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DOST's finest for 2011

EDITORIAL

STII Director Raymund Liboro with STII staff, PCHRD representative, and media friend after the successful launch of the OL Trap in Tacloban City in February this year. The launch was hosted by DOST-8.

Best foot forward

Things are getting exciting at the Department of Science and Technology, especially this 2011. DOST has put its best foot forward in making its programs, services, and projects known to the public through massive quad-media presence.

Early in January, DOST introduced its early warning devices in landslide-ravaged areas in St. Bernard, Southern Leyte. The services of DOST-SETUP were likewise offered to entrepreneurs especially those affected with calamities.

In February, DOST and DOH launched the Mosquito OL Trap in Leyte to curb the number of dengue-carrying *Aedes aegypti* mosquitoes. Later, the OL Trap was cascaded into all the regions.

DOST also extended partnerships to various private and government organizations to disseminate its services and technologies. To repatriated OFWs from Libya, DOST offered its technology trainings for free to help them become productive again.

DOST likewise played a big role in ensuring public safety at the heels of the Japan tsunami and subsequent nuclear disturbance through its scientific data gathering, networking, and disseminating important information to the people.

The efforts, all done during the first quarter of 2011, were geared towards making Filipinos realize that S&T affects every aspect of their lives, and when properly tapped, could help them gain a better quality of life.

This year, DOST is set to launch several technologies that could clearly help Filipinos in various aspects, such as nutrition, health, medicine, education, and safety. What is more interesting is that these technologies are all locally-developed. In launching these technologies, DOST wants to put across the message that we have local technologies that could respond to practical, and even personal, needs. Local technology works!

Local technologies are not only more accessible, more available and less expensive. They also inspire our local researchers and scientists to better pursue their crafts because, one day, their outputs and products would be put into good use in their own country.

In this issue, we introduce local technologies that are included in Sec. Montejo's high impact projects to be launched this year. Dubbed "DOST's finest for 2011," these DOST technologies showcase the best of Pinoy technologies that we look forward to in 2011.

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Photo by: Ricky J. Bautista

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DOST launches Tulong-Kababayan program for Libya OFWs

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

THE DEPARTMENT of Science and Technology (DOST) opens doors of opportunities to Filipino Overseas Workers on voluntary repatriation from Libya to seek alternative means of livelihood through the DOST's Tulong-Kababayan program.

This new program initiated by Sec. Mario G. Montejo will provide free livelihood training to OFWs who were displaced and voluntarily repatriated from Libya. Affected OFWs and their families can avail at DOST's Technology Resource Center's (TRC) various hands-on livelihood trainings such as production of flavored and fortified juice, layers (table egg) production, manufacture of fashion accessories, herbal bath soap, perfumes and colognes, among others. Affected OFWs and their families who are management-oriented can also avail of other trainings such as a business operation, event planning and management, setting up a domestic ticketing office for airlines and shipping companies, bakery management, and others.

"This is our way of helping our displaced OFWs to quickly get back on track to being productive anew," said Montejo. "We want to show to our people that they can start again through DOST's technology training courses that will enable them to venture into entrepreneurship and business."

"DOST's Tulong-Kababayan also offers free assistance to these affected OFWs who want to avail of microfinancing through DOST-TRC's partner institutions," added DOST-TRC Director General Dennis Cunanan.

The program aims to assist OFWs who voluntarily repatriated from Libya, including their families, to return to the mainstream and become productive again through various livelihood and business options.

DOST-TRC is the science agency's arm in providing technology-based products and services for livelihood and enterprise development of Filipinos. Particularly, it provides expert business and livelihood technology training courses that can transform ideas into practice and profits.

