)
Fil(S) T61 P53 14/1 2004

0292

The significance of service: the values of a university
Tan, Betsy Joy B.

Teaching is service. Nowhere is this service made more profoundly professional than when Values Education was institutionalized in the Philippines educational system. At Silliman University, Values Education is values integration, a curricular design that extends from the classroom to the community. Through core curriculum that provides a cluster of course within the general education program anchored on the university's mission, Silliman University has responded to that call. However, how a student evolves into a social being who is self-actualized with a deep sense of love of country and the worlds, is the ultimate affirmation of what a university can do to contribute to shaping human excellence—the education of the mind for academic excellence, the education of emotions for human values, and the education of the conscience for life's principles of harmonious living. **(Author's abstract)**

Keywords: *Education, Department of Education, Culture, and Sports, Values education, Values integration, Core curriculum, Academic excellence*

Silliman Journal, Volume No. 48 Issue No. 2, 39-50
(Filipiniana Analytics)
Fil(S) AS538 S46 48/2 2007

ENGINEERING

0293

Assessment of a one-way policy in a major road: the case of Quezon Avenue in Vigan City, Ilocos Sur
Amistad, Franklyn T.

This study focused on the assessment of a one-way policy in a major road in the City of Vigan Philippines. It aimed to characterize the area, pedestrians and level of service of intersections; analyze the perceptions of respondents on the necessity, acceptability and impact of the one-way scheme and test the relationships between perceptions and attributes of the respondents. It is recommended that the city government of Vigan should enact a "*No loading*" policy and minimal time for unloading of passengers and a 'Give way to Pedestrians" policy for maximum safety. It is suggested that the traffic enforcers should strictly implement traffic rules, laws, and regulations found in the Land Transportation and Traffic Code of the Philippines. The City government should adopt some environmentally sustainable transport strategies in the pursuit of a sustainable development of the city of Vigan without sacrificing its legacy as a world heritage site. **(Author's abstract)**

Keywords: *Engineering, Major road, Trafic management, Environmentally sustainable transport*

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0294

A collaborative spatial database for the inventory of trees in the University of the Philippines Diliman Campus

Aranas, R.K.D., Abuel, M.C., del Rosario, E., Locsin, J.D.C., Villanueva, M.J.

Urban trees are defined as individuals, groups, and stands of trees and remnant forests with amenity values found in urban areas or areas with human structures on site. These resources provide a wide variety of ecologic and economic uses. These assets need to be accounted for and protected, hence the need to monitor their status by inventory. Urban trees management would be greatly enhanced by setting up a spatial database system. Activities to be undertaken include spatial database design, data acquisition, database build-up, web GIS set-up and installation, and developing methods for collaboration. Through the use of modern technology i.e. mobile and web technology, we were able to come up with an initial database for tree inventory of UP Diliman. The utilization of open source platform facilities easier and cheaper option for updating of the components of our prototype. Latest developments in mobile technology i.e. GPS technology, Android OS and Smart Measure app in the market enables us to propose a viable option for updating our tree database. Data integration from different field observations is facilitated through an initial spatial database model as proposed in this research. **(Author's abstract)**

Keywords: *Engineering, Urban tree inventory, Web GIS, Collaborative apatial database, Mobile technology application*

Philippine Engineering Journal, Volume No. 33 Issue No. 2, 1-14
(Filipiniana Analytics)
Fil(S) TA4 P532 33/2 2012

0295

A comparative study of the life cycle global warming potential of charcoal stove options in Haiti

Tamayao, Mili-Ann M.

This study provides estimates and a comparative assertion on the life cycle global warming potential (GWP) impacts of three products systems: 1) traditional Haiti charcoal stove, 2)

efficient charcoal stove manufactured in Haiti (Recho Mirak), and 3) imported efficient charcoal stove. Results indicate that efficient charcoal stove, both local and imported, are better than traditional designs in terms of life cycle GWP impact. The traditional stove has the highest GWP per cooking year of 5.6 tons CO_2e on average; this is over 20% greater than the 4.3 tons CO_2e per cooking year for both local and imported efficient stove products. Replacing a traditional stove, thus results in reduction in emissions of about 1.3 tons CO_2e per year. Charcoal production and burning account for over 99% of the GWP impacts for the three product systems. Meanwhile, stove material and stove origin (i.e. local versus imported) contribute merely 0.1% of GWP impact for all three products. Imported efficient stoves would have less GWP than local efficient stoves if the former's charcoal use efficiency is at least equal to that of the latter. Furthermore, the parameters that have the greatest impact on the GWP of all product systems are frequency of cooking and cooking charcoal use intensity. **(Author's abstract)**

Keywords: *Engineering, Life cycle analysis, Charcoal stove, Charcoal production, CO2e*

Philippine Engineering Journal, Volume No. 33 Issue No. 2, 15-25
(Filipiniana Analytics)
Fil(S) TA4 P532 33/2 2012

0296

Ejector powerplant system with natural working fluid

Berana, Menandro Serrano

This paper presents the potential applications of ejector and the efficiency improvement it brings to powerplants that utilize low-temperature renewable and recoverable heat sources. The ejector significantly increases the efficiency of the organic Rankine cycle (ORC) by increasing the turbine temperature drop which is made possible by the expansion, mixing and recompression processes in the ejector. The driving fluid in the ejector of the modified cycle is the high-pressure liquid in the separator that is just circulated back to the evaporator in the ORC. Fundamental thermodynamic analysis of the novel ejector powerplant cycle was undertaken. Ammonia and propane, which are both natural working fluids, were used in the analysis. The analysis was limited by considering that the lowest pressure in the system must be higher than the atmospheric pressure to avoid vacuum leak. The calculation results showed that propane and amonia can both give maximum efficiencies at different evaporator temperatures and fixed condenser temperatures in the range of 20 – 27%. At evaporator and condenser temperatures of 40°C and 30°C, respectively, ORC gives only 2.5% for the two working fluids while the ejector system gives 21.5% and 27.5% for ammonia and propane, respectively. The difference in efficiency reduces as the evaporator temperature increases. It has been shown that propane can give higher efficiencies and lower velocities in the ejector than ammonia at considerably lower evaporating temperatures, leading to more economical, safer and simpler design and operation. The ejector system with ammonia and propane as working fluids offers environment friendly power generation from low-temperature sources at improved efficiency. **(Author's abstract)**

Keywords: *Engineering, Ejector, Powerplant, Propane, Ammonia, Organic rankine cycle*

Philippine Engineering Journal, Volume No. 34 Issue No. 1, 1-10
(Filipiniana Analytics)
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0297

Energy analysis of a "Dragon Kiln" for firing "Vigan jars"

Franco, Samuel S., Nalundasan, James R,

The firing of ceramic products involves the partial fusion of the body and as it proceeds, the proportion of the glassy bond increases and the apparent porosity of the fired product becomes progressively lower. In the case of "Vigan Jars", these are fired to vitrify in fuel wood fired "Dragon Kilns" with a length of 30 to 50 meters. The kilns can accommodate different types of ware of various sizes. The thermal consumption.

Results of the evaluation indicate that the kilns consume an average of 30 to 50 cubic meters of fuel wood per firing, the firing cycle takes an average of five (5) days including the preheating phase. The maximum temperature recorded as 1250oC. The uneven heating of the kiln was found to be due the changes in wind directions during the firing process which resulted in cracking and over-firing.

Proper sequencing of the operation with the pre-heating process results in better fuelwood use efficiency. The installation of contraptions can reduce the occurrence of uneven heating. **(Author's abstract)**

Keywords: *Engineering*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0298

Enhanced photocatalytic decolorization of malachite green using ruthenium - doped titanium dioxide nanocrystals under visible light illumination

Masangkay, Ramon Victor M., Lopez, Sarah Jane C., Lapitan, Jr., Lorico DS.

Ruthenium-doped Titanium dioxide (TiO_2) photocatalysts were successfully prepared using sol-gel method and structural characterization involved X-ray Diffractometry (XRD), Scanning Electron Microscopy and Energy Dispersive X-ray Analysis (SEM +EDX), and Fourier Transform Infrared Spectroscopy (FT-IR). SEM image analysis revealed the synthesized Ru-TiO_2 particles are highly aggregated and surfaces are clearly rough. The phase composition using XRD analysis revealed that anatase and rutile peaks were found in undoped TiO_2 and only

anatase peaks were present Ru-doped TiO_2 systems which were calcined at 500°C. Furthermore, an increase calcination temperature to 700°C promotes the transformation of anatase to rutile peaks. The Debye-Scherrer equation was used to estimate the crystallite size based from the diffractograms. The estimated values are 3.49 nm, 3.53 nm, 3.53 nm for 0.20, 0.50 and 0.80 mole % Rudoped TiO_2, respectively. The photocatalytic property of the Ru doped TiO_2 were tested against the decolorization of malachite green solution (MG). A plot *ln* Co/C versus time gave R^2 values ranging from 0.9041 to 0.996 which suggests that the photodecolorization of MG using TiO_2 photocatalysts follows pseudo-first order kinetics. The photocatalytic activity of the catalysts was found to improve with the addition of ruthenium, from 20 % for undoped TiO_2 to 87 % for 0.8 mol % TiO_2. The maximum percent removal of MG dye was achieved using 1.50 g/L of catalyst loading for 0.8 mol % ruthenium added. The TiO_2 photocatalyst prepared at calcination temperature of 500°C showed the highest percent removal compared to those calcined at 300°C and 700°C. When the calcination temperature was increased the photocatalytic activity of the synthesized catalyst was found to decrease over time. **(Author's abstract)**

Keywords: *Engineering, Malachite green, Photodecolorization, X-ray diffractometry, Titanium dioxide, Ruthenium*

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(Filipiniana Analytics)
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0299

Estimating hydrocompression settlement of mine tailings

Adajar, Mary Ann Q., Zarco, Mark Albert H.

The disposal of the enormous amounts of tailings regularly produced from mining operations is the most common environmental issue associated with mining activities. Tailing dam as storage facility plays as an important role in the waste management of mining industries but failure of this structure, while the mine tailings are still in slurry form, can result in a debris flow that poses a serious threat to life, property and the environment. It is therefore important to reduce the volume of tailings so that the risk to the exposed population and the environment can be reduced. One possible option is to utilize tailings that do not contain hazardous chemical substances as backfill or as embankment materials in the construction of tailing dams. To evaluate its applicability as construction materials, geotechnical characteristics of tailings need to be established. This study was conducted to determine the geotechnical characteristics of mine tailings from concrete aggregate quarry in Cavite and gold mine sites in Davao and Masbate. Standard ASTM procedures are performed to obtain the physical characteristics such as grain size distribution, Atterberg Limits, specific gravity, minimum and maximum index densities and compaction behavior. Results indicate that the tailing samples are non-plastic and considered as fine-grained consisting of fine sands and silts. Compaction tests show that the moisture versus unit weight relationship is characterized by a concave downward curve with the optimum water

content ranging between 13% to 17% with a maximum dry density ranging from 15.6 kN/m^3 to 17.7 kN/m^3. Microfabric analyses performed using electron microscopy show a microstructure that is granular with some flaky particles. Oedometer tests were conducted to obtain the consolidation parameters and stress-strain behavior of tailings under vertical loads. Based from the values of consolidation parameters, tailings are classified as slightly compressible. Gold mine tailings from Davao were shown to be 40% more compressible than aggregate tailings and gold tailings from Masbate. The hydrocompression settlement of tailings was also investigated, and a new procedure for determining the hydrocompression strain was proposed. The procedure is appropriate for use even with samples that do not exhibit secondary compression. Test results revealed that tailings are only slightly susceptible to hydrocompression. Based on the experimental data obtained, polynomial relationships were developed to estimate the hydrocompression settlement as a function of vertical stress. **(Author's abstract)**

Keywords: *Engineering, Mine tailings, Geotechnical characteristics, Microfabric structure, Consolidation parameters, Hydrocompression settlement*

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(Filipiniana Analytics)
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0300

Estimation of emissions and fuel consumption of sustainable transport measures in Metro Manila

Vergel, Karl B.N., Tiglao, Noriel Christopher C.

Environmentally sustainable transport (EST) strategy measures for Metropolitan Manila are assessed in terms of reduction in emissions and fuel. Measures include vehicle inspection, engine replacement, use of alternative fuels and biofuels, non-motorized transport, travel demand management and improvement of public transportation. Travel Activity in terms of traffic volume and travel speeds of the travel demand forecast model estimates and the database of the 1996 Metro Manila Urban Transportation Integration Study (MMUTIS), emission factors from the Vehicular Emission Control Planning (VECP) project and fuel consumption factors from MMUTIS and recent studies on jeepneys and buses are utilized to generate the baseline emissions of criteria pollutants (HC, CO, NO_2, PM and SO_2) and fuel consumption (diesel, gasoline, alternative fuel/biofuel) in 2010 and 2015. Local emissions and fuel consumption are estimated for each strategy measure and compared with respect to the baseline values. Measures such as implementation of vehicle inspection, mass transit network expansion and travel demand management contributed to higher overall local emission reductions while the switch to CNG buses, mass transit network expansion and travel demand management measures resulted to significant reduction in fossil fuel consumption. **(Author's abstract)**

Keywords: *Engineering, Emissions inventory, Fuel consumption, Travel demand forecast model, Environmentally sustainable transport*

Philippine Engineering Journal, Volume No. 34 Issue No. 1, 31-46
(Filipiniana Analytics)
Fil(S) TA4 P532 34/1 2013

0301

Heat and mass transfer in an adsorption panel with rod fins heated by a radiant source: 3D mathematical model

de Leon, Rizalinda L., Cortes, Arturo B., Chu, Richard Q.

A 3-D modified equilibrium, static-bed model of adsorption in an adsorption panel with rod fins heated by a radiant heat source is developed and solved using the Method of Lines. The energy equation is transformed to have only one dependent variable hence the accumulation, conduction and generation terms are all expressed in terms of rate of change and gradient of the local bed temperature. Results are compared with experimental data for insight into the heat and mass transfer process occurring in the bed during the cooling and heating phases. Effective surface diffusivities derived agree with literature values obtained by other authors. **(Author's abstract)**

Keywords: *Engineering, Diffusivity, Effective thermal conductivity, Method of lines*

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(Filipiniana Analytics)
Fil(S) TA4 P532 34/1 2013

0302

Simulating crowd egress dynamics using multiple agents and social comparison theory

Castro, Francisco Enrique Vicente G. , Pabico, Jaderick P.

The understanding of crowd movement is important to planning and improving shared public places, not only to effectively and efficiently facilitate the comfortable movement of individuals, but also to guarantee the safety of individuals, especially under conditions of danger when quick and orderly evacuation of a mass of individuals is desired. Because data from real evacuation are hard to obtain and conducting replicate experiments on humans is ethically questionable, the characterization of crowd egress dynamics has been confined to simulation and modeling. We introduce a simulation approach that hybridizes multi-agent systems (MAS) with the social comparison theory (SCT) that provides the capability to simulate more human crowd phenomena than the more common social force model (SFM). SFM has been proven to show real world crowd phenonema such as the “faster-is-slower” in escape panic, “arching” and “bursty exit” as side effects to “clogging” on exit ways, “flocking,” “bidirectional lane formation,” and “roundabout formation.” Simulations using our MAS-SCT hybrid are able to exhibit all these

phenomena and two more individual behaviors: (1) *Imitation*– where individuals tend to move in groups whose members they think would have the same opinion as theirs; and (2) *Contagion*– where people tend to "adopt" the behavior of others in the same group. Because of these, we propose that our MAS-SCT approach is more akin to modeling humans and real-world objects in very realistic ways, and thus can be used with higher confidence in performing *what-if* scenarios to aid decision makers, designers and researchers. **(Author's abstract)**

Keywords: *Engineering, Simulation, Crowd egress dynamics, MAS, SFM, SCT*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 147
(Filipiniana Analytics)
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0303

Studies on dual fuel operation of diesel engines using crude coconut oil and water-diluted alcohol

Cruz, Ibarra E.

Dust operation of diesel engine! using water diluted alcohol and crude coconut oil was found to be technically feasible, normally with 50 percent of the energy coming from alcohol and 50 percent from crude coconut oil. Diesel engines could be ran either on straight or 100 percent crude coconut oil or down to 10 percent crude coconut oil in dual fuel operation with 90 percent of the input energy coming from alcohol. Water-dilution of alcohol with about 30 percent water was necessary to prevent engine knock at high engine loads. Water-dilution up to 70 percent was possible, but pre-heating of the intake air became necessary to prevent misfitting and to improve thermal efficiency. **(Author's abstract)**

Keywords: *Engineering, Diesel engines, Crude coconut oil, Water-diluted alcohol*

NRCP Research Bulletin, Volume No. 40 Issue No. 2, 427-469
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/2 1985

0304

Study on effect of fermentation-conditions and modeling of submerged batch process for citric acid production

Pham, Chay B., Marquez, Raquel B., De Guzman, Jocelyn T.

The demand of citric acid requirement in the country is met by importation. Citric acid is used in food, pharmaceutical, feed and medical industries. This study was carried out to optimized the

effect on initial ammonium and glucose concentrations and pH using multiple regression equation and to model the kinetics of submerged batch fermentation of citric acid production by *Aspergillus niger*.

Initial ammonium concentration effects on glucose, biomass and citric acid concentrations are shown by ANOVA (p>F = 0.01%). The highest citric acid concentration 84.10 g/l was obtained from 0.1 g/l initial ammonium concentration at 30^{o}C, pH 3.5, 0.8 vvm aeration and 400 rpm agitation rate.

The fermentation kinetics related to growth model, production formation, substrate consumption were used to determine the kinetic parameters (i q_m, k, C, D) using Leudeking-Piret equations. At the optimum fermentation conditions, the specific growth rate ì for 1 g/l initial ammonium concentration was 0.071 h^{-1}. The non-growth related parameter, q_m (0.0095 g.product/g.biomass.h) was obtained at 1.0 g/l initial ammonium concentration indicating that product formation is growth related. Substrate consumption was also growth related since higher value of growth related parameter C (1.6558 g.substrate/g.biomass) was obtained as compared to the non-growth related parameter D (0.0458 g.substrate/g.biomass.h). **(Author's abstract)**

Keywords: *Citric acid production, Optimization of fermentation-conditions, Modeling of submerged batch process, Engineering*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 361-362
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0305

Three-dimensional non-linear time-history analysis of two-storey concrete wall-type structure

Germar, Fernando J., Pacheco, Benito M.

A two-storey concrete wall-type structure is analyzed using three-dimensional nonlinear time-history analysis. Ground acceleration records of the magnitude 7.2 Kobe earthquake are used to simulate a scenario earthquake from the 67 km West Valley fault in Metro Manila. Ansys® software is used in the analysis to enable the modeling of concrete inelasticity: due to both concrete cracking and concrete crushing, using Solid65 concrete element. Using this element, smeared reinforcement is also introduced in the model. Results of simulation show that the failure mode is governed by tension cracks in the concrete adjacent to the corners of openings in the walls, especially in the absence of additional diagonal reinforcement thereat. It also shown that concrete crushing failure is not critical for the structure analyzed, even in the absence of special boundary elements. Comparison of the result of simulation using different ground acceleration records scaled up to the same level shows that both stresses and deflections are higher for the record that has a predominant period of 0.34sec which is relatively nearer that of

the natural period of structure of 0.15sec. The effect of frequency content of the input ground motion, which may be attributed to the soil condition, is evident in this study. There is a need for further research on more appropriate ground acceleration inputs for simulations like this study. The computational effort of about 10 hours using 1.83 GHz Intel Core Duo processor and 2.49GB RAM for a 10-sec simulation at 0.01sec interval is too much for most engineering design offices. While the computational effort for a 16-sec simulation at 0.02 sec interval for a small structure as in this paper could be reduced from 8 hours to 2.5 hours using a much powerful HP Proliant ML150 G6 server with 2.26 GHz, 8-core processor and 48 GB RAM, this computer is still not the norm for ordinary engineering design office. Aside from considerable storage disk requirement, software commercially available to engineering design offices are typically less powerful; there is thus still a need for simplified analytical tools, e.g. 2-dimentional nonlinear static analysis by pushover. **(Author's abstract)**

Keywords: *Engineering, Non-linear time-history analysis, Concrete, Wall-type structure, Ground acceleration*

Philippine Engineering Journal, Volume No. 33 Issue No. 2, 44-60
(Filipiniana Analytics)
Fil(S) TA4 P532 33/2 2012

0306

Traffic congestion in Metro Manila: is the UVVRP still effective

Regidor, Jose Regin F.

The Unified Vehicular Volume Reduction Program (UVVRP), more popularly known as the "number coding" scheme was originally developed as a short-term travel demand management measure for Metro Manila in the light of on-going construction of transportation infrastructure projects in the 1990's. Although the scheme was not meant to be a long-term policy, the UVVRP is at present still implemented along major roads in Metro Manila albeit with some modifications like the mid-day window. With the completion of those major infrastructure projects, various transportation stakeholders, particularly those who are significantly disrupted by the UVVRP are critical of its continuous implementation, especially now that the authorities are imposing the scheme on public transportation vehicles as well. A study was conducted in 2004 to evaluate the UVVRP. Several scenarios were developed to evaluate traffic performance for variations to the schemes. The conclusionat the time was that UVVRP was effective enough to address traffic congestion. With the present experience of traffic congestion along major roads throughout the day there is a clamor for revisiting the UVVRP and to determine if it is still effective in curbing congestion. This paper revisits the UVVRP and presents the way forward for addressing congestion in the metropolis. **(Author's abstract)**

Keywords: *Engineering, Unified vehicular volume reduction program, Travel demand management, number coding*

Philippine Engineering Journal, Volume No. 34 Issue No. 1, 66-75
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Fil(S) TA4 P532 34/1 2013

0307

Uncalibrated camera images in delineating parcel boundaries

Macapinlac, Oliver T.

The reconstruction of 3D points from two view camera images has found several applications in various fields of engineering, science and architecture today. Many of these fields are involved in the generation of 3D models using diverse technology in 3D reconstruction. In geomatics, estimating 2D or 3D locations can be made through direct or indirect measurement. Direct measurements involve laser technology (e.g total stations), satellite positioning and terrestrial laser scanning. Indirect methods, on the other hand, involve remote sensing,aerial and terrestrial photogrammetry. In delineating parcel boundaries, direct measurements with total stations and global navigation satellite systems (GNSS) are used in field operations. Although these have been quite stable with satisfactory results, the cost of operations is still relatively higher compared to indirect measurements, especially in larger areas of coverage. This study investigated the feasibility of using close-range photogrammetry thru uncalibrated image pairs for fast acquisition of target locations. The general algorithm will derive the fundamental matrix, generate the camera matrices, triangulate the projective 3D positions and finally transform these points to their metric ground 3D position using Ground Control Points (GCP). The extracted northing (y-coordinates) and easting (x-coordinates) of the parcel's corners were compared to coordinates derived from total stations. These showed an error vector of up to 10 cm. Results also revealed that the required accuracy for tertiary survey can be achieved around 30 percent distance from the image center. Beyond this, the positional error increases, marking this method unsuitable for boundary delineation. The RMSE of this set of points was 0.0758 m or 7.58 cm. **(Author's abstract)**

Keywords: *Engineering, Close range photogrammetry, Computer vision, 3D reconstruction, Direct linear transformation*

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Fil(S) TA4 P532 33/2 2012

ENVIRONMENTAL SCIENCE

0308

An investigation on the potential of highly absorbent material obtained from surplus diapers and sanitary napkins as lahar conditioner

Espiritu, Emilyn Q., Chua, Khervin Cheng, Torres, Abigail

Volcanic eruptions such as that of Mt. Pinatubo in 1991 bring about great devastation to the lives of people especially those who rely on the land for their livelihood. In line with the effort of providing assistance to the lahar affected communities, the study was undertaken to explore the possibility of using highly absorbent material such as those obtained from surplus diapers and sanitary napkins as lahar conditioner.

Treatment of lahar containing varying amounts of the absorbent material (e .g .. 0.6 kg, 1.2 kg, 1.8 kg, 2.4 kg, 3.0 kg, 3.6 kg) were prepared in three replicates under two experimental set ups - one set was treated with 14-14- 14 balanced fertilizer and the other without fertilizer. Controls included pure lahar and pure garden soil. Each pot was planted with five kernels of corn and was watered with a specified amount of tap water daily. Observations on the length of stalk, number of leaves, length of leaves, and other changes in the general appearance of the plants were also noted daily. At the end of the test period, physical and chemical analyses were performed to determine the following: (physical bulk density, water holding capacity, field capacity, permanent wilting point, percent available moisture; (chemical) pH, available phosphorus, organic matter content, total nitrogen, cation exchange capacity.

The results showed that highly absorbent material produced some significant improvement of lahar such as decreased bulk density, increased water holding capacity and improved organic matter content. However, there was no improvement on the permanent wilting point and percent available moisture values. Results from the plant growth experiments show that the smaller the amount of conditioner added to lahar, the more fibrous the root system of the plant became. The addition of fertilizer resulted in healthier plants compared to their counterparts in the non-fertilizer set up. **(Author's abstract)**

Keywords: *Environmental science, Mt. Pinatubo, Lahar, Garden soil, Diapers, Sanitary napkins*

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(Filipiniana Analytics)
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0309

Utilization of water hyacinth debris as bulking material for composting of market waste

Cabacang, Romeo, Tansengco, Myra, Tejano, Judith, Gelua, Cristina, Herrera, David, Beraye, Jose Ricky, Adan, Reymundo, Malabanan, Maximiano, Montiague, Emilio, Razon, Melvin

A pilot-scale study was conducted to determine the technical viability of composting technology as an alternative disposal option for large-scale water hyacinth debris. Feedstock materials consisted of chopped, dried water hyacinth (33%), swine manure (10%), and shredded market waste (57%). Dried water hyacinth served as bulking material, swine manure as nitrogen

source, and market wastes as wet organic materials. Microbial inoculant was added as a component of the bioreactor composting technology. The composting process was initiated with loading of feedstock materials into the ITDI-development bioreactor. Partially degraded materials harvested from the reactor were kept in the curing area for further degradation. Based on the two pilot-scale runs, the compost produced had the following characteristics: dark brown, humus-like, odorless, pH of 7.9, 37% organic carbon, 14:1 C:N ratio, 12% total NPK, 80% total solids, non phytotoxic, and with acceptable levels of trace elements. These characteristics are indicative of a mature compost product and proved that dried water hyacinth can be an alternative bulking material for composting. Based on the feasibility studies conducted , composting with water hyacinth as dry matter was considered economically viable with an internal rate of return (IRR) of 61.5%. However, the economic viability of composting water hyacinth alone was found even better with an IRR of 85.1% and a lower investment requirement. **(Author's abstract)**

Keywords: *Environmental science, Water hyacinth, Composting, In-vessel composting, Bioreactor composting, Eichhornia crassipes*

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(Filipiniana Analytics)
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FISHERIES

0310

On-farm production of vermicompost and earthworm biomass (*Eudrilus eugeniae*) for nile tilapia (*Oreochromis niloticus*) culture in freshwater ponds

Guerrero, III, Rafael D., Guerrero, Luzviminda A.

In organic aquaculture, the non-use of chemical fertilizer and fish meal is advocated. Vermicomposting was done using paragrass (*Brachiaria mutica*) and the "African night crawler" (*Eudrilus eugeniae*). The processed grass was stocked in outdoor beds at 100 and 200 kg/m^2 and 1 kg/m^2 of the earthworm. In the first trial, the vermicompost which was obtained after 30 days was applied at 2.5 and 5 t/ha in 200-m^2 freshwater ponds during the 120-day culture of sex-reversed Nile tilapia (*Oreochromis niloticus*) fingerlings stocked at 2/m^2. In the second trial, only application of the vermicompost at 2.5 tons/ha was done in the ponds stocked with the fish at 1/m^2 for 120 days in Treatment I; in Treatment II, the ponds were fertilized with vermicompost at 2.5 t/ha in the first 60 days of culture and feeding of a moist feed consisting of 850 g of fine rice bran and 1 kg of processed earthworm biomass was given to the fish every other day for the last 60 days of culture. The results showed that a production of 41.85 kg of vermicompost and 2.17 kg of earthworm biomass were obtained with 200 kg/m^2 of the processed grass after 30 days of vermicomposting compared to 19.8 kg of vermicompost and 1.05 kg of earthworm biomass with 100 kg/m^2 of the processed grass. In the first trial, the yield of harvestable-sized fish (>50g)

was significantly greater (P<0.05) in the ponds fertilized with vermicompost at 2.5 t/ha compared to those of the control ponds and ponds fertilized at 5 t/ha. In the second trial, the yield of harvestable-sized fish in the ponds initially fertilized with vermicompost at 2.5 t/ha in the first 60 days and where fish were fed with the moist feed in the last 60 days of culture was 44% more than that of the fish in ponds fertilized only for the whole culture period. The results also indicated that use of vermicompost as organic fertilizer at 2.5 t/ha for 120 days and feeding of the fish with the moist fed in the last 60 days of culture were more cost effective compared to those of the controls. **(Author's abstract)**

Keywords: *Fisheries, Vermicompost, Earthworm, Nile tilapia, Freshwater ponds*

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(Filipiniana Analytics)
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0312

Studies on factors affecting production of alginic acid from selected brown seaweeds

Rodulfo, Bienvenida R.

The paper gives a -detailed report on the two year research project, for the extraction of alginic acid from local brown seaweeds. Different factors for improving yields and quality of the extracts were studied.

Three methods were used for extraction - Standard methods of Cameron and Rose and the NIST Process. While yields were lower using the NIST Process, production cost was found much cheaper than the standard. Viscosities of algin were lower with increased NaOCI and higher without the bleacher. This was observed with the different plant parts where yields were higher with fertile, then vegetative fronds with stipes the lowest. Pre-treatment with formalin increased viscosities with and without bleaching. Extractions at different carbonate concentrations (0.5-2.5%) and drying gave yields higher with oven dried (48°C) than air dried and viscosities with increased CO_3 concentration which upon further increase (up to 8%) varied in yields (4-7% CO_3) and viscosities (3-6% $C0_3$) when chopped seaweeds were used. Whether fresh or dried seaweeds, pre-treatment improved yields and viscosities even when bleached. Increasing alginate concentrations (0.25-1.0%) also increased viscosities of algin. Aeration with prolonged digestion also improved viscosities and color of algin from yellow to white.

There was no significant effect on yields of stored and freshly harvested seaweeds. Viscosities were affected, however, with the time the plants were collected such that matured infertile plants gave higher yield than the fertile plant. Seaweeds from the Southern Region gave higher yields and viscosities than from other regions due perhaps to effect of latitude and metabolic activity of the plants in the area. **(Author's abstract)**

Keywords: *Alginic acid, Brown seaweeds, Fisheries, NIST process*

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(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/1-2 1989

0313

The water and sediment quality of *Chanos chanos* monoculture and *Chanos chanos* - *Gracilariopsis bailinae* biculture in pond

Alcantara, Lota B.

A short-term study on the physical-chemical parameters in *Chanos chanos* monoculture and its biculture with *Gracilariopsis bailinae* indicated that the biculture might be advantageous for the growth of milkfish. Dissolved oxygen of the biculture and monoculture was not significantly different early in the morning. Oxygen produced by *G. bailinae* from late afternoon until evening was probably compensated by larger *C. chanos* that consumed more oxygen in the biculture. The afternoon DO of the biculture, however, was higher than that of the monoculture. There was no difference in pH readings between the monoculture and the biculture. Water temperature ranged from 23 - 39°C, and salinity ranged from 14 - 42% for both monoculture and biculture. The presence of *G. bailinae* did not affect water pH, temperature, and salinity of the biculture pond.

During the culture period, phosphate in the water of the biculture decreased while it increased in the monoculture. The change in nitrate was significant for both monoculture and biculture. The ammonium decrease in the biculture was higher than that in the monoculture while the rise in phosphorus in the sediment was higher in the monoculture than in the biculture. The increase in nitrate and ammonia was higher in the monoculture sediments than in biculture sediments, but the difference was insignificant. Some of the phosphate and ammonium lost in the biculture pond may be attributed to the phosphorus and the nitrogen utilized by the red seaweed or stored in its tissues.

Chanos chanos grew better in biculture with *G. bailinae* as the effect of more favorable water and sediment quality in the pond during the culture period. Furthermore, the nutrients present in the pond water and sediment were porbably utilized by *G. bailinae* for their growth or stored in their tissues. **(Author's abstract)**

Keywords: *Fisheries, Chanos chanos, Gracilariopsis bailinae, Water quality, Sediment quality, Monoculture, Biculture*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 12 Issue No. 1, 35-44
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/1 2000

FOOD SCIENCE AND TECHNOLOGY

0313

Microbial hazards of street-vended grilled chicken intestine

Azanza, Ma. Patricia V., Gedaria, Arlyn I.

Microbial hazards associated with street-vended grilled chicken intestine (*isaw*) were studied. Grilling of *isaw* effected $\geq$ 89.00% decrease in the total microbial load of the sample. Cooked *isaw* contained about 10^5-10^6 cfu/g aerobic plate counts and 10^3-10^4 MPN/g coliform counts. *Salmonella* per 25 g sample was isolated from cooked isaw samples. Grilling eliminated *Staphylococcus aureus* and *Listeria monocytogenes* cells initially present in pre-cooked samples. Different sauces of isaw showed increasing numbers of total aerobic microorganisms and coliform during vending operations. The total plate counts and coliform counts of the sour sauce, which ranged from 10^3-10^5 cfu/g and 10^1 MPN/g, respectively, were observed to be lower than those found in the sweet sauce. Sources of microbial contaminants of grilled chicken *isaw* included the natural flora of the raw materials, contaminations from food-contact surfaces, bamboo skewers, and the hands of the food handlers. Among the critical control points identified in the street-vending operation of chicken *isaw* were the control of time and temperature during cooking and hold-on periods during vending operations. **(Author's abstract)**

Keywords: *Food science and technology, Microbial hazards, Streetfood, HACCP, Salmonella, Staphylococcus aureus, Listeria monocytogenes*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 2, 1-11
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/2 1998

FORESTRY

0314

Point to surface mapping of selected soil properties using different interpolation techniques

Vallesteros, Shierel F., Vallesteros, Arvin P., Galang, Marco A.

