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All rise for SuperRice

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EDITORIAL

Mindshift

Hours before super typhoon Juan slammed in northern Philippines on October 18, most of the international community anticipated a dramatic devastation in lives and properties. Many observers, veteran and instant, conceded that the world's strongest typhoon in 2010 will trounce the country thoroughly.

Oblivious to the outside world, a small group of weather forecasters and officials of the Department of Science and Technology kept a watchful eye on Juan, crunching numbers to pin down the when and where of its landfall.

Close to midnight on October 17, the group reached a consensus. Juan, contrary to international weather bulletins, would make landfall in Isabela. The group, including DOST Sec. Mario G. Montejo and PAGASA OIC-Administrator Graciano P. Yumul, Jr., signed the bulletin sent out to an anxious nation.

The accurate forecast was more than providential. It was made through right science, and the confidence that the fundamentals to calculate fickle weather movements were followed methodically.

North of the country the following day, heavy rains and howling winds whipped houses and trees, and shut power and communication lines in Cagayan and Isabela provinces. Some towns in Pangasinan were flooded.

Today, we know that billions in agriculture were lost. But casualties were far fewer than initially feared. That small group of forecasters who worked in that chilly, tensed corner in PAGASA has helped save lives. Moreover, DOST's decision to cut the interval of weather bulletins from six hours to one has mobilized the people and government disaster management system to prepare effectively against nature's wrath.

From day one, this administration knew that it's in the business of saving and enhancing lives. It's in a frantic race against competing and complex development needs. The people expect results practically in haste. They cannot wait perpetually.

With this awareness, the new leadership is trying to push and change institutional mindset in the Department of Science and Technology. It is implementing a shift from business-as-usual to catch up mode, following President Aquino's commitment to restore the people's trust in government through transparent and responsive governance.

Hard work and imagination are integral to DOST's national development mission. But results are necessary to break a lingering crisis of integrity in government.

Over the last five months, the new administration has identified and put together key development programs that it intends to pursue in the years ahead. In each program, the potential impact to day-to-day life of Filipinos is a top consideration. Such connection is the best way for them to make sense of science and technology.

All the other DOST programs are carefully designed to meet immediate national development issues. These include an all-Filipino designed mass transport system, reduction of malnutrition incidence, anti-dengue solution, promotion of brown rice consumption to alleviate health and production constraints, affordable water filter, more efficient disaster management system, basic education modernization, customized and cheaper port gantry cranes, and enhancing S&T human resource development, among others.

All these came with the realization that we have to build our capacity for self-reliance to liberate ourselves from basic and longstanding socioeconomic inadequacies.

RODEL G. OFFEMARIA

SCIENCE and TECHNOLOGY POST

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SupeRice, an iron-fortified rice, promises to make people livelier, brighter, and stronger ("mas masigla, mas matalino at mas malakas"). The next generation will surely benefit much from it. Story on page 15.

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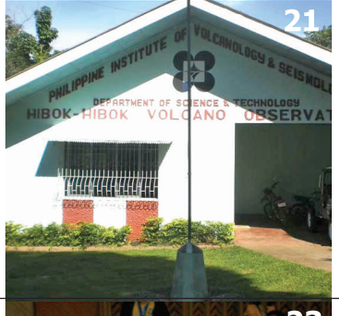
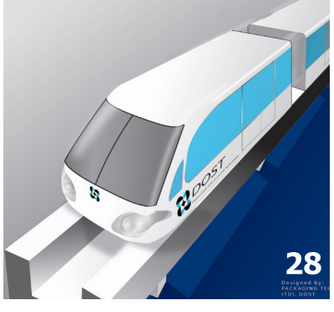
what's cool?

WHAT'S INSIDE?





FPRDI can help start local cellophane industry

DID YOU know that the self-adhesive tape you used to seal your friend's birthday gift is made from the pulp of plants?

"Yes," according to Ms. Adela S. Torres of the Forest Products Research and Development Institute (FPRDI) – Department of Science and Technology (DOST). "The base of any transparent self-adhesive tape is made of cellophane which comes from the regenerated cellulose of either wood, abaca, or cotton."

Torres continues, "Cellophane is a strong, flexible, 100% biodegradable material widely used for food and cigarette packaging. Although it is not easy to make, cellophane can be manufactured locally – given the country's vast abaca resources and technical experts."

"We are one of the world's top abaca exporters, supplying Japan and Europe with abaca fiber which they process into cellophane products and sell back to us," says Ms. Mildred M. Fidel, also of FPRDI.

"Likewise, we have at FPRDI experts in cellulose technology and a body of research results on the suitability of various local tree species for cellulose-derived products like cellophane. The Institute's Viscose Rayon Bench Plant, on the other hand, may be used for laboratory tests and pilot production."

Fidel concludes, "Manufacturing cellophane is a complex and expensive process, but we have strong advantages that should make government consider how it can support the possible establishment of a local cellophane industry." (Rizalina K. Araral, S&T Media Service)

Currency paper can be made locally

ABACA FIBER – one of the Philippines' biggest exports – is the dominant raw material in making the specialty paper for money. Ironically, though, the country imports about 780,000 kilos of currency paper a year which it turns into peso bills.

All over the world, paper bills are manufactured using fair to excellent grades of abaca fiber. Research at FPRDI-DOST, however, has shown that lower quality abaca pulp blended with the right amount of wood pulp (from Acacia mangium) performs as well as export quality abaca pulp intended for bank notes.

"Our financial analysis has shown the feasibility of producing 780,000 kilos of currency paper from lower grade abaca fiber," says FPRDI Director Romulo T. Aggangan. "This is one venture players in the local pulp and paper industry may want to go into. This means not only more business for our abaca farmers, it also means big savings on our dollar reserves." (Rizalina K. Araral, S&T Media Service, FPRDI)

DOST brings anti-dengue fight right where it starts

By ROSARIO T. GENATO and JOY M. LAZCANO
S&T Media Service

FILIPINO RESEARCHERS are taking the fight against dengue right down to households where the health menace starts.

A research team from the Industrial Technology Development Institute of the Department of Science and Technology began field tests September 24 on its Ovicidal Trap System (OTS) for mosquitoes in Quezon City and Marikina City, respectively.

OTS is designed to significantly shrink the reproductive activities of mosquitoes through lure and catch. The month-long field tests covering 250 households in Barangays [villages] Bagbag in QC and Nangka in Marikina aim to validate the effectiveness of OTS.

The OTS kits will be collected every fifth day of each week for laboratory examination at the ITDI facility in Bicutan, Taguig City.

OTS is a simple trap system made of ordinary tin can (regular size evaporated milk) painted black and a strip of lawanit board (1 x 6.5 x 1/2 in.). An all-natural solution is poured into the can and by capillary action moistens the board. The moist lawanit board becomes like an ideal nest for female aedes mosquito (FAM) to lay its eggs on.

The tin can serves as the platform where reproductive activity happens. Inside it is a lawanit strip where the FAM supposedly would lay eggs until they hatch while the ovicidal solution, which also works as FM attractant, kills the eggs and larva in the process.

Based on ITDI laboratory tests, the OTS wipes out 100% of FAM eggs and larva.

ITDI researchers worked on OTS for a year and did tests initially on a laboratory scale followed by field testing in Metro Manila for one month. If the field tests in Marikina City and Quezon turn out successful, DOST will put OTS into action nationwide.

Only the female aedes mosquito carries the dengue virus. It feeds on proteins from human blood to be able to produce and lay as many as 200 eggs in one laying cycle. It lives for only three to four weeks and lays eggs thrice during its lifetime.

It would only take a few hours for the eggs to hatch, about 80% of them female, and almost a week for the larva to become adult mosquito.

Department of Health data showed that from January to August 28 this year, the total number of dengue cases reached 69,594.said that the OTS field tests show that DOST works hard in tapping local technologies to mitigate or manage local public health problems.

Wood wastes can be used for pallets

NEW RESEARCH results from FPRDI may help fill the raw material needs of the country's wooden pallet industry.

The platform devices that make it easy to handle, store and distribute goods across oceans and continents, pallets are now an indispensable tool to global trade. Pallets have become so important that in the Philippines, pallet production is now the fastest growing sector among the wood-based industries. The boom, however, is threatened by the lack or high cost of raw materials.

The research results of FPRDI's Ms. Simplicia B. Katigbak may help relieve the problem: woodwastes from processing plants seem to be suited for making pallet parts. Explains Katigbak, "We made composite products from wood shavings and used these to make the blocks and stringers for pallets. Composites with a density of 650 kilograms per cubic meter passed our strength tests and were significantly stronger than those with lower density."

"This is an important finding since wood processing plants across the country turn out huge volumes of wood shavings," says Katigbak. "Our next step now is to develop and test pallets using the blocks and stringers we made from woodwastes. With good results, we can hopefully help ease the wooden pallet industry's raw material problem." (Rizalina K. Araral S&T Media Service, FPRDI)

MIRDC-DOST develops machine for coco coir biologs

COIR FIBER logs are made of decomposed ground coconut husks pulp tightly packed in tubular netting. Also called biodegradable logs or biologs, these 100% natural materials are excellent planting medium additives. They add fertility to the soil after biodegradation, and they have high tensile strength and high water absorbency. Moreover, they are eco-friendly and wildlife safe.

Coco coir biologs come in a variety of lengths and densities to suit different applications. As the logs can absorb large amount of water, these can be used to slow down the velocity of storm water run-off, thus stabilizing slopes. The logs are also great for stabilizing shorelines/river embankment and rehabilitating forest slope. The logs likewise provide bedding for seedlings or cuttings. As the coconut fiber logs biodegrade, the plants develop a well-established root system in the shoreline sediment to retain the soil in place. Moreover, the logs are useful in catch basin protection, keeping unwanted pollutants from entering into sewer systems.

To maximize the use of coco coir, the Metals Industry Research and Development Center of the Department of Science and Technology developed a manual machine for coco coir biologs. The machine can compress coco fibers while wrapping them in a geotextile net, resulting in the so-called coir fiber biologs. Measuring 3000 mm x 1030 mm x 502 mm, the machine is capable of producing 30 units of coco fiber biologs per day even by a novice operator. The manufacturing cost of the machine is approximately P40,000.00.

The machine for coco coir biologs is a promising technology for coir fiber as the Philippines is among the top coconut-producing countries. With the help of this machine, coco processors will generate employment and increase the use of coconut coir for commercial purposes.

PCARRD names best agri researchers, journalists

By JAZZELLENE JOY GARCES
S&T Media Service

IN CELEBRATION of the 38th founding anniversary of the Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD), the agency conferred awards to outstanding researches during the 2010 National Symposium on Agriculture and Resources Research and Development (NSARRD) and Awarding Ceremony held November 10 at the Dusit Thani Hotel in Makati City. The awards had two components, namely the research category and the development category.

The first place for the research category went to the project Coconut Biotechnology: Gene Discovery of Fatty Acid/Triglyceride Biosynthesis, Cocosin Promoter and Tissue Culture-Transformation in Corn as a Model System" by Dr. Rita Laude Dr. Marni Cueno Dr. Ma. Genaleen Diaz, Dr. Merlyn Mendioro, Dr. Olivia Damasco, Dr. Antonio Laurena, and Dr. Jorge Gil Angeles of the University of the Philippines Los Banos. The project aims to develop a genetically modified coconut with increased oil content and lauric acid, a special kind of saturated fat that is usually healthy to eat. It is also reported to speed up weight loss, and help lower the risk of heart disease, high blood pressure, and many other health problems. This cutting edge research will greatly benefit the country's coconut industry.