Interested OFWs may contact DOST-TRC's Rene Oxina at the TRC office in 103 J. Abad Santos, Little Baguio, San Juan City or at telephone number 727-6205. OFWs going home to the provinces may contact DOST's regional offices through the office of Usec. for Regional Operations Carol Yorobe at telephone number 837-2944. Available trainings this March 2011 can be viewed at http://www.trc.dost.gov.ph/

Photo by: Henry A. de Leon

DOST Sec. Mario Montejo swears in the new members of the Presidential Coordinating Council for Research and Development (PCCRD) and DOST Governing Councils. From left: Aniceto S. Villahermosa, For. Leonardo D. Angeles , Jose P. Leviste Jr. , Meneleo J. Carlos Jr., Atty. Jose Maria A. Ochave, Dr. Antonio B. Villaflor, Dr. Alvin Culaba, Dr. Mediadora C. Saniel, Louis Napoleon C. Casambre, Dr. Feliciano B. Calora Sr., Dr. Philip L. Ong, and Marcelo Villanueva. *(S&T Media Service)*

DOST assists government offices in IPv6 interoperability testings

BY KATHERINE R. BABARAN
S&T Media Service, ASTI

IN THE light of the impending worldwide migration from Internet Protocol version 4 (IPv4) to IPv6, the Department of Science and Technology (DOST) – Advanced Science and Technology Institute (ASTI) will assist the government agencies to achieve smooth interoperability testings of IPv4 and IPv6 infrastructure and systems.

The task came at the heels of the release last month of the Implementing Rules and Regulations (IRR) of Executive Order (E.O.) No. 893 Promoting the Deployment and Use of Internet Protocol version 6 (IPv6) dated 29 June 2010.

In a memorandum signed by Commission on Information and Communications Technology (CICT) Chairman Ivan John Enrile Uy, the CICT stressed the importance of the development of IPv6, as well as the worldwide migration from Internet Protocol version 4 (IPv4) to IPv6.

IPv6 responds to the current problem of internet address exhaustion. Every mobile phone and computer that has access to the Internet is given a unique IP address. With the rise in the number of gadgets and users, the old system of addressing networked devices is almost exhausted. Running out of IP addresses has serious effects, such as impeding the growth and development of Internet-based services.

"Smooth transition from IPv4 and IPv6 is very important in enhancing government operations and services," said DOST Secretary Mario Montejo. "DOST's team of experts in Internet infrastructure and systems is ready to take part in this significant Internet leap."

Malacañang Palace issued E.O. No. 893 to encourage the use of IPv6 since exhaustion of IPv4 threatens to deter investments in Internet-based infrastructure, applications and services. Government services that may be affected by the exhaustion of IP addresses include health care, national security, public safety, education, environment, among others.

E.O. No. 893 states that the development of IPv6 and the worldwide migration from IPv4 to IPv6 will pave the way to solving the problem of IPv4 address exhaustion. Moreover, deploying IPv6 will enable the continued expansion of the Internet in the country.

The 32-bit IPv4 allows a maximum of four billion addresses while the IPv6 with its 128 bits allows a total that can only be expressed by the mathematical sentence 3.4x10^38.

A memorandum from the CICT instructed all government online services to be IPv6-compliant two years after E.O. No. 893 takes effect and to have an IPv6 migration plan in their Information System Strategic Plans. Moreover, government agencies will be forbidden to procure IPv4-only equipment, software and services after 2013.

The DOST-ASTI, through the Philippine Research, Education and Government Information Network (PREGINET), initiated the use of IPv6 in the Philippines. PREGINET got its IPv6 assignment from the Asian Internet Interconnection Initiatives in 2000 and received from the Asia Pacific Network Information Center, the first IPv6 address block in the Philippines in 2003.

PREGINET is the only research and education network in the Philippines which interconnects and catalyzes research among academic, government and research institutions.

DOST, MMDA to tap local technology for road safety, cleanliness

THE DEPARTMENT of Science and Technology led by Assistant Secretary Robert Dizon and DOST-Science and Technology Information Institute Director Raymund Liboro recently held talks with Metro Manila Development Authority (MMDA) Chairman Francis Tolentino to identify areas that the two agencies can jointly work on.

The talks were held in the light of MMDA's move to explore homegrown technology solutions to its pestering concerns in maintaining order and cleanliness along the capital's major roads and waterways.