Three spatial analysis algorithms, namely, inverse distance weighted (IDW), kriging, and spline, were used to interpolate soil pH and soil texture properties from sample point data. A systematic sampling method was employed to collect soil samples for laboratory analysis. Interpolation was carried out in ArcGIS 10. Root mean square error was calculated to evaluate the relative precision of the interpolation methods. IDW had the lowest RMSE for pH, OM, clay, and sand while kriging had the lowest RSME in silt and the spline had the highest for all of the four properties. Lower RMSE implies a better interpolation result. While the relative precision results appeared to be consistent, the analysis of variance revealed that the three interpolation methods were not significantly different (p>0.05) from each other. In addition, soil map

generated through kriging had the least visual appeal among the three methods. The major outputs of the interpolation are surface maps (continuous data) of the five soil attributes. These maps are important for decision making regarding land use, soil-plant compatibility, yield analysis, and soil improvement activities. Future research should take into account the topographic factors, existing vegetation and other important site properties. **(Author's abstract)**

Keywords: *Forestry, Soil interpolation method, Soil mapping, IDW, Kriging, Spline*

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GENETICS

0315

Philippine population database at STR locus FGA for forensic applications

Tabbada, Kristina A., Magno, Michelle Music F., De Ungria, Ma. Corazon A., Halos, Saturnina C.

A Filipino population database has previously been established at eight short tandem repeat (STR) loci. In the United states and in Europe, STR locus FGA has been widely used in forensic DNA typing due to its high degree of polymorphism and amenability to PCR amplification. The allele frequency distribution for a Filipino population from the National Capital Region (NCR, N=107) was determined for STR locus FGA. DNA was extracted and amplified using standard procedures and analyzed using an automated DNA sequencer (ALFexpress, AP Biotech). A total of 13 alleles were found in the population, ranging from allele 17 to allele 27 and including rare variants 21.2 and 22.2. The most common allele found was 23 (f=0.21). Statistical analysis showed that the population conformed to Hardy-Weinberge rules (p=0.7810); therefore the allelic frequencies may be used for forensic calculations. FGA had an average power of paternity exclusion of 0.7185 and an index power of discrimination of 0.9001. FGA was found to be in linkage equilibrium with the eight other STR loci currently being used in the laboratory namely: F13A01, FES/FPS, vWA, FOLP23, D8S306, CSF1PO, TH01 and TPOX; therefore cumulative values for APE and PD were calculated. The addition of FGA brought the average power of paternity exclusion of the nine loci to 0.9984 and the combined power of discrimination of 0.9999999965. The data obtained in this study has therefore increased the power of DNA typing system for use in forensic testing. **(Author's abstract)**

Keywords: *FGA, Short tandem repeat 8, Philippines, DNA typing, Population database, Forensic, Paternity testing, Genetics*

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(Filipiniana Analytics)

0316

The Y-chromosome STR system and forensic DNA analysis in the Philippines

Delfin, Frederick C., Calacal, Gayvelline C., Halos, Saturnina C., De Ungria, Ma. Corazon A.

Conventional procedures for mix strain analysis incorporate differential lysis to separate male and female DNA for effective profiling. Various protocols for differential lysis were previously validated by the laboratory and were found to be effective in identifying female and male DNA in mixed samples using the autosomal STR system. But in cases of trace evidence, more DNA is lost when differential lysis methods are used. To circumvent this problem, the Y-chromosome Short Tandem Repeat (STE) system was developed and validated.

Using in-house laboratory validated protocols, a Y-chromosome database in the DYS19, DYS390, DYS393, DYS385 Y-STR loci was constructed and the systems to analyze the reference and mixed samples. Results show the Y-STR system was successful in first, determining the presence of male DNA and second, in identifying the male source of the DNA relatively high probability in all mixed samples tested. In tandem with the autosomal STR system, a higher power of discrimination was achieved thus demonstrating the effectiveness of the Y-STR database for forensic cases. Overall, this shows a new system that can compliment the already existing autosomal database of the Philippine population. **(Author's abstract)**

Keywords: *Forensic, Y-chromosome, Short tandem repeat, DNA typing, DYS19, DYS390, DYS393, DYS385, Genetics*

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Fil(S) Q149. P5 N25 v.23 2001

GEOLOGY

0317

Changes in bathymetry and their implications to sediment dispersal and rates of sedimentation in Manila Bay

Siringan, Fernando P., Ringor, Cherry L.

The predominant sediment dispersal pathway and lateral variations in sedimentation rates in Manila Bay, specifically off Cavite, Manila, and Pampanga were determined primarily by using water depth changes over the period 1901 to 1950 and secondarily from sediment-distribution

patterns. High resolution reflection seismic profiles and piston cores have provided information on longer-term sedimentation. Off Cavite and Manila, sediments are transported predominantly to the north of the source. The zones north of the Cavite Spit and west northwest of the Pasig River mouth are major sinks for sediment accumulating at rates as high as 9 cm/yr. Shoaling rates vary across the three study areas: Pampanga Bay showing the least amount of shallowing and the Pasig River area, the greatest. Apparently low rates of sedimentation in the Pampanga Bay could be due to rapid subsidence. A general increase of sedimentation rate in the offshore direction is also indicated by the bathymetric changes. This trend implies low retention of sediments near the coast, which might be due primarily to a relative sea level rise in the bay. The high-resolution reflection seismic data indicate that the relatively high sedimentation rates along the deeper central portions are not a recent trend. However, this long-term trend is probably controlled by the bay's morphology rather than by sea level fluctuations. **(Author's abstract)**

Keywords: *Geology, Bathymetric changes, Sedimentation rates, Predominant sediment dispersal, Seismic profiles*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 2, 12-26
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/2 1998

0319

The detection of climate and environment at changes from satellite and in situ observations

Comiso, Josefino C.

The observed positive trends of anthropogenic CO_2 and other greenhouse gases In the atmosphere has been linked 10 human activities and may cause a profound influence on climate. Global surface temperatures, as observed by meteorological stations, have been increasing at the rate of 0.4 K per decade during the last century. Surface and satellite data show that warning actually accelerated during the last century. Surface and satellite data show that warning actually accelerated during the recent decade providing evidence that the greenhouse induced change may already be occurring. This phenomenon is studied in detail in the polar regions where climate change signal is expected to be amplified due to feedback effects associated with the high albedo of ice and snow. The 50 to 100 -year data records from polar stations show consistently higher warning trends in both regions than global trends. The 20 year satellite record and corresponding in situ data, however. show symmetric effects: a warming and a sea ice retreat in the Arctic but slight cooling and a sea ice cover advance in the Antarctic. This counter-intuitive observations are actually supported by a previous simulation study or greenhouse warming effects using a global circulation model. Satellite data also reveal large regional variability countries. Ensuing changes in the environment and associated impacts on society may be drastic and costly depending on location. The strategy to mitigate the impacts must include a good understanding or the Earths climate system. **(Author's abstract)**

Keywords: *Geology, Climate change, Environment, Warming, Trends, Sea ice*

Transactions of the National Academy of Science and Technology, Volume No. Issue No. , 11-36
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0320

Predominant nearshore sediment dispersal patterns in Manila Bay

Siringan, Fernando P., Ringor, Cherry L.

Net nearshore sediment drift patterns in Manila Bay were determinby combining the coastal geomorphology depicted in 1:50,000 scale topographic maps and Synthetic Aperture Radar (SAR) images, with chages in shoreline position and predominant longshore current directions derived from the interaction of locally generated waves and bay morphology.

Manila Bay is fringed by a variety of coastal subenvironments that reflect changing balances of fluvial, wave, and tidal processes. Along the northern coast, a broad tidal-river delta plain stretching from Bataan to Bulacan indicates the importance of tides, where the lateral extent of tidal influences is amplified by the very gentle coastal gradients. In contrast, along the Cavite coast, sandy strandplains, spits, and wave-dominated deltas attest to the geomorphic importance of waves that enter the bay from the South China Sea.

The estimates of net sediment drift derived from geomorphological, shoreline-change, and meteorological information are generally in good agreement. Sediment drift directions are predominantly to the northeast along Cavite, to the northwest along Manila and Bulacan, and to the north along Bataan. Wave refraction and eddy formation at the tip of the Cavite Spit cause southwestward sediment drift along the coast from Zapote to Kawit. Geomorphology indicates that onshore-offshore sediment transport is probably more important than alongshore transport along the coast fronting the tidal delta plain of northern Manila Bay. Disagreements between the geomorphic-derived and predicted net sediment drift directions may be due to interactions of wave-generated longshore currents with wind- and tide-generated currents. **(Author's abstract)**

Keywords: *Geology, Manila Bay, Sediment transport, Coastal geomorphology, Longshore current*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 9 Issue No. 1-2, 29-40
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 9/1-2 1997

0320

The role of mining in national development: the case of Benguet Province

Santos, Teodoro M., Abiad, Virginia G., Angeles, Marian Delos

The paper deals with the effects of mining activities, a case of natural resource exploitation, on development. It focuses on development in terms of national concerns, as well as on the local impact of mining in the host communities.

The main thesis of the study is that natural resource use produces favorable effects on developmental areas of concern, both at the national and local levels, through the accompanying inputs as well as through the production of goods and services. The use of inputs which are paid their prices produce income effects as well as entail the investment in infrastructure which also benefit the mining communities. Income to the miners stimulate demand for goods and services which in turn, generate other economic activities.

To look into the impacts of mining on the host communities, comparisons are made of several indicators of development in the following terms: the use of a control group, the non-mining areas, and comparing its development over a specific time period, with the group of mining towns. Virtually all social and economic indicators used in the study validate the general hypothesis that mining industries do make a favourable impact on the development of local communities.

The study also points out that data constraints limited its scope to non-environmental aspects and therefore suggest future research directions along this line. Income equality considerations could not be tackled either, since much of the study's focus was on the local impacts. **(Author's abstract)**

Keywords: *Geology, Mineral, Goods, Services*

, Volume No. 40 Issue No. 4, 723-843
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/4 1985

0321

A study of rainfall variations in the Philippines: 1950-1996

Pajuelas, Bonifacio G.

The long-period rainfall variations in the Philippines are studied using unfiltered and filtered Rainfall Anomaly Index (RAI). To have RAI's that are representative for each group, zones of quasi-homogeneous climate were constructed based on highly correlated stations ($r > 0.75$), narrow standard deviation, and period of maximum rainfall using the 195-1996 monthly rainfall total.

Variance analyses of the RAI's suggest that unfiltered samples do not significantly differ from the normal distribution except for the western part (climate type 1) that have significant positive skewness and peakedness. The RAI's contain a significant amount of non-random elements and a significant negative change in mean is reflected over the central Visayas and Mindanao (climate type 3). Filtered RAI's that are not significantly different from the normal distribution (at least

for X2 test) indicated significant trend over areas with high-variable rainfall (i.e., climate types 1, 2, 4 & 5).

In general, long-period rainfall may have changed over the period of study. The 10-year filtered RAI's have the possibility of falling rate over climate types 1, 2 & 5, but increasing rate over climate type 4. These trends are indicated towards the rainfall-sensitive months (i.e., February through May) during El Niño or La Niña events. Falling rate is also significant from October through January over climate type 4. Longer periods (30-year filtered RAI's) have significant negative trend for climate types 2 & 4, but positive trend for climate type 5. These trends also occurred during February through May. **(Author's abstract)**

Keywords: *Geology, Long-period rainfall variability, Rainfall variations, RAI*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 12 Issue No. 1, 1-28
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/1 2000

HEALTH AND WELLNESS

0322

Effects of combined toothbrushing and sweet diet limitation in dental caries prevention in a school setting after two-and-a-half years

Barbers, Blanche C., Rojas, Aurora C.

A two-and-a-half-year study was conducted in four selected public elementary schools in Manila to determine the effectiveness of a combination measure, of toothbrushing and sweet diet limitation in the prevention of dental caries compared to either method alone, and their practicability in a school setting. A total of 679 children who were 9 to 11 years old at the start and 11 to 13 years old at the end of the study were distributed into four groups; namely: a) Control Group at the Lukban Elementary School, b) Toothbrush Group at E. delos Santos Elementary School. c) Sweet Diet Limitation Group at Sta. Ana Elementary School, and d) Toothbrush-Sweet Diet Limitation Group at F. Guerrero Elementary School. Groups were comparable to each other at baseline in terms of age distribution and caries susceptibility.

The results of the study have shown that the single measure of sweet diet limitation was highly effective, but was even more highly effective when combined with toothbrushing. Toothbrushing as a single measure on the other hand, demonstrated only a small capability in preventing dental caries.

As suggested in the study. the practicability of sweet diet limitation both as a single or combined measure depended on the alteration of dietary choices which in this case was controlled in the school environment. It helped reduce by one the frequency of intake of sweets while children were in school. **(Author's abstract)**

Keywords: *Health and wellness, Sweet diet limitation, Toothbrushing, Dental caries*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 590-603
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0324

The effects of modified aerobics exercise program on the performance of activities of daily living and satisfaction to quality of life of older persons in a rural community

Bonito, She

This study determined the effects of an exercise program, "Modified Aerobic Exercise Program for Older Persons (MAEPOP)," on the performance of activities of daily living (ADL) and satisfaction to quality of life (QOL) of older persons in the rural community. It also explored sociodemographic factors and health status variables that predict performance of ADL.

The study utilized quasi-experimental research design - nonequivalent, pretest-posttest control group. The sample consisted of older persons (n=60), randomly selected from two comparable *barangays*, to comprise the study group (n=30) and control group (n=30).

MAEPOP has four exercise components - warm-up, cardiorespiratory, and cool down one and two phases. It was designed with modifications: exercise sitting down (seated aerobics), at 40-70 percent maximum heart rate reserve, and sessions 30-60 minute duration, three times per week .

Study findings include: a) mean age of 67-70 years among participants, b) more young-old and old-old persons (5:1), c) more female than male (7:5.5), and d) more widowed females than males (3:1). With regard to health status, 50 percent were rated to have very good health habits indicated by balanced diet (87%), exercise (75%), recreation (63%), and rest or sleep (85%). On the contrary, 47 percent smoke and 52 percent drink liquor. With chronic illness, 89 percent were rated to have poor health due to presence of arthritis, vision impairment, hypertension, and hearing problem; found in descending order. With ADL and QOL, 92 percent perform their ADL independently, while 67 percent claimed they were satisfied with their QOL. Comparison of ADL and QOL scores, pretest and posttest, revealed there is no significant difference in the ADL (p=0.403), but there is in the QOL (p=0.027). This study also showed that age, sex, marital status, family support, chronic illness, and health habits significantly explain the 28 percent variance in ADL scores (p=0.0062). **(Author's abstract)**

Keywords: *Health and wellness, Modified aerobic exercise program for older persons (MAEPOP), Activities of daily living (ADL), Satisfaction to quality of life (QOL)*

The UPManila Journal, Volume No. 3 Issue No. 4, 25-32
(Filipiniana Analytics)
Fil(S) RA421 U3 3/4 1997

0325

The seafaring population in the Philippines: their lifestyles and work environment

Simbulan, Nymia P., Gomez, Dominga C., Tayag, Josefina G., Imperial, Reynaldo H.

The study was conducted to describe the lifestyles and work environment of seafarers in Metro Manila, Cebu City and General Santos City, to describe the nature of their high risk behaviors and practices, to identify their beliefs about experiences with and access to information in HIV/AIDS/STD, and to identify potential opportunities for HIV/AIDS intervention work among seafarers.

The study utilized structured interviews, interviews with key informants, and focus group discussions among the wives of seafarers.

Results of the study revealed the low level of know/edge of seafarers as well as their wives on HIV/AIDS/STDs and the prevalence of wrong notions among both sets of respondents on the nature, prevention, transmission, and etiology of the diseases. The study further showed that seafarers are engaged in high risk sexual practices which make them vulnerable to HIV/AIDS/STD infection. These findings stress the need for immediate and systematic intervention work that will address immediate needs like determining information about the diseases and human anatomy, assessing their levels of risk behavior and taking into account the nature of work environment of seafarers. **(Author's abstract)**

Keywords: *Health and wellness, HIV/AIDS, Sexually transmitted diseases (STD), Metro Manila, Cebu, Genera Santos*

The UPManila Journal, Volume No. 3 Issue No. 1, 18-30
(Filipiniana Analytics)
Fil(S) RA421 U3 3/1 1997

INDUSTRY

0325

The mechanical properties of lahar concrete paving blocks laced with plastic wastes

Aguila, Loreto G., Ramirez, Lot B., Salvador, Jr., Gonzalo C., Zapanta, Carlos E., Maglaqui, Andres D., Martinez, Mario V.

The compressive strength, flexure strength and abrasion resistance of concrete paving blocks made of lahar added with shredded plastic wastes were measured following ASTM standards. The concrete blocks were made of Portland cement and lahar sand in 1:3 ratio. Only sand passing the – 1.19-mm mesh was used. For each cement-sand mixture, 300 ml of water was added. A 2 x 2 factorial experiment was conducted: natural curing time of 7 and 28 days, and amount of plastic wastes of 10 and 25 g. The reported values correspond to the average of three trials.

Compressive strength increased with increasing of curing time, but decreased with increasing amount of plastic wastes, from 148.7 to 174.8 kg/cm^2 and from 93.8 to 110.1 kg/cm^2 for blocks containing 10 and 25 g of plastic wastes, respectively. Flexure strength likewise increased with increasing curing time and decreased with increasing amounts of plastic wastes. Flexure strength varied from 28.4 to 40.7 kg/cm^2, and from 21.4 to 29.6 kg/cm2 for blocks containing 10 and 25 g of plastic wastes, respectively. Abrasion resistance decreased with increasing amount of plastic wastes. % abrasion ranged from 0.32 to 0.47% and from 1.42 to 1.04% for block containing 10 and 25 g of plastic wastes, respectively.

The compressive strength of paving blocks decreased by a factor of one when laced with plastic wastes. The maximum strength reached for similar blocks was 17.3 MPa. The compressive strength of blocks that are not laced with plastic wastes is below the suggested rating for blocks used as paving blocks. Therefore, lahar concrete blocks containing plastic wastes could not be used as paving blocks. However, curing time was found to have a positive effect on increasing the compressive strength of blocks. It is recommended to study the compressive strength of blocks containing lesser amounts of plastic wastes, but naturally cured for longer periods of time. Likewise, a study should be made to look for alternative use for blocks containing plastic wastes. Embedding non-recyclable plastics in construction materials can be an effective way of reducing the amount of plastic wastes. **(Author's abstract)**

Keywords: *Paving block, Lahar, Industry, Compressive strength, Flexure strength, Abrasion resistance*

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(Filipiniana Analytics)
Fil(S) T61 P53 14/1 2004

INFORMATION AND COMMUNICATIONS TECHNOLOGY

0326

BER testing of a π/4-DQPSK modem for broadband wireless access

Manlapat, Alvin, Santos, Christopher Gerald, Ifurung, Jane, Sabido, IX, Delfin Jay M.

Wireless transmission is a very promising technology for broadband access. As the available spectrum decreases in the lower frequencies, the trend is to go into the microwave region where more bandwidth is available for high-speed data transfer. The digital microwave radio (DMR) system is a popular method for implementing wireless communication systems. Bit-by-bit error rate (BER) is their common measure of efficiency. This paper presents a short technical discussion of BER measurement and discusses the BER degradation issues in the implementation of a 2.048 Mbps π/4 DQPSK modem using TMS320C6211 digital signal processor. The BER performance of the modem was measured to be 10-8. **(Author's abstract)**

Keywords: *Information and Communications Technology, Bit-by-bit error rate (BER), Digital microwave radio (DMR), DQPSK modem, Bandwidth*

Philippine Journal of ICT and Microelectronics, Volume No. 1 Issue No. 1, 43-45
(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0328

Bluetooth host-side protocol stack development using formal design techniques

Caccam, Anne Margrette Q., Dideles, Myra Colina B., Galang, Jr., Bienvenido H., Wong, Ian C.

Bluetooth is a wireless technology standard for the interconnection of electronic devices in the personal space. It started out as a cable replacement technology and became a wireless personal networking (WPAN) solution. This paper describes the development of a Bluetooth Host-side Protocol Stack using Object-oriented and Formal Design Techniques such as SDL, ASN. 1 and MSC. This marks the initial effort of the Advanced Science and Technology Institute 1 in developing a complete System-on-a-Chip (SOC) solution within five years time. **(Author's abstract)**

Keywords: *Information and Communications Technology, Bluetooth, WPAN, Communications protocol software, SDL*

Philippine Journal of ICT and Microelectronics, Volume No. 1 Issue No. 1, 23-27
(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0329

Design and simulation of integrated circuits for system-on-chip design using the analog and mixed-signal extension of the VHSIC hardware description language

Tabangcura, Michelle Marga C., Sabido, IX, Delfin Jay M.

In recent years, there has been increasing demand for smaller yet more powerful handheld devices for personal communication. Designers have achieved success in combining large digital circuits in a single chip, achieving integration levels of several million gates. However, with the continuous clamor for further integration, researchers are looking at System-on-Chip (SoC) design as a viable solution. Fundamental to SoC design is the incorporation of digital and analog functionality on a single chip, and one way to do this is to use a top-down approach in analog and mixed-signal integrated circuit design. The paper explores the implications of this new methodology by examining the needs of SoC design and the capabilities of the Analog and Mixed-Signal Extension of the VHSIC Hardware Description Language (VHDL-AMS). Sample circuits will be modeled using VHDL-AMS and simulated using hAMSter©, a PC-based simulator. **(Author's abstract)**

Keywords: *Information and Communications Technology, Analog and mixed-signal integrated circuits, System-on-chip design, VHDL-AMS*

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(Filipiniana Analytics)
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0330

Embedded internet telephone

Manio, Jesus C., Frisco, Mildred L., Quiblat, Carla

Delivery of telephony services over the Internet is increasing rapidly and it is expected that IP-based networks will carry 15% of the world's voice traffic by 2002 [1]. The development of cost efficient equipment based on embedded systems that converts analog telephony information such as voice and fax into pocket data suitable for IP transmission will be necessary to meet this increasing demand. The new Internet protocol, IPv6, offers assurance of QoS inherently. With this in mind, the Embedded Systems Group of ASTI will focus on the development of a very low-cost telephony device capable of directly exchanging IP pockets over the Internet. This paper will look at the functional requirements and design of an IP Telephone. It will also discuss the H.323, a standard that is used for network signaling/management in Vo1P applications. The role of IPv6 in improving the current status of packet-based networks and current efforts to its transition will also be discussed. **(Author's abstract)**

Keywords: *Information and Communications Technology, IP-based networks, Internet protocol, IPv6, IP transmission, Conferencing, H.323, IP telephone, QoS, Socket, Voice over IP*

Philippine Journal of ICT and Microelectronics, Volume No. 1 Issue No. 1, 50-54
(Filipiniana Analytics)
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0331

FPGA implementation of a (255,223) reed-solomon error-correction codec

Chio, Azaleah Amina P., Sahagun, Jonathan A., Sabido, IX, Delfin Jay M.

Accuracy of information in any communication system is very critical. Use of Foward Error Correction (FEC) to lower the probability of error and increase transmission distance has become widespread. Reed-Solomon is a block FEC, capable of correcting multiple errors, specifically focusing on burst errors, making it popular for storage devices, and wireless and mobile communication units.

This paper presents an implementation of a (255, 223) Reed-Solomon encoder-decoder using Visual Hardware Description Language (HDL) to be downloaded into Xilinx Virtex 1000E Field Programmable Gate Array (FPGA) for functional and timing verification, and the performance of which will be evaluated when integrated with a Digital Microwave Radio (DMR) system. **(Author's abstract)**

Keywords: *Information and Communications Technology, Forward error correction (FEC), Visual hardware description language (HDL), Field programmable gate array (FPGA), Reed-solomon encoder-decoder*

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(Filipiniana Analytics)
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0332

Implementation of gaussian filters for a 0.25-micron CMOS process

de Asis, Janice A., de Guzman, Angelita L., Sison, Lloyd T., Sabido, IX, Delfin Jay M.

The wireless market is on the uptrend and the demand low-cost, handheld, and lower-power devices spurred the current interest in using CMOS process to implement RF circuits. CMOS delivers benefits such as low fabrication cost, low power consumption and the possibility of integrating both analog and digital circuits in a single chip.

Most RF integrated circuits in the market today have off-chip filtering. The implementation of filters on-chip will result in a high degree of functionality especially for system-on-chip applications. However, it may introduce complexity in the circuit due to the additional parasitics it will bring in and the limited Q factor of the passive components like inductors and capacitors.

Filtering of the modulation signal results in a much narrower spectrum. However, the filter should have a well-behaved time domain response. A class of filters having this well-behaved time domain response is the Gaussian filter. This type of filter has frequency response that exhibits no ringing or overshoot. It also possesses a gradual frequency response. This smooth, well-behaved frequency response results in very little intersymbol interference (ISI). Gaussian filters are used in wireless applications like Global System for Mobile Communications (GSM) and Bluetooth.

The Gaussian filter will be approximated by using standard reactive filters such as LC ladder filters. The filter is a lumped-element LC ladder filter with components implemented for a 0.25 micron, five-layer metal, single-layer polysilicon CMOS process. The simulations and layout will be done using Cadence Full-Custom IC Design Tool. **(Author's abstract)**

Keywords: *Information and Communications Technology, CMOS process , Global system for mobile communications (GSM), Gaussian filters, LC ladder filters*

Philippine Journal of ICT and Microelectronics, Volume No. 1 Issue No. 1, 33-37
(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0333

Interoperability of H.323 clients

Layno, Joselito A., Larin, Louie R., Manlapig, John Marc S.

H.323 standard is one of the main research concerns of the Multimedia group of the Advance Science and Technology Institute (ASTI). This paper on Interoperability of H.323 Clients presents the results obtained from interoperability tests and evaluation of various commercial and open source H.323 compliant clients. Supported protocols, call connectivity quality assessment, and offered supplementary features of these clients are compared. The paper also discusses the fundamental issues faced by the H.323 protocol in modern day packet networks.

Based on the tests and evaluation, factors such as available bandwidth, network congestion, and equipment affected the implementation of the H.323 standard. Almost all of the tested H.323 endpoint were able to comply with the use of standard codec as specified in the ITU recommendations. **(Author's abstract)**

Keywords: *Information and Communications Technology, H.323, Interoperability, Codec, Bandwidth, Network congestion*

Philippine Journal of ICT and Microelectronics, Volume No. 1 Issue No. 1, 11-17
(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0334

IP telephony to the last mile

Yusingco, Christine M.

Last Mile technologies have been eyed in bringing high speed Internet and voice service to the home. Quality of service features and functionalities have to be considered to deliver services over packet based networks comparable with public switched networks subscribers have been used to. This paper explores the possibility of bringing IP telephony over packet-switched networks and how an IP Telephone could be implemented for such purpose. **(Author's abstract)**

Keywords: *Information and Communications Technology, IP telephony, Last mile, Voice over cable, Quality of service*

Philippine Journal of ICT and Microelectronics, Volume No. 1 Issue No. 1, 55-57
(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0335

IPv6 deployment to the University of the Philippines through the Advanced Science and Technology Institute

Camus, Carlo Manuel R., Gueco, Christian Wendell C., Quiblat, Carla Canriela P., Villorente, Dennis F.

IPv6, the new Internet protocol, addresses the limitations of IPv4, the current Internet protocol. The biggest limitation of IPv4 is the progressive depletion of its addresses. This is a problem because it limits connections to the Internet and therefore, the services and access of resources that would help in research and development especially in schools.

The University of the Philippines (UP) is a state-owned university considered to be the best university of the country offering 94 undergraduate and graduate degree programs in the fields of science, technology and the arts. The UP system is made up of many campuses located all over the country with each campus involved on specialized fields of study. For example, UP Los Baños forms expertise on agriculture. UP's current network uses Network Address Translation to address limited IP addresses for its different offices and departments within the university and in the other campuses.

This paper explores transition methods for the University of the Philippines' network to shift to IPv6 so as to end its dependence on NAT. By doing so, it can fully take advantage of direct connection to the internet. For the meantime, UP can make use of the Advance Science and Technology Institute's (ASTI) native IPv6 connection through the Asian Internet Interconnection Initiative (A13) network test bed. Using that connection, transition to IPv6 can start immediately in the University of the Philippines. **(Author's abstract)**

Keywords: *Information and Communications Technology, IPv6, IPSec, ngtrans, Tunneling, Tunnel server, University of the Philippines*

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(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0336

Next generation internet in the Philippines: the Philippine Research, Education, and Government Information Network

Gueco, Christian Wendell C., Villorente, Dennis F., Larin, Louie R., Mendoza, Rene C., Olesco, Richard O.

The Philippine Research, Education, and Government Information Network (PREGINET) projects is intended to create an environment that encourages collaborative research, development, and education activities in emerging technologies and to provide a platform for experimentation of innovative next generation Internet applications and services.

This papers discusses the implementation and status of the PREGINET project. Designed as a broadband network for the next generation network testbed in the Philippines, technologies include Asynchronous Transfer Mode (ATM), TDMA-DAMA over satellite, IPv6, IP Multicasting and Network Measurement. **(Author's abstract)**

Keywords: *Information and Communications Technology, Philippines , Next generation internet (NGI), Philippine Research, Education, and Government Information Network (PREGINET), Asynchronous transfer mode (ATM)*

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(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

0337

Practical techniques for designing microstrip tapped hairpin resonator filters on FR4 laminates

Toledo, Nikholas G.

Practical design techniques are presented for tapped hairpin resonator filters on FR4 laminates. The hairpin filter is one of the most popular low microwave frequency filters because it is compact and does not require grounding. It's design on FR4 laminates is very difficult to do because of the relatively poor performance of the laminate at the microwave region. The laminate properties of the FR4 are uncontrollable to begin with and have significant effects at the microwave frequencies is it's cost. Methods and techniques were developed to address these design problems and are discussed in this paper. **(Author's abstract)**

Keywords: *Information and Communications Technology, FR4 laminates, Tapped hairpin resonator filters, Low microwave frequency filters*

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(Filipiniana Analytics)
Fil(S) T7800 P535 1/1 2002

MARINE SCIENCE

0338

Contributions to the understanding of the bloom dynamics of *Pyrodinium bahamense* var. *compressum*: a toxic red tide causative organism

Azanza, Rhodora V.

Pyrodinium bahamense var. *compressum* has been the primary organism responsible for the toxic red tide episodes which have been recurring in Manila Bay, Philippines since 1988. The life history of the species has been elucidated through encystment-encystment studies in vitro, from which its obligatory dormancy has been demonstrated. Cyst-mapping studies have shown that this life stage of the organism occurs relatively higher in the Bataan and Cavite areas where the greater number of red tide occurrences have also been reported. A cyst-based model has been developed as an initial step in understanding the role of physical processes in the development, occurrence/recurrence, an ultimately, advancement of *Pyrodinium* red tides in Manila Bay.

To help mitigate or prevent the negative impacts to toxic red tides, particularly in Manila Bay, regular closure of shellfish harvest in areas affected by *Pyrodinium* bloom should be considered, based on long term monitoring and research data sets. **(Author's abstract)**

Keywords: *Marine science, Pyrodinium, Red tides, Manila Bay, Paralytic shellfish poisoning*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 9 Issue No. 1-2, 1-6 (Filipiniana Analytics)
Fil(S) Q1.A3 S4 9/1-2 1997

0339

Immunochemical investigation of the Philippine siganids

Cierte, Lizalene A., Macaranas, Julie M.

The difficulties and problems associated with animal maintenance and antiserum production were identified and appreciated for future improvement of methods. The double diffusion and latex agglutination test results indicate very small antigenic differences among the species classified under the Family Siganidae, and a marked distance from a closely-related family, Acanthuridae. One problem identified in the tests which requires further study is the poor migration behaviour of the siganid antigens in the agarose gel. This problem may indicate the need to use, purified antigens especially in comparing very closely-related species. Nevertheless, our results from this immunochemical investigation confirm findings on taxonomic relationships in the Family Siganidae based on electrophoretic analyses of other protein markers. **(Author's summary)**

Keywords: *Marine science, Immunochemical, Siganidae, Siganus guttatus, Lactate dehydrogenase isozymes*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 612-623
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0340

The levels and distribution of Polycyclic Aromatic Hydrocarbons (PAH) contamination in bottom sediments in Manila Bay

Santiago, Evangeline C.

The concentration levels of 18 PAH compounds extracted from 19 bottom sediments from the Limay Coast and 16 bottom sediments from the coast along Metro Manila and Cavite Province of Manila Bay were determined by Gas Chromatography/Mass Spectrometry.

The PAH contamination, the levels of other non-PAH petroleum hydrocarbon compounds, and total organic content in the sediments were assessed in relation to the location and depth of the sampling sites. The PAH concentrations and the levels of other petroleum hydrocarbons in the sediments showed that the spatial distribution of PAH and other hydrocarbon contamination in Manila Bay is largely dependent on the proximity of the sediment deposition site to known point sources of pollution. On the Western side, the highest levels of PAH contamination normalized to % TOC (1.29×10^4 at L12, 1.28×10^4 at L16, 0.55 at L13, and 0.54 at L15) were obtained from sediments collected at deposition sites near the outfall of the Petron Oil Refinery. On the eastern side, sediments located at the effluent zones of the Parañaque and Malabon Rivers showed excessively higher levels of PAH normalized to % TOC (3.32×10^4 and 2.87×10^4, respectively) compared to those obtained from other sites in the area.

The PAH contamination in the sediments from Manila Bay is dominated by alkylated naphthalenes and phenanthrenes and phenanthrenes which are associated with petrogenic sources. This indicates that the surface sediments in Manila Bay are exposed to chronic contamination of petroleum hydrocarbons introduced mainly by direct spillage onthe western side and by urban run-off on the eastern side. **(Author's abstract)**

Keywords: *Marine science, Polycyclic Aromatic Hydrocarbons (PAH, Hydrocarbon contamination, Coastal sediments, Levels of hydrocarbon contamination*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 9 Issue No. 1-2, 16-28
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 9/1-2 1997

0341

Modeling the circulation of Manila Bay: assessing the relative magnitudes of wind and tide forcing

Villanoy, Cesar, Martin, Marilou

A two-dimensional circulation model of Manila Bay was used to determine the relative importance of wind and tide forcing. Tidal forcing was prescribed using tidal curves based on two diurnal (O_1 and K_1) and two semidiurnal (M_2 ans S_2) components on both sides of the bay mouth. A slight amplitude increase towards the head of the bay was obtained, presumably due to shoaling effects. The high correlation between sea level variations at selected coastal tide stations and model results suggests the dependence on tidal forcing at the mouth. Strongest tidal velocities were found at the mouth and decreased towards the head of the bay. The wind-driven components of the flow using mean September 1995 wind forcing shows the presence of two asymmetrical, counter-rotating gyres. Comparison of wind and tidal kinetic energies indicates the dominance of the wind-driven components of the flow only in selected shallow areas adjacent to the coast. **(Author's abstract)**

Keywords: *Marine science, Manila Bay, Circulation, Tide, Wind*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 9 Issue No. 1-2, 41-51
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 9/1-2 1997

0342

Preliminary study on the Agar quality of laboratory-generated carposporelings of *Gracilariopsis bailinae* Zhang *et* Xia grown in the field: a short communication

Rabanal, Susan F.