The second place went to the project entitled "Accelerated Development of Coconut Synthetic Variety Using Classical Breeding Methods and Microsatellite Marker Technology" by Ramon Rivera, Ernesto Emmanuel, and Dr. Susan Rivera of PCA-ZRC/WESMARRDEC.

For the Development Category the project "Rural Enterprise Development Through Innovative Goat Production Systems" by Dr. Wilson Cerbito, Dr. Edgar Orden, and Dr. Jonathan Nayga of Isabela State University bagged the first place. The project demonstrated a successful science-based goat raising enterprise, involving adoption of proper housing, stall feeding, and upgrading in villages in Isabela , Nueva Ecija and Leyte. It also introduced improve goat productivity and profitability through community-based selection and breeding system and organized associations. Most of all, the project empowered the goat farming communities and transformed traditional goat raising from subsistence farming to a profitable enterprise.

Receiving second place was the project "Improving Production of Saba, Lakatan and Latundan Cultivars in Different Cropping Systems" by Dr. Edna Aguila, Dr. Jose Nestor Garcia, Dr. Nelly Aggangan, Juliet. Anarna, Patrick Rocamora, Leonardo Tamisin Jr., Dr. Felipe Dela Cruz Jr., Manuel Esguerra, Michael Noel, and Louie Joseph Pabro of UPLB STARRDEC.

Meanwhile, the Professional Media Award Hall of Fame, Print Category was awarded to Noel Provido of the Department of Agriculture for his crucial role in the dissemination, popularization and promotion of agricultural technologies of the Southern Mindanao Agriculture and Resources Research and Development Consortium in Region XI in the print media.

The Professional Media Award Hall of Fame, Broadcast Category was awarded to the University of the Philippines Los Baños (UPLB) DZLB Tinig ng Agrikultura sa Barangay Program Team.

Hall of Fame awards went to Dr. Anselmo S. Roque of Muñoz, Nueva Ecija for the print category and Teresita S. Baluyos of DOST-X for the broadcast category for their outstanding contribution in disseminating and promoting science and technology (S&T) information and breakthroughs in support of the programs of the Central Luzon Agriculture and Resources Research and Development Consortium (CLARRDEC) and Northern Mindanao Consortium for Agriculture and Resources Research and Development (NOMCARRD), respectively, and of PCARRD's technology transfer modalities.

The Tanglaw Award for Most Outstanding Research Institution was received by the Philippine Rootcrops Research and Training Center in Region 8.

Meanwhile, the Pantas award for Most Outstanding Researcher/Scientist went to Dr. Roberto Guarte of the Visayas State University for his sustained commitment to research, and self-betterment both as a scientist and an inventor. The award recognized his credible leadership that engendered funding from local, national, and international institutions for at least seven major research projects in the past five years.

The Pantas award for the Most Outstanding Research Administrator category was given to Dr. Jose Bacusmo, president of Visayas State University, in recognition of his significant contributions to the advancement of agriculture and natural resources R&D in Region 8. The award also acknowledges his "unwavering visionary leadership and 'hands-on' presidency that made the university's network expanded at the regional, national and international levels," according to the citation.

The Ugnay award was conferred to Cagayan Valley Agriculture and Resources research and Development (CVARRD) for its outstanding performance as a regional R&D consortium for the years 1998, 2000, 2001, 2002, and 2008-2009.

Pres. Aquino confers Lingkod Bayan Award to Phivolcs chief

PRESIDENT BENIGNO S. Aquino III honored the country's outstanding public servants, among them the head of the Department of Science and Technology's Philippine Institute of Volcanology and Seismology (Phivolcs), in a rites held in Malacañan Palace October 15. The awarding coincided with 110th anniversary of the Philippine Civil Service (CSC).

Phivolcs Director Renato U. Solidum received this year's Lingkod Bayan Award for his meritorious contributions in the field of disaster risk reduction. According to his citation, Solidum was conferred the prestigious government service award "for raising the bar of disaster risk reduction in a country prone to volcano, earthquake, and tsunami disasters; for initiating a mapping program that compiled historical tsunami information shown in the form of hazards maps for use by local governments in tsunami-prone areas."

In his response, Solidum said, "I am happy and honored to be one of the recipients of the award because this is the highest honor that a public servant could ever receive."

"This is the result of all the things that we do here in Phivolcs," he added. Through Solidum's efforts in disaster risk mitigation, Phivolcs has earned the nod of many international funding agencies to extend its support in upgrading its monitoring facilities among the agency's 59 seismic stations around the country.

According to Solidum, the tsunami hazard mapping has already covered 100 per cent of the country's coastline. This historic tsunami information gathering is part of the bigger program in tsunami hazard mapping that includes physical and numerical modeling of the possible tsunami-prone areas in the country, he said.

Also under Solidum's watch, Phivolcs initiated the formulation of Tsunami Hazard Mapping ahead of the tsunami incident that left 4,812 deaths in Phuket, Thailand in 2004.

Among Phivolcs regular programs include the conduct of series of tsunami drills, apart from the compulsory earthquake drills on schools, on communities that are most likely to be hit by the said natural disaster.

Other recipients of the Lingkod ng Bayan Award were Technical Sgt. Salvador S. Buenaobra Jr. (Philippine Air Force [PAF]-15th Strike Wing, Cavite); Pablo Y. Lasprilla Jr. (PAF-410-th Maintenance Wing, Pampanga); Thomas G. Aquino (Department of Trade and Industry, Makati City); Teodosia S. Bernaldez (Loboc Local Government Unit, Bohol); Col. Lope C. Dagoy (Philippine Army-85th Infantry Battalion, Taguig City); Dr. Fe A. Yap (Komisyon sa Wikang Filipino, Manila); Regional Public Affairs Office's Trees for Books/Books for Trees Project (DENR-Cordillera Administrative Region); and Open Academy for Philippine Agriculture (Pampanga Agricultural College, Pampanga).

Spearheading the annual awarding is CSC which is tasked to honor and recognize significant works and initiatives of public officials and employees in the government service. Other awards conferred were the Pagasa and the Dangal ng Bayan Awards.

In a short telephone interview, Solidum said he shares the honor to his fellow public servants in Phivolcs and DOST. He said that this award would not be possible if not for the people who toiled with him in coming up with projects that are very essential to the lives of Filipinos. (Joy M. Lazcano, S&T Media Service)

National Metrology Laboratory Phils gets international accreditation from Germany

DOST's National Metrology Laboratory Philippines gets international accreditation. Department of Science and Technology Secretary Mario Montejo (second from right) witnesses the hand-over of the accreditation certificate from the German Ambassador to the Philippines Christian Ludwig Weber-Lortsch in behalf of the Deutsche Akkreditierungsstelle GmbH (German Accreditation Body, DAkkS) to Ms. Aurora Kimura, chief of the Metrology Division of DOST's Industrial Technology Development Institute (ITDI). The DOST agency operates the National Metrology Laboratory of the Philippines (NMLPhils) which received international accreditation from the German accreditation body to perform calibration in the fields of temperature, mass and pressure in accordance with the standard DIN EN ISO/IEC 17025. **(Framelia V. Anonas, S&T Media Service)**

PH wins big in 2010 World Robot Olympiad

By MARK IVAN ROBLAS
S&T Media Service, *SEI*

THE PHILIPPINE contenders emerged as big winners in the recently concluded World Robot Olympiad as the country hauled two gold medals in the Open Category. With the theme, "Robots Promote Tourism," the students fashioned their robots in the Open Category to market the culture and tourist spots in their countries.

Cupping gold medals in the Open Category are Grace Christian College from Quezon City for the Elementary Level and Dr. Yanga's College from Bulacan in the Junior High School category.

Coming second and third in the Open Category – Elementary Level are Malaysia and Korea. Under the same category, Spurgeon School from Makati City won sixth place and Most Popular Robot.

In the Open Category – Junior High School Level, China and International School of Manila netted silver and bronze medals, respectively. Grace Christian College placed fourth as well in this category.

Tumbang preso

Meanwhile, the Regular Category – High School featured the game "Tumbang Preso" in which the robots of the students were tasked to touch three switches to open a gate, knock down a can, grab another, and bring it to the finish line.

Benigno Aquino National High School from Makati and Makati Science High School placed seventh and eighth place in the Regular Category-Junior High School.

Tour of the Philippines

The Regular Category – Elementary Level featured the game "Tour of the Philippines" where robots of the students were tasked to run across an obstacle course placed on top of the map of the Philippines.

The Philippines also won silver in the Regular Category-Elementary Level courtesy of West Rembo Elementary School, the country's first in its six years of joining the WRO. Tibagan High School from Makati also placed fifth in the same category.

At par with developed countries

Dr. Ester B. Ogena, Director of the Department of Science and Technology-Science Education Institute, expressed elation over the Philippines' medal reap in the WRO.

"We have truly shown to the world that we can be at par with developed countries as we also possess the human resources that can go head to head with foreign colleagues," she said.

Ogena pointed out that the government will continuously support science, technology, engineering and mathematics related competitions here and abroad, as it gives recognition to students with talent in science and technology.

"Competitions provide us the opportunity to discover gems in science and technology whom we can help to hone their talent and, eventually, lead them into the science community," she said.

Ogena noted that she is optimistic that the students who joined in the WRO, as well as those who join in other science-related competitions, will take courses in science and technology.

"If they want to look forward to a world of work in science, there are science scholarships we offer annually for those who are really interested."

Ogena said that she is hopeful as well that the WRO enticed the public into seeing science in a different light and see that it is everywhere.

"Science is in everything and it is our dream that the Filipinos will embrace a culture of science and technology," she said.

Two DOST agencies cited best accounting offices

By JOY M. LAZCANO
S&T Media Service, *STII*

TWO OF the Department of Science and Technology attached agencies bagged the Most Outstanding Accounting Offices for FY 2009 to 2010 by the Association of Government Accountants of the Philippines (AGAP), Inc.

The Science and Technology Information Institute (STII), the information arm of DOST, won in the small category for adopting the centralized accounting system of the government. Meanwhile, the Industrial Technology Development Institute (ITDI) gained recognition as one of the Hall of Fame awardees.

STII, according to the citation, has "exemplary met the criteria of accuracy, timeliness, reliability and compliance to accounting and regulations set by the committee on awards."

Representing STII during the awarding ceremony were Arlene Centeno, Officer-in-Charge, Finance and Accounting Department; Marilou Curie Leelian, Accountant III; Zenaida Santos, Agency Cashier; and Jeffrey Centeno, Accounting Staff.

"This is a proof that here at DOST, every taxpayer's money is well accounted for," said STI Director Raymund E. Liboro.

"The challenge at hand everyday is to be able to perform at best, with timely and accurate accounting reports within the prescribed accounting rules and regulations set by the government despite the lack of personnel," says awardee Leelian.

AGAP is a non-stock organization of government accountants established in 1950 to promote the common interest of the accounting profession in the government, as well as to promote and maintain high professional and ethical standards among government and private accountants, among others.

AGAP recognizes government accounting offices for their compliance in the prescribed accounting rules and regulation set by the government. Winners are grouped into two categories according to the accounting system that each agency is employing.