Initially, DOST will look into the possibility of developing enzyme-based process to degrade or reduce harmful chemicals in garbage. "Daily we collect thousands of tons of garbage in Metro Manila, which contain residual chemicals harmful to humans and the environment," Tolentino said.

To accelerate the clean up of the Pasig River and its tributaries, the DOST can also introduce bioremediation through the use of chemical waste-absorbing plants and organisms.

Both sides agreed to look into the possibility of developing Filipino-designed solar powered traffic signal system, speed radar guns, rescue sensors for collapsed buildings, and colored plastic-asphalt mix that can be used to mark pedestrian lanes, Liboro explained. *[Rodel G. Offemaria, S&T Media Service]*

Photo by DOST-12

Halal laboratory opens in Cotabato City

WELCOME A new clearinghouse of halal products in the Philippines as the Department of Science and Technology Region 12 opens its halal laboratory at the DOST Compound in Cotabato City.

The newly established laboratory has advanced technology, and state-of-the-art equipment and facilities, according to DOST-12 Regional Director Haja Sittie Shayma (Zenaida) P. HR Laidan.

"This is the only existing halal laboratory in the country devoted to serving local and international clients," said Dr. Laidan. "Its range of services spans the entire supply chain of halal food and selected non-food."

DOST's halal laboratory services include profiling of fatty acids of animals and plants; DNA analysis of foods and other processed products; gelatin content analysis of milk and other dairy products; testing of genetically modified organism (GMO); alcohol content analysis of beverages and other related products; qualitative detection of haram in meat products; and detection of lard in bakery products and edible oils, among others.

Among those who will benefit from the establishment of the halal laboratory include several sectors, such as the food and beverage manufacturers and producers, food service outlets, caterers, food distributors and suppliers, food importers and exporters, pharmaceutical manufacturers, medical device manufacturers, and other sectors aiming for halal certification.

Said laboratory was established in line with the Philippine Science and Technology Program for the Development of the Halal Industry initiated by Dr. Laidan.

According to Laidan, DOST is the competent authority in the technical aspect of validating compliance of products and services to halal requirements. DOST partnered in this venture with the National Commission on Muslim Filipinos (NCMF) which will handle the religious aspect of validation.

Dr. Laidan confirmed that construction of a bigger halal laboratory building, also in South Central Mindanao, has started. This laboratory will respond to the increasing demand of halal products and the flourishing halal industry. She added that, upon completion, this bigger laboratory shall be named "Philippine National Halal Laboratory."

She emphasized that halal laboratory is very important especially for a non-Muslim country like the Philippines. The laboratory increases the integrity of locally-made halal products and credibility of certifying bodies and local halal product-manufacturers, producers, and processors both for domestic consumption and export trading.

The lab also plays a crucial role in the protection of the Philippine halal market and gaining the trust and confidence of halal consumers especially those from the Islamic countries. "We cannot assure that a particular product is halal using only our naked eyes or senses," Laidan told. "Only through testing and analyses in our halal laboratory can we guarantee that products claimed as halal are what they claim to be without contamination or adulteration," she added.

The global halal market value is now estimated at about US$3 trillion dollars. Halal food alone has a commanding market value of US$680 billion annually or 76 percent of the world's food trade which accounts to US $ 880 per annum. *(DOST-12, S&T Media Service)*

UP Diliman Chancellor Caesar Saloma, New Editor-in-Chief of PJS

By MARIA JUDITH L. SABLAN
S&T Media Center, *STII*

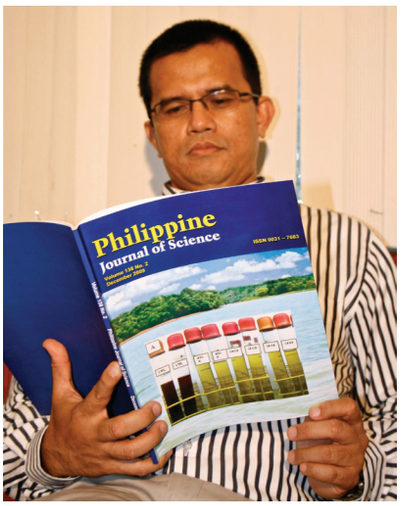
NEWLY-ELECTED UP Diliman Chancellor Caesar A. Saloma takes over the reins of the Philippine Journal of Science as the new Editor-in-Chief for 2011-2013 following the term of Dr. William G. Padolina whose term as EIC ended last December 31, 2010.