The agar quality (gel strenth, gelling and melting temperature) of laboratory-generated carposporelings of *Gracilariopsis bailinae* grown in the field for six weeks off Amunitan, Gonzaga, Cagayan was investigated. Cut sporelings grown at 1.0 m depth showed good quality agar (492 gm cm^{-2} gel strength, 43°C gelling temperature, 84°C melting temperature). This constitutes the first report on the agar quality of this species from this area. **(Author's abstract)**

Keywords: *Marine science, Gracilariopsis , Agar, Agarophyte*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 12 Issue No. 1, 45-47
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/1 2000

0343

Sea level and shallow water current variability in Pagasa Island, Philippines
Villanoy, Cesar L., Mancebo, Fay F.

Significant wave height, sea level, and currents at 0, 2, 4, and 6m were measured using a doppler current meter deployed at the northern reef of Pagasa Island from 16 October 1997 to 3 march 1998. Tidal components of sea level and current data were extracted using harmonic analysis and subtracted from the original series to obtain residuals. These were then correlated with each other and with atmospheric variables (wind speed and atmospheric pressure). The tidal components accounted for about 98% of the variance in sea level but only 4-5% of the variance in the currents. Power spectral density correlations indicate that residual sea level variations may be due to set-up wave action. Strong non-tidal residual components of the flow suggest conditions favorable for offshore transport which may promote long-distance dispersal of propagules. **(Author's abstract)**

Keywords: *Marine science, Reef circulation, Current and sea level variability, Pagasa Island, Kalayaan Island Group*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 2, 47-54
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/2 1998

MATHEMATICS

0344

An existence theorem for differential inclusions using the kurzweil integral
Macansantos, Priscilla Supnet

We define solutions to the differential inclusion $x(t) \in F(t,x)$ in the Kurzweil sense, using the Kurzweil integral of a multifunction, and establish an existence theorem for these inclusions under a semicontinuity condition called Property (Q), and the assumption of integrable-boundedness. **(Author's abstract)**

Keywords: *Mathematics, Kurzweil-Henstock Integral, Multivalued differential equations, Differential inclusions*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 1, 31-38
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/1 1998

0345

Henstock integration in a hilbertian countably normed space with nuclearity

Canoy, Jr., Sergio R.

Henstock integration of real-valued functions has been extended to functions with values in normed spaces. Cao, who considered Banach-valued functions, showed that Henstock's lemma, which plays an important role in the real-valued case, does not always hold in infinite dimensional Banach spaces. Nakanishi showed that Henstock's lemma holds in a ranked space called Hilbertian CN-space with nuclearity. In this paper, we revisit this space, define r-differentiability of a function with values is an r-separated ranked space, and give results concerning the primitives of Henstock integrable functions with values in this space. Further, we shall give a descriptive definition of the Henstock integral defined by Nakanishi. **(Author's abstract)**

Keywords: *Mathematics, Henstock integral, Ranked CN-space, Hilbertian nuclearity, r-separated, r-differentiable, HL-integral, Strong lusin*

Transactions of the National Academy of Science and Technology, Volume No. Issue No. , 83-89
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0346

Ideals of AG-groupoid**

Ebal, Crispin, Vilela, Jocelyn P.

A *groupoid* is a set associated with a binary operation and a groupoid S satisfying the *left invertive law*: *(ab)c = (cb) a* for all *a, b, c Î S* is called an *AG*-groupoid. If, in addition, an *AG*-groupoid S satisfies *a(bc) = b(ac*) for all *a, b, c Î S,* it is called an *AG***-groupoid. In this paper, some properties of the ideals in an *AG***-groupoid are discussed. More particularly, the quasi-ideals, bi-ideals, interior ideals, and ideals in an intra-regular *AG***-groupoid are investigated. The properties of ideals in an *AG*-groupoid necessitate the existence of a left identity. Every *AG*-groupoid with left identity is an *AG***-groupoid and not every *AG***-groupoid contains a left identity. Results on the ideals of an *AG***-groupoid without left identity that are parallel to those for *AG*-groupoid hold.

Let Sbe an *AG***-groupoid. Then the following hold:

1. If *I* is an ideal of *S*, then *I* is a bi-ideal (quasi-ideal, interior ideal) of S.
2. An idempotent subset *I* of *S* is a right ideal, if and only if *I* is an interior ideal of *S*. **(Author's abstract)**

Keywords: *Mathematics, Groupoid, AG-groupoid, AG**-groupoid, Quasi-ideals, Bi-ideals, Interior ideals, Intra-regular ideals, Left invertive law*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 140
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0347

The subgroup structure of the plane crystallographic groups

Cejalvo, Flor V., Felix, Rene P., Fernandez, Aurora R., Kaballo, Paz M., Trance, Aur

In this research project, we describe all groups of finite index of the seventeen plane crystallographic groups using a geometric approach and the presentations that define the groups. Section 1 lists the seventeen plane crystallographic group together with their defining relations and patterns that describe them. Section 2 gives the subgroups of finite index. **(Author's abstract)**

Keywords: *Mathematics, Plane, Crystallographic, Geometric approach*

NRCP Research Bulletin, Volume No. 41 Issue No. 1-2, 213-242
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/1-2 1989

MEDICINE

0348

A 2-week comparative study on the efficacy of 2 different concentrations of acapulco ointment among residents in two barangays in Metro manila with tinea pedis using a randomized experimental design

Dumlao, Aldo C., Dumlao, Lourdes Carolina I., Dy Tiapco, Rafael Paulo T., Echiverri, Carmenchu Marie S., Elbo, April May F., Encanto, Pamela J., Paredes, Georgina T.

The study was undertaken to determine the efficacy of 2 different concnetrations of Acapulco ointment in the treatment of tinea pedis (athlete's foot) using a randomized experimental design. Forty three subjects living in two barangays, Bagong Silang in Cainta Rizal and Dona Imelda in Quezon City, were included in the study. Data were collected weekly during the course of the study using a checklist scale of symptomatology. A t-test with logistics regression to control for confounders produced the following results: for pruritus at 3 days t was significant ($t= -3.86$, $p<0.002$) as well as for erythema at 3 days ($t = -5.19$, $p<0.0004$) and scale formation at 14 days ($t= 4.33$, $p<0.002$). Corrected cure rates using the logistics regression for treatment A were 100, 84.6, 61.5 and 69.2 percent for pruritus, growth and extension of the lesions, erythema and scale formation, respectively. Cure rate for treatment B were 69.2, 61.5, 84.6 and 61.5 percent for pruritus, growth and extension of the lesions, erythema and scale formation, respectively. Eight

subjects were dropped from the study due to follow-up failure and usage of other medications during the course of the study. **(Author's abstract)**

Keywords: *Medicine, Tinea pedis, Acapulco ointment, Erythema*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 35-45
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0349

Active aging and the Filipino older person

de la Vega, Shelley

Active aging is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age. Determinants of active aging include health and social service, behavior and personal factors, the physical environment, the social environment, and economics. The WHO Active Aging Framework is analyzed in relation to studies on the situation of Older Filipinos. The NAST and its partners are called upon to uphold the principles of Active Aging through science and technology. **(Author's abstract)**

Keywords: *Medicine, WHO, Active aging, Health, Social service, Behavior, Personal factors, Physical environment, Social environment, Economics*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 2, 171-182
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 31/2 2009

0350

Aids: knowledge, awareness and attitudes in Metro Manila

Tiglao, Teodora V., Tempongko, Ma. Sandra B., Gust, Dulce E.

AIDS Knowledge, Awareness and Attitudes were studied in Metro Manila among the general population, 15-69 years of age. The 1,617 respondents were generated from the National Statistics Office house hold survey of Metro Manila in 1985 covering four cities and 12 municipalities.

Findings show that there was widespread awareness of HIV/AIDS with the mass media being the predominant source of information. While there was no denial of the general threat of AIDS, moreso in the future, feeling of personal vulnerability to the disease was low. Similarly, while a high proportion believed in the efficacy of behavior change in controlling the disease, only a

small proportion reported they have changed their behavior. While a high proportion believed in the favorable attributes of the condom, there was a relatively low level of condom awareness and widespread reticence to use condoms. **(Author's abstract)**

Keywords: *Medicine, Aids, Knowledge, Awareness, Attitudes*

The UPManila Journal, Volume No. 2 Issue No. 4, 33-47
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0351

Allelic discrimination for single nucleotide polymorphism interleukin 28B gene using 5' nuclease assay

Baclig, Michael O., Gopez-Cervantes, Juliet, Natividad, Filipinas F., Liver Diseases Study

With the development of single nucleotide polymorphism (SNP) genotyping assays and the availability of fluorogenic probes that anneal specifically to its complementary sequence, it is now possible to use realtime PCR to detect SNP alleles in purified genomic DNA samples. DNA was extracted from peripheral blood of patients clinically diagnosed with chronic hepatitis B or C using the Taqman sample-to-SNP kit. Real-time PCR was performed on the Rotor-Gene 3000 instrument (Corbett Research) with a SNP genotyping assay for rs8099917. The rs8099917 G to T polymorphism on chromosome 19, located near IL28B gene which encodes interferon-λ3 has been shown to be associated with sustained virologic response in patients with chronic hepatitis C treated with pegylated interferon-αplus ribavirin. Recently, it has also been shown that the G allele of rs8099917 was associated with higher rate of response in chronic hepatitis B patients treated with interferon-á. Thus, a reliable method for the accurate identification of IL28B SNP is important for the management of chronic hepatitis. Allelic discrimination was performed using the Rotor-Gene 6.1 software. The allele frequencies in Hardy-Weinberg equilibrium among cases were 0.75 for the T allele and 0.25 for the G allele. Fifty six per cent was identified as homozygous for the wild-type T/T genotype, 38% was identified as heterozygous for the G/T genotype, and 6% was identified as homozygous for the G/G variant genotype. Overall, the 5' nuclease assay provides a rapid and automated method for detecting SNP in the IL28B gene. **(Author's abstract)**

Keywords: *Medicine, 5â€™ nuclease assay, Chronic hepatitis, Interleukin 28B gene, Single nucleotide polymorphism*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 162
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0352

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*

The UPManila Journal, Volume No. 5 Issue No. 1, 9-23
(Filipiniana Analytics)
Fil(S) RA421 U3 5/1 2000

0353

Antiproliferative assessment and mechanistic probing of the promising anti-cancer bisindole alkaloid globospiramine from *Voacanga globosa*

Vidar, Warren S., Macabeo, Allan Patrick G., Dahse, Hans-Martin, Nagle, Dale G., Mooberry, Susan

Globospiramine, a new bisindole alkaloid from the Philippine endemic Apocynaceae plant *Voacanga globosa* was observed to possess potent antituberculosis and anti-Alzheimer's activity. As part of a continuing study to elaborate the biological potency of globospiramine, investigations directed towards its anti-cancer activity were undertaken. Cell viability assays (MTT and SRB) showed globospiramine to be cytotoxic to various cancer celllines at very low microgram/mL or micromolar concentration ranges(HUVEC GI_{50} = 5.4 μg/mL; K-562 GI_{50} =1.4 μg/mL; HeLa CC_{50} =6.1 μg/mL; T47D IC_{50} =1.11 μM; MDA-MB-231 IC_{50} =1.17 μM; PC-3 IC_{50} =1.77 μM). Reporter assay on T47D cells lines transfected with pHRE-luc plasmid showed no effect on HIF activity at low concentrations but had a significant inhibitory effect at

concentrations greater than 5 mM under both chemical and physical hypoxia. In the mitochondrial respiration assay, globospiramine showed increased mitochondrial respiration rate slightly at 0.1 mM indicating little mitochondrial uncoupling activity. In the anti-tubulin polymerization assay, globospiramine appeared to have a different mechanism of action revealing total non-specific cell death with crenated shrunken cells and at some point, may have led to loss of microtubules during apoptosis or via calcium entry – a behavior not seen in related anticancer alkaloids, vincristine and vinblastine. **(Author's abstract)**

Keywords: *Medicine, Globospiramine, Voacanga globosa, Bisindole alkaloids, Anti-cancer, Mitochondrial cytotoxicity, Anti-tubulin polymerization*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 163
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0354

Apolipoprotein E ε4 as a factor in the evaluation of the genetic risk of alzheimer's dementia in Filipinos

Casingal, Cristine R., Daroy, Maria Luisa G., Mapua, Cynthia A., Florendo, Dianne Jane A., Matias, Ronald R., St. Luke's Dementia Study Group, Dominguez, Jacqueline C.

In the Philippines, there are 3.8 million people above 65 years old who are at risk of developing Alzheimer's dementia. This report presents the results of a cross-sectional study to determine the genotypic distribution of *ApoE* in affected and unaffected groups of Filipinos, who either consulted in the hospital for Alzheimer's dementia or were screened in a community setting. Peripheral blood was collected from a total of 600 subjects, composed of 124 patients who consulted at the Memory Center of St. Luke's Medical Center, Quezon City, and 476 individuals who participated in a community-based cohort. DNA from the buffy coat was analyzed for *ApoE* genotype by PCR-RFLP (Hha I) method. The most frequent genotype for both groups was ε3/ε3: 51.6% for the hospital group and 66.6% for the community group. The clinical profile of all the subjects is: 96 with Alzheimer's dementia, 110 with mild cognitive impairment, 369 with no dementia, and 25 with diagnoses other than dementia. In this group of Filipinos, the *ApoE* ε4 allele was significantly associated with risk for Alzheimer's dementia, compared with the no dementia group, with a p-value of 0.0481 and an odds ratio of 1.611. The frequencies of the risk ε4 allele were as follows: 14.1% for those diagnosed with Alzheimer's dementia, 9.1% for those with mild cognitive impairment, 9.2% for those with no dementia, and 6.0% for those with diagnoses other than dementia. These results suggest that the detection of the presence of the *ApoE* ε4 allele could be a useful tool for the assessment of genetic risk for Alzheimer's dementia in Filipinos when integrated with the patient's clinical data and family history. **(Author's abstract)**

Keywords: *Medicine, Alzheimerâ€™s disease, Dementia, Apolipoprotein E, PCR-RFLP, Genetics*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 164
(Filipiniana Analytics)
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0355

An assessment of the hypoglycemic property of *Syzygium cumini* LINN. and *Musa paradisiaca* LINN.

Santiago-Mendoza, Jasmine S., Ysrael, Mafel C.

Syzygium cumini L. and *Musa paradisiaca* L. are used in traditional medicine in lowering blood glucose levels. Although these plants have been reported to have hypoglycemic properties, their effects on blood glucose levels should be studied in detail to be able to use them judiciously even at crude state.

The juice from the ripe fruits of *S. cumini* L. was freeze-dried while the unripe fruits of *M. paradisiaca* L. was extracted using ethanol as solvent. Each crude fruit extract dissolved in water was given orally at a dose of 1.25g/kg BW to nondiabetic and diabetic Swiss mice at different prandial states: fasting and postprandial. Blood was collected at different time intervals through the ocular vein. Concentration of glucose in the blood was determined by glucose-oxidase method. The hypoglycemic activity was expressed in terms of % reduction in the blood glucose level.

Results showed that in nondiabetic mice, *S. cumini* L. and *M. paradisiaca* L. had significant effect in fasting state ($p<0.02$) and in postprandial state when each extract was fed simultaneously with glucose solution ($p<7x10^{-5}$). In diabetic mice, none of the two extracts showed any effect in the fasting state. However, *S. cumini* L. opposed the rise in postprandial blood glucose level when extract was given thirty minutes before glucose load (percentage reduction of blood glucose level: -117+/-35 in the control vs. -10+/-2, $p<0.002$) *M. paradisiaca* L. showed a tendency to raise (-337+/-56) the postprandial blood glucose levels 30 minutes after it was administered orally together with glucose solution. Reduction of -56+/-20 followed at 75 minutes. The results indicated that these two fruits have intersting possibilities as source of oral hypoglycemia agents. **(Author's abstract)**

Keywords: *Syzygium cumini, Musa paradisiaca, Hypoglycemia, Diabetes mellitus, Medicine*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0356

Association of angiotensin converting enzyme DD genotype with increased risk of severe coronary stenosis in the Filipino population

Luz, Mark Anthony D., Daroy, Maria Luisa G., Matias, Ronald R., Posas, Fabio Enrique B., Genomics and Cardiovascular Medicine Initiative

The evidence supporting the association of the angiotensin converting enzyme (*ACE*) and the susceptibility to coronary artery disease (CAD) across other populations remains debatable. In this study, the association between *ACE* I/D polymorphism and the development of severe stenosis was determined among Filipinos who underwent coronary angiography in St. Luke's Medical Center, Philippines. A total of 215 patients aged 18-85 years of age were enrolled for the study with 166 patients with e"70% angiographically established stenosis (severe stenosis) and 49 with <70% stenosis as controls. The *ACE* I/D polymorphism was assessed by polymerase chain reaction wherein primer binding sites flanked the 287 bp alu-sequence deletion, hence discriminating the I and D alleles with difference in PCR amplicon sizes in an agarose gel electrophoresis. The *ACE* I/D polymorphism showed concordance with Hardy-Weinberg Law with allele frequencies of 0.61 and 0.39 for the I and D alleles, respectively. Multiple logistic regression analysis after adjustment with several potential confounders showed that DD genotype poses a higher risk of developing severe stenosis when compared with to the II genotype with an OR of 4.37 (p value 0.033, CI 1.13-16.9). A univariate analysis with a larger sample size (n=500, e"70% stenosis = 382, <70% stenosis = 118) was also performed for several other genes related to CAD. The homozygosity to angiotensinogen Thr235 in reference to having at least one Met235 allele (MetMet + MetThr) also showed significant association to e"70% stenosis with an OR of 3.38 (p value 0.033, CI 1.16-9.84). In conclusion, this study supports previous findings indicating that the RAS pathway may play a role in the pathogenesis of coronary artery disease. **(Author's abstract)**

Keywords: *Medicine, Coronary artery disease, Stenosis, Angiotensin converting enzyme, Angiotensinogen, Cardiovascular genomics*

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

0357

Association of lipoprotein lipase HINDIII polymorphism with coronary artery disease in Filipino patients

Gestuveo, Rommel J., Luz, Mark Anthony D., Maliglig, Aubrey Anne C., Anulat, Maria Nancy D., Mapua, Cynthia A., Genomics and Cardiovascular Medicine Initiative Group, Daroy, Maria Luisa G., Natividad, Filipinas F., Posas, Fabio Enrique B.

The Genomics and Cardiovascular Medicine Initiative is a research program aimed at elucidating the genetic basis of cardiovascular disease in Filipino patients seen at the Heart Institute of St. Luke's Medical Center. One of the gene polymorphisms studied is the Lipoprotein lipase (LPL) HindIII T>G and has been associated with coronary artery disease (CAD) in a number of ethnic groups including Asians and Caucasians. To determine genotype and allele frequencies and establish disease association of the LPL HindIII polymorphism in Filipino CAD patients, we performed PCRRFLP genotyping of DNA samples from patients who underwent coronary angiography. Out of 1,271 patients enrolled (mean age=58.50), 880 (69.2%) were males, and severe stenosis (e"70%) was seen in 848 (66.7%) patients (from St. Luke's Cardiovascular Disease Information System). Genotype frequencies were as follows: TT=830 (62.9%), TG=237 (18.6%), and GG=234 (18.4%). The T allele frequency was 0.72. Chi-square test revealed a significant association between LPL HindIII and obesity (p=0.009) but not with other risk factors. Adapting a case-control association study using % stenosis as parameter, genotype frequencies of normal patients, deviated from Hardy-Weinberg equilibrium but several significant associations were established. In normal patients, LPL HindIII variant was associated with obesity (p=0.031) and myocardial infarction (p=0.044). The T allele in normal patients had a high OR (2.638, CI: 1.098-6.348) for obesity and low OR (0.425, CI: 0.209-0.866) for myocardial infarction, indicating that in normal individuals the presence of the allele could mean increased susceptibility to obesity and/or protection from myocardial infarction. **(Author's abstract)**

Keywords: *Medicine, Lipoprotein lipase, CAD, Filipino, Allele frequency, PCR-RFLP*

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

0358

Association of urinary iodine excretion level to physiological status of Filipino women

Serafico, Michael E., Perlas, Leah A. , Ferrer, Eldridge B., Patalen, Herbert P.

Urinary iodine excretion (UIE) is currently the most practical biochemical marker for iodine nutrition. For this biomarker, international groups have recommended school-aged children as useful target group for surveillance because of their combined high vulnerability, easy access, and applicability to a variety of survey activities and as an acceptable proxy for the iodine status of the general population. But the relevance of this group to others, especially among pregnant and lactating women, is not well established. In the present study, UIEs of 442 pregnant and 830 lactating women were compared to UIEs of 1272 age- and BMI-matched nonpregnant, non-lactating women covered in the Biochemical Phase of the 7th National Nutrition Survey conducted by the Food and Nutrition Research Institute, Department of Science and Technology. Among pregnant women, median UIE was 100 μg/L (adequate e"150 μg/L) with 26.4% having values <50 μg/L. Median UIE among non-pregnant women, on the other hand, was 142 μg/L

with only 17.5% having values <50 μg/L. Likewise, median UIEs among lactating and non-lactating women were 78 μg/L and 141 μg/L, respectively. Median UIEs for both pregnant and lactating women indicate insufficient iodine status. Further, median UIE levels for the 1st, 2nd and 3rd trimesters of pregnancy were 113, 107 and 89 μg/L, respectively. Iodine nutrition among non-pregnant, non-lactating women was optimal based on median UIE (e"100 μg/L) and the percentage (<20%) of women having UIE<50 μg/L. In conclusion, physiological status such as pregnancy and lactation possibly increases the demand and utilization of iodine. In pregnancy, this may also be true as gestation progresses. To achieve optimal nutrition in these vulnerable groups, an increase in dietary intake is recommended. In addition, monitoring of their iodine status, as well as supplementation during pregnancy and lactation should be considered. **(Author's abstract)**

Keywords: *Medicine, Iodine, Urinary excretion, Biomaker, Pregnancy, Lactation*

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

0359

The attitudes and values of Filipino medical teachers toward teaching

Sana, Erlyn A., Romero, Roel A.P., Mencias, Cristina F., Omaois, Marina B., Gailan, Tarlochan R.P.

Teaching is one of the means by which attitudes and values toward the medical profession are inculcated among medical students. Being so, the regard accorded to the teaching process by medical teachers bears much significance and worth studying. This study sought to find out the attitudes and values of Filipino Medical Teachers (FMTs) and the factors associated with these attitudes and values.

A total sample of 1,942 medical teachers from 26 medical schools in the country were identified through stratified random sampling as respondents of the study However, retrieved questionnaires totaled 868 representing 25.96 per cent response rate. A 49-item self-assessment questionnaire was the data gathering instrument used in finding out the FMTs attitudes toward teaching.

Results show that FMTs have generally favorable attitudes toward teaching. More than 50 percent of the FMTs showed consistency in their beliefs, feelings, and actions favorable to general planning. However, in actual classroom settings, these beliefs and attitudes are not always carried out. There appears to be cognitive dissonance in the expressed beliefs and feelings and those of behaviors or actual statements of action.

The chi-square test of association was employed to check the cognitive consistency among beliefs, feelings, and actions. Series of AN OVA tests indicated that the values and attitudes of

FMTs are significantly different in terms of university affiliations and academic ranks. **(Author's abstract)**

Keywords: *Medicine, Filipino medical teachers (FMTs), Attitudes, Values*

The UPManila Journal, Volume No. 3 Issue No. 2, 17-27
(Filipiniana Analytics)
Fil(S) RA421 U3 3/2 1997

0360

Attitudes development in anatomy and physiology

Gailan, Tarlochan Kaur Pabla

Attitudes are difficult to teach and evaluate. Although there is some truth to this, teachers are not relieved of the responsibility to teach and evaluate attitudes.

This article presents the manner by which attitude development was incorporated in Anatomy and Physiology which is a five-unit course in the nursing curriculum.

The setting is a private institution. The second year nursing class was composed of 22 full-time students. The class met twice a week for four hours each meeting. The subject was taught with the use of self-instructional materials (SIMs) which were designed by the author and published by the National Teacher Training Center for the Health Professions (NTTCHP). Discussion, instead of pure lectures, was the main methodology utilized. There were laboratory exercises and other enrichment activities which helped learners understand the subject. Post-tests were given a week after the discussion ofthe SIMs.

Attitude development was incorporated in the methodology of teaching and in evaluation techniques. To summarize, an extensive orientation was given to the class where the responsibilities of the students and teacher were discussed. Rules and policies of the school were explained. Group discussions were aimed at developing communication skills, leadership skills, decision-making skills, self-confidence and proper group behavior. Self-instructional materials were used to help students participate during discussions and become self-directed. The class started every meeting with a "thought for the day" The students rotated in sharing a passage or saying. This was discussed and explained by true to life examples.

Peer evaluation was utilized during group discussions. An evaluation form was designed to help the leader evaluate the members and another form for members to evaluate the leader This was done to teach students objectivity, to enforce proper group behaviors and sense of responsibility.

During the post-tests, rules in test-taking were strictly enforced. This was to help students learn how to discipline themselves and follow proper techniques in taking examinations. The teacher conferred with individual students who had difficulties, discussed their problems and helped them explore alternative solutions.

The evaluation by the students and teacher showed positive results. It indicated that if the objectives include attitudes and time and effort are provided for these, it is possible to help learners acquire the right attitudes. Attitudes must be evaluated and included in the overall grade to make sure that learning is holistic. Students expressed their appreciation for a more holistic learning process. **(Author's abstract)**

Keywords: *Medicine, Anatomy, Physiology, Nursing curriculum*

The UPManila Journal, Volume No. 3 Issue No. 2, 36-44
(Filipiniana Analytics)
Fil(S) RA421 U3 3/2 1997

0361

Blood pressure studies of Filipino infants and children: part I: newborns

Mabilangan, Luis M., Ortiz, Edgardo E., Elises, Joel S., Bacallan, Linda D., Talisayon, Loida

1. BP determination were performed in 245 newborn babies by the flush method and doppler method.

2. The mean arterial pressure obtained by the flush method was 62 with a range of 30.73 mmHg to 94.10 mmHg. While the average systolic BP obtained by the doppler method was 96 mmHg with a range of 65 mmHg to 125 mmHg.

3. Higher BP of the newborn is observed more frequently in babies in multiparous mothers compared to those delivered by primiparous correspondingly newborns with heavier "birth weight are associated with hlgher BP.

4. One out of 245 babies or an incidence of 0.4% was identified as suspect hypertension.

5. Comparing results obtained by the doppler and the flush methods, the former has more inherent limitations and therefore the latter method is justifiably recommended. **(Author's summary)**

Keywords: *Medicine, Infants and children, Blood pressure, Childhood hypertension, Pathogenesis*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 533-547
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0362

A case-control study on *Helicobacter pylori* seropositivity and myocardial infarction among adult Filipino male patients in selected hospitals in Metro Manila

Endriga, David T., Escurel, Dhamscen L., Esguerra, Cheryl Rachel L., Espaldon, Visvanath E., Espinosa, Johanna N., Molina, Joseph Antonio D., Parungao, Daniel M., Uy, Norbert Lingling D.

A case-control study was done to determine if there is an association between *H. pylori* seropositivity and myocardial infarction. 134 subjects were recruited from Philippine Heart Center and East Avenue Medical Center, 67 of which are cases (Filipino male patients aged 30-70 years diagnosed with Acute Myocardial Infarction, not taking anti *H. pylori* infection treatment/therapy for the past 2 months, no history of peptic ulcer disease), 67 are controls (same as cases but without Acute Myocardial Infarction and without history of Coronary Artery Dísease or Hypertensive Cardiovascular Disease. Serum of the subjects were tested for the presence of IgG antibodies to *H. pylori* using the ImmunoComb II *H. pylori* Test. Results show that 37 (57%) cases and 30(49%) controls were positive for H. pylori. Odds ratio was computed to be 1.62 (95% CI 0.75-3.32, p=0.27) which shows that the association between *H. pylori* seropositivity and MI is not significant. based on the multiple logistic regression, true confounders were identified to be age, history of high cholesterol, family history of diabetes, and family history of heart disease. After adjusting for these confounders using Bivariable analysis, the association remained not significant Therefore, H. pylori may not be an important contributor in the occurrence of myocardial infarction. (**Author's abstract**)

Keywords: *Medicine, Helicobacter pylori, ImmunoComb II, Myocardial infarction, Coronary arteries*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 5-14
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0363

Characterization of rifampicin resistance in Philippine isolate of mycobacterium tuberculosis utilizing the RNA polymerase B gene

Montoya, Jaime C., Maglonzo-De Jesus, M.S., Reclusado, G., Sombrero, I., Ang, C.F.

Rifampicin resistant isolates of Mycobacterium tuberculosis in the Philippines were characterized using the rpoB gene (RNA polymerase gene). A total of 47 isolates were analysed using polymerase chain reaction and DNA sequencing. Majority of the Rifampicin resistant isolates of *Mycobacterium tuberculosis* in the Philippines showed point mutations in the rpoB gene (RNA Polymerase B. gene). Majority of the point mutations were in positions 526 (39.5%) and 531 (34.9%) and the most of these involved single nucleotide substitutions. Most of the point mutations associated with Rifampicin resistance were seen in the isolates from the National Capital Region (NCR) whereas majority of the Rifampicin resistant isolates without point mutations were seen in Laguna or areas outside of the NCR. This information may be used in

subsequent studies for determining patterns of drug resistance as well as monitoring changing virulence and drug susceptibility of *Mycobacterium tuberculosis* that may impact on health policies related to tuberculosis control. **(Author's abstract)**

Keywords: *Mycobacterium tuberculosis, RNA polymerase gene, Point mutation, Nucleotide substitution, Medicine*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 345
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0364

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

0365

A cross-sectional study of the magnitude and pattern of glaucoma supects in a representative community of Bagong Nayon, Antipolo City

Miguel, Rophel T., Mondelo, Diosdado H., Monsalud, Amor M., Nadela, Ma. Virginia M., Neira, Rhodney A., Nepomuceno, Jerome F., Ng, Lesley Stuart K.

Objective: There have been no previous studies conducted to measure the prevalence of glaucoma in the Philippines. This study aims to provide a reasonable estimate of glaucoma prevalence and its age and sex distribution.

Methodology: A cross-sectional epidemiological study was conducted in a defined population. Screening for glaucoma was conducted by 2nd year medical students. Residents of the University of the last Ramon Magsaysay Memorial Medical Center (UERM-MMC) did further re-evaluation. Suspects were determined by retinal changes observed through direct fundoscopy.

Results: The data obtained from this study demonstrated an overall prevalence of 2.35% for glaucoma suspects in the representative community of Bagong nayon, Antipolo City. There is no significant difference in the prevalence rate for female (2.26%) and male glaucoma suspects (2.55%)

Conclusion: The prevalence rate was found to be consistent with those obtained by studies conducted in other countries. The results were also consistent, such that the prevalence of glaucoma is rare below age 40 and increases with age. Furthermore, there was no significant difference in the prevalence between males and females. **(Author's abstract)**

Keywords: *Medicine, Glaucoma, Bagong Nayon, Antipolo City , Epidemiological study, Retinal*

UERMMMC Journal of Health Sciences, Volume No. 6 Issue No. 2, 12-15
(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0366

Cytogenetic studies in bronchogenic carcinoma

Pascasio, Flora M., Wood, Maria Luisa, Leonin, Tiburcio

Chromosome analysis of peripheral leucocyte cultures from bronchogenic carcinoma cases showed numerical and structural chromosomal abnormalities. The modal number of chromosomes was 46. Hypodiploidy was observed in a, significant number of cells. The structural chromosomal aberration observed were deletions, chromatid breaks, and dicentrics, the latter, being the most common and consistent finding. No single chromosome group however, was solely involved in this type of aberration Nevertheless, the presence of a dicentric chromosome may be a clue to the disease. **(Author's summary)**

Keywords: *Medicine, Cytogenetic, Bronchogenic carcinoma, Chromosome*

NRCP Research Bulletin, Volume No. 40 Issue No. 3, 633-637
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/3 1985

0367

Detection of chikungunya virus from sera of dengue-suspected patients in the Philippines

Inoue, Shingo, Matias, Ronald R., Hasebe, Futoshi, Morita, Kouichi, Oishi, Kazunori, Alfon, Jhoe A. R., Candelario, Jingle R., Cruz, Deu J. M., Espiritu, Giselle, Gonzales, Alma, Pancho, Mary A., Mapua, Cynthia A., Dimaano, Efren M., Carlos, Celia, Igarashi, Akira, Natividad, Filipinas F.