Other awardees for the Centralized Accounting System Small Category were Philippine Drug Enforcement Agency, the Philippine Racing Commission, and Tariff Commission while the Nueva Ecija University of Science and Technology topped the Big category.

In the Decentralized Accounting System, awardees were the following: Commission Commission on Audit – Regional Office No. I; National Telecommunications Commission (NTC) – Regional Office No. III; Department of Trade and Industry – Regional Office No. V; DPWH 1st Masbate Engineering Office; Cities of Calapan, Oriental Mindoro and Lipa, Batangas; and Municipality of Sto. Tomas, Davao del Norte

Moreover, the Department of Social Welfare and Development – Office of the Secretary, Nueva Vizcaya State University, Foreign Service Institute, Industrial Technology Development Institute, Presidential Legislative Liaison Office, Land Transportation Office – CO bagged the Hall of Fame awards.

Norway helps upgrade flood forecasting in Cagayan Valley

By JOY M. LAZCANO
S&T Media Service, *STII*

AS HEAVY flooding swept some parts of the Cagayan Region due to heavy rains the past few days, the region sees clear days ahead at least in the next two years as the Department of Science and Technology and the Norwegian Water Resources and Energy Directorate (NVE) of the Kingdom of Norway signed a Memorandum of Agreement for the improvement of the flood forecasting and warning system for the Magat Dam and downstream communities.

Present during the MOA signing was Department of Science and Technology Secretary Mario G. Montejo; His Excellency Knut Solem, Ambassador of Norway to the Philippines; Mr. Kjell Repp, Manager of the International Affairs, NVE; and Dr. Nathaniel T. Servando, Officer-in-Charge of the Office of the Administrator of DOST's Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA).

The project will enhance the flood forecasting and early warning capability of PAGASA in the Cagayan river basin and the Magat Dam operations. This will help reduce the loss of lives and damage to properties during floods brought about by heavy rains.

According to the MOA, the NOK 10,700,000 million project will help restore the telecommunication system and rehabilitate the monitoring facilities of the existing flood forecasting and warning system and the flood forecasting and warning system for dam operations. The MOA also covers the installation of additional monitoring stations.

DOST and NVE also greed to jointly conduct research on an integrated weather and flood forecasting system; establish a decision support system; and conduct training and capacity building activities, as well as intensive public information drives and campaigns for stakeholders and the public.

"DOST fully supports the continued enhancement and strengthening of PAGASA'S flood forecasting capability through the continued upgrading of its existing observing equipment and facilities, including the Magat Dam Flood Forecasting and Warning System. This will help improve the issuance of timely and accurate flood forecasts and warnings particularly in the Cagayan river basin, and will bring about a more effective operation of the Magat dam spillway for the safety of the communities in the downstream area," said DOST Secretary Mario G. Montejo.

Meanwhile, NVE International Affairs Manager Kjell Repp was glad at the joint undertaking between Norway and the Philippines. He said that the project is a great opportunity to learn the expertise and technology of each country. "With climate change on the rise, we (Norwegians) might have a similar situation in the future," he said.

Ms. Margie Bautista, Chief of PAGASA's Hydro Meteorological Data Application of the Hydrometeorology Division, said that Cagayan Valley, specifically in the province of Isabela, has recently experienced a 12.7 meters of flood water due to the tail of cold front. It is the highest recorded water level rise in the region after more than two decades. Previous records posted a 12.5-meter rise during a typhoon. She added that with the implementation of this project, new communication link between the Magat – Tuguegarao flood forecasting stations will be established. Previously, only the PAGASA central office and the Tuguegarao station had existing link that relays important hydrometerological data.

Department of Science and Technology Secretary Mario G. Montejo (3rd from left) signs the Memorandum of Agreement with the Ambassador of Norway to the Philippines, His Excellency Knut Solem (2nd from left) that will help improve the flood forecasting and warning system of DOST's Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) for Magat Dam and its downstream communities. Others in photo are NVE International Affairs Manager Kjell Repp (leftmost) and PAGASA OIC, Dr. Nathaniel T. Servando (rightmost). ***[Photo by Gerry Palad, S&T Media Service, STII]***

DOST, IPO issue RA 10055 IRR

By EDGE GENCIAGAN
S&T Media Service, *PCARRD*

THE DEPARTMENT of Science and Technology (DOST) and the Intellectual Property Office of the Philippines (IPO) recently issued the implementing rules and regulations (IRR) of Republic Act 10055, otherwise known as the Technology Transfer Act of 2009.

The Technology Transfer Act is a landmark law that would usher the growth of the country's innovation potential through efficient transfer of technologies, specifically those funded by public funds.

The IRR, contained in the Joint DOST-IPO Administrative Order 02-2010, was jointly signed on August 19 by DOST Secretary Mario G. Montejo and IPO Director General Ricardo R. Blancaflor in their capacities as chair and co-chair, respectively, of the Joint IRR Drafting Committee. The IRR took effect on September 8.

The IRR underlines the main intent of the law, which is lodging ownership of the intellectual property rights (IPRs) to research and development institutes (RDIs), by setting parameters on copyright ownership and recovery of the IPR ownership.

To facilitate commercialization of IPRs through spin offs, the IRR provides for the rules of the Fairness Opinion Report and the Fairness Opinion Board. The Fairness Opinion Report is an alternative to the rigid government procurement process which usually hampers efficient transfer of technologies to the market.

Common provisions, involving stipulations in the research funding agreement, protection of undisclosed information, and rules on disclosure are also included in the IRR.

In terms of revenue sharing, the provisions in the research agreement or the employer-employee contract shall govern. In any case, however, the term revenue shall be defined in the agreement and where practicable, non-monetary revenues will be converted to cash.

To ensure smooth and swift transfer of technologies, the implementing rules also encourages the establishment a Technology Transfer Protocol among RDIs, which sets the guidelines in forming a spin-off company and setting parameters in revenue sharing involving non-monetary grants. It also encourages the establishment of Technology Licensing Offices in whatever form and the formulation of the RDIs' own policies on IPR management and technology transfer.

In case of any dispute in determining government ownership, this shall be subject to arbitration and mediation under IPO rules.

RA 10055, authored by Rep. Joseph Emilio Abaya and Sen. Edgardo Angara was signed into law by former President Gloria Arroyo on March 23 and took effect last May 8.

The making of the IRR

Early on, national consultations were held last July 16 and August 13 to solicit inputs from concerned stakeholders.

Dr. Albert P. Aquino, PCARRD Socio-Economics Research Division director and DOST Technical Working Committee on Tech Transfer chair, said that the activity encourages support for and ownership of the policy from stakeholders.

Noel Catibog, PCARRD's IP focal person, served as resource person during the IRR deliberation.

Incidentally, PCARRD has been at the forefront of the DOST-wide policy advocacy of the Tech Transfer law since its inception in 2006.

At present, DOST and IPO are coordinating with the Department of Trade and Industry to come up with a separate guidelines on IP valuation, commercialization, and information sharing. Alongside, the DOST Policy and IEC Groups are also preparing for the information dissemination campaign to promote the IRR among stakeholders.

DOST-Smart ink pact on co-location of PAGASA weather instruments

By JOY M. LAZCANO
S&T Media Service, *STII*

FASTER AND reliable real-time weather forecasts and flood warnings are expected to help people to prepare against typhoon-whipped disasters, the Department of Science and Technology said following an agreement with wireless communications giant Smart on co-location of telemetric rain gauges at the latter's cell sites.

DOST through its weather forecasting agency, the Philippine Atmospheric Geophysical Astronomical Services Administration signed an agreement October 5 with Smart Communications initially covering the latter's 63 cell sites nationwide.

"The co-location of our telemetric gauges in Smart cell sites will complement our on-going program to strengthen the capacity of PAGASA in issuing weather forecasts and flood warnings to the public," DOST Secretary Mario G. Montejo said.

Each telemetric rain gauge automatically sends rainfall data to PAGASA's 44 Automatic Weather Stations in the form of short messaging system or SMS. The data are then posted real-time in PAGASA's website [www.pagasa.dost.gov.ph].

The co-location arrangement also means PAGASA telemetric rain gauges will have uninterrupted power supplies during power outage caused by the weather disturbances.

Moreover, DOST Undersecretary and concurrently PAGASA acting Administrator Graciano P. Yumul Jr. explained that the agreement saves the weather bureau additional expenses in setting up new locations for its weather forecasting instruments since Smart cell sites are already in place nationwide.

The new agreement expands a similar initiative previously covering Metro Manila. Smart offered to accommodate the installation of the additional PAGASA rain gauges in its cell sites nationwide.

PAGASA and Smart engineers earlier met to identify the ideal sites for co-location of the rain gauges in areas such as Ilocos Norte, Ilocos Sur, La Union, Pangasinan, Abra, Benguet, Bulacan, Zambales, Metro Manila, Batangas, Cavite, Laguna, Quezon, Mindoro Oriental, and Marinduque Camarines Norte, and Sorsogon in Luzon and Negros Occidental, Aklan, Antique, Capiz, Iloilo, Bohol, Northern Samar, and Leyte in the Visayas.

Other provinces in Mindanao considered for the project include Lanao Del Norte, Bukidnon, Misamis Oriental, Sarangani, Davao Del Norte, Sultan Kudarat, Agusan del Sur, Surigao del Norte, and Surigao del Sur.

"Smart is very happy to be part of this noble partnership which aims at saving the lives of our people during disasters," Smart Communications President and CEO Napoleon L. Nazareno said.

DOST Secretary Mario G. Montejo (seated 3rd from left) signed a memorandum of agreement with Smart Communications President and CEO Napoleon L. Nazareno (seated 2nd from left) on co-location of PAGASA'S 63 telemetric rain gauges with Smart cell sites nationwide at the wireless communication giant's main office in Makati City Oct. 5. Present during the MOA signing are (seated left to right) Smart public affairs group head Ramon Isberto, DOST Assistant Secretary Ma. Lourdes P. Orijola; (standing left to right) SmartComm's Darwin Flores, DOST Undersecretary Graciano P. Yumul Jr., DOST Undersecretary Fortunato T. De la Peña, DOST Assistant Secretary Robert O. Dizon, DOST-Science and Technology Information Institute Director Raymund E. Liboro, and DOST Head Executive Assistant Marilyn M. Yap.

DOST-PCASO agree to design and build port cargo handling equipment

By JOY M. LAZCANO
S&T Media Service, *STII*

> ***"In DOST, what we do is to promote local technologies and use science and technology for the benefit of the Filipinos"***
>
> ***DOST Sec. Mario Montejo***

GIANT STEEL cranes designed for local port conditions will make domestic cargo handling easier and affordable resulting to better productivity, Department of Science and Technology Secretary Mario G. Montejo said.

DOST in a recent memorandum of understanding with the Philippine Chamber of Arrastre and Stevedoring Operators (PCASO) and Philippine Ports Authority (PPA) agreed to provide the engineering design for ship-to-shore gantry crane and rubber tire gantry crane for private port operators in the country.

Under the MOU, PCASO members agreed to adopt the design that will be based on industry and PPA standards. The cranes can be built by any domestic steel manufacturing entity of their choice, DOST said.

The arrangement follows President Aquino's directive for government leaders to pursue public-private development partnerships.

The initiative is expected to drastically cut the acquisition cost of such cargo handling equipment. Imported cranes cost about P300M or more while a DOST-designed crane is estimated to cost only about P70M

"In DOST, what we do is to promote local technologies and use science and technology for the benefit of the Filipinos," Montejo said.