Other members of the PJS Board of Editors are National Scientist Dr. Dolores A. Ramirez, Professor Emeritus, Institute of Plant Breeding, University of the Philippines Los Banos; Dr. Fabian M. Dayrit, Dean of School of Science and Engineering of the Ateneo de Manila University; Dr. Queena Lee-Chua, Mathematics Professor from Ateneo de Manila University; Dr. Consolacion Y. Ragasa, Department of Chemistry, De La Salle University; and Dr. Florencia G. Claveria, Department of Biology, De La Salle University.

Those based abroad include Dr. Ronaldo P. Ferraris from the Department of Pharmacology and Physiology, New Jersey Medical School; Dr, Rosalia CM. Simmen from Department of Physiology and Biophysics, Arkansas Children's Hospital Research Institute; and Dr. Josefino C. Comiso from Laboratory for Hydrospheric Processes, National Aeronautics and Space Administration.

Dr. Saloma is a member of the National Academy of Science and Technology under the Department of Science and Technology. He is a distinguished and multi-awarded scientist. He is the only scientist from an ASEAN country to be awarded the Galileo Galilei Award from the International Commission for Optics in 2004 for his significant work in the field of optics by leading a team that developed a method to generate high-contrast images of semiconductor sites via single photon optical beam-induced current imaging and confocal reflectance microscopy.

Dr. Saloma is a professor at the National Institute of Physics and served for two consecutive terms both as Dean of UP's College of Science and as Director of National Institute of Physics before his election as Chancellor. He was appointed by UP System to the highest rank of Scientist III in 2006.



One of his works entitled "Self-organized queuing and scale-free behavior in real escape panic" was published in the Proceedings of the National Academy of Sciences (USA) in 2003 that also caught the attention of international news media including New Scientist, Nature Science News Update, Wired, Spektrum Der Wissenschaft, and BBC News Radio. To date, he has authored more than a hundred technical articles in SCI-indexed journals in the US and Europe.

Meanwhile, Dr. Padolina served as PJS EIC for more than four years. He continues to be a member of the PJS Board of Editors. He is currently the Deputy Director General for Operations and Support Services of the International Rice Research Institute based in Los Banos, Laguna.

DOST's PREGINET boosts telemedicine in PH

FILIPINO DOCTORS can now go high technology in making real-time consultations with other medical specialists across the globe. Through an advanced technology called telemedicine, doctors can now access and exchange medical information in real-time for a quicker delivery of clinical care.

Telemedicine, which uses communication and information technologies, is made accessible in the country through the broadband network called PREGINET (Philippine Research, Education and Government Information Network) run by the Department of Science and Technology's Advanced Science and Technology Institute.

Telemedicine uses various technologies such as telephones, satellite technology, and videoconferencing facility to remotely consult with specialists or diagnose patients. Through telemedicine, doctors can now make decisions and recommendations faster than using conventional communication routes.

Philippine General Hospital (PGH) doctors have been participating in telemedicine sessions since 2007. Recently, the doctors had a teleconference on the latest in maternal-fetal medicine, particularly on eliminating congenital defects in utero and preventing high-risk pregnancy. Said fetal medicine teleconference, held at the University of the Philippines-Manila, was organized by Japan's Kyushu University for the International Fetal Medicine and Surgery Society (IFMSS).