Due to the similar symptoms with dengue fever (DF) and dengue hemorrhagic fever (DHF), Chikungunya (CHIK) virus infection has been diagnosed as DF or DHF. In this study, we examined more than 300 serum samples collected from dengue suspected patients in San Lazaro Hospital and St. Luke's Medical Center. Reverse transcriptase-polymerase chain reaction (RT-PCR) and antigen sandwich enzyme-linked immunosorbent assay (ELISA) were applied for CHIK virus detection. IgM-indirect immunofluorescence antibody test (IgM-IFA), IgM capture ELISA and IgG indirect ELISA were applied for detection of serological evidence of CHIK virus infection. Although we could not detect any Chikungunya virus by RT-PCR, 4.1% of the examined samples showed high titer for Chikungunya virus by antigen sandwich ELISA. By IgM-FA, 15.3% was positive for CHIK virus. Thirteen point seven percentages showed positive for CHIK virus by IgM-capture ELISA. Eighteen point five percentages showed positive for CHIK virus by IgG indirect ELISA. **(Author's abstract)**

Keywords: *Medicine, Chikungunya (CHIK) virus, Dengue virus, Dengue fever (DF), Dengue hemorrhagic fever (DHF), RT-PCR, Antigen sandwich ELISA, IgM-IFA, IgM capture ELISA, IgG indirect ELISA, Philippines*

Transactions of the National Academy of Science and Technology, Volume No. Issue No. , 157-166
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0368

Development of a panel of protein diagnostic biomakers using Nano-LC-Orbitrap MS/MS in urinary proteome before radical prostatectomy of patients with prostate cancer

Autus-Geniston, Leonora V., Garcia, Carlos P., Ramos, John Donnie A., Letran, Jason, Bolong, David, Burlingame, Al, Chalkley, Robert, Tuazon, Alexander O., Estanislao, Virgilio

Global analysis of protein structures *via* nano-LC/MS/MS provides a wealth of information. Bioinformatics allows simultaneous identification of all the contributing proteins in a disease. Given the limitations of PSA test for prostate cancer, these developments in instrumentation, the facile and non-invasive acquisition of urine as a source of proteins similar to blood can provide an alternative for the discovery of novel protein biomarkers. This research aims to identify the protein biomarkers for the early detection of prostate cancer using gradient SDS-PAGE followed by LC-MS/MS analysis aided by Protein Prospector, SwissProt and XCalibur. Transthyretin, hemoglobin alpha and beta were the three protein biomarkers identified in patients with prostate cancer. They are linked to high TNM stage and Gleason scores. Uromodulin and mannan binding lectin protease 2 can distinguish BPH from prostate cancer. These proteins belong to acute phase response proteins like C-reactive proteins which are associated with inflammation and oxidative stress. Hemoglobin alpha and beta as carriers of oxygen justify them as excellent biomarkers. Novel mutations due to oxidation and their reaction mechanism are also shown and discussed. Using a high-throughput method, a panel of biomarkers was identified simultaneously making it possible to differentiate urine of the normal controls from the patients with prostate cancer and another panel of protein biomarkers to distinguish benign prostate hyperplasia from prostate cancer. **(Author's abstract)**

Keywords: *Medicine, Panel of biomarkers, Transthyretin, Hemoglobin subunit alpha and beta, Uromodulin, Mannan binding lectin protease 2, TNM stage, Gleason score, BPH, Prostate cancer*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 168
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0369

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)
Fil(S) RA421 U3 5/1 2000

0370

Diabetic neuropathy
Villadolid, Leland S., Milla, Rosalinda

The first phase of this research dealt with a retrospective study of charts of 671 Filipino patients examined at the medical wards and diabetic clinic of the UP-PGH Medical Center from 1975 - 1979. The clinical observations made were:

23% of the diabetic population suffered from peripheral neuropathy which was primarily sensory symmetrical and of the "glove and stocking" distribution whereas 1% complained and autonomic and cranial nerve neuropathies.

Peripheral neuropathy was not significantly correlated with clinical factors such as age, sex, onset and family history of diabetes.

A neuropathic patient was shown to be more likely an onset diabetic of more than 10 years duration and under some oral hypoglycaemic control.

The second phase of this research attempted to verify the findings in the retrospective study and correlated the onset and progression of the peripheral neuropathy to diabetic control or non-control. Furthermore, needle electromyographic studies and nerve conduction and stimulation studies (sensory and motor) were done to verify objectively the presence or absence of neuropathy. **(Author's abstract)**

Keywords: *Medicine, Diabetic neuropathy, UP-PGH Medical Center, Diabetic population, Neuropathic patient*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 505-514
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0371

Effect of taping on pain and range of motion of athletes with shoulder impingement syndrome: a pilot study

Ventura, M. G., MPhty (Sports Phty), Chua, C. D. M., Espiritu, J. E., Gonzalez, M. B., Lopez, S.

Objectives: The purpose of this study is to investigate the effect of a taping technique on pain and ROM of shoulder on athletes with impingement syndrome.

Methodology: Nine subjects each went through three different testing days: experimental, controlled and sham days. Pain Visual Analog Scale (PVAS), a tape measure and a still digital photo measurement was used to measure the outcome before and after the taping technique. ANOVA was used to test the homogeneity of the pretest results and t-test was used to test the correlation of the pre and post test values for pain and ROM.

Results: There was a statistically significant decrease in pain, as well as in ROM in the experimental test. No significant effect was seen in the sham and control test.

Conclusion: Results suggest that the taping technique can significantly decrease the pain of the athlete; however, a concomitant decrease in ROM was noted. **(Author's abstract)**

Keywords: *Medicine, Shoulder pain, Range of motion, Shoulder impingement syndrome, Shoulder*

PJAHS - Philippine Journal of Allied Health Sciences, Volume No. 1 Issue No. 1, 34-40
(Filipiniana Analytics)
Fil(S) RH930 P53 1/1 2006

0372

The effectiveness of handwashing with an alcohol-based gel solution versus soap and water: a randomized clinical trial

Lopez-Ballelos, Pacita Jay M., Santos, Roberto P.

Hand washing remains to be the simplest and most important intervension in preventing infection. Despite its simplicity, several studies have documented poor compliance with handwashing procedure.

OBJECTIVE: To assess the effectiveness of handwashing using an alcohol-based gel solution against the standard hygienic handwashing with soap and water.

METHODOLOGY: A prospective, randomized clinical trial was done at a tertiary hospital in Manila. Thirty health care workers of a pediatric unit were randomly assigned to regular handwashing with soap and water (SW) or handwashing with a commercially available alcohol-based gel solution (AG) using a crossover design. The number of colony-forming units (CFU) on an agar plate using the fingerprint method was counted before and after each handwashing procedure.

RESULTS: The average reduction in the CFU from samples before handwashing to samples after handwashing was 71.55% for SW and 82.25% for AG. There was a significant difference in the decrease of CFU after handwashing with SW and AG (both $p < 0.001$). There was no significant difference when the mean difference of CFU using AG was compared to SW ($p = 0.309$).

CONCLUSION: Handwashing with soap and water is still the gold standard procedure but the use of an alcohol-based gel solution is as effective and deserves more attention especially in situations in which compliance must be improved and water is not available. **(Author's abstract)**

Keywords: *Medicine, Handwashing, Alcohol-based gel, Soap and water*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 6-9
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0373

The effects of cytokines on the growth and proliferation of human malignant melanoma cells in vitro

Rubite, Rosario R.

A cytokine named basic fibroblast growth factor (bFGF) was utilized to investigate its effect on the growth of human malignant melanoma cell lines ($HMOS^2$) and ($HMHY^2$) Proliferation markers, such as proliferating cell nuclear antigen (PCNA) and the human nuclear protein Ki-67, were utilized to assess melanoma cell proliferation. The growth of $HMOS^2$ and $HMHY^2$ were monitored for an average of 30 days after the inoculation of a number of cells in 60 mm tissue culture dishes. Growth curves for both were slowly rising and plateaus were reached at day 22 (for $HMOS^2$) and day 18 (for $HMHY^2$). When bFGF was added to the cultures, a corresponding increase in growth was observed. Proliferation was evident even at 0.75 ng/ml concentration. PCNA and Ki-67 antigens were expressed in all active parts of the cell cycle. **(Author's abstract)**

Keywords: *Medicine, Cytokine, Basic fibroblast growth factor (bFGF), Human malignant melanoma cells in vitro*

The UPManila Journal, Volume No. 3 Issue No. 1, 6-9
(Filipiniana Analytics)
Fil(S) RA421 U3 3/1 1997

0374

Efficacy and safety of sucralfate enema in the prevention of radiation proctitis

Atienza, Melflor A.

Radiotherapy has extended the lives of patients with malignancy. However, this often results in complications including radiation procititis which may lead to strictures and recurrent bleeding. The study aimed to determine the efficacy and safety of sucralfate enema in preventing radiation proctitis. Twenty-four patients who underwent abdominal radiotherapy at the Philippine General Hospital were randomized to receive either 10% sucralfate enema (Treatment group: n=12) or placebo (Control group: n = 12) during the course of radiotherapy. Patients were followed up every two weeks until two months after the end of therapy then every month for four more months. Proctosigmoidoscopy is done at the end of radiotherapy, one, two, and six months after. Failure of prophylaxis was defined as the development of radiation proctitis based on clinical, endoscopic and histologic criteria. Adverse drug effects were monitored. Two patients

in the control group were lost to follow up. Two out of twelve patients in the treatment group and four out of ten patients in the control group developed radiation proctitis. Diarrhea with no other evidence of radiation proctitis was observed in one patient in the treatment group. This study showed trend toward a decrease in the incidence of radiation proctitis with sucralfate enema. **(Author's abstract)**

Keywords: *Radiation, Procititis, Sucralfate, Randomized controlled trial, Prophylaxis, Proctosigmoidoscopy, Radiotherapy complications, Enema, Medicine*

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Issue No. , 343
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0375

An ethnography of male sex workers in the Philippines

Hernandez, Laufred I., Imperial, Reynaldo H., Simbulan, Nymia P., Dominguez, Cynthia E., Carpenter, Charles CJ.

The study aimed to provide baseline data on the environment of the world of the male sex industry in key areas in Metropolitan Manila. Data collected from this study served as a springboard in designing and implementing a culturally-relevant intervention program for a selected group of male sex workers who trained to become peer educators.

Various data collection techniques were utilized which include environmental scoping, structured interview sessions with fifty (50) sex workers and other key informants and ieterative techniques such as small group discussions.

Data gathered revealed that a majority of the 50 sex workers included in this study started out in the sex industry in their middle and late teens. Friends or peers were singled out as those responsible in influencing them to ply their trade. The chief reason for indulging in sex-with-pay business is purely economic in nature. Their lack of educational opportunities matched with financial difficulties propelled them to enter the sex trade.

Although they may be aware of the risks of getting HIV infection in their work,this awareness was more theoretical than real. While they possessed some basic knowledge about sexually transmitted diseases and HIV/AIDS like being infected through sexual contact, they have little knowledge and wrong notions and ideas about important details of these diseases.

The results of the study among a group of male sex workers emphasized the need to focus attention on this particular occupational group in relation to the prevention of HIV/AIDS. Their high-risk behaviors require the formulation of effective intervention programs that address the pecularities of their sub-culture and work environment, and directed towards behavior modification. **(Author's abstract)**

Keywords: *Medicine, Ethnography, HIV/AIDS, Sex trade*

The UPManila Journal, Volume No. 2 Issue No. 4, 1-6
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0376

An experimental study on the effect of exercise training on cardiopulmonary parameters of healthy male high school students in Central Colleges of the Philippines and San Juan Municipal High School

Bigcas, Melanie V., Buena, Gladys C., Buendia, Flynn M., Buliyat, Mary Joyce F., Cabaccan, Joyce E., Rabe, Milagros B.

Objective: To determine the effects of exercise training on the different cardiopulmonary parameters (CP) among 13-16 years old healthy male high school students of Central Colleges of the Philippines and San Juan Municipal High School.

Method: This is an experimental study involving a control group and an exercise group. Students were screened and selected based from the criteria set. Both groups met for the initial determination of CP parameters (pretest), and underwent an exercise training after which CP parameters were again measured. On the other hand, students within the control group were asked to continue with their usual daily tasks but to refrain from commencing any new program of prescribed physical activity for the duration of the study.

Results: The findings observed among the exercise group did not support the hypothesis that there will be significant difference in the Resting Heart Rate (HR_{REST}), Immediate Post Exercise Heart Rate (HR_{IPE}), Resting Diastolic Blood Pressure (DBP_{REST}), Immediate Post Exercise (DBP_{IPE}), Resting Systolic Blood Pressure (SBP_{REST}), Immediate Post Exercise (SBP_{IPE}), Resting Respiratory Rate (RR_{REST}), Immediate Post Exercise Resting Rate (RR_{IPE}) and an increase in Resting Peak Expiratory Flow (PEF_{REST}) and Immediate Post Exercise Peak Expiratory Flow (PEF_{IPE}) results from the computation of the percentage of subjects who had significant changes on CP parameters showed that the exercise group had higher percentage as compared to the control group.

Conclusion: Based on the study, the one-month exercise training did not produce significant difference in cardiopulmonary parameters between the exercise group and the control group. However, percentage of subjects who had a significant change in the their CP parameters was generally higher among the exercise group that the control group. **(Author's abstract)**

Keywords: *Medicine, Cardiopulmonary, Resting heart rate, Resting respiratory rate, Exercise, Physiology, Cardiovascular parameters*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 46-56
(Filipiniana Analytics)

0377

An experimental study on the effect of topical application of *Areca catechu* L. extract on the cornea of rabbits

Lacuesta, Vanessa Christine Y., Kuo, Tzy shiuan, Labanda, Jr., Felix F., Lagman, Joseph Dominic N., Lagunzad, John Kenneth D., Yu-Hsien, Lai Yuh-Shiun, Lansangan, Rhona I., Lapitan, Jeromel M., Lara, Kurt Miguelito N., Leal, Vincelli L., Yee, Jiun, Lee, Louie Michael Y.

Glaucoma is one of the leading causes of blindness. Alternative treatments have been tested to provide similar but cheaper relieving effects. Betel nut, the fruit of *Areca catechu* L., contains arecoline, an agent that has parasympathomimetic properties similar to pilocarpine. In previous study, betel nut was found to reduce intra-ocular pressure be as much as 32%. To investigate the adverse effects of betel nut on the eye, 10 rabbits were used as subjects to extract administration on the cornea. Out of the seven rabbits that survived, only one showed a positive result under slit lamp biomicroscopy. A positive resut was indicated by a resolution of the corneal changes seven days after betel nut extract was withdrawn. The result of this study showed 14.28% of the test eyes developed infiltrates while 28.57% showed pacities in their corneas. Thus, based on the result of this study, we conclude that although betel nut extract purportedly holds a promising effect on lowering intraocular pressure, its use as topical agent is not entirely safe. **(Author's abstract)**

Keywords: *Medicine, Areca catechu L., Cornea, Glaucoma, Blindness, Betel nut*

UERMMMC Journal of Health Sciences, Volume No. 6 Issue No. 2, 37-40
(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0378

An experimental study on the use of *Areca catechu* Linn. ('betel nut'/'bunga') in decreasing intraocular pressure in rabbits

Torres, Roderick Irvin D., Tseng, Jui-ju, Umali, Charnel S., Trinidad, Anthony M., Tsunoda, Mitchell S., Umandap, Sharon Rose S., Tuazon, Jasper Aldous S.

Glaucoma is one of the leading causes of blindness. Current treatment of Glaucoma is geared towards decreasing intraocular pressure. These drugs are expensive that the common Filipino is not able to sustain his treatment. This problem prompted the search for effective yet cheaper drugs that can be made available to the masses. Medicinal plants are the likeliest candidates being locally available and much less expensive. This study aims to determine the effectiveness of *Areca catechu* (betel nut or bunga) in reducing intraocular pressure. An experimental study was conducted on twenty 8-months old rabbits. Half of the rabbits received the test drug and the

rest became part of the control group. Results of the study showed a 32% difference between the intraocular pressures of the subjects receiving the interventions compared with the subjects that did not receive the intervention. **(Author's abstract)**

Keywords: *Medicine, Areca catechu Linn., Glaucoma, 'betel nut'/'bunga'*

UERMMMC Journal of Health Sciences, Volume No. 6 Issue No. 2, 33-36
(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0379

An experimental study to determine the efficacy of *Capsicum frutescens* (Siling Labuyo) against *Aspergillus fumigatus In vitro*

Versola, Christine O., Victoria, Edward S., Villamor, Christine R., Villanueva, Anthony Russell T., Villavicencio, Jay B., Cañal, Jesus Randy O.

C. frutescens (Siling labuyo) fruit infusion with a concentration of 3g/ml was compared with 4% acetic acid (positive control) and distilled water (negative control) on their inhibitory effect on the growth of *Aspergillus fumigatus*, using the agar well diffusion method. C. frutescens had a mean zone of inhibition diameter of 38.625mm ± 1.11 SD, as compared to the 4% acetic acid which had a mean diameter of 20.375mm ± 0.581 SD, and distilled water which had a mean diameter of 10mm ± 0 SD. The antimicrobial index of *Capsicum frutescens* was 2.86 ± 0.111, while 4% acetic acid and distilled water were 1.04 ± 0.82 SD and 0 ± 0 SD, respectively. With a 90% increase in the mean zone of inhibition diameter and a 175% increase in the antimicrobial index, these results showed the *C. frutescens* had a significant inhibition of growth as compared to 4% acetic acid. However, *C. frutescens* yielded only partial inhibition of growth. T-test values for mean zone of inhibition and antimicrobial index between *C. frutescens* and 4% acetic acid were 46.5 and 46.38, respectively, and are within the critical region of $1.895 \leq t \leq 1.895$. Therefore, the mean zone of inhibition and antimicrobial index of *C. frutescens* are not equal to 4% acetic acid, but are significantly higher. **(Author's abstract)**

Keywords: *Medicine, Capsicum frutescens , Aspergillus fumigatus, Acetic acid, Distilled water*

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(Filipiniana Analytics)
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0380

Explanatory models of STD illnesses – findings from a qualitative research activity among female sex workers in Manila and Cebu City, Philippines

Tiglao, Teodora V., Tempongko, Ma. Sandra B., Ghee, Anette, Wi, Teodora

The objective of this paper is to describe models female sex workers (FSWs) use to explain STD illnesses, their causes, transmission patterns, prevention and management.

This qualitative research used the pilot version of a manual entitled "Targeted Intervention Research for the Setting of Commercial Sex." A total of 858 informants in Metro Manila and Metro Cebu were interviewed between December 1994 to May 1995 by trained interviewers using 13 different interview guides. Open-ended responses were coded and analyzed by looking at frequencies and conducting content analysis.

Among a group of FSW informants, the predominant STD concerns were gonorrhea and AIDS, with a common belief that both are transmitted by sex and that condom and abstinence are a means of prevention; however, there was evidence that some believe these infections are transmitted through casual contact or other means. Though many informants thought a clinic visit of some type was useful to prevent gonorrhea, they did not commonly mention regular STD clinical care as a means of H IV prevention. It was common for women to spontaneously think of psychosocial consequences of a gonorrhea infection in addition to health ramifications. While a considerable number of informants indicated they did not know what caused AIDS and gonorrhea, many subsequently said condom use was a preventive measure. Mention of gonorrhea elicited a wide range of symptoms and was spontaneously mentioned as the associated illness for 7 out of 8 interviewers prompted symptoms findings demonstrating informant's understanding of other priority STD infections, their symptoms, and whether they affect women and/or men.

Findings are useful to guide STD program planners who will incorporate the user perspective into intervention design. User and the health provided terminologies and concepts do not coincide, even though informants in this study demonstrate a considerable familiarity with Western biomedical concepts related to STDs. The "catch-all" meaning for the term gonorrhea is a potential starting point for introducing syndromic management of STD for FSWs. **(Author's abstract)**

Keywords: *Medicine, STD illnesses, Prevention, Management, Transmission patterns*

The UPManila Journal, Volume No. 3 Issue No. 3, 10-20
(Filipiniana Analytics)
Fil(S) RA421 U3 3/3 1997

0381

An exploratory study on hospital performance in the Philippines

Lawas, Noel D.

A total of 1,172 hospitals were included in the study that seeks to

1. Estimate the trends of the following indicators of hospital performance of public and private hospitals under different categories in the Philippines.
   a) Hospital Occupancy Rates

b) Average Length of Stay

c) Annual Discharges

d) Hospital Death Rates

e) Major Operation Rates

f) Minor Operation Rates

g) Ceasarean Section Rates

2. Compare the performances of public and private hospitals grouped under tertiary. secondary. and primary categories of hospitals.

The methodology involved purposive sampling and included all available records in the Bureau of Licensing and Regulation (BLR). Records of Annual Hospital Reports required for renewal of licenses by the BLR for the years 1988 to 1995 were the sources of information for this study. Selected data from these records were encoded into a computer using Epi Info ver. 6.02. Collation and cross-tabulation were done using this software.

Results of the study show differences in the performances of government and private hospitals. These differences raise a number of questions and implications related to historical development of the Philippine hospital system. managerial issues. and hospital standards development concerns which can be used as a guide in developing probing policy and health systems researches. **(Author's abstract)**

Keywords: *Medicine, Hospital occupancy rates, Average length of stay, Annual discharges, Hospital death rates, Major operation rates, Minor operation rates, Ceasarean section rates*

The UPManila Journal, Volume No. 3 Issue No. 3, 1-9
(Filipiniana Analytics)
Fil(S) RA421 U3 3/3 1997

0382

Factors influencing the delay in diagnosis among colon and rectal cancer patients

Chang, Robert L., Roxas, Manuel Francisco T., Crisostomo, Armando C.

This study was conducted to determine the frequency of delayed diagnosis on all histologically proven cases of colon and rectal cancer admitted to the Philippine General Hospital from January 1 to June 30, 1997. Delayed diagnosis was defined as the time interval from onset of symptoms to establishment of diagnosis of more than three months and the factors that influence the delay. An open-ended interview was conducted with all patients with delayed diagnosis. Seventy-eight cases of colon and rectal cancer were admitted, of which 46 (58%) were presented with delayed diagnosis. Majority of patients(56%) had low educational attainment, originated from outside Metro Manila and did not immediately consult a physician mainly for financial reasons. Only 56% initially consulted a physician, at an average interval of five months

from onset of symptoms. A significant number of physicians were perceived by patients to have performed inadequate assessments, and only 47% considered the possibility of malignancy on consult. Amoebiasis and hemorrhoidal disease were the most common initial considerations. Nearly 90% of patients with delayed diagnosis presented with advanced stage of disease (Stage III or IV) on surgical exploration. Resectability was 88%. This study showed that socioeconomic factors contributed to patient-related delay in this study group of patients while physician-related delay was also significant. **(Author's abstract)**

Keywords: *Medicine, Colon cancer, Rectal cancer, Delayed diagnosis*

The UPManila Journal, Volume No. 3 Issue No. 3, 36-42
(Filipiniana Analytics)
Fil(S) RA421 U3 3/3 1997

0383

Field survey and laboratory assay of the biological constituents of Philippine medicinal plants in selected areas

Solevilla, Rosalinda C., Claustro, Alicia L., Sarile, Angelina, Lim-Yu, Elnora

A field survey was made of the biological constituents of some Philippine Medicinal plants of Baguio and Batangas. 148 plants were collected and tested in the field. The plant samples were prepared and preserved for herbarium specimens. Laboratory assays of the constituents were conducted using the methods for TLC screening. **(Author's abstract)**

Keywords: *Medicine, Medicinal plants, Field survey, Laboratory assay, Herbarium specimen*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 604-611
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0384

Fine needle aspiration biopsy in the cytologic evaluation of thyroid nodules

de los Santos, Edith T., Tudtud, Leah A., Quimpo, Joselynna A., Perez, Bernardita P., Banez, Virgilio P., Rayel, Renato R., Lapuebla, Marimin A., Villadolid, Leland S.

Sixty one (61) patients were studied to assess the utility of find needle aspiration cytology for the diagnosis of thyroid nodules. The procedure did not cause any morbidity. Cytological diagnoses were classified as: benign (53), suspicious (7) and malignant (1). There were only 9 cases of carcinoma and the rest were benign. Assuming that all suspicious and malignant cytologic findings represented carcinoma, specificity was 96.2%, sensitivity 66.7%, accuracy 91.8%, positive predictive value 75%, negative predictive value 94.3%, false positive fraction

38%, and false negative fraction 33.3%. Fine needle aspiration biopsy is a safe and simple procedure that is useful in assessing the need for surgery of patients with thyroid nodules.

Nodular goiters remain to be one of the most common disorders seen in the Philippines. However, the incidence of malignancy among these nodules is relatively low ranging from 4% to 25%. Thus the internist is faced with the decision as to when to recommend a patient for surgery so as not to overlook a malignant tumor and when to avoid unnecessary surgery. The predictability of various clinical parameters for assessing thyroid nodules varies. Most authors claim that clinical diagnosis is a poor parameter but a local study done in the Philippine General Hospital shows otherwise. Although physical examination can select a group of patients at high risk for cancer, a larger group in which the findings are inconclusive are left behind. Radioactive thyroid imaging focuses interest in hypofunctioning nodules but 80% of them are benign. Ultrasound is helpful in delineating cystic lesion but 10% of these cystic lesions are reported to be malignant.

In search for a more accurate procedure for identifying malignant thyroid nodules, Crile et. aI. in 1952 introduced needle aspiration biopsy, in the hope of diminishing unnecessary thyroid nodule excision and delay in the removal of truly malignant lesions. A cutting needle was first use to get a core of tissue with the use of Vim Silvermann needle. Wang et. aI. in 1976 reported 11,000 coarse needle biopsies with cytology reports confirmed in 90%. Opponents to this technique of needle aspiration biopsy have argued about complications such as: seeding the needle tract with malignant cells, hematoma, transient laryngeal nerve palsy, and tracheal puncture.

In an attempt to minimize complications, fine needle aspiration biopsy was done by several foreign authors. A local study was done using large needle (G. 19). No report so far has been made of tumor implantation nor other serious complications with this technique. It is thus our aim to describe our local experience in the use of fine needle aspiration biopsy. **(Author's abstract)**

Keywords: *Medicine, Thyroid nodules, Cytologic evaluation, Aspiration biopsy, Benign, Malignant*

NRCP Research Bulletin, Volume No. 41 Issue No. 3-4, 379-393
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/3-4 1989

0385

Finger and palmar dermatoglyphics in torsion dystonia

Lee, Lilian, Pascasio, Flora M., Viterbo, George

This study therefore shows that there are distinctive dermatoglyphic features present in TD, namely : (1) presence of radial loop in the 3rd digit, (2) decrease in arch pattern in all digits, (3) decrease in digital ridge counts, (4) increase in atd angle, (5) paucity of thenar, hypothenar and

interdigital pattern, (6) decrease in radial and proximal but increase in absent C-line termination, (7) in crease in the frequency of simian crease in both hands as well as the left hand. The most useful of the above-mentioned features is the presence of radial loop in the 3rd digit which is not found in any of the normals.

More cases of TD and the dermatoglyphics of the presumed TD carriers in the family will still have io be taken. Statistical comparison between the dermatoglyphic patterns of the TD carriers and TD cases as . well as TD carriers and controls will be done. **(Author's summary)**

Keywords: *Medicine, Torsion dystonia, Digital patterns, Digital ridge counts, Axial triradius , ATD angle, Interdigital patterns, Thenar pattern, Hypothenar pattern, a-b ridge count, C-line termination, Simian crease*

NRCP Research Bulletin, Volume No. 40 Issue No. 3, 628-632
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/3 1985

0386

A five-year retrospective study of diabetes mellitus in association with coronary heart disease in the Philippine General Hospital

Villadolid, Leland S., Ong, Jimmy Y., Consolacion, Carmelita T.

The coronary heart disease itself begins early in life. Asymptomatic coronary heart disease develops at an unknown rate and is detected only when death occurs from other causes. The rate would be doubled in the presence of Diabetes Mellitus considering that it is one of the risk factors in the developing coronary heart disease. By the time the disease has become symptomatic, the process in arteries will be far advanced. Risk factors have been confirmed as playing a role in the incidence and mortality of coronary arterial disease in approximately 50% of all cases of coronary arterial disease other risk factors such as cigarette smoking, hypertension, hyperlipidemia. Diabetes Mellitus has 2 times the incidence of coronary heart disease. Some evidence exists that strict control of blood sugar in the patients with Diabetes Mellitus may lead to decreased complications of coronary arterial disease in some patients.

Myocardial ischemia, irregardless of the age of occurrence of the Diabetes Mellitus, still ranked the first among the EKG findings even in the early stage of the disease (Diabetes Mellitus) - less than 10 years. **(Author's conclusion)**

Keywords: *Medicine, Diabetes mellitus, Coronary heart disease, Philippine General Hospital, Cardiovascular disease*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 548-581
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0387

Gluteal taping on running performance of healthy young adults: a randomized controlled pilot study

Cerdenia, J. T., Ang, A., Asuque, J. D., Bucasas, P. A., Datinguinoo, L., Be Belen, J. J., Eugenio, E. C., Maralit,

Objective: To determine the effect of gluteal taping on gluteal muscle activity, running speed and stride length.

Methodology: University students were recruited to participate. Of 46 students who gave consent, 33 were included and randomly allocated into a TAPE group (N=15) or a control (NMES) group (N=18). Baseline running time over 100 m, stride length and gluteal muscle EMG activity were measured. These were followed by either gluteal taping (TAPE) or 10 minutes of electrical stimulation (NMES). Running time, stride length, and EMG activity were then re-measured. Data were analyzed using planned contrasts within an ANOVA framework with significance testing done at $p<0.05$.

Results: Running time decreased in both groups but this only approached statistical significance ($F=3.94$, $p=0.057$); there were no significant differences between groups. Changes in stride length were variable and were not statistically significant ($F=0.09$, $p=0.766$); no significant between-group differences were noted. EMG activity of the gluteus maximus decreased after both taping and NMES but this was not statistically significant ($F=0.511$, $p=0.480$).

Conclusion: This study has demonstrated that gluteal taping decreases running time over a 100-m distance in healthy young adults but not to a statistically significant level. **(Author's abstract)**

Keywords: *Medicine, Running, Gluteal taping, Stride length*

PJAHS - Philippine Journal of Allied Health Sciences, Volume No. 1 Issue No. 1, 51-52
(Filipiniana Analytics)
Fil(S) RH930 P53 1/1 2006

0388

Haplotype and mutation analysis in a Filipino patient with Wilson disease

Faustino, Edward Vincent S., Cutiongco, Eva Maria C.

Wilson disease is a rare autosomal recessive disorder due to a defect in the body's elimination of copper. Such defects have been attributed to mutations in the Wilson disease gene found on chromosome 13. We present a case of a 9-year old male with unexplained liver disease with a diagnosis of Wilson disease on the basis of clinical and biochemical findings. Haplotype and

mutation analyses are performed on the patient, his parents and his surviving siblings. The following polymorphic markers are tsted: D13S314-D13S301-D13S316. The patient is found to have the haplotype 12-6-8 for both chromosomes. None of his siblings carries a pair of the said haplotype. The most common Arg778Leu and His1069Glu mutations are not detected. Sequencing of exons 8 and 9 do not reveal any spcific mutation. **(Author's abstract)**

Keywords: *Medicine, Wilson disease, Hepatolenticular degeneration, Copper, Haplotype analysis, Mutation analysis*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 2-5
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0389

Heat exposure in the workplace affecting "PASMA": a third world work-related problem

Del Prado-Lu, Jinky Leilanie

This investigation tried to validate a common Third World work-related problem which is called “pasma". Through a questionnaire given to 49 subjects of a Plastic Factory, "pasma" was most frequently defined as profuse sweating, shaking of hands, exhaustion and headache. The most commonly perceived sources of "pasma" include immediate bathing/washing of hands after work, alternate exposure to hot and then cold environments and working in a hot environment. Using a chi-square analysis, association between "pasma" and exposure to hot environment was significant at 95% confidence level. All others were nonsignificant. All areas exceeded standards set at 26. 7°C for continuous moderate work with the highest HSI at 30. 22°C. These data show that there is no basis to the common perception of workers that "pasma" is a result of bathing/washing of hands after work. **(Author’s abstract)**

Keywords: *Medicine, Pasma, Heat stress, Hot workplace, Cool workplace*

The UPManila Journal, Volume No. 3 Issue No. 1, 1-5
(Filipiniana Analytics)
Fil(S) RA421 U3 3/1 1997

0390

HIV / AIDS infection control in an institution with limited resources: the Philippine General Hospital experience

Velmonte, Melecia A. , Gomez, Domingo C., Dominguez, Cynthia E.

Needle prick injuries as well as those with sharp objects are common injuries among health care providers. In many cases, they are self-inflicted due to the health providers' inadequate or improper observance of universal precautions.

The Philippine General Hospital (PGH) continues to suffer from inadequacy of facilities and supplies because of budgetary constraints and the enormous and ever expanding patient load.

The following article summarizes cost containment and improvisation measures, infection control procedures, and HIV/AIDS Information, Education, and Communication (IEC) strategies being implemented by hospital personnel under the supervision of the PGH Infection Control Committee, the PGH Task Force on AIDS, and the UP Manila AIDS Study Group, in an effort to strengthen the hospital's infection control and HIV/AIDS Prevention and Control Program despite limited resources. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Self-inflicted, Needle prick injuries*

The UPManila Journal, Volume No. 2 Issue No. 4, 17-22
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0391

Human immunodeficiency virus in pregnancy: a case report

Del Rosario, Wilfredo A., Manalastas, Ricardo M.

This is a case report of a 25 year old, G3P2 (1100), with a term twin pregnancy, the first documented HIV positive pregnant patient who delivered at the University of the Philippines-Philippine General Hospital Medical Center. This article would discuss the pathophysiology, epidemiology, the effect of pregnancy on HIV infection, the effect of HIV infection on pregnancy, diagnosis, and clinical management of the HIV positive mother and her infant before, during and after delivery. **(Author's abstract)**

Keywords: *Medicine, Pathophysiology, Epidemiology, HIV infection*

The UPManila Journal, Volume No. 2 Issue No. 4, 64-74
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0392

Identification of the major igeimmunoreactive proteins in penaeus merguiensis

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 merguiensis or "suwaheng puti" was investigated to determine the major IgE-immunoreactive protein from soluble extracts of cooked P. merguiensis. 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. merguiensis, 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 (5males, 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 σH1) in the SSA was recognized by 78% (7/9) of serum from the shrimp allergy-positive group, while a ~51 kDa protein (designated σH2) 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. merguiensis are the σH1 and σH2 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 merguiensis, IgE-immunoreactive, Shrimp Soluble Antigen (SSA), Lowry method*

The UPManila Journal, Volume No. 5 Issue No. 1, 39-56
(Filipiniana Analytics)
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0393

Identifying subjects for community oriented medical education: a delphi study

Fajutagana, Nemuel S.

When medical and nursing schools started using strategies such as Community Oriented Medical Education (COME) and Community Based Medical Education (CBME) in their respective curricula, there was much hope of finally producing more doctors that will work in community and PHC setting. Unfortunately, this did not happen as exemplified by the more than 271 doctorless municipalities. Observers say that shifting to new strategies is not enough. There must also be a concomitant change in curricular content. It cannot be COME and CBME within a Flexnerian oriented medical curricula – it must be COME and CBME within a holistic medical curricula.