He explained that implementation of the DOST-PPA-PCASO initiative will also substantially benefit the local steel fabricators.

Among the cargo equipment to be designed by DOST are quay cranes, ship-to-shore rail-mounted gantry cranes, and rubber-tired gantry crane, which is an affordable alternative to rail-mounted gantry cranes.

DOST plans to initiate similar arrangements in other technology based development projects in the future, Montejo added.

DOST Secretary Mario G. Montejo (middle) signs the Memorandum of Understanding with PPA General Manager Juan C. Sta. Ana (left) and PCASO Chair Benjamin C. Akol (right).

PAGASA weathers superhowler typhoon

TYPHOON JUAN was so strong that when it hit Palanan Bay, Isabela, last October 18, it packed sustained winds of 225 kilometers per hour.

And Pagasa was ready for it – and even more super howlers could be coming.

The typhoon season lasts until December and Juan was only the 10th of about 20 tropical depressions that batter the country each year.

The current La Nina weather could also spawn strong typhoons as it did with Typhoon Milenyo in 2006.

Typhoon Juan "was a test of fire," said Science Secretary Mario Montejo. "We had the confidence based on competence and science."

It was not by chance that Typhoon Juan was tracked meticulously, he said: "Before the typhoon formed in the Pacific, we were holding dry runs for such an event."

"This time, we were frantic, badgering our field men for local data, and we had a sort of pass-your-paper, finish-or-not-finish deadlines," Montejo said.

"We believe it's repeatable," he said, referring to the more accurate and timely forecasting.

For the first time, the Philippine Atmospheric Geophysical and Astronomical Services Administration, an agency of the Department of Science and Technology, had hourly weather reports, tracking the storm, predicting where it'll hit "almost to the town" long before Juan made landfall, said Montejo.

"If it veered a bit, we knew exactly where," he said.

More specific details on which towns will be affected were known and local governments were warned way ahead of the typhoon making landfall.

Eight hours before it hit land, when the supertyphoon entered the Philippine area of responsibility, weather men were already triply watchful. For their effort, authorities believe, many lives were spared and more properties protected.

Days before Juan hit, villagers and farmers along its path were warned of the potential disaster. Weather officials promptly issued the highest alert for coastal Isabela and Cagayan and mountainous Kalinga, Ifugao and Mountain Province in the Cordilleras.

When it reached the country last October 18, Juan was the strongest to hit the planet this year, leaving a wasteland on its wake. Megi to the world, Supertyphoon Juan flattened villages and farms in Northern Luzon.

The superhowler made landfall in Sierra Madre's Estagno Point at Divilacan Peak in Isabela shortly before noon, about 320 kilometers northeast of Manila.

It was so powerful that China, next in line, warned of a destructive "50-year storm surge" along its coastline.

Already classified a typhoon while still in the open sea, visibility instantly turned to near zero when it hit Cagayan Valley and flattened many banana and sugar plantations, uprooted corn and tobacco fields, cancelled flights and ship departures, downed power lines, phone and Internet services, tore off roofs, snapped trees in half, caused landslides, overflowed riverbanks, made bridges impassable and deemed pedestrian walking next to impossible and dangerous.

Up to 90 percent of communications in the Valley were knocked out: the entire Isabela province without power along with 16 of Cagayan's 28 towns.

Landslides closed many major roads

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All rise for SupeRice

By **FRAMELIA V. ANONAS**
S&T Media Service, *STII*

San Felipe, Zambales -- It's not a bird nor a plane but Zambalenians were simply amazed at this new wonder that landed on their grounds. It's called SupeRice, an iron-fortified rice that promises to make people livelier, brighter, and stronger ("mas masigla, mas matalino at mas malakas").

Developed by the Food and Nutrition Research Institute (FNRI), SupeRice is the Department of Science and Technology's one answer to the burden of malnutrition weighing down a segment of the country's population, especially young children.

"One meal of SupeRice meets about 30 percent of a person's daily iron requirement," explained FNRI Director Mario Capanzana to Zambalenians excited over this new kind of rice and the benefits it brings into their households. He also assured that SupeRice poses "no danger of having an iron overdose."

SupeRice contains 6 mg iron per 100 gram rice. A day's intake of about 4 to 6 cups of cooked Superice already meets the daily iron requirement of the body. "This is why it will be most beneficial to children, the elderly, and pregnant and lactating women," he said.

Iron deficiency has adverse effects. People with low iron levels generally have pale skin, white soft fingernails, and unexplained fatigue. They also lack concentration and have low energy level. Moreover, they are more likely to develop iron-deficiency anemia.

FNRI developed the SupeRice technology to combat micronutrient deficiency among the population, Capanzana said. Since the passage of the Food Fortification Law of RA 8976, FNRI has actively engaged in food fortification projects that involved mass-based foods such as noodles, margarine, soy sauce, pan de sal, and salt.

Premixed iron-fortified rice

SupeRice is prepared by blending ordinary rice and premixed iron-fortified rice grains which are actually ordinary rice coated with iron using suitable solvent and binder.

The iron content of SupeRice can build healthy red blood cells, prevent anemia, improve physical and mental performance, and boost body systems to fight infection.

SupeRice is my prize. Food and Nutrition Research Institute (FNRI) Director Mario Capanzana (middle) congratulates school children who won packs of SupeRice in a mini-quiz show during the SupeRice launch Nov. 22 at San Felipe town of Zambales. SupeRice is the Department of Science and Technology's answer to the problem of micronutrient malnutrition in the country. Spearheading the commercialization of SupeRice in San Felipe are Dr. Imelda Agdeppa, FNRI research team leader (leftmost); Mayor Carolina Pariñas (second from left); DOST provincial Director Bernadette Montevirgen (second from right); and local officials (in green). Superice, an iron-fortified rice developed by FNRI-DOST, contains 6 mg iron per 100 gram rice. About 4 to 6 cups of cooked Superice, approximately a day's intake, already meets the daily iron requirement of the body. (Framelia V. Anonas, S&T Media Service)

Unlike other preparations of iron-fortified rice, FNRI's Superice looks, tastes, smells, and is cooked like any other regular rice. Previous taste tests of FNRI have likewise shown that the flavor and aroma of SupeRice is very acceptable to consumers.

Warm welcome to SupeRice

In the third week of November, Zamabalenians woke up to the upbeat jingle of SupeRice playing downtown. Motley crowds flocked to the venues where the SupeRice was launched, most of them parents with children in tow.

"I want to know what this SupeRice is all about," said one mother in Subic. "If this is good for my children, then I will patronize it."

Zambales mayors, as well as town and barangay officials and government workers, strongly gave support to SupeRice, banking on its various health benefits. Olongapo Mayor Bong Gordon stressed the importance of including SupeRice in one's diet to become stronger, a key to achieving excellence, especially in sports Subic Vice Mayor Jun Guevarra thanked FNRI for introducing SupeRice with its obvious benefits "especially to the indigent."

Meanwhile, San Felipe Mayor Carolina Pariñas pledged her commitment to programs such as SupeRice that have clear health benefits to her constituents, noting that "an ounce of prevention is better than a pound of cure." San Marcelino Mayor Jose Rodriguez likewise looks forward to a next generation that is "stronger and brighter" through SupeRice.

Commercializing SupeRice in Zambales

FNRI-DOST researchers led by Dr. Imelda Agdeppa combed through the complex networks of local government officials, public health workers, local public school system, and even rice distributors to introduce Su-

All rise for SupeRice. FNRI Director Mario Capanzana (rightmost) bats for SupeRice as an important answer of the Department of Science and Technology to the problem of micronutrient malnutrition. With him are (L-R) City Mayor Bong Gordon and wife Anne with City Councilor Elena Dabu who strongly endorsed SupeRice to the people of Olongapo City. Superice, an iron-fortified rice developed by FNRI-DOST, contains 6 mg iron per 100 gram rice. About 4 to 6 cups of cooked Superice, approximately a day's intake, already meets the daily iron requirement of the body. (Framelia V. Anonas, S&T Media Service)

Town dads rise for SupeRice. FNRI Director Mario Capanzana (right) and Subic Vice Mayor Jun Guevarra (left) give the thumbs-up sign to show that SupeRice tastes just as good as regular rice though it is packed with iron. SupeRice, an iron-fortified rice developed by the Department of Science and Technology's FNRI, contains 6 mg iron per 100 gram rice. About 4 to 6 cups of cooked Superice, approximately a day's intake, already meets the daily iron requirement of the body. Subic officials warmly welcomed and endorsed the commercialization of SupeRice in this Zambales town. (Framelia V. Anonas, S&T Media Service)

peRice and set up networks for its commercialization in Zambales.

"We want to find in Zambales similar successful results that we had in previous studies held in Pasig City and Bataan," Dr. Agdeppa said. "This is our motivation in transferring this technology in Zambales."

Dr. Agdeppa's team in this project will document the various nuances in marketing SupeRice in Zambales using social marketing principles. The team will also establish a marketing model that could serve as reference for a future national-scale implementation.

SupeRice lowered anemia cases in Pasig

The technology transfer of SupeRice stemmed from a well-controlled study among school children in San Joaquin, Pasig City. For 120 days, the children were fed with iron-fortified rice which resulted in a significant decrease of the prevalence of anemia among them.

Reeling on the success of the Pasig City study, the FNRI research team embarked on a municipal-wide modeling on the commercialization of iron-fortified rice in Orion, Bataan. The group documented the processes involved in commercializing iron-fortified rice in said town, in which the team noted a similar decrease in anemia prevalence.

Market potential of SupeRice

In the Philippines, just like in most Asian countries, rice is the people's staple food. Whether poor or rich, young or old, Filipinos eat rice during meals or snacks. Thus iron fortification of rice is considered as the most practical way to combat anemia which affects 30.6 percent of the entire Filipino population, according to FNRI. This sector is composed of infants, the elderly, pregnant and lactating mothers, and children, as identified in FNRI's National Nutrition Survey recently.

SupeRice is now available in the public markets of Olongapo, Subic, San Felipe, San Marcelino, and Iba, all of Zambales province. Price per sack ranges from P1,310 to P1,450 which retails between P26 and P32 per kilo.

The commercialization of SupeRice is supported by UNICEF and Institute of Life Sciences in Japan.

With regard to the success of SupeRice in lowering anemia cases in its launch sites, plus the warm welcome it received in Zambales province, this simply proves that " local technology works," according to Capanzana.•

Kids like SupeRice. School children in Olongapo City enjoyed the taste test of SupeRice in its launch in said city Nov. 22. SupeRice, an iron-fortified rice developed by the Department of Science and Technology's Food and Nutrition Research Institute, contains 6 mg iron per 100 gram rice. About 4 to 6 cups of cooked SupeRice, approximately a day's intake, already meets the daily iron requirement of the body. It looks, smells, tastes, and is cooked like any other regular rice. SupeRice is DOST's answer to the problem of micronutrient deficiency in the country. (Framelia V. Anonas, S&T Media Service)

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from and to the mountain provinces, including those in Apayao, Benguet, Mountain Province and Nueva Vizcaya; Kennon Road to Baguio City was impassable.

Pagasa puts in place more typhoon tracking stations

More weather stations on the ground will fine tune tracking typhoons and narrow further the area covered that pinpoints its path, from the 45 to 50 kilometers eye-of-the-storm currently tracked, Science Secretary Mario Montejo has revealed.

Eighty-five new weather stations will be added by January and 100 more rain gauges will be in place next year, on top of the 101 stations already there.

All these – and more – to generate real-time data on the ground needed to hone weather tracking, said Montejo.

The weather stations will provide more on-the-ground information; the rain gauges will strengthen current capabilities to measure the amount of rain and also indicate typhoon strength.

Five Doppler radars will be added this December and three more in the next two years will complement the two now operational, Montejo said.

He said more ocean buoys will be deployed so that ships are informed about the track and strength of typhoons as well as the ferocity and height of waves.

Montejo said more ocean buoys will be deployed so that ships are informed about the track and strength of typhoons as well as the ferocity and height of waves.

A nationwide river control and monitoring system in the pipeline will help prevent the repeat of Typhoon Pepeng last year when Pangasinan and most parts of northwest Luzon were flooded.

Indeed, Montejo said, a series of water impounding dams will be constructed to ease flood threats.

A DOST study has found that during the devastating Typhoon Ondoy last year, 55 percent of the flood waters came from the heavy rains that fell on Sierra Mountain watersheds and overflowed.

Had impoundment dams been there to hold the waters, even just for four to six hours until the rains subsided, Metro Manila and other areas would have been spared from the unprecedented floods, Montejo said, adding it illustrates the need for such a flood control system.

A huge water impoundment dam with a holding capacity of 30 million to 50 million cubic meters, or a series of smaller dams with the same total holding capacity, is seriously "under study"for Sierra Madre watersheds, Montejo said, adding it could cost P1 billion.

It's not just flood monitoring, it would be a comprehensive flood control system for Metro Manila and surrounding areas, he said.

All these, Montejo said, to avoid the consequences that occurred last year when the intensity of typhoons Ondoy and Pepeng was unforeseen. More than 1,100 people were killed in the worst flooding in Luzon and Metro Manila's recent history.

Ondoy dumped record rains that submerged 80 percent of the capital region and nearby areas, killing 277 people, leaving tens of thousands homeless.

The last time a similar punch hit the country was in 1995 with Supertyphoon Rosing, a very powerful Category 5 with 290-kph sustained winds, the strongest at that time in 25 years; 936 lives were lost, over 96,000 houses destroyed and P10.829 billion in damages caused.

In 2006, typhoon Reming's 250-kph winds set off mudslides that buried entire villages and killed about 1,000 people, mostly in Bicol. Damaged to property was estimated at over P5 billion.

In comparison, while a superhowler, Typhoon Juan, also tagged with a Category 5 highest rating, recorded relatively fewer casualties at 19 lives lost, and less damage to agriculture, fisheries and infrastructure at P5 billion. **(Paul Icamina, S&T Media Service)**

Filipino inventors shine anew

By ARISTOTLE P. CARANDANG

Living up to this year's theme "Filipino Inventions and Innovation: The Way Forward"

Filipino inventors of all ages were in a battle royale to see who will emerge as the most innovative.

Held in Cebu City, the 2010 National Invention Contests and Exhibits (NICE) of the Department of Science and Technology (DOST) through the Technology Application and Promotion Institute (TAPI) was a resounding success with inventors competing for various awards. Categories for the awards were Outstanding Inventions (Tuklas Award), Outstanding Utility Model, Outstanding Industrial Design, Outstanding Creative Research (Likha Award), and Outstanding Student Creative Research (Sibol Award) for high school and college students.

Entries this year were 376 inventor-finalists who competed in the different Regional Cluster Inventions contests in Mindanao, Visayas, Northern Luzon, Southern Luzon, Central Luzon, and National Capital Region.

Bagging the Outstanding Invention (Tuklas Award) with a P150,000 cash prize were Arnulfo Malinis, Eleanor Balute, Hermingildo Lizano, and Floria Tagarino of the Bicol University - Polangui Campus for their invention Pili nut Depulping Machine. Placing second and third place respectively were Ferdinand Crisologo of Dasmariñas, Cavite for Concrete Wall Form Block and Teodorico Badua of Bacnotan, La Union for Fuel Energy Saving Device. Crisologo and Badua received PhP 100,000, and PhP 50,000, respectively.

Winners for the Outstanding Utility Model were Marina Alipon, Gil Dolotina, Arnulfo Malinis, Eleanor Balute, Hermingildo Lizano, Floria Tagarino, Gerwin Guba, and Grecelda Eusebio ofDOST's Forest Products Research and Development Institute in Los Baños, Laguna for Digital Wood Moisture Meter (FA 507) Calibrated to Philippine Wood Species (first prize); Maria Gracia Peralta, Jonathan Puerto, and Felix Banawa of DOST's Metals Industry Research and Development Center in Bicutan,Taguig City for Non-Cyanide Gold Electroplating Solution (second prize); and Blessie A. Basilia of DOST's Industrial Technology Development Institute (ITDI) in Bicutan,Taguig City for Nanocomposites from Recycled Polycarbonate and Treated Clay (third prize).

Meanwhile, the Outstanding Industrial Designs were Vito Angelo Selma of Banilad, Cebu City for Geo Cocktail Table (first prize), and Ralph Cabrera of Cubao, Quezon City for Plastic Low Volume High Density Fish Cage (second prize). There was no third prize winner this year.

Cash prizes for the Outstanding Utility Model and Outstanding Industrial Design awards were pegged at PhP 100,000, 50,000, and 25,000 for the first, second, and third placers,respectively.

The Outstand Creative Research (Likha Award) went to Grecilda Zaballero of Guadalupe, Cebu City for Antica Organic Safe Fungicide (first prize); Annabelle Briones, Apollo Victor Bawagan, Armando Mallillin, Ramon Esperanza, James Avila,

Juanito Aquino, Oscar Trinidad of ITDI-DOST in Bicutan,Taguig City for Microemulsified Hybrid Fuel from Jatropha and Coconut Oils (second place); and

Jogie E. Cubar of La Paz, Iloilo City for Valve Spring Remover with Seal Puller (third place).

Moreover, winners of the Outstand Student Creative Research (Sibol Award) in college level were Emil Keith Antonio of Mindanao State University (MSU) - Marawi Campus for From Processed Sea Cucumber Waste to Novel Practical/Clinical/Medical Applications (first prize); Noraliza Bangngo, Romalita Cayong, and Anam Jang of the University of Baguio for The Wira-Wer Extract as Procoagulant for Lipid Profile Level

Analysis (second prize); and Naimah Karina Negad of UPV-Leyte, Marynit Rivera of UPV Iloilo, Clyde Silverio of UPV-Miag-ao, and Anthon Mark Jay Rivas of USC, Cebu City for the research Engineering a Novel Immunostimulant from Sea Urchin *(Tripneustes gratilla)* for Biodefense and Treatment During Immunosuppression (third prize).

Meanwhile, the Outstand Student Creative Research (Sibol Award) in high school level went to Benedict Manuel R. Priela of the Holy Infant Academy in Calapan, Oriental Mindoro for the research Vehicle Emission Trap: The Feasibility of CO2 Sequestration from Vehicle Emission (first prize); Arvin Jay Jimenez, Niña Bianca San Pedro, and Darwin Santos of the Talavera National High School in Nueva Ecija for Gliplutica: The Wonder Cream (second prize); and Pamela Bernada, Karla Mae Magsipoc, and Bernadette Anonoy of the Capiz National High School in Roxas City for the Alternative Computer Ink from Indigenous Materials.

The Sibol awardees in both college and high school levels received PhP 50,000 (first prize); 25,000 (second prize); and 15,000 (third prize).

The World Intellectual Property Organization (WIPO) also awarded The Pili Nut Depulping Machine of the Bicol Uni-

(L-R) Chemrez representative, Usec. Fortunato T. dela Peña, Mr. Philip N. Tan, Guest Speaker, and Engr. Edilberto L. Paradela, ARD for Technical Services, DOST VII.

versity students; From Processed Sea Cucumber Waste to Novel Practical/Clinical/Medical Applications by Emil Keith Antonio; and Vehicle Emission Trap: The Feasibility of CO2 Sequestration from Vehicle Emission by Benedict Manuel R. Priela.

"The 2010 NICE heralds the best creative efforts of local inventors," DOST Secretary Mario G. Montejo said. "Thus I hope this year's award-winning inventions will be able to provide new and more effective solutions to our most pressing problems and needs."

He also hoped that the inventions "lead to commercially-ready products, processes, and services that can be competitive, not only locally but also globally."

Undersecretary Fortunato T. Dela Peña of DOST, representing Sec. Montejo, stressed that the recognition was given to Filipino inventors because of the strategic roles that inventions and innovations play in the country's quest for economic development. "We believe that inventions help propel our economy," he stressed.

He also reiterated the commitment of the DOST in strengthening its assistance to inventors.

"Our Filipino inventors are faced with the challenges to generate and develop functional products and processes that not only make life convenient and easy, but more importantly, help improve our economy," TAPI Director Edgar Garcia said.

Chairing the board of judges of the competition was Engr. Raul C. Rabularse,

Deputy Director of DOST's Philippine Council for Industry and Energy Research and

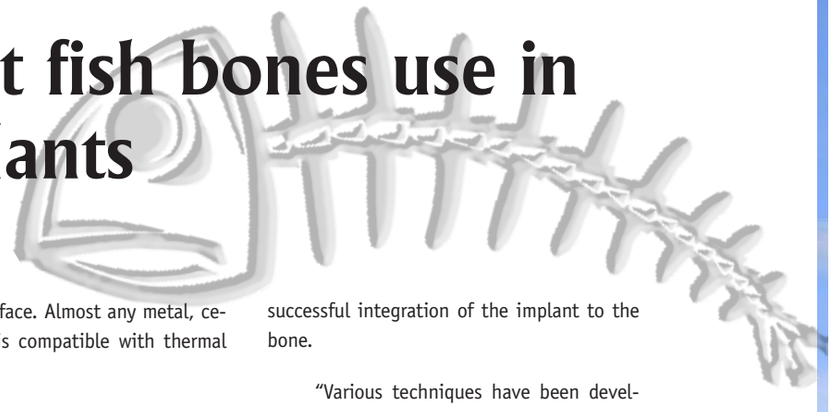
Development. He was also the chair of the screening committee. Members of

the board were Dr. Nuna E. Almanzor, Industrial Technology Development Institute director and screening committee vice chair; Dr. Carmencita V.

Kagaoan, chief of Bureau of Agricultural Research - Department of Agriculture; Carmen G. Peralta, director of Intellectual Property Office - Department of Trade and

Industry; and Forester Levi V. Florido, officer-in-charge of the Ecosystems Research and Development Bureau - Department of Environment and Natural Resources, representing the government sector. Judges from the private sector were Mr. Samuel M. Abrenilla, president of the Mindanao Inventors Federation; Mr. Gonzalo O. Catan Jr., president of the Filipino Inventors Federation; and Mr. Guillermo M. Chua, president of the Filipino Inventors Society.

Savants looking at fish bones use in bone, dental implants



By PAUL M. ICAMINA
S&T Media Service

FILIPINO researchers are looking at bangus and tilapia bones as a potential source of hydroxyapatite, a natural material commonly used in bone and dental implants.

It is the first time that research is looking at the structural and chemical composition of bangus and tilapia bones as sources of hydroxyapatite, a highly valuable material that is priced at P40,000 per 200 grams.