Through this Delphi research, subjects were generated which think stakeholders think will make the medical curriculum more community-oriented and community-based, more holistic than Flexnerian. This was done without going through the usual 'endless territorial debates' (which curricular reform observers consider as major reason for the inability to come up with sweeping curricular reforms) but attaining high enough level of consensus as to suggested subjects' relevance and being taught status.

Using the Delphi technique, gaps in our curriculum were identified between what are intended, what are being taught, and what are being learned – and this is possible only when more stakeholders, especially recipients of educational transaction, are involved in curricular reform discussions. **(Author's abstract)**

Keywords: *Medicine, Delphi technique, Consensus, Curriculum, Curricular reforms*

The UPManila Journal, Volume No. 3 Issue No. 2, 1-16
(Filipiniana Analytics)
Fil(S) RA421 U3 3/2 1997

0394

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 thse 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)
Fil(S) RA421 U3 5/2 2000

0395

Initial experience with laparoscopy-assisted vaginal hysterectomy

De Guia, Blanca C., Gonzaga, Florante P.

We report for the first time our experience with laparoscopy-assisted vaginal hysterectomy. To date, twenty patients, aged 40-56 were managed by this approach. The indications for hysterectomy were complex hyperplasia in seven patients, myoma uteri in three, adenomyosis in

one, endometriosis in one, ovarian cyst in one case, first degree uterine prolapse in six cases. The uterine sizes ranged from 4-18 weeks, the blood loss from 100-500 ml, and the postoperative hospital stay from 2-6 days. From this preliminary report, we had three major complications - that of bleeding, a ureteral nick, and an incisional hernia. The other morbidities include ecchymosis, transient high fever, and foot drop which all resolved spontaneously. All patients who had successful removal of the uterus laparoscopical/y had the benefits of reduced pain, as compared to traditional abdominal hysterectomy, but extra caution is advised for those beginning to
learn this new technique. **(Author's abstract)**

Keywords: *Medicine, Laparoscopy, Hysterectomy, Ovarian cyst, Uterine prolapse*

The UPManila Journal, Volume No. 3 Issue No. 1, 10-17
(Filipiniana Analytics)
Fil(S) RA421 U3 3/1 1997

0396

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*

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(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0397

Lipidemic effects of kamias (Averrhoa bilimbiL.) fruit extract on male wistar rats

Madrideo, Nichihana O., Sarmiento, Dianne Kaye M., Serrano, Caryll Rubylyn M., Guerrero, Jonathan Jaime G.

Kamias (*Averrhoa bilimbi* L.) is a tropical fruit known for its many medicinal properties. The present study investigated the effects of fruit extracts on the lipidemic profile of male Wistar rats. Different concentrations of aqueous and ethanolic fruit extracts were fed and the rats were tested for blood cholesterol, high-density and low-density lipoproteins, and triglycerides. Rats were given high-fat diet for fourteen days using rat pellets amended with egg yolk. A control group with normal diet was also maintained. Extracts were administered through oral gavage once a day for fourteen days at different treatment concentrations: 25%, 50%, 75% and pure concentrations. Simvastatin and water were used as control treatments. Blood samples were taken through the tail vein during the initial and final phases. Results processed using Analysis of Variance (ANOVA) and Duncan Multiple Range Test (DMRT) show significant reduction in cholesterol, low-density lipoprotein and triglycerides among rats treated with pure extracts. This reduction is seen to be directly associated with concentration of treatments. As treatment concentration increases, effects on lipidemic parameters were greater. Further, the results are comparable to Simvastatin, a commercially – available drug used to lower blood cholesterol. Cholesterol level of rats given pure and 75% fruit extracts were at 85.22 and 88.46 mg/dL of blood respectively, significantly better than Simvastatin's 98.91 mg/dL. The study concludes that Kamias is a potential natural cholesterol control and can significantly replace statin drugs. It is recommended that a thorough chemical analysis be done on the fruit for better drug applications. **(Author's abstract)**

Keywords: *Medicine, Kamias, Averrhoa bilimbi L, Cholesterol, Lipidemic, Simvastatin*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 170
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0398

Milk, lead levels and mental development

Fagela-Domingo, Carmelita, Alavanza, Beauty J., Gole Cruz, Rosita V., Zafra, Racquel G.

A total of 1071 children aged 4 months to 14 years were studied for blood lead, FEP, and d-ALAD levels. Five hundred seventy children carne from depressed areas within Metro Manila while 801 came from rural areas. Due to inadequacy of blood samples obtained in a number of urban subjects, only 554 had lead determinations, 520 had FEP and 379 had d-ALAD levels. d-ALAD was not done in the rural group because of transport difficulties and possible deterioration of the enzyme.

The over-all prevalence rate for elevated blood lead (-30 ug/d.) in the urban group was 7.76% and 1.2% in the rural group. Mean levels were found to be higher in the rural group although values are still much below what is considered elevated.

The study shows an increased prevalence rate for elevated lead in the younger age groups. All 43 urban-based children with increased lead concentrations are aged 6 years and below while 4 out of 6 in the rural group are aged 2 years and below.

The results also show a significant correlation between increased lead levels and household proximity to heavy traffic density as well as with proximity to lead-emitting industries among the urban-based subjects. This was not found among the rural subjects presumably because there are no such roads or lead-emitting industries in the areas studied. There was no correlation between lead levels and FEP; neither was there any correlation between lead and d-ALAD. The results of the psychometric testing deserve further analysis. **(Author's summary)**

Keywords: *Medicine, Milk, Lead, Mental development, d-ALAD, FEP*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 515-532
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0399

Misoprotol (Prostaglandin E1) versus dinoprostone (Prostaglandin E2) in cervical ripening for labor induction: a meta-analysis

De Guia, Blanca C., Ramos-Abad, Lorna F.

A meta-analysis was performed to determine whether recent literature provide evidence to say that Misoprostol is as safe and effective as Dinoprostone in preinduction cervical ripening. Four randomized controlled trials that compare Misoprostol and Dinoprostone met the inclusion criteria. The use of Misoprostol resulted in a substantive reduction of failure of vaginal delivery within 24 hours (summary odds ratio 0.3, confidence interval 0.2-0.4). There was a decrease in Caesarean section rate (OR 0.8, CI 0.6-/09). The need for oxytocin augmentation was significantly reduced (OR 0.4, CI 0.2-0.6). In all studies, Misoprostol did not cause adverse maternal side effects like hyperionus, hyperstimulation, or chorioamnionitis except for tachysystole. There were no significant difference in neonatal outcome such as Apgar score, abnormal fetal HR pattems, meconium passage, meconium aspiration, NICU admission, need for ventilatory support and hyperbilirubinemia. These indicates that Misoprostol has been found to be a safe and effective preinduction agent for labor induction at the empirical

doses used in the published trials. The use of lower doses need to be studied to circumvent the occurrence of tachysystole noted in prostaglandin use. **(Author's abstract)**

Keywords: *Medicine, Misoprotol, Dinoprostone, Oxytocin, Hyperbilirubinemia*

The UPManila Journal, Volume No. 3 Issue No. 1, 31-42
(Filipiniana Analytics)
Fil(S) RA421 U3 3/1 1997

0400

A model for school-based control of common intestinal helminths using mass treatment: parasitologic assessment

Belizario, Jr., Vicente Y., Amarillo, Maria Lourdes E., De los Reyes, Ana Belinda E., De Leon, Winifreda U., De Guzman, Jr., Antonio D., Bugayong, Mark Philip G.

A model for school-based control of common intestinal helminths was developed and tested in San Vicente Elementary School in Biñan, Laguna, Philippines integrating health care with education programmes, monitoring parasitologic parameters, and comparing the efficacy of once versus twice yearly mass treatment. Mebendazole (Antiox) 500 mg choco-flavored tablets were administered to school children with parental consent following a treatment schedule determined by randomization. Parasitologic assessment and monitoring were conducted among third grade pupils considered the indicator group. Stool specimens were conducted and processed using Kato Katz method which allowed qualitative and quantitative diagnosis in terms of parasite species and egg counts, respectively. Parasitologic parameters were monitored at Days 0, 7 to 14, 180, 187 to 194, 360 and 367 to 374. There were significant reductions of infection rates and intensities of infection post-treatment. Twice yearly deworming was shown to be superior to once yearly treatment. Continuation of periodic mass treatment with mebendazole initially twice yearly with monitoring of parasitologic and nutritional progress as well as school performance parameters are strongly recommended for the school. Larger scale application of the results of this and other similar studies are recommended. **(Author's abstract)**

Keywords: *Medicine, Mass treatment, Common intestinal helminths, Ascaris, Trichuris, School-based control, Deworming, Parasitologic assessment, Monitoring*

Transactions of the National Academy of Science and Technology, Volume No. Issue No. , 137-156
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0401

The need for KAP studies in the rural pacific rim countries

Dominguez, Cynthia E.

In January 1992, the University of the Philippines Manila-Brown University Collaboration on AIDS Research, under the auspices of the World AIDS Foundation, embarked on a Peer Workers Development program directed towards the prevention and Control of HIV in the Philippines.

The Collaboration identified three target groups for HIV/AIDS education: Female and Male Commercial Sex Workers and Seafarers.

Peer workers from among these groups were trained as non-traditional experts in HIV/A IDS education using the ripple or multiplier effect. Interventional strategies consisted of word of mouth, personal contacts, small group discussions, and distance education. Traditional experts (MDs, paramedical staff, social scientists) were given diminished roles in the process.

It was however important to probe each target group's socio-demographic profile, attitudes and behavior towards their job, lifestyles, values and aspirations in order to develop the appropriation intervention strategy for each group.

The training program for each group centered on HIV/AIDS education, provision of skills for self-protection, values clarification and behavior modification, and peer counseling. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Lifestyles, Values clarification, Behavior modification, Peer counseling*

The UPManila Journal, Volume No. 2 Issue No. 4, 23-32
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0402

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

0403

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

0404

Outcome of child prostitution in Barangay Kamagayan, Cebu City

Samson-Malapitan, Sofia

CONTEXT: A number of reports and newspaper accounts have come out articulating the rise in child prostitution. Yet despite the promulgation of republic Act No. 7610 or the Special Protection of Children Against Abuse, Exploitation and Discrimination and the mushrooming of child-care and rehabilitation centers, many children are still trapped, forced and lured into the flesh trade. This study describes the consequences of child prostitution.

OBJECTIVE: To determine the outcome of child prostitution in Barangay Kamagayan, Cebu City in terms of pregnancy, sexually transmitted diseases (STD), physical assault, and drug use.

STUDY DESIGN: A cross-sectional study.

STUDY SETTING: All female commercial sex workers below 18 years old found in Barangay Kamagayan, Cebu City.

MAIN OUTCOME MEASURE: Outcome of child prostitution.

CONCLUSION: A total of 50 female subjects were interviewed aged 14-17 years old, of the 50 respondents, 24 (48%) got pregnant of who, 12 of them had abortion which were all intentional, 21 (42%) contracted STD, 23 (46%) suffered physical assaults, and 24 (48%) were drug users. **(Author's abstract)**

Keywords: *Medicine, Child prostitution, Barangay Kamagayan, Cebu City, Republic Act No. 7610*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 16-20
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0405

Outcome of pregnancies in women with treated antiphospholipid antibody syndrome

Lu-Segui, Mary Christine, de Leon-Mendoza, Socorro, Lim, Eduardo, Silvestre, Ma. Asuncion

OBJECTIVE: To determine the outcome of pregnancies in women with treated antiphospholipid antibody syndrome.

STUDY DESIGN: A restrospective study. Seventeen pregnancies were studied. Maternal data for history miscarriages, results of LA or aCL tests and therapies received were obtained. Neonatal data obtained were birth weight, sex, length, head circumference, Apgars at 1 and 5 minutes, ventilation and oxygen therapy and clinical outcome. Any other significant complications were recorded. Growth restriction was defined when birth weight falls at or below the tenth percentile for age of gestation.

RESULTS: There were a total of 25 pregnant women treated for antiphospholipid antibody syndrome (APAS). Six of them did not meet the clinical criteria for the diagnosis but were positive for the antiphospholipid antibody tests. The nineteen remaining subjects delivered live neonates except for one which resulted into intrauterine fetal death at 19 weeks AOG. Out of the nineteen, 12 were preterm due to elective caesarian section delivery prior to term to avoid the risk of uteroplacental insufficiency during active labor. The rest were all term neonates. Among them, two were growth restricted in size of whom, one was a preterm and died of sepsis.

CONCLUSION: Based on published data, in women who were diagnosed to have antiphospholipid antibody syndrome the chance for successful pregnancy is reduced. In these cases, treatment appears to be a clear option. The favorable pregnancy outcomes reported in this series supports this option in the management of these cases. **(Author's abstract)**

Keywords: *Medicine, Antiphospholipid antibody syndrome, Pregnancies in women, Apgars*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 13-15
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0406

Physiologic responses of comatose patients to liturgical text reading as a biobehavioral nursing intervention

Villamiel, Joseph Wal

This study was conducted to (1) determine the significant physiologic responses of comatose patients to spiritual reading, particularly from liturgical texts, using blood pressure (BP), heart rate (HR), respiratory rate (RR), and motor response as parameters; (2) ascertain whether the physiologic responses of comatose patients to liturgical text reading significantly differ from their corresponding response to non-liturgical text reading; and, (3) identify some variables that may affect their physiologic responses to liturgical text reading.

Utilizing a double-blind repeated measures experimental design, the study was conducted in six selected units of a tertiary public hospital where comatose patients were confined. Within a 10-week data-gathering period, criteria-based complete enumeration of subjects generated a sample size of 30, randomly assigned to the control and study (experimental) groups. Data collection included charts review, interview of watcher, observation, and parameter evaluation prior to, at 10 minutes, at the end, and at 15 minutes after each intervention. Two sets of 15-minute studio tape recorded Filipino readings-liturgical (Psalms 23, 130 & 16) and non-liturgical (poetry)-were administered for six (three morning, three evening) randomly scheduled sessions per set, using a portable cassette player (walkman) with earphones at a fixed volume, following a pilot-tested intervention protocol. For the controls, blank tapes were given while using the same schedule and equipment.

Results show that compared to the control group, the study group exhibited more changes in parameter values with both readings, but which was more apparent during liturgical than during non-liturgical reading-a difference statistically significant at p> .0001 using repeated-measures ANOVA for BP, HR and RR and at p >. 05 using chi-square test for motor response. With liturgical reading, the predominant response appeared to be a slight decrease in SBP and DBP, and an increase in motor activity. These patterns were less apparent for HR and RR.

Stepwise multiple and logistic regressions reveal that six interdependent variables influenced the responses to liturgical reading in varying degrees. The neuropathophysiologic variables included coma level and duration, while the sociodemographic variables included socioeconomic status, age, educational attainment, and degree of religiosity (p > .05). Variables that were found not significant were stimulation timing, intervention duration, gender, and coma level. **(Author's abstract)**

Keywords: *Heart rate, Blood pressure, Medicine, Respiratory rate*

The UPManila Journal, Volume No. 3 Issue No. 4, 12-24
(Filipiniana Analytics)
Fil(S) RA421 U3 3/4 1997

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*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 32-35
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0408

A profile on child workers involved in the production of pyrotechnics in Radar Babag, Lapu-Lapu City

Brodith-Dauz, Migresa P.

CONTEXT: despite several attemps 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*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 21-26
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0409

The psychosocial factors influencing patient non-compliance in the anti-tuberculosis short course chemotherapy (SCC)

Simbulan, Ny

The objective of this study is to describe the characteristics of noncompliant patients in the anti-TB see in a barangay in Marikina and identify the psychosocial factors influencing non-compliance among TB patients.

The study involved 20 TB patients who dropped-out from the anti-TB see program. They were chosen using random sampling procedures. Records review, observation and interview were employed for data collection. Demographic background, disease status and history, and

utilization of the health center services were included in the interview. Each patient was also asked to answer a KAP pretest quetionnaire on TB.

Based on study results, several factors may be pointed out as responsible for non-compliance of TB patients: the attitude and perception of the patient towards medicine-taking; low threshold for pain and discomfort of the patient; lack of knowledge about proper duration of the treatment; certain environmental conditions; lack of drug supply; complexity of the procedures and requirements of the medical regimen; and insufficient social support both from the family of the patient and from the health care providers. **(Author's abstract)**

Keywords: *Medicine, Anti-tuberculosis, Chemotherapy, Psychosocial factors*

The UPManila Journal, Volume No. 3 Issue No. 3, 21-35
(Filipiniana Analytics)
Fil(S) RA421 U3 3/3 1997

0410

Quo vadis patient education

Tiglao, Teodora V.

The article define patient education and briefly describes the state-of-the-art locally and globally. It discusses some issues in patient education and their implications on health professionals. The steps in planning and implementing patient education programs are also included. **(Author's abstract)**

Keywords: *Medicine, Patient education, Quo vadis, Systematic*

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(Filipiniana Analytics)
Fil(S) RA421 U3 3/3 1997

0411

A randomized, double-blinded parallel-controlled clinical trial on the effectiveness of different doses of *Moringa oleifera* (malunggay) in promoting growth in infants of breastfeeding mothers from UERMMMC and different hospitals in Metro Manila f

Balahibo, Marlon F., Balde, Jennifer C., Baldovino, Zea Leigh D., Baquiran, Pocholo C., Barillos, Chanda Marie O., Barredo, Carlo G., Madarcos, Floro B., Mendoza, Suzette M.

Malunggay (Moringa oleifera) leaves have long been used in the Philippines as a galactogogie. A controlled randomozed, double-blind study was done to determine the optimum dose of Natalac capsules consisting of 250 mg of dried malunggay leaves. These capsules were

given to 60 nursing Filipino mothers for 2 months in an attempt to increase the amount of breast milk.

Sixty Filipino mother and their newborns were randomly assigned to four trial groups. Within a two-month trial period, group A mothers were given one Natalac capsule OD, group B mothers were given one Natalac Capsule BID, group C mothers were given one placebo capsule OD, while group D mothers were given one placebo capsule BID. Increases in both length and weight were obtained every two weeks and compared. An increase of twenty-five percent in length and weight of the newborns were obtained every two weeks and comparisons among the four trial groups were done.

The study found significant increases in the weight and length for both OD and BID Natalac treatment groups. Additional findings showed that BID Natalac significantly improved lactation over OD Natalac group and OD and BID placebo within a study period of eight weeks. **(Author's abstract)**

Keywords: *Medicine, Moringa oleifera, Galactogogues, Breastfeeding*

UERMMMC Journal of Health Sciences, Volume No. 5 Issue No. 1, 21-27
(Filipiniana Analytics)
Fil(S) R97.4 U37 5/1 2002

0412

A rapid assessment of health workers' capability in meeting care needs of HIV/AIDS patients: the case of the Philippine General Hospital (PGH)

Imperial, Reynaldo H.

Health caregivers have since the beginning of the AIDS epidemic been preoccupied with the question of vulnerability in acquiring their patients' infections. This may be due in part to these caregivers' lack of readiness and preparedness in meeting the health care needs of their patients as well as in their intermittent practice of universal precaution.

This study through a survey questionnaire intends to define the level of knowledge and readiness of doctors and nurses of the UP-Philippine General Hospital (UP-PGH), the country's largest tertiary hospital to manage the health needs of HIV/AIDS patients. On the basis of the findings of this survey, it may be necessary to put in place in the hospital an AIDS education/training program which will equip this group of health workers with correct information on the infections. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Health caregivers, Philippine General Hospital (PGH)*

The UPManila Journal, Volume No. 2 Issue No. 4, 75-85
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0413

A rapid needs assessment study on HIV/AIDS workplace policy and program in three (3) Metropolitan sites in the Philippines

Hernandez, Laufred I.

This Needs Assessment Study in three (3) selected sites in the Philippines, namely: Metro Manila, Southern Luzon and Metro Cebu, was directed at assessing the level of awareness on HIV/AIDS among business managers, workers and worker representatives through a combination of methodologies - Knowledge, Attitudes and Perception (KAP) Questionnaires, Sexual Behavior Surveys, Structured Management Interviews, Focus Group Discussions and In-depth Interviews of Personnel Managers and Key Informants. This was a four-month study.

A total of three hundred sixty (360) workers and twenty-four (24) middle and upper level managers were among those who participated in the process. There is a high level of correct knowledge among the 360 respondents relative to HIV/AIDS. A majority of them derive their information from the tri-media (e.g., television, print and radio). Half of the respondents want to learn more about HIV/AIDS and sexually transmitted diseases.

The assessment manifested the following: (1) There is a need to integrate lectures on HIV/AIDS as part of workplace health maintenance for workers. These lectures should focus on the epidemiology, modes of transmission and the need for behavior modifications and safe sexual practices including condom use; and, (2) Management should take the upper hand in designing policy guidelines on HIV/AIDS prevention, management and care in the workplace. Collective Negotiating Agreements (CNAs) negotiations must include this concern. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Metro Manila, Southern Luzon, Metro Cebu*

The UPManila Journal, Volume No. 2 Issue No. 4, 7-16
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0414

Role of sex and sirtilin-related receptor 1 variants in Filipinos with cognitive impairment

Casingal, Cristine R., Daroy, Maria Luisa G., Mapua, Cynthia A., Florendo, Dianne Jane A., St. Luke's Dementia Study Group, Natividad, Filipinas F., Dominguez, Jacqueline C.

This study investigated the association of 6 *sortilin-related receptor 1 (SORL1)* variants with cognitive impairment. *SORL1* SNPs 8, 9, 10, 13, 19 and 23 were genotyped using TaqMan® SNP Genotyping Assays in 484 Filipinos: 335 females and 149 males). One hundred had

Alzheimer's disease (AD), 109 who had mild cognitive impairment (MCI), 18 who had other types of cognitive impairment, and 257 who had normal cognitive functions. Cognitive impairment (CI), which includes AD, MCI and other cognitive impairment cases, was associated with SNP 23 (p=0.041). None of the *SORL1* variants was associated with AD. SNPs 8, 9, 10 and 23 were associated with MCI, (p=0.028, p=0.034, p=0.034 and p=0.025, respectively). Based on these results, *SORL1* may be used as a biomarker in the early detection or diagnosis of cognitive impairment and other dementias. The role of sex in the association of *SORL1* variants and cognitive impairment was also evaluated. The results suggest that the SNP 23 may have a significant association with CI in females. The results showed association between SNP 23 (p=0.033) and the female sex in the MCI group. For males, all six *SORL1* variants did not show any association with the CI groups. This suggests that *SORL1*may affect cognitive impairment and the interplay of sex-specific risk factors, sex-specific disease course, and sex-specific survival of a disease, through a female-dependent mechanism. *SORL1* plays a crucial role in the formation of amyloid plaques – the primary cause of AD. Although no association was observed between the variants and AD, the findings provide evidence that *SORL1* may predispose individuals to CI. Further evaluation of the usefulness of *SORL1* variants as predictors of progression of CI to AD needs to be done. **(Author's abstract)**

Keywords: *Medicine, Cognitive impairment, Sortilin-related receptor 1, SNPs*

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

0415

A second look on viescoureteral reflux among patients with recurrent urinary tract infection in private hospital

Carpio, Anne Marie L., Sioson, Lorenza, Bautista, Jr., Rudito, Reyes, Maria Sharon, Elises, Joel S., Gana, Jr., Telesforo E.

BACKGROUND: Vesicoureteral reflux is a condition in which urine regurgitates from the bladder back to the ureter and occurs in 1% of children. It is a major cause of renal failure and hypertension in children and young adults.

OBJECTIVES: To determine the clinical outcome of patients referred at Medical Center Manila for Voiding Cystourethrogaphy (VCUG) for the past 12 years.

DESIGN: Descriptive study

SETTING: Medical Center Manila

PARTICIPANTS: One hundred nineteen patients referred at Medical Center Manila for VCUG for the past 12 years

METHODS: Records of pediatric patients who underwent VCUG for the past 12 years were reviewed. Age at the time of procedure, sex and VCUG findings was collected.

RESULTS: Thirty patients have viescoureteral reflux (VUR) with equal occurence between the sexes. Majority was under 1 year of age. Unilateral reflux occurs more often than bilateral and most of the refluxing ureters were of Grade II.

CONCLUSION: Majority of patients who have VCUR were below 1 year oldwith no sexual predilection. Unilateral reflux was more often encountered. Majority of cases were at Grade II at the time of diagnosis, VCUG should be recommended for patients with urinary tract infection and follow-ups should be done for patients with VUR to assess possible resolution. **(Author's abstract)**

Keywords: *Medicine, Viescoureteral reflux, Urinary tract infection, Hypertension, Renal failure*

The Philippine Journal of Pediatrics, Volume No. 50 Issue No. 1, 10-12
(Filipiniana Analytics)
Fil(S) RJi P54 50/1 2001

0416

A serial validation study of the proposed scoring measurements for risk levels in glaucoma in Bagong Nayon, II, Antipolo City

Dela Cruz, Sheryl Anne E., Dela Trinidad, Jemmy Regina F., Delos Santos, Mary Anne E., Diaz, Duane I., Diaz, Marvin R., Dimaano, Maritess M.

Methods: A serial study of the proposed scoring system for risk levels for glaucoma was conducted in Bagong Nayon II, Antipolo City for a duration of four months. The scoring system consisted of the following variables age, gender, last complete eye exam, family history of glaucoma, predisposing condition (e.g. diabetes mellitus, previous eye surgery, myopia, systemic hypertension), and symptoms (e.g. soreness/tiredness, burning/smarting/stinging. foreign body sensation, difficulty of seing in the dim light or daylight, blurring of vision, halos around light, tearing). The subjects were composed of male and female residents, aged 35 years and above, not previously diagnosed with glaucoma. Forty-seven subjects, consisting of 24 cases and 23 controls, were interviewed using the questionnaire form and subjected to direct fundoscopy and octopus perimetry.

Results: Serial testing showed a sensitivity of 64.51%, specificity of 33.33%, positive predictive value of 0.67 and negative predictive value of 0.31.

Conclusion: The low sensitivity and specificity found in this study suggest that the proposed scoring system cannot accurately detect glaucomatous individuals and thereforeis not a good screening test. **(Author's abstract)**

Keywords: *Medicine, Glaucoma, Bagong Nayon, II, Antipolo City, Diabetes mellitus, Myopia, Hypertension*

UERMMMC Journal of Health Sciences, Volume No. 6 Issue No. 2, 27-32
(Filipiniana Analytics)
Fil(S) R97.4 U37 6/2 2003

0417

The serum levels of calcium and phosphorus of adult Filipinos in health and disease: a preliminary study

De Asis-Buenaluz, Leticia, Giongco-Baylon, Honorata V.

Two hundred thirty (230) normal adult Filipinos were included in the study. The average amount of calcium for the males was 2.3572 m mol/L and for the females, 2.3318 m mol/L. The average amount of phosphorus for both males and females was 1 .2486 m mol/L.

For the 3S patients with chronic renal disease, the mean value for calcium was 1.99 m mol/L for males and 2.32 m mol/L for females while for the phosphorus, the mean values were 2.43 and 2.35 m mol/L for males and females, respectively. **(Author's summary)**

Keywords: *Medicine, Serum levels of calcium, Serum levels of phosphorus, Adult Filipinos, Health and disease*

NRCP Research Bulletin, Volume No. 39 Issue No. 2, 427-448
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0418

Sexual behavior and HIV / AIDS in Metro Manila

Tiglao, Teodora V., Tempongko, Ma. Sandra B., Gust, Dulce E.

The primary goal of the study is to identify sexual behaviors among the general population of Metro Manila, 15-59 years of age that carry potential risk of HIV infection. There were 1,617 respondents. Specifically, the study was concerned with current status and type of relationship; length of current marriage partnership, age at first marriage, age of first fun sexual intercourse, total number of partners and practice of safe sex with particular reference to condom.

Levels of pre-marital sexual activity and rates of partner change, particularly among the young males, coupled with unimpressive figures on the personal use of condom enhance the risk of HIV/STD infection. The nature of marital bond was significantly associated with sexual behavior outside of marriage. Also single or separated persons are more likely to engage in commercial sex or high risk behavior than married men. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Sexual behavior, HIV/STD infection*

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(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0419

The social component of AIDS prevention in the Philippines: training the female commercial sex workers to become change advocates, phase I

Castillo, Fatima A., Villamor, Cynthia M.

This study focused on the training of selected Female Commercial Sex Workers (FCSWs) in Ermita, Manila as peer educators on sexually transmitted diseases (STD) and HIV/AIDS. Its specific objectives were: to generate primary data on the beliefs, attitudes, values and socialization processes of FCSWs that might contribute to their receptiveness to intervention measures; to design and conduct a culturally appropriate intervention measures to reduce HIV transmission through and among FCSWs; and to recommend areas for future studies and action.

Case studies through ieterative-ethnographic interviews with each of the five girls and environment sensing were used to get in-depth data from the sex workers. The case studies enabled the team to identify messages, symbols and styles that were used to design the seminar workshop which served as the first component of the intervention measure.

The two half-day seminar workshops were conducted by four well experienced health educators of the Olongapo City Health Office. Activities during the workshop were lectures on the etiology, transmission, symptoms and prevention of both STD and AIDS, lecture-demonstration on condom use, exercise on negotiating with customers and workshop on the formulation of action plans. Among the message highlighted during the workshop were the strengthening of locus of control, raising of self-esteem, the girls' primary role in designing the action plan and the need for cooperation, trustworthiness and teamwork in the implementation of their plans.

An internal evaluation of the team and the results of the pretest and posttest interviews with the girls showed that the seminar workshop heightened the girls' knowledge of STD/AIDS and modified their attitudes towards their job and the threats of the disease. **(Author's abstract)**

Keywords: *Medicine, Female Commercial Sex Workers (FCSWs), Sexually transmitted diseases (STD), HIV/AIDS, Ieterative-ethnographic interviews*

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0420

The social reproduction of the medical profession: the case of the University of the Philippines-Philippine General Hospital Medical Center

Sana, Erlyn 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-Cynecology. 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 effortlessy 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*

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(Filipiniana Analytics)
Fil(S) RA421 U3 5/2 2000

0421

The social reproduction of the medical profession: the case of the University of the Philippines-Philippine General Hospital Medical Center

Sana, Erlyn A.

Among the members of the health team, physicians are accorded the highest prestige. Societies depend on them for their rational authority on matters related to health and disease. For this reason, medical centers are always expected to implement a curriculum that would train and prepare the most competent physicians.

This paper describes the long and tedious process of the final year of clinical internship of the country's top medical center, the University of the Philippines-Philippine General Hospital Medical Center (UP-PGH). In the process, it was able to describe the various traditions that are socially reproduced in the course of training. It was also able to explain the different social structures involved in the process of socially reproducing the future medical professionals.

It is a descriptive study as it gathered qualitative data from direct observations of interns and clerks during their rotation in UP-PGH. Key informant interviews, survey questionnaire and review of secondary data were also done. The study was started in 1997 and completed in 1999. **(Author's abstract)**

Keywords: *Medicine, Social reproduction, Physicians, Official curriculum, Operational curriculum, Hidden curriculum, Medical education, Clinical internship, Uniform elite, Professional socialization of doctors*

Transactions of the National Academy of Science and Technology, Volume No. Issue No. , 197-210
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0422

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

0423

Studies on the use of expired human blood as a source of antigens for the production of blood typing sera (Anti-A and Anti-B) and anti-lymphocytic

Manuson, Nidia M., Jacalne, Antonio V., Tan, Sally C., Lumapas, Maria Carmela L., Alias, Adelaida V.

Animals were immunized subcutaneously using a 2% suspension of the packed stroma (type A or B red blood cells) in sterile physiological saline and via foot pad injection with the 2% stromal suspension homogenized (1:1) with Freund's complete adjuvant. Sera were obtained and antibodies have specificities other than the desired antiserum (Anti-A or Anti-B) were adsorbed through the use of fresh human red blood cells, kaolin, and stroma.

Immunization of the rabbits via foot pad with subsequent boosters intraperitoneally gave similar titers as given subcutaneous injections of the stroma. The antisera produced gave promising results based on tests done on some cases.

The Anti-Lymphocytic sera were prepared using separated B and/or T cell (from expired human blood) to immunize rabbits. Skin grafting of mice given the preparations were monitored obtaining the percent accumulated risk of rejection. The results indicated that Anti-Lymphocytic serum using T cell suspension as immunogen is a better form of the preparation in mice prolonging the period of rejection and/or permitting acceptance of the skin graft. **(Author's abstract)**

Keywords: *Medicine, Anti-lymphocytic, Blood typing sera, Antigens, Anti-A, Anti-B*

NRCP Research Bulletin, Volume No. 41 Issue No. 3-4, 395-423
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/3-4 1989

0424

A survey of Philippine bryophytes for antibiotics

Del Rosario, Romualdo M., Beloy, Flora B.

One hundred six species of Philippine bryophytes representing 36 families were tested for antibiotic activity against Escherichia coli, Staphylococcus aureus, Bacillus subtilis, Sarcina lutea, Pseudomonas aeruginosa, Proteus vulgaris, Salmonella typhi, Candida albicans and Saccharomyces cerevisiae by modified paper disc-agar method of assay. Ninety-three or 88% gave varied degrees and ranges of positive activity. Fifteen samples or 14% exhibited strong inhibitions to one or more test organisms. These include Breutelia arundinifolia, Pohlia flexuosa, Amphidium pappilosum, Campylopus eurydictyon, C. subericoides, Macrothamnium macrocarpum, Ectropothecium buitenzorgii, Ptychantus striatus, Floribundaria pseudo-floribunda, Stereophyllum anceps, Garovaglia elegans, Schistochila rubristipula, Acroporium altopungens, Sphagnum junghuhnianum and Thuidium plumulosum. Thirteen or 12% failed to demonstrate antibiosis in this test.