That's P200,000 a kilogram, and the Philippines potentially has tons of bangus and other fish bones now discarded as waste.

By using appropriate detection techniques, researchers at the Mindanao State University-Iligan Institute of Technology (MSU-IIT) – with the support of the Department of Science and Technology (DOST) – are looking at the possible application of hydroxyapatite in medical implants.

The research at the MSU-IIT Materials Science Laboratory, in Iligan City, was conducted by Eric Alcantara, Reynaldo M. Vequizo, Jess E. Gambe, Rolando T. Candidato Jr., Bienvenido M. Butanas Jr., Simon Jude M. Burgos and Rommel J. Jagus of MSU-IIT's Physics Department and Ermie M. Bacarra of the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD).

They presented their findings in an international forum here convened by the DOST and the Association of Southeast Asian Nations (ASEAN).

The DOST's PCIEERD hosted the ASEAN-India Scientific Forum which discussed the latest development in surface engineering and processes related to thermal spray coating technology.

In thermal spray coating, materials such as metals, alloys, ceramics, plastics and composites are heated to a molten or semi-molten state and sprayed in micrometer-size particles on a surface. Almost any metal, ceramic or plastic is compatible with thermal spraying.

The coating protects the material against high temperatures, corrosion, erosion and w ear. It can also replace worn parts or change the appearance and properties of a surface.

"The repair and maintenance of moving parts of machineries use thermal spray coating, such as in power plants, flour mills and other applications that specifically require the technology," said PCIEERD's Ermie Bacarra, an engineer and chairperson of the ASEAN Subcommittee on Materials Science Technology.

Many small and medium enterprises are already using the technology in the country, she said, adding the DOST wants to popularize the technology some more.

Ressearchers at MSU-IIT is trying to synthesize hydroxyapatite as a bioceramic material that may eventually be used as a thermal spray coating on bone and teeth implants.

Hydroxyapatite, an inorganic bone mineral, is a major and essential part that provides rigidity to bones and teeth. More than 50 percent of the bone, in fact, is made up of a modified form of hydroxyapatite.

Scientists have been developing ceramic materials for replacement of diseased and damaged bones, teeth and hard tissues.

Hydroxyapatite is a calcium phosphate-based bioceramic which is commonly used as a substitute material for hard tissue implants because it is not rejected as an implant organ and integrates well with the bone.

It is also commonly used as filler to replace amputated bones or as coating to promote bone ingrowth into prosthetic implants. In fact, many modern hip replacements and dental implants are coated with hydroxyapatite which promotes osseointegration or the successful integration of the implant to the bone.

"Various techniques have been developed to synthesize hydroxyapatite bioceramic materials, including hydrothermal processing, ultrasonic spray pyrolysis, precipitation routes, emulsion system and sol gel method," explains MSU-IIT's Vequizo, the lead scientist representing the Philippines in the ASEAN-India Collaboration.

"Most are expensive processes that produce expensive hydroxyapatite," he points out. "Our study is an alternative way of synthesizing hydroxyapatite through the treatment of bones from bangus and tilapia."

"Fish bones are rich sources of natural apatite, and using bangus and tilapia bones as raw materials is an advantage as the Philippines has an abundant supply, typically dumped as waste product during processing. Thus it is a cheaper source of hydroxyapatite," Vequizo says.

The hydroxyapatite produced is highly crystalline and this crystallinity increases with increasing temperature. The high temperature process burns away any organic molecules, such as proteins, preventing an immune response to reject implants.

"Hydroxyapatite from tilapia bone, for example, was successfully produced and conformed to the characteristics and composition of biological apatite which is usually calcium-deficient. To enhance the calcium content in the produced hydroxyapatite, various amounts of chicken eggshell materials were added." Vequizo says.

"We focused first on the production of calcium and non-calcium deficient hydroxyapatite powders from bangus bones through the addition of chicken eggshells to tailor various applications," Vequizo says. "It will open the possibility of producing biological hydroxyapatite using agricultural wastes precursors such as fish bones and chicken eggshells."

Phivolcs-DOST digital tech wires island volcanoes in real time

By PAUL M. ICAMINA
S&T Media Service

Phivolcs-DOST's Hibok-hibok Volcano Observatory in Camiguin

Mambajao, Camiguin Island – There are more volcanoes than there are towns here.

More than 10 volcanoes, two of them active, share the 291-square-kilometer island province with the towns of Sagay, Catarman, Guinsiliban, Mahinog, and Mambajao, the capital.

It's the largest concentration of volcanoes per square kilometer in the country, and the number has since increased after volcanologists in the 1980s added three more to make it 10 – and counting. They believe there could be more.

The most violent and deadly in Camiguin is Hibok-Hibok on the northwest, with several vents in the crater and on the flanks. What sets it apart was the white-hot and poisonous sulphuric gases that accompanied its 1951 eruption – extremely fluid but dense enough to cascade rapidly down the slope and "mummify" people on its path.

That was what happened during its most recent outburst, in December that year, when glowing ash clouds – packing temperatures of 800 to 1,000 degrees Celcius seen 160 kilometers away – swiftly rolled down to Mambajao town and charred trees and burned houses along its path; 500 people were solidified and covered in white ash looking like mummies.

"Lava flood buries 15 barrios", "Hunger, disease peril evacuees", The Evening News bannered. "New blast blocks rescue effort", it headlined.

The eruption "caught people unprepared for its fury and devastating impact," volcanologists reported.

Except for its almost forgotten activity in 1902 when it emitted sulphurous odors, there were no signs of activity in the five decades before the series of sporadic eruptions that lasted from 1948 to 1953; the one in 1951 was most violent.

People were not forewarned because there was no government institution concerned with volcanoes then, although in 1948 a seismic monitoring station was already established in Mambajao.

Hibok-Hibok's eruption prompted the government to create in June 1952 the Commission on Volcanology (COMVOL), later the Philippine Institute of Volcanology and Seismology (Phivolcs) of the Department of Science and Technology.

The COMVOL's first order of business was to create five monitoring stations near the country's five most active volcanoes.

Twenty-two of the country's 37 volcanoes are considered active, including those near urban concentrations, such as Banahaw

in Laguna and Quezon; Bulusan in Sorsogon; Hibok-hibok in Camiguin; Kanlaon in Negros Oriental; Mayon in Albay; Pinatubo on the boundaries of Pampanga, Tarlac and Zambales; and Taal in Batangas.

Today, Phivolcs is not taking any chances, here and elsewhere. In Camiguin, digital seismic sensors run 24/7 in Mainit, Catarman; at the peak of Mt. Vulcan 571 meters above sea level; and on the upper slope of Hibok-Hibok in Tagdo, Mambajao.

They pick up volcanic quakes all over the island and transmit the data direct to computers at the Phivolcs Observatory in Sitio Quiboro, 4.7 kilometers from the crater.

No eruption is expected in the "foreseeable future" as indicated by a network of seismometers, including that at the Hibok-Hibok Observatory; another on the upper southeast slope; and those in Napo, Catarman; Mt. Vulcan Peak Observation Point; Mt. Vulcan Peak Repeater Station; Lawigan, Catarman; Mainit, Catarman Observation Point; and Baylao.

Where out-of-direct signals don't work, four repeater stations transmit seismic data to the observatory where all inputs are monitored 24-hours daily in rotation by three staff members: resident analyst and volcanogist Luisito Salugsugan, science research assistant Arturo Jardin and science aide Angelo Abang.

Except for the observatory, monitoring stations are unmanned, automatic and connected to computers by Local Area Network.

They are equipped with solar-powered seismometers (that measure minute seismic or ground movements), data recorders and transceiver units able to store raw information and transmit digital versions to the observatory's Network Management Unit – all in real time.

When necessary, the observatory – which will soon be replaced by a P2.8-million facility under construction – alerts the Phivolcs office in Diliman, Quezon City, which then analyzes the data and makes the final prognosis.

The central office, when appropriate, alerts local governments if an eruption is imminent.

"It doesn't happen suddenly," said Salugsugan. "There are visual warnings like smoke, rock falls, dry vegetation at the top and unusual animal behavior."

"If and when Mt. Vulcan erupts, only Catarman will be affected. If Hibok-Hibok erupts, only Mambajao and Catarman towns will be affected as Mt. Mambajao will be one of the barriers against lava flows. People there can be accommodated in nearby communities," he said.

"If Mt. Mambajao erupts violently, all towns will be affected," he added, adding civilian evacuation systems are in place.

"We sleep light and check the computers every two hours," said Abang, "We know where a quake originates and whether it is an earthquake or a volcanic quake. We can pinpoint where a volcanic quake, which can be detected only by sensors on the island, originates."

Precursors to an eruption are increasing volcanic quakes and tremors; landslides and rockfalls from the summit not caused by rains; increased steam emissions; progressive ground deformations like tilting; the appearance of vents that emit sulphurous odors; and crater glow.

Based on recorded eruptions in 1827, 1862, 1871, 1897-1902, 1948-1953, patterns have been observed in Hibok-Hibok: short periods of stem emissions from the crater and avalanches of volcanic materials; explosions of heavy clouds of steam and fragmented volcanic rocks; eruption of large amounts of incandescent materials and steam; then a decrease in the amount of steam and ejecta.

The pattern observed during the 1948-1952 eruptions showed a short period of emission of considerable amount of steam from the crater and avalanches of volcanic materials. Explosions or steam blast with emission of heavy clouds of steam, ash and other fragmentary volcanic materials followed.

Eruption of incandescent materials, emission of ash and steam in large amounts, formation of flows and occasional minor crateral outburst, then occurred.

Relatively high and increasing unrest, including numerous strong earthquakes, accelerating ground deformation and rockfalls, increased vigor of steam vents and gas emissions increases the "likelihood" of an eruption, possibly within days to a week.

Low frequency earthquakes, quiet lava emissions and/or dome growth and/or small explosions indicate that magma is close to or at earth's surface. Hazardous explosive eruption, in this case, is likely within hours or days.

Explosive eruption is in progress when volcanic materials are ejected and flows down valleys and an eruption column rises at least 6 kilometers or 20,000 feet above sea level. Hibok-Hibok eruption is described as "pelean". This is the accumulation of underground viscuous lava that creates a dome, followed by the formation of glowing clouds containing hot gases that rush down the slopes.

"There is no need to evacuate Camiguin if Hibok-Hibok erupts," said Salugsugan. "Only Mambajao and Catarman towns will be affected." He said the taller, 1,580-meter Mt. Mambajao will be able to block volcanic debris from the lower, 1,300-meter Hibok-Hibok.

"Old timers remember that in 1951, heavy rains and strong winds blocked the sulphuric gases from reaching Mambajao and thus prevented more casualties," said Abang. "Many believe that San Nicolas, the town patron saint, blocked the gases."

Because of potential volcanic hazards like steam blasts, glowing avalanches, lava flows and lahars, the area three kilometers from the summit has been designated a Permanent Danger Zone where human presence and activities are always prohibited

Government sets RP's research priorities

By JOWI CARTECIANO
S&T Media Service, *NRCP*

TO STREAMLINE all research and development (R&D) efforts in the country, the Office of the President, through the Department of Science and Technology (DOST), convened more than 200 R&D experts from private sectors, science and engineering organizations, and various government departments and agencies in an experts opinion forum held October 5, 2010 at the Philippine International Convention Center, Pasay City.

Dubbed the "National R&D Priorities Delphi Assembly," the forum was participated in by experts from the Departments of Science and Technology; Agriculture; Energy, Environment and Natural Resources; Health; National Defense; Education; Trade and Industry; and Foreign Affairs, all members of the Presidential Coordinating Council for Research and Development (PCCRD).

During the assembly, Department of Science and Technology Secretary Mario G. Montejo explained that the main aim of the forum is to "harmonize all R&D efforts of various government and agencies and come up with a guide for the proper use of R&D funds."

Experts from the fields of Science and Technology, energy, health, food, agriculture, nanotechnology, and other fields cast their votes for the country's R&D priorities for the year 2010 to 2016 in the Delphi Survey organized by the Department of Science and Technology. The survey intends to harmonize the country's R&D thrusts by the different sectors and optimize the R&D budget. Results of the survey will be forwarded to the Presidential Coordinating Council on Research and Development to review and recommend the R&D priorities for development. [Photo by Gerardo Palad, S&T Media Service, STII]

R&D priorities

Unofficial tally of experts' responses showed that the government R&D activities, from 2010 to 2016, focused and concentrated on the following areas: agriculture and food (development of food and non-food crop varieties for high yield, quality, nutritional value, and adaptability to unfavorable environments and resistance to pests); environment and natural resources (forest production, utilization and protection); disaster mitigation and management (disaster-resilient system and infrastructures);

Energy (renewable energy technologies; and energy efficiency, conservation, and management); Health (confirmatory diagnostic tests for infectious/tropical diseases (dengue, influenza, MDR-TB) and lifestyle related diseases [cancer]; and point of care technologies for infectious/ tropical diseases [dengue, malaria, tuberculosis and influenza] and lifestyle related diseases [cardiovascular diseases, diabetes, cancer];

Manufacturing and production (new materials production using indigenous and other local materials); enabling technologies (ubiquitous/pervasive computing [hardware, network]; and ICT for development [ICT applications for different sectors] and citizen participation decision making);

Biotechnology (conventional biotechnology involving tissue culture, fermentation technology and enzyme technology; recombinant DNA on technology/proteomics including mutation breeding and marker-assisted breeding, waste management, drugs, vaccines, and diagnostic kits); nanotechnology (nanosensors and actuators; nanomaterials and nanocomposites; nanoporous filters); and electronics (semiconductors and components).

Delphi method

A technique for gathering data, the Delphi group approach generates ideas and facilitates consensus among carefully-selected individuals who have special knowledge to share, particularly in analyzing a specific problem. Delphi is often used in national science and technology forecasting. It enables the country's science and research experts to come up with scientific basis for good government decision-making and administration. This method gathers experts' ideas in two or more rounds, with the second round validating the results of the first round.

The need to harmonize R&D efforts

By harmonizing all R&D efforts in the country, the government avoids research duplication, overlapping, and wastage of funds, while saving time and harnessing more creative talents for other R&D projects that could bring about maximum socio-economic advantages for the Filipino people. Harmonized programs ensure proper use of public funds to address societal problems, particularly those that directly affect the people like urban congestion, poverty, food shortages, disasters, and disease infections. Moreover, the business sector would realize the usefulness of the government R&D activities to their respective industries, DOST Secretary Montejo added.

CONTINUED ON P.25

Chewy fruit bar chomps its way to export market

Workers process dried papaya for export to Australia, New Zealand, Europe and the United States. Photo by Paul Icamina

SIBULAN, NEGROS Oriental – Snack bars are made for extreme sports – and exports. Each Chewy Fruit Bar packs 160 calories and "that's a complete meal," says Katherine A. Vinarao Production and R&D Manager of Orient Foods Industries Corp.

"Our main products are dried papaya, pineapple, mango and jackfruit," she says. "For the past 25 years we have been exporting to Australia, New Zealand, Europe and the United States."

Retailed as Island Fruits and Jolly Foods in local stores and supermarkets, the fruit bars are high-end sports snacks in the West. So high end that, since 2008, the Chewy Fruit Bar has been a regular feature only for business class passengers on Philippine Airlines flights between Manila and Sydney.

Bulk packing is done here in Barangay Boloc Boloc and sent for repacking in Australia and New Zealand for Scalzo Food Industries which carries the fruit under its own brands – with the "Made in the Philippines" tag. A similar arrangement is being worked out with Dara Foods of France. For the first time last year, Island Fruits was able to carry its own brand name on boxes of dried mango packaged for a South Korean food firm.

Dried fruits have a shelf life of one year. Fruit bars in paper packaging last for nine months while those in aluminium packs go for a year and a half.

Orient Foods, with a registered capital below P5 million, employs up to 100 people and has an annual sales volume of about P40 million.

One technology intervention that helped increase efficiency was made by the Department of Science and Technology's Industrial Technology Development Institute (ITDI) through an interest-free loan facility called SETUP.

The ITDI provides various technical services and interventions to small enterprises that can help them improve their overall performance and productivity, and meet local and international market requirements. With other government agencies, ITDI developed standards for ethnic food products, like sweetened fruit preserves such as that made by Orient Foods.

SETUP assistance for equipment upgrading aims to improve production output and increase overall performance. This assistance may also be in the form of design and

fabrication of suitable production equipment, modification or improvement for fitting process controls or automation, reverse engineering and plant design and layout.

"The fruit dryer we got from SETUP, with a 3,000-kilogram per load capacity, increased production by 20 percent," says Sales Marketing Manager Mae B. Magdamo.

"Our objective is to reach out to small and medium enterprises, for them to realize that they can avail of our services, not just training but also laboratory services, emerging technology research and so on," said engineer Rene Burt N. Llanto, DOST-7 Director.

"Technology should be able to help support small firms," said Dr. Carol M. Yorobe, DOST Undersecretary for Regional Operations.

Chewy Fruit Bar is made of dried tropical fruit bits as a meal replacement for athlete and active consumers.

The fruits bar is made of papaya, pineapple, mango, refined sugar, citric acid, glucose syrup, puffed rice and rice powder, tapioca starch, sweet whey powner, corn stard, wheat fiber, oatmeal, sesame seeds, nuts and wheat. That depends on the variations of classic, or with added peanuts, pili or cashew nuts, banana chips and malunggay.

Ripe mangoes and papayas are sliced and plumped in sugar syrup, dehydrated and packed in polyethylene bags. The papayas are further processed into chunks, spears, dices and granules. About 900 cases of dried papaya dyed red and 400 cases of dried papaya in natural color are produced each month.

Monthly production of the fruit bars is about 3,225 kilograms packed in 80,640 40-gram pouches. About 400 cases of dried pineapple dried as rings or in chunks are produced monthly.

Orient Foods Industries Corp. was established in 1982 with an initial capital of P1.3 million. Its 5,000-square-meter factory is located in Barangay Boloc Boloc, Sibulan, Negros Oriental. For the past 25 years it has been exporting processed, frozen and dried fruits to Australia, New Zealand, Europe, the United States and Southeast Asia.

It products include dried mango, papaya, pineapple and jackfruit and it employs up to 100 people with an annual sales range below P50 million. The main markets are Southeast Asia and the Middle East as well as Australia and New Zealand with total annual sales volume below $1 Million. (Paul M. Icamina, S&T Media Service)

GOV'T SETS . . . FROM p.23

To set the National R&D Priorities Plan 2010 – 2016 (NRDPP) is the first attempt of the national government to bring together the R&D activities of the government departments, agencies, and the academe, particularly SUCs. Likewise, NRDPP aims to strongly link the government R&D institutions, non-government research/science organizations, and the business sector. Setting up this five year plan for the country's R&D priorities poses a challenge for the DOST, according to DOST Undersecretary for S&T Services Fortunato T. de la Peña. This is because DOST, anchoring on the global Millennium Development Goals, identified through its experts some 83 areas of concern for both the Socio-Economic and the Enabling Technologies Sectors.

Filipino researchers, scientists, and technologists in nation building

DOST commissioned the National Research Council of the Philippines (NRCP) to assess and rank the R&D priorities in the socio-economic and enabling sectors to formulate the five-year research priorities plan.

NRCP experts, led by current NRCP Vice President Roland V. Sarmago, former NRCP President Dr. Olivia C. Caoili, former NRCP Chairperson for Earth and Space Sciences Carina G. Lao, and former NRCP Chairperson for Governmental, Educational, and International Policies Soccorro M. Rodriguez, spearheaded the said evaluation.

"The national government now believes that Filipino researchers, scientists, and technologists could significantly contribute in nation building," Dr. Rodriguez said. "The fact is, our government recognized that R&D projects help in the generation of new knowledge and improve existing knowledge needed by the socio-economic sectors for the creation of new products, services, processes as well as provide solution to problems and challenges faced by the country today and in the future."

As a response to these concerns, she said that her team decided to use the Delphi survey on the identified R&D priorities.

Using the Delphi method, spontaneous responses of more two hundred invited R&D experts to each of the 83 identified R&D priority concerns were ranked using Wireless Automated Response System and PCOS machine, Dr. Rodriguez explained.

Dr. Alvin B. Culaba, past President of the Philippine-American Academy of Science and Engineering and the current President of the NRCP, said that these R&D projects, if and when implemented and completed, could help the Philippine government produce technologies that would have beneficial impact to the economy and society. The technologies would enhance and alleviate the lives of the entire Filipino populace, putting the country at par with the others in Asia and the rest of the world.

This Delphi assembly is sanctioned by Executive Order 604 that created the PCCRD specially tasked to supervise research and development projects of government agencies. PCCRD coordinates and harmonizes all research projects in government to save time and money. (Joselito Alonte-Carteciano, S&T Media Service)

Fast Facts on Breastfeeding

By CHARINA A. JAVIER
S&T Media Service, *FNRI*

- The 7th NNS shows that among 0-5 month old infants, only 35.9 percent are exclusive breastfed, which means that only about one-third of infants in the country met the World Health Organization (WHO) recommendation of exclusive breastfeeding until 6 months.
- Among 0-23 month old children, only 8.6 percent or only about 8 out of 100 received exclusive breastfeeding, while 29.9 percent received breastfeeding and complementary food by current feeding practices.
- The mean duration of exclusive breastfeeding significantly decreased to 2.3 months from 3.0 months in 2003.
- The mean duration of breastfeeding in 2008 is 4.9 months compared to 5.6 months in 2003.
- Among 6-11 month-old babies, exclusive breastfeeding dropped to 0.5 percent while breastfeeding and complementary feeding was practiced by 39.4 percent. Also, more than half or 59.8 percent was given other milk and foods in this age group.
- Among 12-23 month-old babies, about two-thirds or 65.7 percent was given other milk and foods, and only about one-fifth or 21.6 percent of mothers practiced breastfeeding and giving complementary foods.

Breastfeeding on the decrease, National Nutrition Survey reveals

By Mildred Guirindola
S&T Media Service, *FNRI*

PURE BREASTFEEDING is on the drop. This is the alarming finding of the 7th National Nutrition Survey (NNS) of the Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) on infant feeding practices.

According to the survey, exclusive breastfeeding is practiced by only 8.6 percent of the respondents, while a high of 55.4 percent feed their children with other milk or in combination with complementary feeding.

The low level of breastfeeding practices among infants and young children is consistent with the high prevalence of malnutrition among the 0-5 year age group where 22.2 percent and 27.9 percent are underweight and stunted, respectively.