Qualitative tests by color reaction test and thin-layer chromatography indicated the presence of alkaloids, steroids, sapogenins and terpenes in most of the extracts using organic solvents. **(Author's abstract)**

Keywords: *Medicine, Escherichia coli, Staphylococcus aureus, Bacillus subtilis, Sarcina lutea, Pseudomonas aeruginosa, Proteus vulgaris, Salmonella typhi, Candida albicans, Saccharomyces cerevisiae*

NRCP Research Bulletin, Volume No. 41 Issue No. 3-4, 505-543
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/3-4 1989

0425

A systems view of the HOX-OME

Chung, Hyun Joo, Deocaris, Custer C., Ruthala, Kalyani, Kim, Myou

In mouse and humans, the correct location of body parts along the A-P axis is specified by the expression boundaries of 39 Hox genes. Regulated in a spatial and temporal fashion, these genes, dubbed as 'master genetic switches', instruct embryonic cells on a particular route of morphogenesis. Focusing on Hoxc8, we have established its first network map from the results from our previous genome-wide screening for Hoxc8-associated molecules using a combination of CHIP-based screening and cloning and 2-DGE proteomics screening. Together with available literature data on the transcriptome and proteome of Hoxc8, the predominant signaling pathways were identified. The molecular networks and interaction of diverse signaling pathways revealed the important and overlapping roles played by Hoxc8 during both embryonic development and carcinogenesis. **(Author's abstract)**

Keywords: *Medicine, Hoxc8, Cancer, Embryogenesis, Systems biology, Molecular networks*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 161
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 35/1 2013

0426

Taste and smell measurements and blood trace element levels during pregnancy

Lawas, Irineo L.

1. A total of 81 pregnant women in different stages of gestation are tested for taste (sweet, salty, bitter, sour) and smell (garlic odor, rubber-like odor).

2. Taste sensation is generally depressed for all kinds of taste in many pregnant women.

3. Smell, on the other hand, is mostly accentuated for both garlic odor and rubber-like odor.

4. Determination of trace elements, both essential and non-essential, in the blood of these women shows no significant difference with values of the general population, except for the essential trace element Zinc.

5. Zinc values are low, 70% of the total pregnant women falling below the proposed normal limit for the general population. Zinc values are lowest in the first trimester of pregnancy, increasing somewhat in the second, and reaching higher levels during the third trimester.

6. It may be deduced that Zinc deficiency may be a factor in the reduced taste sensitivity of pregnant women and therefore the poor appetite.

7. The accentuation of smell seen in most women tested is not characteristic of Zinc deficiency. It may explain the tendency of some pregnant women to be nauseated when exposed to some odors.

8. Further studies on the realtion of Zinc and the symptoms of pregnancy may be done by giving supplements of Zinc in the diet of pregnant women. The over-all response in regards to appetite and smell may help resolve the role of this essential trace element in the symptoms seen in pregnancy. **(Author's summary)**

Keywords: *Medicine, Sweet, Salty, Bitter, Sour, Garlic odor, Rubber-like odor*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 485-504
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0427

Therapy of uncomplicated gonorrhea infection in hospitalized women with reference to the problem of drug resistance

Tupasi, Thelma E., Calubiran, Ofelia V., Torres, Cleotilde A., Crisologo-Vizconde, Lita B.

The increase in the prevalence of penicillinase producing Neisseria gonorrhoeae (PPNG) - strains from 39.9% to 40%.has created an urgent need to evaluate effective alternative treatment programmes against PPNG.

Although (APPG) aqueous procaine penicillin G and ampicillin are the cheapest drugs they may not be appropriate primary treatment for gonococcal infection because of the high level of penicillin resistance in PPNG as well as non•PPNG strains.

Cefuroxime and kanamycin proved to be equally superior to spectinomycin in the treatment of both PPNG and non-PPNG infections. However. kanamycin is highly cost-effective than either cefuroxime or spectinomycin.

Thiarnphenicol is effective against PPNG but has proven to be not any better than APPG for

non-PPNG infections. Rosoxacin, although highly effective for both PPNG and non~PPNG , was associated with a high incidence side effects. Lastly, co-trimoxazole in multiple doses is likewise cost-effective but is also associated with high incidence of side effects. **(Author's abstract)**

Keywords: *Medicine, Penicillinase producing neisseria gonorrhoeae (PPNG), Aqueous procaine penicillin G, Ampicillin, Thiamphenicol*

NRCP Research Bulletin, Volume No. 39 Issue No. 3, 473-484
(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/3 1984

0428

Total parenteral nutrition thru peripheral vein

Maramag-Abesamis, Ma. Victoria, Pascual-Poblete, Evangelina

Forty patients who received total parenteral nutrition thru peripheral vein were randomized into three groups: those receiving amino acid + 10% dextrose, (group 1), 10% dextrose alone, (group 2) and 20% dextrose alone, (group 3). The effects of TPN on these groups were evaluated. There were no differences in the hematological parameters noted. Group 1 patients showed higher alkaline phosphatase, total and direct bilirubin, BUN, total protein and albumin and lower serum glucose values than the patients in group 2 and 3. The incidence and severity of peripheral vein phlebitis were also evaluated. The three groups had a similar incidence and severity of peripheral vein phlebitis. **(Author's abstract)**

Keywords: *Medicine, Peripheral vein, Total parenteral nutrition (TPN), Amino acid, Dextrose*

NRCP Research Bulletin, Volume No. 41 Issue No. 3-4, 425-443
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/3-4 1989

0429

Training of female sex workers as change advocates: a shift in strategy of intervention

Tayag, Josefina G., Garcia, Arlene T., Dominguez, Cynthia E.

This paper documents the final phase of the project on the training of female sex workers as change advocates on HIV/AIDS and STDs prevention. With the inability to reintegrate the previously trained peer educators in this phase, a shift in strategy was undertaken. Accordingly, its objectives were modified which included the following: (1) to review and reinforce the information on HIV/AIDS and STDs to the clubs previously reached in the preceding phase; (2) to tackle other health related issues, and (3) to scout for a potential core group in every club to reinforce lessons learned.

One of the changes introduced was the inclusion of other topics for lecturing. Aside from the etiology and epidemiology of HIV/AIDS, the different types of STDs, reproductive health and self-protection and condom use, and other topics were included. These were on family planning and abortion, drugs and alcoholism, and values and empowerment. Another notable change was the employment of experts instead of peer educators. Some of the members of the UP Manila AIDS Study Group handled the lectures. With these changes, six establishments and a total of 231 club workers were reached. Interaction with the participants was on a weekly basis.

An improvement in the participants' know/edge on HIV/AIDS and STDs was noted as revealed by the results of the pre and post KAP questionnaires. Likewise, with the regular administering of quizzes, the information dissemination efforts proved effective. It was also gleaned from the assessment sessions that the project made an impact on the participants who realized the value of knowledge on matters that concern them, of sharing such know/edge with others, and of applying or at the least, desiring to practice things learned. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Sexually transmitted diseases (STD), Etiology, Epidemiology*

The UPManila Journal, Volume No. 2 Issue No. 4, 105-117
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0430

The training of female sex workers as peer advocates by the University of the Philippines Manila and Brown University: lessons and prospects

Tayag, Josefina G.

In 1992, the University of the Philippines Manila and Brown University collaborated on a project entitled, "The Social Component of HIV/AIDS Prevention: Training Commercial Sex Workers to become Peer Advocates which lasted for almost two years or over 5 phases.

This paper documents the process of training the peer workers , with all the attendant problems and immeasurable gains. Sustaining the interest of the peer educator-trainees and keeping them active participants of the project, often having to address their personal problems before they can be tapped for peer educator work and situational changes necessitating a rapid change of plans were just some of the few problems encountered. But it was well-worth the effort to see them change some of their values, exhibit more self-confidence and self esteem and in the end be empowered to negotiate with customers and insist on safer sex practices. Most of them changed jobs, through no insistence of our own, but because they realized the hazards of their trade.

However, towards the end or by Phase 5 which took a full year after Phase 4, none of the originally trained peer educators could be reintegrated in the project. An alternative approach of

a combination expert and peer educator methodology was utilized The lessons and prospects of peer educator training are also tackled in this paper. **(Author's abstract)**

Keywords: *Medicine, HIV/AIDS, Peer educator, Social component of HIV/AIDS*

The UPManila Journal, Volume No. 2 Issue No. 4, 94-104
(Filipiniana Analytics)
Fil(S) RA421 U3 2/4 1996

0431

Validity and reliability of selected outcome measures used in rehabilitation for anterior cruciate ligament reconstruction: a literature review

Warren, K. J. C., MHlthSc, PTRP, Chua, C. D. M., Tagala, A. A., Cadiz, B. O., Maglanque, II,

Objectives: The aim of this study is to conduct a literature review of available evidence on selected outcome measures commonly used during rehabilitation following Anterior Cruciate Ligament Repair (ACL-R) with emphasis on their validity and reliability.

Methodology: A comprehensive search for articles was performed through manual and electronic searches using predetermined keywords. Full text articles related to pre-identified outcome measures specifically, pain assessment scales, range of motion measurements, circumference measures, functional performance tests, and the Cincinnati Knee Rating System, were reviewed.

Results: A total of 20 articles were included in the review. The outcome measures selected for the study were found to be valid and yielded moderate to high reliability.

Conclusion and Recommendations: The outcome measures that were found to be valid and reliable were summarized into an evaluation form with a user's guide that outlines the testing procedures for use in the clinical setting. **(Author's abstract)**

Keywords: *Medicine, Outcome measures, Anterior Cruciate Ligament (ACL), Validity, Reliability*

, Volume No. 1 Issue No. 1, 41-50
(Filipiniana Analytics)
Fil(S) RH930 P53 1/1 2006

PHYSICS

0432

Comparative transport studies of '1212' superconductors

Gapud, Albert, Wu, Judy, Yan, Shaolin, Xie, Yi-Yuan, Kang, Byeongwon, Siega, Michael, Overmyer, Don L.

$HgBa_2CaCu_2O_{6+\delta}$ (Hg-1212) thin films were fabricated by exchanging the Tl cations in $TlBa_2CaCu_2O_{7-\delta}$ (Tl-1212) thin films with Hg cations, causing a 30-K increase in Tc. To determine how this exchange effects such a Tc increase, the irreversibility lines, temperature dependence of critical current density, and temperature dependence of hall angle of Hg-1212 and Tl-1212 thin films were measured and then compared. The results strongly suggest that the Tc shift is caused by a doubling of charge carrier density. **(Author's abstract)**

Keywords: *Physics, Hg-1212, Tl-1212, Transport, Hall effect, Irreversibility*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 2, 8-10
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0433

Crystal quality dependence on the nonvolatile resistance switching in 3C-SIC thin film grown by gas-source molecular beam epitaxy using monomethylsilane

Bantaculo, Rolando, Suemitsu, Maki

For the next-generation of nonvolatile memory (NVM) devices, 3C-SiC/Si based NVM devices are attracting much attention because of its superior mechanical, thermal, and electrical properties. In this study, the resistive switching (RS) characteristics of the resistive random access memory (ReRAM) device based on 3C-SiC epifilm grown using monomethylsilane gas-source molecular beam epitaxy (GSMBE) were investigated. Results reveal that the growth temperature of the 3C-SiC epifilm plays a vital role for the two-terminal nonvolatile RS property of the $Au/SiO_2/3C\text{-}SiC/Si/Al$ device. We found that there is a linear relationship between 3C-SiC epifilm degradation and electronic hysteresis. The RS behavior of the 3C-SiC epifilm was highest when the growth temperature was 800°C and this was demonstrated by applying bias on the Au and Al electrodes. I-Vcharacteristic showed a bipolar switching behavior with a memory window of 2.1 V and a threshold voltage of 1.8 V under a minimum applied sweeping voltage of ±5V. C-V characteristic indicated a counterclockwise hysteresis direction which signifies a tunneling capture of free charges. Endurance test gave a typical rewriting cycle of about 10^5 cycles. These observations suggest that 3C-SiC/Si based NVM devices may be well suited for ultrahigh-density memory applications. **(Author's abstract)**

Keywords: *Physics, Crystal quality dependence, Nonvolatile resistance switching, 3C-SiC thin film, Gas-source molecular beam epitaxy, Monomethylsilane*

Transactions of the National Academy of Science and Technology, Volume No. 35 Issue No. 1, 155

0434

The effect of gamma irradiation on mimosine in liquid systems: preliminary studies

Alejandrino, A. L., Goze, C., Balboa, B.

Dilute solutions of mimosine (atmospheric conditions: a oxygen-free and b. oxygenated) in the liquid systems: I) water and II) 0.1 N HCI, were subjected to high dose levels of Co-60 gamma irradiation. At the dose range investigated (1.5-6 Mrads), mimosine degradation was found to increase with dose. The radiosensitivity of mimosine was of the order: mimosine in water (oxygenated) > mimosine in water (oxygen-free) > mimosine in 0.1 N HCI (oxygenated) > mimosine in 0.1N HCI (oxygen-free). **(Author's abstract)**

Keywords: *Physics, Gamma irradiation, Mimosine, Oxygen*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision,
Volume No. Issue No. , 305-313
(Filipiniana Analytics)
Fil(S) QC173 P55 4/1 1976

0435

Effect of radiation on some salicylates: i steady state studies

de la Paz, Lilia R.

The effect of solid phase irradiation of three salicylates are studied. A method of product analysis using TLC coupled with diffused reflectance spectroscopy was made for two of the salicylates. Values of G (-phenyl salicylate) = 2; G(-acetylsalicylic acid) = 1.2 and G(-salicylamide) = 0.50 were obtained. Irradiations in solution were carried out for salicylamide and the initial G(-M) values under four irradiation conditons were obtained. Results indicate that salicylamide is more susceptible to OH radical attack which leads to acidic oxidation products in the presence of air. Attack by the e^- aq or the H atom leads to basic product formation. Some observations and tests which may lead to the identification of the degradation products are made. Post irradiation effects are studied. Implications on radiation sterilization are discussed. **(Author's abstract)**

Keywords: *Physics, Salicylates, Radiation, Acetylsalicylic acid, Phenyl salicylate, Salicylamide*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision,
Volume No. 4 Issue No. 1, 292-304
(Filipiniana Analytics)

0436

Evaluation of amplified image characteristics of a BSO Crystal

Guerrero, Raphael A., Palima, Darwin Z., Daza, Marlon Rosendo H.

Image amplications by two-wave missing in a BSO crystal is investigated. Amplified images are observed to have higher gray levels, with an average relative gain of 5.9. Contrast range is enhanced from 0-to-58 to 0-to-98 and the overall brightness is increased by a factor of 2.7. The response function of the image amplification system shows sensitivity at higher spatial frequencies and is similar for two different images. **(Author's abstract)**

Keywords: *Physics, Nonlinear optics, Image processing, Two-wave mixing, Parallel optical processors*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 1, 13-20 (Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/1 1998

0437

Evidence of a normal-state pseudogap in bulk superconducting tunneling junctions of $YBa_2Cu_3O_{7-\delta}$

Guerra, Leandro, Reyes, Mildred, Manuel, Ayn, Sarmago, Roland , Salvador, Arnel

Planar contact tunneling experiments have been performed on bulk superconducting tunneling junctions of $YBa_2Cu_3O_{7-\delta}$ in the temperature range 77--295K. A clear depression in the conductance curves measured, attributed to the pseudogap, has been observed in temperatures above Tc (approx. 90K determined from dc resistivity measurements) before diappearing at T*=275K. The width of the pseudogap has been quantitatively measured as Dps, ave = 25.6 meV from the differential conductance plots. These results agree with the current understanding of the phenomenology and nature of this pseudogap, namely: (1) the pseudogap value is relatively temperature-independent; (2) the superconducting gap and the pseudogap have the same d-wave nature; and (3) the superconducting gap evolves from the pseudogap. **(Author's abstract)**

Keywords: *Physics, Pseudogap, Tunneling, YBa2Cu3O7-Î´*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 2, 11-14 (Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0438

Experimental observation of non-"S-wave" superconducting behavior in bulk superconducting tunneling junctions of $YBa_2 Cu_3 O_{7-\delta}$

Guerra, Leandro Jose D., Basco, Flordivino L., Sarmago, Roland V.

Evidence of non-s-wave superconductivity from normal tunneling experiments in bulk tunneling junctions of $YBa_2 Cu_3 O_{7-\delta}$ is presented. The I-V and dI/dV characteristics of bulk superconducting tunneling junctions of $YBa_2 Cu_3 O_{7-\delta}$ have been measured at 77.0K and clear deviation from s-wave superconducting behavior has been observed. The results agrees with d-wave symmetry, and interpreting the data in this way, the magnitude of the superconducting energy gap, 2âˆ†, is found to be (0.038 ± 0.002) eV. Comparing this energy gap with T_c (2âˆ†/k_B T_c = 5.735), indicates that these high-T_c superconductors are strongly correlated materials, which in contrast with BCS-superconductors are believed to be weakly correlated. **(Author's abstract)**

Keywords: *Physics, S-wave, D-wave, Tunneling, Superconducting energy gap, YBa2 Cu3 O7-Î´*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 1, 7-12
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/1 1998

0439

Full gauge-parameter-independent higgs-boson self-energy

Kniehl, Bernd A., Palisoc, Caesar P.

We calculate the self-energy of the standard-model Higgs boson n by means of the pinch technique. We work in the general R_ξ gauge and show that the final results is independent of the gauge parameters. This results is useful in order to demonstrate that the threshold singularities encountered in the description of Higgs-boson production and decay in the on-shell renormalization scheme only arise at physical thresholds and are independent of the chosen gauge. **(Author's abstract)**

Keywords: *Physics, SM Higgs-boson self-energy, Pinch technique, S-matrix PT framework, Gauge invariance, Quantum corrections, Perturbation theory*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 12 Issue No. 1, 29-34
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 12/1 2000

0440

Granular mixing studies with $^{69}Zn^{m}$

Lumba, Linda G., Cabalfin, Estelita G.

The use of ^{69} Zn ^{m} as tracer in evaluating the characteristics of a mixing process was demonstrated. The objectives of the tracer study were to determine the optimum mixing time, to test the homogeneity of the product and to detect any demixing at specific points in the process. Five grams of irradiated ZnO (~5m Ci^{69} Zn ^{m})was used for each 2-ton-batch mixture. Five mixing times were tested and samples were taken at 3 sampling points. The results obtained using 3 statistical procedures in determining mixing parameters are compared. **(Author's abstract)**

Keywords: *Physics, 69Znm , Granular mixing, Homogeneity*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision, Volume No. 4 Issue No. 1, 282-291
(Filipiniana Analytics)
Fil(S) QC173 P55 4/1 1976

0441

Holographic studies on human femur with internal fixations

Almoro, Percival , Morales, Marienette, Gueco, Regency, Bundoc, Ronald, Daza, Marlon Rosendo

Double-exposure holographic interferometry is used to investigate the response of the human femur, with and without fracture, subjected to mechanical forces. The femur without fracture experienced uniform tension in the lateral side and uniform compression in the medial side. Fractured femurs stabilized by different internal fixators were investigated and significant differences in the dynamics were observed. The fractured femur stabilized by a plate and screws experienced greater bending in the upper portion than in the lower portion of the fracture. In the fractured femur stabilized by an intramedullary nail, the load was absorbed completely by the lower portion of the fracture. **(Author's abstract)**

Keywords: *Physics, Biomechanics, Orthopedics, Bone fractures, Holographic interferometry, Double-exposure method, Laser application*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0442

Hydrological characterization of the eastern side of Batan, Aklan Aquifer

Sucgang, Raymond J., Pabroa, Preciosa Corazon B., Petrache, Christina A., Lapay, Rosebelly P., Luces, Arnicole B.

Groundwater is constantly being recycled and replenished by rainfall. However, because of the uneven distribution of rain and the heavy use of water in some areas, some basins/aquifers are experiencing environmental stress. To delineate the ground water recharge areas for the eastern side of Batan, Aklan, Philippines, and to assess the vulnerability of the aquifer to pollution and sea water intrusion, measurements on the filed parameters, pH, conductivity, as well as, the eight major ions calcium, magnesium, sodium, potassium, chloride, nitrate, sulfate, and bicarbonate were made. Radioactivity of the water samples was also measured. Some geochemical processes were recognized in the Batan, Aklan basin, the most important of which are water-bedrock interaction and sea water intrusion. The groundwater in the eastern Batan, Aklan basin is predominantly of the calcium magnesium bicarbonate type. Two clusters of water type were found. Cluster 1 (Aby, Mandong Manukan, and Poblacion Magkawit) and Cluster 2 (Banica Hill, Banica Plain, Poblacion Acacia and Angas-1). Recharge in Cluster 1 becomes sodium chloride dominated due to possible impending brackish water intrusion. Recharge in the Cluster 2 does not show salinisation/ seawater intrusion and may indicate active recharge to the subsurface water. The overall quality of subsurface water in the eastern side of Batan, Aklan can be considered good and compliant with the limits set by the Philippine National Standards for Drinking Water for the physicochemical parameters, except for the Angas-1 and Angas creek waters which have very acidic pH. Both the gross alpha and beta activities in all the sites were within the regulatory limits for radioactivity in drinking water of the Department of Health. **(Author's abstract)**

Keywords: *Physics, pH, Groundwater, Recharge, Major ions, Aklan*

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

0443

Inherent and non-inherent source of error in film badge dosimetry

Valdezco, Eulinia M., Marasigan, Corazon J.

This paper describes the various studies conducted at the Philippine Atomic Energy Commission to test the performance and accuracy of the film badge as a personnel monitoring device and to determine the magnitude of the random errors and variations in the film badge measurements of radiation exposures. Inherent and non-inherent sources of error such as latent image fading, angular dependence, energy dependence, effect of heat treatment, variations of developing time and developer temperature, and absorption of beta radiations by the film wrapper were investigated and found to contribute significantly to the compound errors in film badge dosimetry. Recommendations to improve the techniques in order to minimize these errors

are also discussed. The results obtained in this work is intended to establish more accurate and precise methods of personnel monitoring and should help in the understanding and control of these various sources of error in order to eliminate some doubts as to the adequacy of the film badge as a routine personnel dosimeter. **(Author's abstract)**

Keywords: *Physics, Radiation, Film badge dosimetry, Film wrapper, Effect of heat treatment*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision, Volume No. 4 Issue No. 1, 325-339
(Filipiniana Analytics)
Fil(S) QC173 P55 4/1 1976

0444

Laser induced refractive index change in nematic liquid crystals

Larraga, Crispulo M., Palima, Darwin Z., Domingo, Zenaida B.

We report the observation of laser induced refractive index change for a homeotropically aligned nematic liquid crystal (BDH-E7) film of 10 mm thickness. Diffraction rings were observed when an intense Ar+ ion laser hits a homeotropically aligned nematic liquid crystal at normal incidence above a threshold of 110 KW/cm2, which correspond to the threshold of the Optical Freedericksz Transition (OFT). Above the threshold, as the laser intensity was increased, the number of observed diffraction rings likewise increased. The mechanism for optical molecular reorietation has a great dependence on elastic restoring forces. By exploring the dependence of bend elastic constant, K33 with Freedericksz transition, the value of the K33 was calculated at 2.6 x 10-12 N. to investigate the behavior of Dn as a function of intensity, an experiment was performed for oblique laser incidence. It was shown that the refractive index change increased linearly from values of 0.001 to 0.18 at laser incidence. It was shown that the refractive index change increased linearly from values of 0.001 to 0.18 at laser intensities ranging from 50 KW/cm2 to 200 KW/cm2. The kerr coefficient n2 was calculated for various laser incidence angles. **(Author's abstract)**

Keywords: *Physics, Liquid crystals, Refractive index, Optical freedericksz transition, Director reorientation, Laser*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0445

New measurement of cosmic ray flux in Iligan City

Terio, Rosemarie M., NiÃ±ofranco, Eufemio, Solidum, Roelson, Bacala, Angelina M.

Sea level cosmic ray flux is measured anew in Iligan City using two plastic scintillators of area 100 x 10 cm2 which are stacked vertically by a spacing of 150 cm. Each scintillator is separately coupled to a Hamamatsu photomultiplier tube which when high voltage is applied. constitutes a detection-amplification system. This assembly of detectors is then connected to Nuclear Instrumentation Modules to discriminate and count coincident signals over a fixed interval of time through the months of August - September 1999 at the MSU-IIT High Energy Physics (HEP) Laboratory. Data show that there is no significant difference between the measured average nighttime and daytime cosmic ray fluxes and that the average hourly and daily fluxes is a constant throughout the measurement period. All these results are in agreement with the first measurements of cosmic ray flux done at the same laboratory in 1999 using an entirely different detector- electronics assembly. The measured values are also shown to be consistent with Monte Carlo simulations and with the predicted, internationally accepted values. **(Author's abstract)**

Keywords: *Physics, Cosmic ray, Plastic scintillator detectors, NIM modules*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0446

Measurement of microscopic deformations using double-exposure holographic interferometry and the fourier transform method

Almoro, Percival F., Daza, Marlon Rosendo H.

Microscopic deformations on the surface of a circular diaphragm were measured using double exposure holographic interferometry and Fourier transform method (FTM). The three-dimensional surface deformations were successfully visualized by applying FTM to holographic interferogram analysis. The minimum surface displacemnt measured was 0.317 μm. This was calibrated via the Michelson interferometry technique. **(Author's abstract)**

Keywords: *Physics, Holographic interferometry, Microscopic deformation measurement, Fourier transform method, Double-exposure method, Hologram, Laser application*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 2, 55-61
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/2 1998

0447

Measurement of the W boson mass using the JLC study framework(JSF)

Arogancia, Dennis C., Sanchez, Allister Levi C., Magallanes, Jingle B., Gooc, Hermogenes C., Bacala, Angelina M., Fujii, Keisuke, Miyamoto, Akiya

The Standard Model (SM) asserts that the matter is ultimately composed of three generations of pointlike particles called quarks and leptons and their intermediary particles called gauge bosons; all of which have been directly observed to date except for the Higgs boson. To search for this elusive particle, the Asian high energy physics community has proposed a next-generation linear accelerator facility to be built in Japan called the Joint Linear Collider (JLC) which runs at center-of-mass energies of 500 GeV to 1.5 TeV.

Since the Higgs boson is sensitive to the precision measurements of the weak bosons, we investigated the reaction $e^+e^- \rightarrow evW$ using computer simulation work at MSU-IIT Computational Physics Laboratory. Events from this reaction were generated and analyzed by using the JLC Study Framework (JSF); a software library based on the ROOT suite of programs provided by the European high energy physics laboratory called *CERN*. In running JSF, other software libraries were installed such as *CERNLIB, ROOT*, and *LCLIB*; all from *CERN* and the *PHYSSIM* library by *KEK* physicists. Default configurations of the *JLC* detectors such as the different *vertex detectors, central drift chamber, calorimeter, muon detector*, and *superconducting solenoid magnet* were already set in the simulation; so with the 3 Tesla detector parameter setting.

Measurement of the W boson mass used the semileptonic channel particularly e^+e^- *evW* because it has a larger cross section and does not have an ambiguity due to final state color exchange in 4 jets final state. Event generation and simulation used the packages called *BASES/SPRING* and *JSF Quick Simulator* respectively with a center of mass energy set at 500 GeV. Data analysis used graphical user analysis (GUI) which include effects from *initial state radiation* (ISR) and *beamsstrahlung*. Calculation of total cross section in such process was done in using *BASES*. W mass was measured directly from its decayed products, particularly quarks. In the event selection criteria, neutrinos were removed and all particles that went into the beam pipe direction. Theoretically, the mass of the W boson is about 80 GeV which was used as input mass in the computer simulation. In this paper hte mass of the W boson was measured to be 80.41 GeV with ISR effects and 80.40 GeV with beamsstrahlung effects. Based on this result the relative error is less than 1%. **(Author's abstract)**

Keywords: *Standard model, JLC Study Framework (JSF), ROOT, LCLIB, CERNLIB, PHYSSIM, JSF, Quick simulator, BASES/SPRING, ISR, Beamsstrahlung, Physics*

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Issue No. , 349-350
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

A molecular theory of the onset of turbulence

Muriel, Amador, Novopashin, Sergei, Esguerra, Jose Perico, Gutierrez, Edgardo

We review experimental data which shows the dependence of the critical Reynolds number on molecular composition. We then use the cell model of a gas to explain the onset of turbulence by the excitation of the internal degrees of freedom of molecules. Two sources of internal energy states are identified: quantum confinement for monoatomic molecules and rotational states for diatoms. **(Author's abstract)**

Keywords: *Physics, Turbulence, Reynolds number, Molecules*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0449

Morphological and chemical properties of biological apatite powders from 0.5M hydrochloric acid (HCI) pre-treated and thermally-treated tilapia bones

Butanas, Jr., Bienvenido M., Vequizo, Reynaldo M.

Hydroxyapatite (HAp) from biological apatite has been widely studied for its ability to replace broken bones and teeth. Numerous techniques can produce good quality HAp; however, these techniques are expensive. In this research, the production of biological HAp powders from 0.5M HCl pre-treated tilapia bones using thermal treatment is presented. Proper cleaning of bones was done before thermal treatment (700°Cd"*Td*"1000°C). Energy dispersive x-ray (EDX) spectroscopy and scanning electron microscopy (SEM) were used to elucidate the elemental and surface morphology, respectively. The characterization results confirmed the presence of HAp in all prepared samples. Better HAp crystals are observed compared with the untreated tilapia bones. As the annealing/calcination temperature of tilapia bones increased, the good quality of HAp crystal is formed as shown in SEM-EDX results. SEM micrographs depict the roundlike and rod-like shapes of HAp powders along with the coalescence of particles as calcination temperature increases which are better than untreated prepared samples. Furthermore, EDX results also confirm the calciumdeficient formation of HAp powders. However, formation of 0.5M HCl pre-treated HAp crystals is observed at 800°C as revealed by [Ca]/[P] ratio. These results conform to the properties and composition of biological apatites implying that the produced HAp powders have better quality than untreated samples and are now ready for further studies on its applications. **(Author's abstract)**

Keywords: *Physics, HAp, Apatite, Biological apatite, SEM-EDX, Thermal treatment*

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

0450

Natural radioactivity measurement at the proposed nuclear power plant site

Cojuangco, Josefina G., Salomon, Angeles pH.

Natural radioactivity measurement in the Philippines aims to establish baseline radioactivity levels in the environment of items essential to man. In this article are presented the results of the environmental surveillance conducted in Bagac, Bataan from 1973 to 1974. Analyses were made on air particulates, sea and fresh water, grass, and soil samples for gross beta-gamma activities. Results obtained showed activity levels below the maximum permissible concentration recommended by the International Committee on Radiation Protection (ICRP). **(Author's abstract)**

Keywords: *Physics, Natural radioactivity, Air particulates, Sea water, Fresh water, Grass, Soil*

Philippines Nuclear Journal: A publication of the Philippine Atomic Energy Commision, Volume No. 4 Issue No. 1, 340-351
(Filipiniana Analytics)
Fil(S) QC173 P55 4/1 1976

0451

Negative ion beam focusing in a plasma sputter-type negative ion source

Yambot, Miguel, Mendenilla, Alexander, Valmoria, Nico, Ramos, Henry, Garcia, Alipio

The ion beam produced from a plasma sputter-type negative ion source with Zr target was analyzed, and the negative ion beam current was increased by focuisng with an electrostatic Einzel lens. An Ar-N2 plasma at 7.0 x 10-3 Torr (20% N2) with discharge current voltage=-20 V and discharge current = 1.0 A was produced for sputter formation of negative ions in the ion source. The Zr target immersed in the plasma was biased at -200 V. The ion beam was analyzed with a retarding potential electrostatic energy analyzer. Lens potentials of 20.0 V for the outer electrodes and -80.3 V for the inner electrode resulted in the highest negative ion beam current, increasing the ion current to 0.5 nA (from 0.28 nA when not using the lens), and reduced the beam spot size to 25 mm (from 35 mm for the unfocused beam. **(Author's abstract)**

Keywords: *Physics, Negative ion source, Electrostatic einzel lens, Negative ion beam, Plasma sputter-type*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 2, 44-46
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0452

Noise enhanced imaging of weak objects

Separa, Stephen Daedalus, Tapang, Giovanni, Lim, May, Saloma, Caesar

A method that allows the imaging of weak objects is demonstrated through the use of additive noise. Additive noise (characterized using a variance parameter σ) is used to drive the intensity of the test object so that a threshold detector detects it. Performing the simulation with a sufficiently large number of trials decreases the optimum value of noise required for a good image quality **(Author's abstract)**

Keywords: *Physics, Noise dithering, Image recovery, Stochastic resonance (SR)*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 2, 29-32 (Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0453

Phase diagram of binary mixture E7: TM74A liquid crystals

Delica, Serafin, Estonactoc, Melvin, Micaller, Mary Claire, Cada, Leonorina, Domingo, Zenaida

Although there many liquid crystalline materials, difficulty is often experienced in obtaining LCs that are stable and has a wide mesophase range. In this study, mixtures of two different LCs were used to formulate a technologically viable LC operating at room temperature. Nematic E7 (BDH) and cholesteric TM74A were mixed at different weight ratios at 10% increments. Transition temperatures were determined via Differential Scanning Calorimetry and phase identification was done using Optical Polarizing Microscopy. The phase diagram showed the existence of three different phases for the temperature range of 10-80°C. Mixtures with 0-20% E7 exhibit only the cholesteric-nematic mesophase, which could be due to the micture's being largely TM74A and its behavior in the temperature range considered is similar to the behavior of pure TM74A. With an increase in the concentration of E7, the smectic phase of the pure cholesteric was enhanced, as seen from the increased transition to the cholesteric-nematic phase and a broader smectic range. The cholesteric-nematic to isotropic transition increased as the nematic concentration increases, following the behavior expected from LC mixtures. For mixtures that are largely nematic (more than 50% E7), the smectic phase has vanished and the cholesteric-nematic phase dominated from 30-60°C. **(Author's abstract)**

Keywords: *Physics, Liquid crystals, Phase diagram, Binary mixture E7, TM74A*

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Fil(S) Q1.A3 S4 11/2 1999

0454

Pulse 1064 nm Nd-YAG laser deposition of titanium on silicon in a nitrogen environment

Amistoso, Jose Omar, Pabit, Edgardo, Hui, Marilyn, Garcia, Wilson

Pulsed laser deposition (PLD) technique was demonstrated for the deposition of titanium nitride (TiN) thin films on Si (100) substrates. A 1064 nm pulsed Nd-YAG laser focused on a titanium (99.5%) target in a nitrogen environment to generate the atomic flux needed for the film deposition. Spectroscopic analysis of the plasma emission indicates the presence of atomic titanium and nitrogen, which are the precursors of TiN. Images of the films grown at different laser pulse energies show an increase in the number and size of deposited droplets and clusters with increasing laser pulse energy. A decrease in cluster and droplet size is also observed, with an increase in substrate temperature. EDS data show an increase in the titanium peak relative to the silicon as the ambient nitrogen pressure is decreased. An increase in deposition time was found to result in large cluster and irregularly shaped structures on the substrate. Post-deposition annealing of the samples enhanced the crystallinity of the film. **(Author's abstract)**

Keywords: *Physics, Laser deposition, Titanium nitride, Laser-induced plasma*

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(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0455

Pulsed 1064 nm Nd-YAG laser deposition of titanium on silicon in an ambient nitrogen environment

Amistoso, Jose Omar, Pabit, Edgardo, Hui, Marilyn, Garcia, Wilson

Pulsed laser deposition (PLD) technique was demonstrated for the deposition of titanium nitride (TiN) thin films on Si (100) substrates using 1064 nm excitation. The target material used was titanium (99.5%) and deposition was done under ambient N2 pressure. Spectroscopic analysis of the plasma plume revealed emission lines due to Ti(l) and N(I), which are the active species that lead to the formation of TiN. Images of the films grown at different laser pulse energies show an increase in the number and size of deposited droplets and clusters with increasing laser pulse energy. A decrease in cluster and droplet size is observed, with an increase in substrate temperature. EDS data show an increase in the Ti peak relative to the Si peak as the ambient N2 pressure is decreased. An increase in deposition time was found to bring about the growth of large clusters and irregularly shaped structures on the substrate. Post-deposition annealing of the samples enhanced the crystallinity of the deposited thin film. **(Author's abstract)**

Keywords: *Physics, Pulsed laser deposition, Titanium nitride, Laser ablation, Laser-produced plasma, Optical emission, Nd-Y AG laser, SEM, XRD, Titanium nitrogen*

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Fil(S) Q149.P5 N25 v.22 2000

0456

Radiological and physico-chemical appraisal of Aklan River

Pabroa, Preciosa Corazon B., Abayon, Elsa I., Dalipe, Francis R., Abayan, Danilo, Lauron, Ma. Rema, Dela Cruz, Elaine P., Faminiano, Oliver, Sucgang, Raymond J., Racho, Joseph Michael D., Petrache, Christina A.