When malnutrition was disaggregated by single year, the prevalence increased sharply between the child's birth to one year old. Underweight prevalence more than doubled from 12.4 percent to 30.3 percent, as stunting almost tripled from 8.6 percent to 24.4 percent. Meanwhile, wasting more than doubled from 6.7 percent to 14.0 percent form 2003 to 2008.

Infant and young child feeding is said to be the most critical ultimate care for growth and development. What infants and young children eat has an impact on their nutritional status, growth, development, health and survival that will determine human capacity and productivity during adulthood.

There is no best way to feed an infant to have the best start in life than what Mother Nature offers in breast milk.

Breastmilk is said to be the superior and unequalled milk for infants as it provides all the energy and nutrients the baby needs for the first six months of life. Exclusive breastfeeding promotes sensory and cognitive development and protects the infant against infectious and chronic diseases.

With the important role of breastmilk in the infant's health and survival, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend that infants receive only breastmilk from birth to six months and provide appropriate complementary foods with continued breastfeeding for up to two years of age and beyond.

Infant feeding practices have a corresponding effect on children's nutritional status and need urgent attention from the health and nutrition sectors and other stakeholders.

For more information on food and nutrition, contact: Dr. Mario V. Capanzana, Director, Food and Nutrition Research Institute, Department of Science and Technology, General Santos Avenue, Bicutan, Taguig City; Tel/Fax Num: 8372934 and 8373164; email: mvc@fnri.dost.gov.ph, mar_v_c@yahoo.com; FNRI-DOST website: http://www.fnri.dost.gov.ph.

Intensified breastfeeding promotion among pregnant urged

The 7th National Nutrition Survey (NNS) conducted by the Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) in 2008 showed that the participation of pregnant women in breastfeeding promotion program is low.

Results of the survey on government program participation showed that only 24 in every 100 pregnant women participated in breastfeeding promotion program. This figure among the pregnant is in contrast with the participation level of lactating women in the same program which was 100 percent.

While the promotion of breastfeeding is successful among lactating women, more attention should be given to pregnant women in preparation for lactation. During pregnancy, a woman's body is already preparing for breastfeeding, as milk ducts and milk-producing cells are developing and more blood goes to the breasts than before.

Pregnant women need a healthy diet for sufficient milk supply. Good nutrition in pregnancy helps a mother stay healthy, energetic and better prepared for taking care of the baby and the rest of the family.

Breastfeeding classes and other nutrition and health promotion activities can help address

concerns like teaching mothers the recommended diet, correct positions of breastfeeding, right clothes to wear, what to do with inverted nipples, importance of regular check-ups in health centers or hospitals and where they can get support, among others.

Today, with a growing concern on food safety and security and the threats of natural calamities like strong typhoons and prolonged droughts, breastfeeding ensures that newborn infants get enough nourishment to grow normally and become productive citizens in the future.

Breastfeeding promotion focused on nutrition, health and economic benefits should be intensified among pregnant women to encourage the practice immediately after childbirth.(Charina A. Javier, S&T Media Service)

Fast Facts on Infant Feeding

By MILDRED O. GUIRINDOLA
S&T Media Service, *FNRI*

- Complementary feeding, or the transition from exclusive breastfeeding to giving other foods while continuing breastfeeding, starts when the infant reaches six months until 24 months old, according to WHO.
- At six months, infants are very vulnerable to malnutrition because at this stage, breastmilk alone is not sufficient to meet the nutritional needs.
- Giving it earlier than six months is discouraged because it exposes infants to pathogens that increase the child's risks to infection and diarrhea and decreases the demand for breastmilk that in turn decreases breastmilk production.
- Given late, it will predispose the child to undernutrion since breastmilk alone is not enough to cover the increasing nutritional requirement of the child after six months.
- Complementary feeding should be nutritious, prepared in sanitary manner and given in appropriate texture and amount.
- The 7th NNS shows that among three-month old infants, nine out of 10 were given water as complementary food.
- Among four-month old infants, two out of 10 were given with sugar.
- These results fell short of the recommendation that only breastmilk should be given to infants before six months.
- Results show the need to strengthen advocacy and training on correct infant and young child feeding practices to all nursing mothers and would-be mothers to improve Filipino infants and young children's nutritional status.

First locally-developed mass transit to roll off in UP Diliman

A NEW mode of transportation will soon ply around the university to ferry passengers while showcasing the green sights in the sprawling campus of the country's premier state university.

This vehicle, to be developed by the Department of Science and Technology initially for UP Diliman, is a rail-based local mass transit very similar to the MRT and LRT, except that it runs on a single rail which acts as its sole support and guideway. Formally called the "Automated Guideway Transit" (AGT), this local mass transit promises to make a tour around the Diliman campus easier, faster, and safer.

DOST Secretary Mario Montejo and UP President Emerlinda Roman (both seated, middle) ink DOST' and UP's pact to establish the Automated Guideway Transit at the UP Diliman campus in Quezon City. Other signatories were (L-R): DOST Asst. Sec. for Special Projects Robert Dizon, DOST Undersecretary for S&T Services Fortunato dela Peña, and UP Diliman Chancellor Sergio Cao.

"We are coming up with a local AGT to address the problem of overcrowding in our mass transports," said DOST Secretary Mario Montejo. "This is how we would want local science and technology to work—to respond to the people's needs."

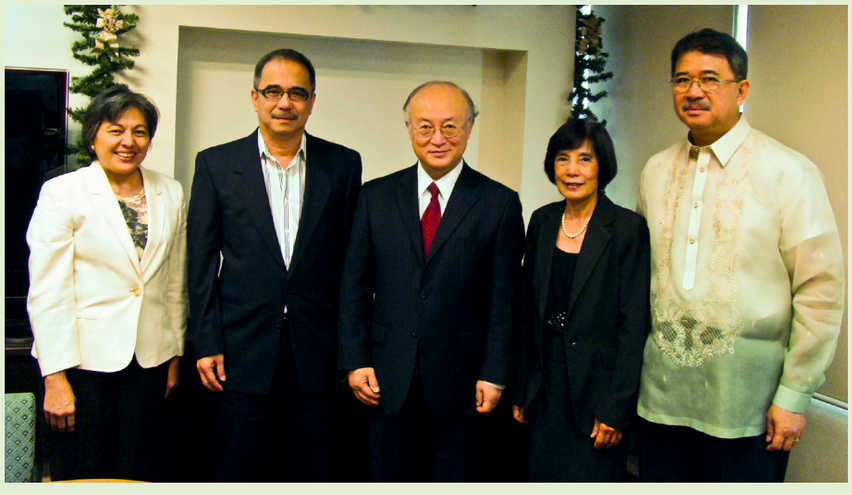
DOST and UP laid the ground for the country's first local prototype of AGT through the signing of the Memorandum of Understanding on Dec. 6. 2010 at UP Diliman. The MOU formalizes the intent of both DOST and UP to establish a prototype of AGT, consisting of two 60-passenger coaches, to traverse a two-kilometer test track in the campus.

Currently, traveling around UP Diliman is a little confusing due to the distance between the colleges. Some students come in late in their classes while newbies get lost not only because of the distance but also because of the campus's intricate route. With the coming of the AGT, hopping from point to point will definitely come easier.

DOST and UP's pitch for the AGT has many good reasons. Firstly, the AGT requires very minimal space as it is usually elevated, leaving the University's environment undisturbed. Secondly, it costs less to build, and its track is definitely cheaper compared with other railway transportations. According to Sec. Montejo, developing the AGTl locally will cost only a fifth compared with the price of importing one.

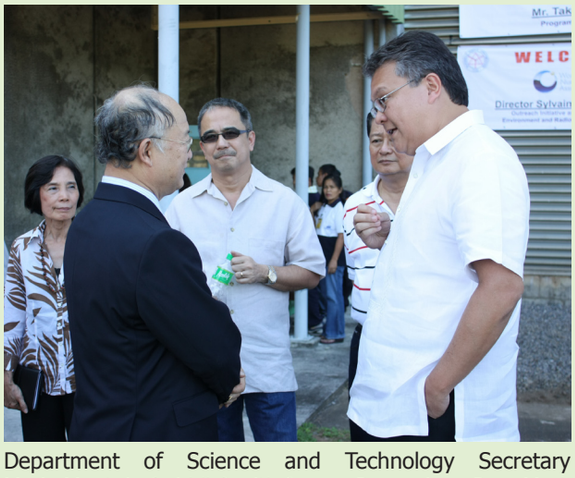
Thirdly, the AGT's compact size makes it look better, even as it blocks the landscape and skyline very minimally. Moreover, as it has its own route and track, the AGT will not interfere with existing transport modes, making it traffic- and accident-free. It is also people- and environment-friendly as it runs very quietly and does not emit any smoke or exhaust because it is electrically-run. Finally, the AGT is very safe as it travels very securely along its track.

To set the AGT project in motion, the DOST shall design the detailed engineering plan and prepare the framework and schedule of activities, among others. Meanwhile, UP shall provide all needed technical assistance and implement community relations activities to make the project proceed smoothly. (Framelia V. Anonas, S&T Media Service)



Department of Science and Technology (DOST) Secretary Mario G. Montejo (2nd from left) welcomes International Atomic Energy Agency (IAEA) Director General Yukiya Amano (center) at the DOST office in Bicutan, Taguig City for a courtesy call that updated the secretary on the latest developments in the peaceful application of nuclear energy especially on water management. Dir. Gen. Amano attended the closing ceremony of the 38th Atomic Energy Week celebration at DOST's Philippine Nuclear Research Institute (PNRI) in Quezon City. Photo shows (from left) DOST Undersecretary for Regional Operations Carol M. Yorobe, PNRI Director Alumanda Dela Rosa, and DOST Undersecretary for S&T Services Fortunato T. Dela Peña. (S&T Media Service)

Winners in the Filipinnovation Award held Nov. 26 at Intercontnental Hotel in Makati City with DOST Secretary Mario Montejo (second to the left) and DOST Undersecretary for S&T Services Fortunato dela Pena (left).



Department of Science and Technology Secretary Mario Montejo (middle) with former Pangasinan Rep. Mark Cojuangco (right). Napocor Vice President for Technical Maintenance Services Danilo Sedilla (second to the right) and Philippine Nuclear Research Institute Director Alumanda dela Rosa (left) discuss their impressions on the mothballed Bataan Nuclear Power Plant in a recent ocular visit with International Atomic Energy Agency Director General Yukiya Amano (front). (Photo by: PNRI)

Nobel laureate in RP. National Research Council of the Philippines President Alvin B. Culaba (right) and NRCP Governing Board Member Dr. Lourdes J. Cruz, the first Filipina L'Oreal-Unesco Awardee for Women in Science (2nd from right) recently visited Dr. Richard Fred Heck (sitting), co-winner of the 2010 Nobel Prize in Chemistry in his Quezon City residence and had initial discussion on possible future engagement. Dr. Heck shares the prestigious award with Japanese chemists Ei-ichi Negishi and Akira Suzuki for groundbreaking research work in palladium-catalyzed coupling reactions in organic synthesis. Also in photo is AGHAM party-list Representative Angelo Palmones (left) and Dr. Heck's spouse Soccorro. [Joselito Alonte-Carteciano S&T Media Service]

Ignite the mind

DOST, twenty eleven and beyond.