In this study, gammametric counting and gross alpha-beta measurement by Liquid Scintillation Spectrometry (LSC) were used to mark out regions with impending elevated concentrations of minerals/pollutants in the offshoot streams of the Aklan River. The study was done in line with the establishment of a baseline data of geo-environmental pollutants and mineral resources in the province of Aklan, and to set up action limits for soil, sediment, and water contamination using the local baseline. Seven tributaries were selected as sampling points. Streambed sediments were collected from the 7 sites and were analyzed for gamma emitting radionuclides using a high purity Germanium (HPGe) detector; surface water from all of the five sites were analyzed for bicarbonate ions by titrimetry; pH and conductivity by selective electrodes; and radioactivity by Wallac 1414 Liquid Scintillation Counting; and microbial load by Sim Plate method. None of the watercourses exceeded the regulatory limits set by the Philippine National Standards for Drinking Water for conductivity, pH, and bicarbonate parameters for surface waters. As far as radioactivity is concerned, all of the sites' water samples gave total alpha activity of less than the detection limit, LLD, (LLD= 0.03 Bq/L), which was way below the drinking water regulatory limit of 0.1 Bq/L for alpha emitters. All the samples exhibited beta activities of less than LLD (LLD= 0.3 Bq/L), which was also way below the drinking water regulatory limit of 1.0 Bq/L for beta emitters. In terms of radiogenic nuclides in sediments, all the sediments had Cs-137, Sr-90, and I-131 concentrations of less than 3 Bq/K. Microbial load was elevated at site 7 with approximately 738 populations per plate during a post monsoon sampling. **(Author's abstract)**

Keywords: *Physics, Aklan River, Gross alpha-beta, Gamma, Drinking water, Water contamination*

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(Filipiniana Analytics)
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0457

Resistivity measurements on Bulk $Bi_2Sr_2CaCu_2O_{8+\delta}$: contribution of vortices at low magnetic fields

de la Cruz, Clarina, Guerra, Leandro, Sarmago, Roland, Salvador, Arnel

The behavior of high-temperature superconductors in the presence of an external magnetic field is of particular interest in light of its technological application and commercialization. In this paper, we performed resistivity measurements on bulk superconducting pellets of $Bi_2Sr_2CaCu_2O_{8+\delta}$ in the presence of external magnetic fields below 0.5T. The broadening of the transition region below Tc in the resistivity plots, was attributed to the residual resistance imparted by flux flow in the sample. From I-V measurements of 50 K at fields below 0.6T, the contribution of vortices was quantitatively measured as a flux flow resistivity which range from 0.1231 to 1.700 (m(-mm) for applied magnetic fields from 0.04T to 0.6T. The increase in the flux flow resistivity with increasing applied field was due to the increase in the number of vortices moving in steady state motion brought about by the interaction of the vortices with the transport current. **(Author's abstract)**

Keywords: *Physics, Superconductors, Resistivity, Vortices, Flux flow resistivity, Magnetoresistance*

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Fil(S) Q1.A3 S4 11/2 1999

0458

Scientific publications by the faculty of the College of Science, UP Diliman: September 1988 to May 1998

Lim, May, Saloma, Caesar

We present a comprehensive survey of the scientific publications by the Faculty (Professors, Associate Professors, and Assistant Professors) of the College of Science, UP Diliman. The initial listings are obtained from UNCOVER and MEDLINE database which are freely available in the internet. Our search covers articles that have been published between September 1988 and May 1998. Books and conference proceedings are excluded. Performance analysis is done along academic ranks and units. Final tally considers only journals covered by the Science Citation Index. Based on our tally, no academic unit has achieved the rule of thumb for research excellence which is at least one internationally-abstracted publication per faculty per year. **(Author's abstract)**

Keywords: *Physics, Survey, College of Science, UNCOVER, MEDLINE*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 1, 1-6 (Filipiniana Analytics)

Fil(S) Q1.A3 S4 10/1 1998

0459

Synthesis of ZrN film via the plasma sputter-type negative ion source

Valmoria, Nico, Mendenilla, Alexander, Yambot, Miguel, Mena, Manolo, Ramos, Henry

A plasma sputter-type negative ion source is used in the production of high grade coatings of zirconium mononitride (ZrN) on copper substrate. It presents a new approach for the production of ZrN thin films. The ion source was operated in its target/gas mode. Zirconium metal is used as target and argon as the sputtering gas. Nitrogen is used as the reactive gas. Optimum conditions for the synthesis of ZrN for a number of process parameters like volume ratio of gases, discharge conditions, substrate heating, bias, and deposition time were determined. Experimental runs using between 20% and 30% of nitrogen (with argon constituting the other 70-80) in a total gas filling pressure of 7.0 x 10^{-3} Torr and an hour of deposition showed the synthesis of good samples by visual inspection in view of the typical gold color of the film produced. The target potential was between 300V to 325V and the target current between 7 mA to 12 mA. Discharge voltage was at 40V giving a plasma current between 698 mA to 1070 mA for the range of target potentials. The substrate was cooled to 20°C. The resulting layers were characterized by surface analysis methods like X-ray diffraction (XRD), atomic force microscopy (AFM), and energy dispersive X-ray analysis (EDAX). Films produced under these conditions exhibit the (100) and (200) peaks of ZrN obtained from the XRD analysis. The rms roughness from AFM were determined to range from 72 nm to 101 nm. Deposition rate was obtained at about 17 nm/min. **(Author's abstract)**

Keywords: *Physics, Ion source, Plasma, thin film, Target, Substrate*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 2, 39-43
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/2 1999

0460

Transverse beam profile analysis of a plasma sputter ion source

Mendenilla, Alexander, Blanca, Carlo Mar, Ramos, Henry

The beam profile of an existing plasma-sputter-type negative ion source with a titanium target is analyzed. The transverse characteristics of the ion beam are investigated and the deposition capability of the system is characterized. The ambient plasma parameters are derived via a Langmuir probe indicating an electronic density of 9.2 x 10^{10} cm^{-3} and temperature of 2.14 x 10^{4} K near the center of the ion beam. Simulated negative ion distribution show that the energy content of the deposition plasma is three orders of magnitude lower than the expected current amplitude-the apparent effect of beam defocus. Although attenuation of the incident beam is

apparent, the beam is basically monoenergetic, with a maximum energy spread of 8eV. **(Author's abstract)**

Keywords: *Physics, Plasma physics, Film deposition, Negative ion, Titanium*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 1, 21-30 (Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/1 1998

0461

A two-dimensional predator-prey model

Banzon, Ronald S.

A spatio-temporal predator-prey model is devised from an existing space-independent model that was modified to include the phenomenon of migration. A tolerance level, which depends on the amount of resources, is proposed as the motivation for the migration of the prey. The change from a rectangular to a cylindrical confinement was interpreted as an increase in mobility. The model supports the idea of increased predator population with mobility. **(Author's abstract)**

Keywords: *Physics, Predator-prey model, Migration, Mobility, Spatio-temporal, Numerical*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 11 Issue No. 1, 21-24 (Filipiniana Analytics)
Fil(S) Q1.A3 S4 11/1 1999

0462

Viscosity sensor based on a piezoelectric quartz crystal

Cuadra, Dominic S., Sevilla, III, Fortunato S.

Conventional viscosity measurements usually require a sizeable amount of liquid sample (ca. 5 to 20 mL), considerable measurement time, and some specialized personnel skills. The most commonly used devices are the capillary viscometer and the "steel ball" viscometer. In order to simplify viscosity determination, a novel viscosity sensor was developed based on a piezoelectric quartz crystal. This device exploits the effect of the viscosity of a liquid medium on the resonant frequency of a piezoelectric crystal.

In this sensor, one side of the quartz crystal was exposed to about μL of the liquid sample in a fabricated sensor cell. The piezoelectric crysta l was driven to vibrate through an oscillation circuit based on a TTL device and the oscillation frequency was measured through a frequency counter. The sensor exhibited a response within 1 second and reached a steady state in 2 minutes, In the presence of liquid sample, the sensor displayed a decreased frequency. The response was

highly repeatable even at random sampling procedures. A highly linear relationship was observed between the frequency and the square root of the product of density and viscosity. The response characteristics of this sensor cold make it useful for the on-line measurement of viscosity in industrial processes.**(Author's abstract)**

Keywords: *Physics, Viscosity sensor, Piezoelectric crystal, Quartz crystal*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

SCIENCE AND TECHNOLOGY

0463

Calamansi (*Citrus microcarpa*) seed charcoal as water filter

Sosas, Marcial D., Baga, Cecilio S., Macachor, Corazon P.

Rain water is one of the potential sources of water supply at Cebu Technological University. However, the water is contaminated with fecal coliform due to bird and rodent wastes. Calamansi seed charcoal filter improved the quality of rainwater based on biological parameters, in particular, total bacterial count and total coliform count, as well as physico-chemical parameters including alkalinity, total suspended solids, total dissolved solids, salinity and turbidity. The water sample filtered using calamansi seed charcoal had the least bacterial count and fecal coliform compared to the rain water samples before filtering, which were comparable to the quality of commercial bottled water. The rain water samples filtered with calamansi seed charcoal reduced the levels of alkalinity, total dissolved solids and turbidity. Verification studies on filtered rain water using calamansi seed charcoal will be conducted for liquid hand wash diluents. **(Author's abstract)**

Keywords: *Science and technology, Calamansi seed, Charcoal, Filter, Rain water*

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(Filipiniana Analytics)
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0464

Citrus microcarpa peel extract as active ingredient for liquid hand wash

Macachor, Corazon P.

Some liquid hand wash products contain *Citrus microcarpa* (calamansi) juice and virgin coconut oil as active reagents added to SLES, CDEA, Dehyton AB 30, propylene glycol, salt, preservatives, and water. Because calamansi juice as an active ingredient increases the cost of production, its peel extracts can be investigated as a substitute. This study determined the acceptability of calamansi peel extract as a substitute active reagent of calamansi juice for liquid hand wash to improve the viscosity of the product and reduce production cost. A three-day extracted peel extract of calamansi was formulated with varying concentrations of 20, 40, 60, 80 and 100% into a liquid hand wash and subjected to sensory evaluation. The liquid hand wash with 40% peel extract was the most preferred concentration with "like very much" as to appearance and foamability and "like moderately" as to scent and viscosity. The product was effective based on total plate count in cfu/20cm^2 using a swab test. The calamansi peel can be incorporated to calamansi juice as an active reagent for liquid hand wash and a 40% solution of the three-day extract of calamansi peel is recommended. **(Author's abstract)**

Keywords: *Science and technology, Citrus microcarpa, Peel, Extract, Hand wash, Calamansi*

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0465

Development of drawing ink from cephalopods

Baga, Cecilio S., Macachor, Corazon P.

The production of the squid ink, developed by the researchers of Cebu Technological University (CTU), Main Campus-Technology Research Center (TRC), promotes the utilization of ink from the sac of Cepaholopods, in particular squid, diamondback squid, and cuttlefish, with the objective of decreasing the cost of commercial ink. The squid ink using different species of cephalopods is superimposed with water, acid, glycerin, thinner and varnish. The developed squid ink from *Thysanoteuthis rhombus* with 25% squid pigment and 50% acid concentration has a grayish black color, slightly desirable solvent-like odor, ink dryness with a sharp irregular line, thick and dry ink consistency which is comparable with the commercial ink as to its color, dryness, and consistency. An improved ink formulation from sac of cuttlefish has light black color, moderately desirable solvent-like odor, sharp regular line, thin and dry ink consistency. 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 drawing ink from squid had a density (0.98 g/ml) which is close to commercial ink, and is safe for use since the lead content was less than 3.00 ppm. The researchers refining the ink density towards wider application of the newly formulated ink from a natural source. **(Author's abstract)**

Keywords: *Science and technology, Cephalopods, Ink sac, Drawing ink, Squid ink, Ink density*

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0466

An electronic nose based on conducting polymers for the differentiation of Philippine coffee varieties

Sevilla, III, Fortunato B., Santiago, Karen S., Dayao, Aaron Ralph Kahlil C., RaÃ±ola, Rey Alfred G.

An electronic nose (e-nose) based on conducting polymers was developed to discriminate different varieties of Philippine coffee: Arabica, Excelsa, Liberica, and Robusta. Conducting polymers such as polyaniline and polypyrrole doped with various counter-ions were utilized as the molecular recognition element in the e-nose system. Thin-film of conducting polymers were electro-deposited through potentiostatic polymerization onto the gap between the two gold wires (diameter = 620 ìm; distance = 200μm) set on a Teflon substrate and these conducting polymers were conditioned at a potential of 250 mV. The sensors response was recorded as the voltage produced by a linearized wheatstone bridge circuit. The sensors responded rapidly when exposed to the headspace of the coffee beans sample. The response exhibited good reversibility and reproducibility. The response of the sensor array in the e-nose system exhibited distinct patterns for each coffee variety. This was visualised by bar graph and radar plot. Chemometric analysis through pattern recognition techniques such as principal component analysis (PCA) and cluster analysis (CA) highlighted clusters for each coffee variety. This system offers a simple, low-cost and reliable method for the discrimination of Philippine coffee variety. It can also be applied for the authentication for coffee variety. **(Author's abstract)**

Keywords: *Science and technology, Electronic nose, Conducting polymers, Coffee, Principal component analysis and cluster analysis*

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(Filipiniana Analytics)
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0467

Extraction, isolation and characterization of proteins from legumes indigenous to the Philippines and Southeast Asia

Garcia, V. V., Galapate, R. P.

One variety of "tapilan" and six varieties of cowpea were used in the study. The samples were analyzed for proximate composition, fiber content, and protein solubility characteristics.

Crude fat content of cowpea ranged from 0.74 to 1.00% while "tapiIan" had 0.40%. Crude protein from 22.31 to 24.85% for cowpea varieties and "tapilan" had 20.53%. Crude fiber content of cowpea varieties varied from 2.42 to 5.21%, while "tapilan" had 4.77%. Ash content of the cowpea varieties ranged from 4.48-4.99% while "tapilan" had 4.48%. Carbohydrates content of the cowpea varieties ranged from 54.69% to 52.13%. "Tapilan" had 57.49% carbohydrate content.

Neutral detergent fiber values ' of cowpea seeds varied from 4.50% to 6.82% and "tapilan" had 7.21%; ADF from 2.15 to 3.54% for the cowpea varieties and 5.11% for "tapilan"; insoluble hemicellulose content of cowpea ranged from 1.27 to 4.17%, "tapilan" had 4.95%; lignin content of cowpea varieties ranged from 1.17 to 2.72% and 1.62% for "tapilan"; cutin varied from 0.24 to 1.14% for the cowpea varieties and 0. 18% for "tapilan" .

The extracted proteins from the seven samples were analyzed for nitrogen content (x 6.25 for protein content). Among the cowpea varieties, the water and salt soluble proteins, Solution (A+G+npn) were found to have the highest nitrogen content followed by the residual nitrogen, glutelin, albumin and prolamin respectively. "Tapilan" showed a different pattern with Solution (A+G+npn) as the highest, followed by albumin, glutelin, residual nitrogen and prolamin respectively.

Solution (A+G+npn) content of the cowpea varieties ranged from 1.89 to 3.18% while tapilan" had 2.31% Glutelin content ranged from 0.42 to 1.00% for the cowpea varieties. "Tapilan" had 0.44% glutelin value. The cowpea varieties had albumin values ranging from 0.24 to 1.11% while tapilan had 0.82%. Prolamin values of the cowpea varieties varied from 0.05 to 0.09%. "Tapilan contained 0.04% prolamin. The residual nitrogen content of the cowpea varieties varied from 0.22 to 1.04% while "tapilan" had 0.21%.

The nitrogen content of the water and salt soluble protein comprised 66.43% of the total nitrogen content of the cowpea varieties while the rest were found in glutelins and prolamins. In "tapilan", the albumin and globulin made up 77.00% of the total nitrogen content. Albumin content of the water and salt soluble fraction of the cowpea varieties had an average vaIue of 2.58%. "Tapilan" variety had a value of 2.31%. **(Author's summary)**

Keywords: *Science and technology, Legumes, Bio-chemical, Protein*

NRCP Research Bulletin, Volume No. 40 Issue No. 3, 638-650
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/3 1985

Extraction of essential (volatile) oils from some Philippine fruits

Anzaldo, Felicidad E., Coronel, Violeta Q., Dela Cruz, Catalina M., Recana, Marina P., Alcoba, Elvin M.

Volatile oils are present and can easily be obtained from local fruits like banana, jackfruit, kaimito, soursop, kabuyao and limoncito. Some of the compounds identified are those that are used as flavorants and medicinal. Alpha-pinene is a starting material in the synthesis of some medicinal; limonene and citral are flavorants (Oliveros-Belardo, 1986). The extracted volatile oils can be used as ingredients in the formulation of new flavors for desserts, cookies and pastries. They can also be used in masking undesirable odor or taste of certain medicinal preparations. Certain cosmetics like lipstics, bath soaps and shampoos also make use of fruity aroma.

The utilization of these materials, which otherwise would be kitchen or factory wastes, for the production of scents, odorants or flavors may minimize imports and eventually help in the conservation of the dollar reserves of the country. **(Author's summary)**

Keywords: *Science and technology, Essential (volatile) oils, Banana, Musa sapientum L., Artocarpus heterophyllus Lam, Crysophyllus caimito L., Anona muricata L., Limonia trifoliata L., Citrus hystrix DC.*

NRCP Research Bulletin, Volume No. 41 Issue No. 3-4, 479-504
(Filipiniana Analytics)
Fil(S) Q179.9 N32 41/3-4 1989

0469

Modeling the fate and transport of pesticides in an irrigated rice area

Simon, Samuel R., Agulto, Ireneo C.

For fast, effective, and economical assessment and continuous monitoring of the concentration of pesticides in an irrigated rice area, the use of models plays a very important role. This study aimed to assess the extent of pesticide contamination of water in the paddy field and drainage channel and to develop a model that can be used to determine the fate and transport of pesticides in an irrigated rice area. Three 144 square meter experimental paddy plots planted with MS 16 variety of rice and applied with Lambda cyhalothrin insecticide was used in the study. A computerbased transport model was developed that was used to simulate the concentration of pesticide residues in the ponded water and drainage channel by mathematically tracking the total mass of chemical residues from the loading point to the drainage stream in terms of mass balance. Results of the model simulation predicted that the concentration of Lambda cyhalothrin insecticide applied in the paddy field would diminish at the rate of 42.38% on the first day, 90.64% on the second day, 98.26% on the third day, 99.10% on the fourth day, to almost nil concentration on the fifth day. As indicated by the correlation analysis and test of significance between the observed and predicted data, the model can accurately simulate the actual pesticide concentration in the ponded and drainage water. The model can be enhanced by taking into consideration the advection process in the drainage stream and by linking of the

model to other available models by either using the input/output of the model as an input/output to the other model or vice versa. **(Author's abstract)**

Keywords: *Science and technology, Modeling, Fate and transport, Irrigated rice area, Insecticide concentration, Lambda cyhalothrin*

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0470

Studies on browning reactions in dessicated coconut products

Del Rosario, R. R., Pantorilla, Ma. G. N.

The browning reaction in desiccated coconut at three stages of maturity 10, 11, 12 months, was investigated during 10 weeks of storage at 10°C, room temperature and 44°C.

The hard texture in desiccated coconut was found to increase with increasing nut maturity.

The 12-month old nut samples had lower total and reducing sugars but higher protein and lipid contents as compared to 10 and 11 month old nuts.

Significant decreases in total and reducing sugars, free amino nitrogen and available lysine were noted over the range studied (10°C and 44°C). This indicated the participation of these components in the browning reaction in desiccated coconut. In younger nuts where free amino groups and sugars are higher, more browning was observed as compared to mature nuts.

With increased storage temperature, the rate of loss of free amino nitrogen, available lysine and sugars also increased. For instance, for free amino nitrogen the rate of loss was 0.011/100 g of material per week at the lowest storage temperature while it was 0.148/100 g of material per week at the highest storage temperature. In the case of available lysine nearly 23% was lost after 10 weeks of storage at 10°C while at 44°C about 53% of available lysine was destroyed.

Total lipids composed of neutral lipids, glycolipids and phospholipids amounted to 94.02, 5.70 and 0.28% respectively. After 10 weeks of storage at different temperatures, the amount of unsaturated fatty acids decreased considerably and decreased more as the storage temperature increased, indicating that they were-oxidized even under low storage temperature (10°C). The unsaturated fatty acids of the glycolipids were less oxidized than the unsaturated fatty acids in phospholipids.

Oxidized coconut lipids released carbonyl compounds. During the preparation of the samples, total carbonyl compounds slightly increased. Thus any additional process for the preparation of

desiccated coconut is a factor contributing to lesser flavor stability. The rate of total carbonyl compound released depended on the stages of maturity, storage temperature , time , the environmental factors and the structure of the samples.

With increased -total carbonyl concentration in the desiccated coconut samples, significant browning was also observed. The browning developed could have been the interaction of peroxidizing lipids and proteins present in the system. Adrews *et al*, (1965) interpreted the losses of free amino groups to reaction with FDNB in autoxidized lipid-protein stystem, indicating a reaction between lipid intermediates and the functional groups of protein.

Another possibility which could have contributed to the development of brown color were the contributions of the phospholipid and glycolipid fractions of the lipids. Phospholipids contain free amino groups which can apparently undergo the same kind of reaction with sugars and other aldehydes as of the amino groups and amino -acids of proteins (Lea, 1957). Previous data showed that even at low temperature, the phospholipids fraction is progressively oxidized to release free amino groups .

Since young nut samples had higher polar lipids, unsaturated fatty acids, reducing sugars and free amino acids, the samples developed browning more than mature nuts since these are more susceptible to oxidation and consequently to browning.

The results in this study suggest therefore that the browning developed in desiccated coconut as caused predominantly by protein and sugars present. The participation of lipids in the browning development was also observed even at low storage temperature.

The 12-month coconut maturity is most advantageous for harvesting and processing. The 12-month old desiccated coconut has long shelf life and has less tendency to develop brown color. **(Author's summary and conclusion)**

Keywords: *Science and technology, Coconut, Temperature, Moisture, Oxygen*

NRCP Research Bulletin, Volume No. 40 Issue No. 3, 537-582
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/3 1985

0471

Using data retrievals from calipso and aeronet: case study of aerosol optical thickness over the Philippines and the east asian region

Deocaris, Custer C., Artificio, Miguel M., Cayetano, Mylene G.

The utilization of aerosol data from satellite measurements has the advantage of identifying pollution episodes in places where there are minimal to no data measurements. Such applications are available from satellite sensors polar-orbiting the earth on a regular basis, called the A-train. This study uses the vertical feature mask fromthe Cloud-Aerosol LiDAR and Infrared Pathfinder Satellite Observations (CALIPSO) to determine the vertically-resloved aerosol quality over the Philippines. On the ground, data from the Aerosol Robotics Network (AERONET) station in the

Manila Observatory was used to quantitate the Aerosol optical depth (AOD). From a selected time frame of satellite data for the whole month of November 2011 it was observed that the AOD on the ground level reached as high as 3.3 during the afternoon of November 2, 2011. Severe cases of pollution from East Asia, specifically from China, were also evident during the study period.Satellite data retrievals have shown their applicability for aerosol studies in the Philippines when technologies for depth comparison of aerosol levels with the neighboring Asian countries are not available. **(Author's abstract)**

Keywords: *Science and technology, A-train, Aerosol optical depth, Satellite constellation, Philippines, Calipso, Aeronet*

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(Filipiniana Analytics)
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SOCIAL SCIENCES

0472

Agriculture and society (a paper on the origins of rice farming in Southeast Asia, social implications of sedentism, and the case for nutrition and health)

Alip, Jr., Alex J. B.

Studies of world pre-history have established the reasons why domestication of plants and animals, hence, agriculture, came about. This paper reviews these factors and focuses on the origins of rice farming in our part of the world. The implications of such on the growth of civilization and on social complexity are also highlighted.

In terms of the effects of food production on nutrition and health, while a stable food supply is expected to translate to good physical health, this was not always the case. The paper points out that there were also negative byproducts such as increased nutritional deficiencies, increased morbidity from infections, a poor immune system and vitamin-deficiency states. Furthermore, in some instances, fertility and hormonal functions may be impaired. Specific explanations are given. **(Author's abstract)**

Keywords: *Social sciences, Agriculture, Society, Plants, Animals*

The UPManila Journal, Volume No. 3 Issue No. 3, 51-58
(Filipiniana Analytics)
Fil(S) RA421 U3 3/3 1997

0473

Changing social structures and the well-being of the older Filipinos

Cruz, Grace T., Abalos, Jeofrey B., Lavares, Melissa C., Natividad, Josefina N., Saito, Yasuhiko

This paper describes the changes in social structures and well-being of older Filipinos over time. Data from the 1996 Philippine Elderly Survey and 2007 Philippine Longitudinal Study of Aging, as well as various census data, show increasing household headship rate among older people, an increasing proportion living with spouse and other older people, and a low but declining proportion who are living alone. Findings also show that the economic well-being and functional health of older people have improved over time. International labor migration has modified the social roles and functions, as significant proportions of elderly Filipinos report having children of older people. Remittances from children overseas have contributed to their improved economic status. In the midst of all these changes, intergenerational family solidarity remains strong, with older people not just recipients of support but active providers to their family. **(Author's abstract)**

Keywords: *Social sciences, 1996 Philippine Elderly Survey, 2007 Philippine Longitudinal Study of Aging, Social structures*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 2, 197-222
(Filipiniana Analytics)
Fil(S) Q149.P5 N25 31/2 2009

0474

Consumers' attitudes and knowledge level on organic products in Region I and CAR

Salas, Ma. Angelina O., Pastor, Floramante C., Legaspi, Noralyn B., Cacatian, Marlyn S., Pastor, Corazon Diana A., Agbigay, Lea C., De Padua, Ma. Victoria M., Llanes, Cliffton R., Imper, Amado P.

This study focused on the assessment of consumers' attitudes and level of knowledge towards organic products in Region I and CAR, including factors that are associated to these. Results of interviews revealed that consumers are generally aware of organic products. They have moderate knowledge on the socio-economic and health attributes and have a favorable attitude towards it. Health benefit is the most significant motivation of consuming organic products. However, there are consumers who have doubts and reservations on the actual health and environmental benefits derived from it. Most consumers signified willingness to shift consumption from non-organic to organic products. However, consumption is still low in the regions because of the unavailability of such in the local market. If there are, these are sold along with non-organic products because there is no established organic market yet in most of the areas in both regions. Likewise, there is no assurance that such product is organic unless certified by existing certifying bodies. With these realities, government must strengthen its advocacy effort in encouraging farmers to adopt organic farming in order to meet consumers' organic product demand. Likewise, support services such as market and organic certification must also be given equal importance. More effort is also needed in information, education and communication campaign (ICE) on matters regarding organic products in order to give consumers the proper view regarding the long term and

significant benefits of organic product consumption. Through this, consumers can develop a more positive attitude regarding organic products. **(Author's abstract)**

Keywords: *Social sciences, IEC, Organic products, Attitudes, Knowledge, Consumers*

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(Filipiniana Analytics)
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0475

Critical aspects of family and reproductive health among middle and lower middle income mothers in Metro Manila

Cabigon, Josefina V.

The Rapid Appraisal for Friendly Care Foundation Inc. (FCFI) provided information on critical asspects of family and reproductive health in the surrounding areas of the corporate clinic of FCFI located in Shaw Boulevard, Mandaluyong City. These information are vital in attaining a more effective planning and implementation of FCFI health project aimed at providing high quality, easily accessible and affordable health care services to middle and lower income families nationwide. One of the methods of data collection used is a survey of 254 mothers 15-49 years old sampled by following a two-stage cluster sampling design in barangays contiguous to FCFI main location. In the survey, the questionnaire was structured in such a way that vital information on marketing opportunities, clinic operations, affiliation, family planning, adolescent health and other reproductive health problems and quality of health care could be obtained. The survey took place in June to July 2000. Results show that: (1) marketing prospects for FCFI are large, varied and encouraging; (2) most potential clients indicate ability to pay; (3) most common amount affordable for private consultations is P100; (4) distance is one though not the most major consideration for availing services; (5) medical person-to-client was perceived as the most effective way of advertising clinic services; (6) doctors and midwives emerged as the best sources of information of family planning; (7) doctors, parents and TV are the first three ranking important sources of information for adolescents about sexuality and reproductive health; (8) while contraceptive prevalence was higher in the study areas than the whole nation and the whole of Metro Manila, a higher level of unmet need (24%) especially for limiting the number of children existed; (9) pill, sterilization and calendar rhythm were the most popular methods currently used and preferred to used in the future; (10) early marriage and unwanted pregnancy where the most pressing problems for women as a whol and adolescents in the study barangays; (11) adequate provisions of services, technical competence, accessibility, affordability and interpersonal relations are qualities mothers are looking for in the health facility they usually go for health services. **(Author's abstract)**

Keywords: *Social sciences*

Transactions of the National Academy of Science and Technology Philippines, Volume No.
Issue No. , 383-384
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0476

The doctor-patient-bantay relationship

Sana, Erlyn A.

In moder societies, patient depend on physicians on matters related to health. In the Philippines, a patient who is hospitalized also relies on a non-medical person, usually a relative who stays with him/her during confinement: the Bantay.

This paper investigated how the doctors, patients, and bantays relate to each other, the norms that they practice and the social implications they reveal in the process of their interactions.

The researcher did a participant observation of daily activities in all clinical settings at the Philippine General Hospital Medical Center. Interviews of key informants, review of secondary data and accomplishment of questionnaire were done.

The patterns of interaction among doctors, bantays and patient include the stages of helplessness, critical surrender, independence and resignation. Both patient and bantay are helpless when the former is critical. As the patient gets well, he/she and the bantay get more actively involved in the treatment until they are ready to go home and declare independence from physicians. In cases where the patient expires, resignation ensues. The whole pattern shows that having someone who continuously shows concern not only contributes to easy recovery but also to reduced dependence on doctors. The relationship also mirrors the condition of the poor and the unwell to depend on the rational authority of physicians and that the relationships make a totally social structure. **(Author's abstract)**

Keywords: *Social sciences*

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Issue No. , 385
(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0477

Environmental knowledge, awareness, and perceptions oftertiary students on climate change

Elazegui, Erwin P.

Climate Change is now the concern of the country as it is attributed directly or indirectly to human activities. This study determined the environmental knowledge, awareness, and perceptions of college students on climate change. A Climate Change Questionnaire (CCQ) was administered to 50 students (40% male and 60% female). The majority of the students were concerned about the environment. They are most concerned with global warming and climate change, and they were least concerned with radioactive contamination and loss of habitat of wildlife. Results of the CCQ revealed that students are knowledgeable and aware (95%) of concepts and issues of climate change. Sources of their knowledge are newspapers, books, and television. A high percentage of students (75%) showed a positive attitude towards tree planting, public transport, walk and bike, and saving electricity to improve the quality of the environment and mitigate climate change. The results of this study will serve as baseline information on the integration of global environmental issues, such as climate change in tertiary level environmental education and climate sciences. **(Author's abstract)**

Keywords: *Social sciences, Environmental knowledge, Climate change, Global warming, Environmental education, Tertiary students*

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0478

An experimental study on human values extrapolated from color preferences

Juanite, Ted

This report examines the results of an empirical investigation into the nature of judgmental, preference-based responses of Filipino college students to a set of displayed colors and categorically-stated, composite social and, or personal values.

A technique was developed, akin to content analysis, permitting a qualitative extrapolation of color-meaning based on Luscher's description of eight basic colors, thereby producing eight counterpart referents or composite value-meanings of social sjgnificance. The exploratory study conducted in 1975 showed highly encouraging results (based on a sample of 221 male and female college students from six institutions) and proved the hypothesis of the one-to-one correspondence of the eight colors with their extrapolated referents.

The present expanded study included a newly-designed procedure which permitted the measurement of a subject's unconscious response to color by openly presenting the arrays of color and value cards and their appropriate correspondences and giving the subject the choice to freely reconsider his/her original set of responses by rearranging the color and value cards in a

test situation. Results of the present 1981 study (based on a nationwide testing of 452 college students from 14 colleges and universities) confirmed the view that when specific colors are matched with appropriate corresponding social value meanings on a conscious level, the human person responds positively and significantly to the naturally familiar and closer meanings that these colors evoke.

The investigation found some theoretical and empirical support from the available literature. The *human information processing* model of cognitive psychology was used to explain the mechanics of color perception and the production of social meanings based on lexicosemantic information stored in the LTM, and on human experience. The *structuralist* orientation furnished important insights into the generation of meaningful equivalents based on Piaget's scheme (interindividual coordination)and Levi-Strauss' explanation of the symbolic function.

An operational paradigm of psychological stability obtained by estimating the difference between the color test responses and the individual's rank-ordering of his value priorities has been introduced. The concept , called *value dissonance* has been found useful in identifying the possible sources of a person's psychological stress, and in determining the extent of gap between a person's unconscious state and his conscious declarations. **(Author's abstract)**

Keywords: *Social sciences, Human values, Value dissonance, Stracturalist, Lexicosemantic*

NRCP Research Bulletin, Volume No. 40 Issue No. 4, 844-894
(Filipiniana Analytics)
Fil(S) Q179.9 N32 40/4 1985

0479

Farmer-level evidences of the impacts of climate change: observations and coping mechanisms of rice growing farmers along the Padsan River Basin in Ilocos Norte

Balisacan, Criselda M., Aquino, Susan, Flojo, Lagrimas J., Juliana, Constante B., Rafael, Lory B., Sabuco, Corason A., Damaso, Erlie Stanley G.

The impacts of climate change on rice-based production and exante and post- coping mechanisms of rice farmers were documented in this study. Farmers' perception of climate change and level of technical assistance or institutional support that are being provided by local agencies and organizations were highlighted. A structured interview was administered to 150 rice farmers, randomly selected from 27 barangays of seven municipalities in Ilocos Norte. Key informant interviews and focus group discussions were done to validate the data gathered. Description and analysis of data were carried out using frequency counts, percentages and means; coping strategies were qualitatively described. Changes in rainfall patterns, increase in temperature, more intense and frequent typhoons and floods, and water scarcity were the farmers' perceptions of climate change and variability. Almost 90% mentioned low yields and low quality of palay seeds as major impacts followed by occurrences of unusual pests/diseases and weeds. To cope with these, the traditional "panagarbeng" or collectively repairing and maintaining of the irrigation system as a "sanjera" was a major strategy, followed by borrowing

of money, farm inputs, fertilizer and seeds from private companies and farm suppliers. Farmers' experiences and knowledge in coping with climate change must be considered in policy formulation as basis to improve rice-based production. **(Author's abstract)**

Keywords: *Social sciences, Impact, Climate change, Perception, Coping, Sanjera*

0480

Finding a niche: training needs assessment for Filipino inventors

Ducusin, Geraldine B., Carandang, Aristotle P., Taule, Alan C., Sablan, Maria Judith L., Bernal, Jona M., Delos Reyes, Louise Ian T., Escondo, Arjay C.

The Science and Technology Information Institute (STII) was commissioned by the Technology Application and Promotion Institute (TAPI) to conduct a study to: (1) gather information on the appropriate training needs of Filipino inventors to help them improve their inventions and their commercialization efforts; and (2) identify training needs per region and per sector. A focus group discussion (FGD) was conducted with 15 inventors representing inventor organizations nationwide accredited by TAPI. They were divided into two groups. Eight pre-programmed questions were used as guide in the discussion. The FGD revealed the following: huge gap between the 'haves' and 'have-nots' among their ranks; their needs were not being addressed by TAPI and other concerned government agencies; the DOST regional offices were hardly a factor in inventor assistance; inventors were aware that they were partly to blame for their current fractured state; and, presence of knowledge gaps in the technical, entrepreneurial, marketing, and personality aspects. However, results also showed that FGD alone was not enough to come up with a complete list of trainings as inventors were not fully aware of the skills and knowledge they need for personal and product/invention development. Further study is needed to enhance understanding of the inventors to determine the specific training needs. Other recommendations were: TAPI should develop specialized training modules in key areas such as quality control, product packaging, and craftsmanship on the technical side; and marketing strategy, business plan development, and entrepreneurship for commercialization; holding regular dialogues with the inventors' organizations; close coordination with DOST regional offices; and intervention on eventual reconciliation of the various groups under one umbrella organization. **(Author's abstract)**

Keywords: *Social sciences, FGD, Training needs assessment, Inventors, TAPI*

Gender sensitivity among faculty and students of University of the Philippines College of Nursing

AÃ±onuevo, C

The study attempted to determine the level of gender sensitivity among faculty and students of the College of Nursing, University of the Philippines Manila.

The study made use of the survey method. A self-administered questionnaire was developed to measure level of gender sensitivity on three sets of gender issues: roles and status of women and men in family and society; women's health and reproductive rights; and gender and nursing. Data were taken from 90 respondents: 18 faculty and 72 students. For data analysis, t-test statistics was used.

Results of the study revealed that the respondents' concept of gender was based on biological sex characteristics of a person, that gender sensitivity meant equality of men and women; but women's issues such as their subordinated status and oppression were mentioned by only a few. The study revealed that the faculty and students have a low level of gender sensitivity based on a questionnaire containing the above-mentioned three gender issues. Low scores were obtained by 72.2 percent of the faculty and 70.8 percent among the students. No significant difference was found in the level of gender sensitivity between the faculty and students, and between male and female respondents.

Socialization in the family, education, exposure to academic discussion, reading materials and media, peers and friends were the factors identified as contributing to the respondents' gender sensitivity.

It is recommended that gender sensitivity be consciously integrated in the curriculum and in related learning experiences of nursing students; that focus-group discussion be utilized in future studies specifically in collecting data relating to gender relations; that researches be conducted with regard to perception of clients on the quality of care they receive which focuses on gender sensitivity of nurses; and that the protocol measuring gender sensitivity be tested with other health professionals. **(Author's abstract)**

Keywords: *Social sciences, Data analysis, T-test statistics, Gender*

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Fil(S) RA421 U3 3/4 1997

The historical analysis on the changes of the traditional beliefs system of Subanen in Labo Banwa, Misamis Occidental

Ranises, Lloyd B., Galindo, Russel P., Onganiza, Virgilio H.

This paper is a study on the traditional beliefs system of the Subanen in Labo Banwa in the province of Misamis Occidental. Labo Banwa is interior area located at the periphery of the city of Ozamiz in the southern part of Mt. Malindang. As they sheltered themselves in some of the ranges of the mountain, it is interesting to know whether their beliefs are preserved through years in the face of the ever increasing development of the city. This paper attempts to understand the continuity and change of their beliefs. However, it is limited to the basic life cycle of Subanen such as birth, marriage, cultivation, and death. As a descriptive study, this employs key informant interviews, observation, and visitation in the area and analysis of archival materials as the primary sources of information. Findings showed that the Subanen claimed to have their traditional beliefs observed/preserved through years, however, it is also noted that among the younger generations, these traditional beliefs are not fully observed and they are slowly losing knowledge about them. **(Author's abstract)**

Keywords: *Social sciences, Subanen, Labo Banwa, Traditional beliefs system, Mt. Malindang, Misamis Occidental*

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(Filipiniana Analytics)
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0483

Household participation of Cebu rivers clean up

Villanueva, Bonifacio S., Baga, Cecilio S., Lauglaug, Miguelito A., Pepito, Joseph C.

Household wastes pollute the San Roque creek in Cebu City. This study investigated the role of households in cleaning up the riverbanks of the towns of Argao and Carmen, Cebu province, and barangays Usmadcatang, Cantumog and San Roque in Cebu City. Fifty six respondents provided their awareness on attitudes towards environment and water utilization. Married women of Argao and Carmen are the ones who are mainly responsible for the housekeeping with part-time sources of income. The main environmental issues that the respondents were concerned about were: climate change, water pollution, loss of biodiversity, water pollution, growing waste and depletion of natural resources. The responses of respondents regarding the environment were: correct disposal of hazardous household products at home, proper maintenance of septic systems, contacting public officials, and attending public hearings to encourage the community to support laws and programs to protect water resources. CTU researchers coordinated with the LGU of San Roque in river clean-up and raised household awareness towards the environment. **(Author's abstract)**

Keywords: *Social sciences, Household, Clean-up, River, Environment, Participation*

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0484

Human resettlement as an intervention in community development

Porciuncula, Fe L., Depositario, Pura T.

This study focused on the Bagong Buhay resettlement in Nueva Ecija settled by displaced families from Pampanga and Zambales as a result of the Mt. Pinatubo eruption in June 1991. It analyzed the complexities and attendant characteristics of the resettlement process, its outcome and viability, the factors affecting such outcomes/viability, and the implications that may be useful in future resettlement planning, implementation, monitoring and evaluation.

The resettlement of Mt. Pinatubo victims as in the case of Bagong Buhay proved to be an important and powerful mechanism through which the displaced were assisted to rebuild their life anew. Results of the study revealed that resettlement was a complex, stressful, and often difficult process. The settlers had to adapt to a new and unfamiliar environment and at the same time create productive enterprises and new social organization to cope with the new situation.

The implications of the study point that resettlement must not be approached simply as a movement of the displaced to a new land but must be holistically approached as a development opportunity to mobilize the resources of the state, different government organization (GOs)/nongovernment organizations (NGOs), and the settlers themselves who are the main actors in the pursuit of development. **(Author's abstract)**

Keywords: *Social sciences, Bagong buhay, Resettlement, Community development*

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(Filipiniana Analytics)
Fil(S) Q149.P5 N25 v.22 2000

0485

Knowledge of OL Trap users on mosquito, dengue, and OL Trap as basis for comics development to promote OL Trap use

Carandang, Aristotle P., Anonas, Framelia V., Lazcano, Joy M.

The study sought to determine the knowledge of community members about dengue and the Ovicidal-Larvicidal (OL) Trap that was used as a basis in developing a comic magazine as an information material for the nationwide promotion of the OL Trap, an innovation by the Industrial Technology Development Institute. The OL Trap is one of the government's multi-pronged actions to fight the spread of the deadly dengue virus. The study surveyed 265 people from five communities (Brgy Zone I and Brgy Zone II, Digos City, Davao Del Sur; Brgy Pico, La Trinidad, Benguet; Brgy Bata and Brgy Taculing, Bacolod City, Negros Occidental) using survey questionnaires, community meetings, and personal interviews. The said barangays were recipients of the OL Trap. The study found that most of the respondents did not have the correct idea about *Aedes aegypti* and dengue. Most of them knew how the dengue-carrying mosquito looked like but did not know that it was a daytime insect. Most were aware that only female mosquitoes bite and lay eggs only on clean water, but were unaware of the mosquito's preference for dark, moist places. The majority knew that dengue was fatal but preventable. On the OL Trap, most respondents knew how it worked and how it was used but they had to be taught on proper disposal of contents with mosquito eggs and larvae. Most also said that P15.00 for an OL Trap kit was reasonable and P6.00 per month for pellets was affordable. Many suggested that OL Trap kits be sold in drugstores and barangay halls. Most believed that the OL Trap was effective and that they would recommend its use. A minority could not yet give an opinion whether the OL Trap was effective or not. The survey results were used in developing 'Ang Komiks' that carried for its maiden issue the story 'Ang OL Trap sa Barangay Madengue' which was published in seven major Filipino languages: Tagalog, Bisaya, Iloco, Bikol, Pampango, Hiligaynon, and Waray-Waray. **(Author's abstract)**

Keywords: *Social sciences, OL Trap, Aedes aegypti, Dengue, Comics, Knowledge*

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0486

A look at the transportation situation in Metro Manila and the mitigating measures to alleviate the impacts of traffic

Lidasan, Hussein S.

Metro Manila continuously experiences traffic congestion similar to growing cities in Asia. Traffic congestion is noted to be a manifestation of inter-related urban problems such as the influx of migrants from the provinces and local areas, overconcentration of economic, cultural and social activities in major urban areas, rapid development and uncontrolled urbanization of urban areas, lack of public transportation system, increasing growth in car ownership and usage, poor traffic management and control schemes and lack of coordination among government agencies involved in transportation and traffic and lack of strict enforcement.

This paper presents the current transportation and traffic situation in Metro Manila and mitigating measures or schemes that are being implemented. as well as those proposed to alleviate the impacts of traffic congestion. Among these are the Do-Fixed Project, Do-Existing Project and Do-Maximum Project which cover existing transport network, completing expressways, skyway and LRT/MRT lines, which should be incorporated with city plans of the LGUs. **(Author's abstract)**

Keywords: *Social sciences, Trafic congestions, Sociological and economic impacts, Mitigating measures*

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(Filipiniana Analytics)
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0487

MDGs, economic performance and governance: a broader perspective

Fabella, R

We present the MDG project in a broader and global perspective. We concentrate on poverty reduction, the overarching goal among the MDGs, and mortality rate as affected by economic performance and governance. We first present the face of global poverty through time and space highlighting where progress has been made and where shortfalls have remained. We then discuss the origins of the MDG worldview as a response to the apparent failure of the "trickle down" philosophy and its roadmap. The Washington Consensus, highlighting the usual conflict between "growing the pie" and "sharing the pie" and their relative effect on poverty reduction. we then illustrate the fundamental relationships in a series of structural flow charts that differentiate between the two polar approaches. In the MDG view the state must directly bring about inclusive growth preferably through improved budget allocation. Finally, we explore the relationships bearing on poverty incidence and mortality rates empirically through cross-country regression analyses bearing out the structural relationship. While plain total budget growth may be bad for MDGs, growth in the share of social expenditures is good for MDGs. **(Author's abstract)**

Keywords: *Social sciences, Millennium Development Goals (MDGs), Economic performance, Governance*

Transactions of the National Academy of Science and Technology, Volume No. 32 Issue No. 2, 199-216
(Filipiniana Analytics)
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0488

A mentoring program for teacher induction: a field test

Domingo, Doreen D., Felipe, Anabelle C.

This research assessed the need and effectiveness of a mentoring program for teacher induction following the research and development method. A preliminary survey was undertaken through a combination of quantitative and qualitative techniques using the interview and document analysis. The respondents in the study were college instructors without preparation for teaching. Subsequently, the results were the basis for the design of a mentoring program. The results showed that the initial year of new teachers was a period of survival and recovery. They encountered problems or difficulties which they kept mostly to themselves. These were: lack of knowledge about teaching method; preparation of lesson plan and syllabi; lack of self-confidence and stage fright; inability to communicate well; poor classroom management; lack of instructional materials/ references/laboratory facilities; and inability to associate well with the members of their respective departments. To be able to cope with these difficulties, a mentoring program was developed for teacher entrants with or without professional education preparation to ensure a smooth transition into the teaching profession. The mentoring program explains what mentoring is, who can be a mentor and how he should relate to the mentee, the guidelines necessary in undertaking the program and the specific activities that can be undertaken in each mentoring stage (sponsoring, coaching, and supervising) in three areas: the institution and its policies, instructional processes, and personality development. Significantly, high differences between the mean pretest (1.87 to 2.56 :fair to satisfactory) and mean post-test scores (4.16 to 4.40:very satisfactory) on the overall performance of the dyads were obtained at 0.01 probability level through the implementation of the work orientation of mentoring program. **(Author's abstract)**

Keywords: *Social sciences, Mentoring, Teacher induction, Mentor, Mentee, Coaching*

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0489

Population dynamics and elderly savings: an ecoDometric analysis

Briones, Kristine Joy S., Mapa, Dennis S.

The changing age structure of countries has substantial implications on savings and economic growth. In the course of the demographic transition, countries experience an increasing share of the working age population relative to the total population and this creates favorable effects on economic growth. Studies have shown that individuals accumulate savings in their working age years to serve as buffer for retirement. While accumulation of capital can be used to deal with the life cycle deficit, this also influences growth. This paper looks at the implications of the country's

population dynamics on the savings of the elderly using econometric models applied to household data from the Family Income and Expenditure Survey. The results show that the saving rate of the elderly is substantially higher compared to the other age groups but has been Oil the decline since 1997. The accumulation of saving of the elderly is good for economic growth. Looking at the overall picture, however, the country's rapid population growth results in a high percentage of young dependents and this creates a negative effect in the aggregate household saving. While the elderly has higher saving rate, their contribution is not substantial to increase the aggregate saving rate. **(Author's abstract)**

Keywords: *Social sciences, Demographic transition, Young dependents, Elderly, Saving rate, Life cycle model*

Transactions of the National Academy of Science and Technology, Volume No. 31 Issue No. 2, 183-196
(Filipiniana Analytics)
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0490

Population growth and its implications on the realization of the MDGS

Ogena, Ni

This paper argues that the Philippine population is expected to continue to increase due to positive natural increase, the low net migration rates and population momentum. The implications of this scenario are examined in relation to the prospective achievement of the Millennium Development Goals (MDGs). **(Author's abstract)**

Keywords: *Social sciences, Millennium Development Goals (MDGs), Population growth, Philippine population*

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(Filipiniana Analytics)
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0491

Potential roles of the academe and religious institutions in sustaining the gains of the peace process in Southern Philippines

Torres, Mark Anthony J., Caballero, Juvanni A., Apilan, Jesimerl, Balsamo, Apple, Bonga, Alonah, Laguindab, Jamilah, Arnilla, Winalyn

The Government's roadmap to peace is not without obstacles as both biases and wrong notions on the on-going negotiations can be potential spoilers that can derail the entire peace process. This paper is an attempt to determine common misconceptions people have on the negotiations between the Philippine Government and the Moro Islamic Liberation Front (MILF). To do this, a total of 300 respondents were asked to complete a 53-item questionnaire regarding the peace process. The responses were analyzed using descriptive and multivariate statistical analyses. Results showed that the respondents lack knowledge on key aspects of the agreement, such as on the extent of the territory of the Bangsamoro and the rights of its inhabitants. Some misconceptions include the belief that non-Muslims will not be guaranteed their rights and that they will be driven away back to Visayas and Luzon. Moreover, Canonical Correspondence Analysis of the data point to the possibility that religion may have been helpful in shaping the hearts and minds of the people towards the agreement and the entire peace process. This lack of understanding and the proliferation of personal biases amongst people imply the need to organize massive information dissemination campaigns designed to clarify issues vis-à-vis the peace agreement via a multiplier effect. The results of this study also point to the potential roles that the academe and religious institutions may play in dispelling these wrong notions in order to help sustain the gains of the peace process in Southern Philippines. **(Author's abstract)**

Keywords: *Social sciences, Peace process, Bangsamoro, Academe, Religion, Framework Agreement on the Bangsamoro, Moro Islamic Liberation Front*

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0492

Profitability analysis of organic vegetable production in Region I

Malab, Beatriz S., Lucas, Marilou P., Agustin, Epifania O., Caluya, Margarita P., Abrogena, Nida Q., Viloria, Lovely Joy M.

This study analyzed the profitability of organic vegetable production in Region I. It determined the costs incurred and the benefits derived by the farmers. The farmers were classified by farm type: full organic (FOFT), in conversion (ICFT) and conventional (CFT). There were 159 farmers interviewed in Ilocos Norte, Ilocos Sur, La Union, and Pangasinan. The "pinakbet" vegetables were included in this study. Data were analyzed descriptively with profitability, partial budget, and price analysis, including yield sensitivity analysis. Generally, material and labor costs were higher in FOFT and ICFT than in CFT. However, net incomes were higher in the two organic farm types. Farmgate prices of FOFT were also higher except for finger pepper and okra which were higher in CFT and ICFT, respectively. Ampalaya, finger pepper and okra yielded highest in FOFT; eggplant, pole sitao and squash in ICFT. The partial budget analysis showed that except for finger pepper, higher net benefits were obtained from vegetables grown under FOFT than CFT. The added benefits more than compensated the added costs. Hence, production of organic "pinakbet" vegetables is highly

remunerative. More intensive information dissemination and aggressive advocacy campaign are necessary to promote organic farming. **(Author's abstract)**

Keywords: *Social sciences, Organic farming, Organic vegetables, Sustainable crop production, Profitability, Soil, Environmental conservation*

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0493

Psychosocial problems of Filipino women working in foreign countries

Kuan, Le

Towards the beginning of the 1980s to the 1990s the exodus of Filipino women workers to foreign lands increased and outnumbered the men. Domestic helpers were in demand and the type of work or service needed called for women.

To identify what psychosocial problems these Filipino women workers had while working in foreign countries and how they coped with those problems. a study was done on these women workers in 15 countries in eastern and northern Europe. Using a phenomenological qualitative research design through personalized interviews and focus group discussion. 150 Filipino women workers consented to be participants in this study.

Main findings showed that these women workers had college preparation. The main purpose in working abroad was to earn and augment family resources. Psychosocial problems experienced revolved around adjustments to culture. language. hard and long hours of work. loneliness and homesickness for children and family left at home. and anxiety over household situation.

To cope with these problems. they recoursed to prayers. assisted liturgical celebrations. correspondence. making overseas calls and listening to tapes sent by families from home.

Work for these women in foreign lands was hard and the hours were long. They were employed in various fields such as housekeeper staff in hotels. salesgirls in department stores. caretakers of old persons and domestic helpers.

To be away from home was an ordeal because of what was missed from the country. but these Filipino women workers worked with patience and with endurance because they wanted to earn and augment family resources. **(Author's abstract)**

Keywords: *Social sciences, Filipino women workers, Foreign lands, Psychosocial problems, Coping strategies*

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Fil(S) RA421 U3 3/4 1997

0494

Soli-soli (*Typha latifolia*) as an industry and as a festival emblem of Pacijan Island, Cebu, Central Philippines: its status, processing and proposed conservation options for sustainability

Tanduyan, Serapion N., Andriano, Berenice T., Gonzaga, Ricardo B.

Soli-soli (*Typha latifolia*) a plant found abundantly in Lake Danao, San Francisco, Cebu, was studied as an industrial resource, its processing and a festival emblem of the fiesta celebration of Pacijan Island. This is a descriptive study where a questionnaire was used as a tool for gathering the data given to the weavers of solisoli, festival organizers, LGU officials, selected inhabitants and tourists of Pacijan Island. Results showed that soli-soli plant was converted into bags, belts, caps, and mats where tourists usually buy them because of their unique material. The soli-soli was processed by harvesting the young soli-soli plant. Then this is dried under the sun for 2 to 3 days. They are then cleaned, made into strips, tanned with different colors and woven to the desired articles. Gender composition on the soli-soli industry is dominated by the females (60%) and males (40%). Marketing of the soli-soli products is done locally and some were brought to nearby provinces like Cebu City and Ormoc City. Mats topped among the saleable articles followed by bags, hats, fans, slippers and ropes. Results showed that soli-soli festival is done every third Sunday of March in San Francisco where it depicts the soli-soli plant which abounds around Lake Danao and a freestyle street dancing competition using the soli-soli plant as the dominant material for the costumes of the participants. Extraction of soli-soli is most active from January to June due to the preparation of articles for the fiesta and summer tourism in Camotes Islands. Problems of soli-soli industry are: limited marketing, financing, and product development. **(Author's abstract)**

Keywords: *Social sciences, Soli-soli, Typha latifolia, Festival emblem, Pacijan, Industry*

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0495

Strengthening community resilience of Barangay Pula, Kanlaon City, Negros Oriental: understanding residents' perceptions as basis for communicating hazards and risks

Tanatan, Ben, Martinez-Villegas, Ma. Mylene, del Monte, Lucille, Lamela, Ruben, Mondia, Nelson, Arellano, Joel, Solidum, Jr., Renato U.

An understanding of residents' perceptions about hazards and risks is important in designing a disaster risk reduction-related communication strategy. People's perceptions about hazards and risks, however, are influenced by knowledge about these specific hazards, disaster history of the area, and one's direct experience of an event or the lack of it. The case study of Brgy. Pula focused on: (a) identifying the general perceptions about volcanic risk of people living close to Kanlaon; (b) looking into previous experience, education, attitude and beliefs as factors that influenced perceptions; and (c) identifying communication strategy that best fit the need for the pilot community to take steps toward strengthening resilience. The goal is to promote awareness about hazards from Kanlaon that would lead to observable emergent positive actions towards preparedness, with the long-term goal of reducing risk. Field interviews with residents and local officials and small group discussions were conducted between 2010-2011. Findings show limited knowledge of historical eruptions due to narrow timeframe of actual experience. Based on this, a series of barangay-level activities were conducted with carefully selected methods that would be used for series of community-based activities. The activities aimed to: (1) identify information needs and develop materials that would persuade the target audience; and (2) facilitate discussions towards planning for volcanorelated disasters. Observed positive actions of officials and residents noted after implementation of the communication plan include community-initiated information campaign for each *purok*,design and installation of early warning device (*batingting*) for each *purok*, communication-test of the emplaced system and a volcano evacuation drill in July 2012. **(Author's abstract)**

Keywords: *Social sciences, Perceptions, Hazards, Risks, Preparedness, Awareness*

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(Filipiniana Analytics)
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0496

Teacher motivation, student motivation and achievement in high school mathematics and science education

Liwag, Ma. Emma Concepcion D., Enriquez, Ma. Cristina H.

Basic education in the Philippines is currently viewed as a system in crisis. Mathematics and Science education in particular have received much critical scrutiny of late in the wake of Filipino students' dismal performance on both local norms and international benchmarks such as the Third International Math and Science Study.

The present study is an attempt to take a closer look into the state of Math and Science education in the Philippines, and in particular, the motivation of teachers and students. Four main variables were the focus of this study, namely, teacher motivation, teacher perception of student motivation, student motivation, and student achievement. The study sought to establish the interrelationships among these four variables. In all, 2,666 high school students across the four

year levels and 37 of their teachers were purposively sampled from 76 Science and Math classes in two public secondary schools in Metro Manila. The teachers responded to a research-constructed instrument, the Teacher Motivational Questionnaire (TMQ), which assessed their feelings and motivation attitudes towards teaching Math or Science, and their perception of their students' attitudes towards these subjects. The students answered the Student Motivational Questionnaire (SMQ) where they reported their own motivational attitudes towards Math or Science, and their motivation-related behaviors in these two subjects (e.g., engagement in the classroom, academic effort, study habits). Math and Science achievement was measured using Third Grading Period grades.

Results showed that tachers had moderately high levels of motivation, with no significant differences across subject (Math versus Science) and other demographic variables (e.g., educational background, years of teaching). In contrast, teacher perception of student motivation in Math and Science was not high – in general, teachers do not perceive their students as having very positive attitudes and academic behaviors was also found to be non-significant, implying that teacher perceptions are not congruent with actual behaviors reported by the students. Students had more favorable attitudes towards Math than Science, claiming to enjoy the subject and seeing it as important, while they perceive Science as very challenging. But these positive attitudes did not predict behaviors: student-reported classroom behaviors and study habits in these two subjects were not efficacious. Lastly, highly motivated Science teachers were found to have highly motivated Science students, but this relationship was not found for Math. More importantly, in both Science and Math, highly motivated teachers did not produce students with better academic achivement. Overall, the findings suggest that other teacher and student factors in the public school system influence student achievement, and that sometimes, motivation is not enough. **(Author's abstract)**

Keywords: *Social sciences, Science and Math secondary education, Student motivation, Teacher motivation, Student achievement*

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(Filipiniana Analytics)
Fil(S) Q149. P5 N25 v.23 2001

0497

Women's activities in the gathering and marketing of seaweeds in Ilocos Norte

Aquino, Susan G., Agngarayngay, Zenaida M.

Women’s activities have been treated as separate activities and the complimentary and conflicting roles and relations between women and men have been given little attention. Studies show that coastal communities have a vital role to play in the development process of many

coastal communities. This study was conducted on the seaweed gathering and marketing industry in four coastal towns of Ilocos Norte from January 2011 to February 2012 using descriptive analysis of data from gatherers and sellers. The results show that there are variations that highlight men's and women's access to, and control over, the seaweed resources. There are specific roles, as well as common roles of women with men that were identified to improve the economic condition of the coastal people. It is recommended that men and women in seaweed gathering and marketing be trained with appropriate drying methods and packaging skills in order to enable alternative livelihood projects. **(Author's abstract)**

Keywords: *Social sciences, Womenâ€™s activities, Seaweed gathering and marketing, Socioeconomic characteristics, Coastal resources*

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

STATISTICS

0498

Extension of the limiting quality indexed single acceptance sampling plans for attributes in high precision processes

Gomez, Ma. Theresa L., Bonzo, Daniel C.

This study investigated the extension of existing single acceptance sampling plans indexed by lot tolerance percent defective (LTPD) or limiting quality (LQ) with respect to their applicability to high precision processes. LTPD/LQ indexed sampling plans were extended to cover the very low fraction defective levels of high precision process. Plans based on the ISO 2859-2 LQ indexed plans, Dodge-Romig LTPD indexed plans, and lot sensitive plans (LSP) were used as bases for the extensions. Target levels for LTPD/LQ were set at defective parts per million levels ranging from 20 ppm to 5000 ppm. The performance of the extended plans were evaluated using measures relating to level of protection afforded by the plans and efficiency in terms of amount of required inspection. The extended Dodge-Romig LTPD plans showed best performance among the three plans generated. Three selected plans from the extended Dodge-Romig LTPD sampling scheme were then subjected to simulation studies. Comparison of the theoretical and simulation data indicated that the plans behave more strictly than expected from theoretical calculations. The specific demands of high precision processes for appropriate sampling inspection plans that cover lower fraction defective levels, and at the same time satisfy the requirement for economy and efficiency of inspection were shown to be provided by this plan. These results contributed significantly to the manufacturing industry as it continuously strives to improve process yields and decreases fraction defective levels to respond to customer demands of better quality and improved performance. **(Author's abstract)**

Keywords: *Statistics, Attributes acceptance sampling, Lot tolerance percent defective, Limiting quality, High*

Science Diliman, A Journal of Pure and Applied Sciences, Volume No. 10 Issue No. 2, 27-38
(Filipiniana Analytics)
Fil(S) Q1.A3 S4 10/2 1998

0499

A study of poverty in Luzon

Parel, Cristina P., De La Cruz, Ester

The study was conducted in six selected areas representing six different sectors of Luzon: Metro Manila, Ilocos Sur, Nueva Vizcaya, Batangas, Zambales and Albay. A random sample of 700 poor households was selected from "poor areas" which were identified within the six selected areas using objective indicators (dilapidated appearance of houses, undernourished appearance of children, income, lack of or poor household equipment) as well as subjective criteria like "reputedly poor" in the community.

Information on demographic characteristics of the household, origins income and expenditure patterns, perceptions of living conditions, aspirations for children, perceptions of the importance of government projects and different aspects of the community where they live, were elicited by interview schedules with structured questions.

Among the important findings-are the following: the heads/spouses of the respondent households have very little education, come from poor big families (about 8 members) and have parents with just a few years of elementary education or none at all; median household expense (P4845/ year.) far exceeds median household income (P3770/yr.); about 75% of the median income goes to food; the majority of the households rated their living conditions as "low" 5 years ago, today, or 5 year later; more than two thirds of the households do not own land, but practically all want to acquire land for residential or agricultural purposes; more than half of me responding household heads/spouses aspire for a college education for their children but very few aspire for a professional occupation for them; most frequently mentioned household needs are food, cash, household equipment, and clothing for household members, in that order; three government projects perceived as important are: price control, job creation, and land allocation; "opportunities for earning a living" in their community of residence was rated as "poor" in all areas covered, while community cooperation, elementary schools, and health services were rated as "good". **(Author's abstract)**

Keywords: *Statistics, Demographic characteristics of the household, Origins, Income and expenditure patterns, Perceptions of living conditions, Aspiration for children*

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(Filipiniana Analytics)
Fil(S) Q179.9 N32 39/2 1984

0499

A survey of nursing schools in the Philippines, 1992 - 1995

Laurente, Ceci

In 1989-1990, the Association of Deans of Philippine Colleges of Nursing (ADPCN) conducted a survey of nursing schools in the Philippines to gather baseline data on the status of nursing education in the country. The results provided bases for further study and plan of action to improve nursing education and practice.

This study, following the first done in 1990, aims to (1) review the 1995 status of nursing schools: (2) compare the 1995 results with those of the previous, and (3) draw out progress, problems, and issues based on new and previously identified indicators.

As in the previous survey, a questionnaire was constructed and distributed to all the deans who attended the last two ADPCN annual conventions. Deans who were unable to attend the convention were followed up through the mail.

Results of the present study using similar indicators did not reflect any meaningful change from the previous survey. The number of newly opened nursing schools continued to increase from 129 in 1990 to 163 in 1993. Nursing education is largely in the hands of the private sector. A number of nursing school heads do not meet the minimum educational degree and teaching experience mandated in the nursing law. And while a big majority of faculty are full-time and are paid monthly, a big number get 24 up to 40 units of teaching load per semester.

Based on the new data gathered, a significant number of heads are doing the job on an acting, temporary basis; the proportionate salary adjustment is almost negligible for a number of deans and faculty members alike, and a number of schools resort to overloading faculty members to increase their take home pay. **(Author's abstract)**

Keywords: *Statistics, Nursing schools, Nursing education, Association of Deans of Philippine Colleges of Nursing (ADPCN)*

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(Filipiniana Analytics)
Fil(S) RA421 U3 3/4 1997

ZOOLOGY

0500

Wildlife inventory of the University of the Philippines (UP) Diliman and the Ateneo de Manila University Campus Diliman, Quezon City, Luzon, Philippines

Ong, Perry S., Pedregosa, Marisol dG., de Guia, Michael G.

An inventory of the terrestrial vertebrate species of wildlife on the campuses of the University of the Philippines (UP) Diliman and the Ateneo de Manila University in Quezon City, Metro Manila, was conducted between October 1997 through August 1998. The land area of the UP Diliman campus is 493 hectares while that of the Ateneo de Manila University campus is 83 hectares.

A total of 76 vertebrate species was recorded in the campuses of UP Diliman and Ateneo de Manila University. This diverse assemblage of wildlife in the study sites consists of 6 species of amphibians (1 endemic), 13 species of reptiles (2 endemic), 47 species of birds (7 endemic) and 10 species of mammals (1 endemic).

More than 61% of wildlife species found in the study areas were birds. Historical records of the assemblage of bird species in the UP Diliman area and its environs indicate that six species of birds used to be found in the study sites, are now no longer present. **(Author's abstract)**

Keywords: *Zoology, Biodiversity, University of the Philippines Diliman, Ateneo de Manila, Local extinction, Endemic*

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