"Through telemedicine, we are able to learn experiences of other university hospitals and may adopt some that are applicable to our institution," said Dr. Serafin C. Hilvano, Chair of UP-Philippine General Hospital (PGH) - Department of Surgery.

The UP-PGH telemedicine sessions are aided by the PREGINET's partner, the Asia Pacific Advanced Network (APAN) that broadcasts high quality telemedicine sessions via the Internet. Through the sessions, APAN aims to promote collaborative medical activities and improve medical information exchange among Asia-Pacific countries. *(Pedrito Mangahas, S&T Media Service)*

DOST Region 11, partners push for water sanitation for Southern Mindanao indigenous folks

By ARISTOTLE P. CARANDANG
S&T Media Service, *STII*

DAVAO CITY – A weeklong international training on water and sanitation concerns has drawn interest in this city as 25 delegates from eight countries share their respective experiences 9-15 February 2011.

Organized by Sweden's Lund University and coordinated by the Department of Science and Technology Region 11, the training is the fourth of a program series sponsored by the Swedish International Development Cooperation Agency (SIDA). It has trained 100 professionals from developing countries since 2007. Aside from the Philippines, other participating countries this year are China, India, Indonesia, Kenya, Sri Lanka, Tanzania, and Zambia.

The sharing of delegate's experiences in water sanitation showed similarities in challenges despite cultural differences. Delegates found common difficulties in communicating ideas and creating partnership among stakeholder-beneficiaries, sustainability, time management, and developing tools on how to measure change. On the other hand, vandalism and integration of gender concerns were prominent in some countries.

The Philippine project

The project, entitled "Development and Implementation of Water Safety Plans (WSP) for Two Peri-urban Indigenous People (IP) Communities in Southern Philippines", was conceptualized and implemented by Dr. Anthony C. Sales, DOST Region 11 director; Hydie R. Maspiñas, Davao Water District quality assurance manager; Ms. Stella Gonzales Anima, Metro Kidapawan Water Distriect general manager; and Ms. Angelina N. Tiotangco, Far Eastern University professor.

"The project from the Philippines is the best," said Lars Bengtsson of the Lund University in an interview. The project proposed a totally new concept replete with strategies, tools, and implementation processes. It was published in the Process Reports for 2009-2010 of the Change Projects from the International Training Programme for Sustainable Urban Water and Sanitation – Integrated Processes.

Project sites were Sitio Upian in Barangay Marilo of Marilog District, Davao City and Barangay Bongolanon in Magpet, North Cotabato which are part of the Davao River watershed and Mt. Apo protected area, respectively.

In the project, understanding the status, trends, and threats of water safety was critical. According to the project report, "…some regions in the country are already experiencing water stress. Water is becoming the most critical resource in the Philippines. Some areas in the country are subject to devastating floods during the wet season. Many areas experience water shortages during the dry season so that storage facilities are needed to store some of the flood water. About 15 percent of all households remain without access to clean and potable water."

The study was considered "unique" as it developed community-based water safety plans and organized water safety teams in the two participant communities to ensure that the project will be institutionalized and sustainable. Such components are seen as new concepts and strategies in developing frameworks.

"Habitat loss such as deforestation is a single biggest pressure on biodiversity worldwide. Species and ecosystems are disappearing at an unsustainable rate," the report underscored. It also disclosed that 13.9 percent of families do not have sanitary toilet which showed identical trend in the regional level. It also cited that knowledge about the dangers of polluting water is the first step towards eliminating contamination sources and blocking contamination pathways. Meanwhile, the protection of water sources begins with the management of the watershed itself, including the prevention of industrial and agricultural pollution that can threaten water safety.

Nicknamed WSP4IP, the project has started reviving and enhancing stewardship attitude of the indigenous peoples in accordance with their cultural beliefs and traditions in regard to watershed and water resources management. It has created a vision of a "sustainable watershed that is maintained by the highland communities who are in turn protected from water supply and sanitation related diseases as a result of the capacity building interventions by the project team and other partners."

The DOST and its role

As the executive body mandated to lead the country in all science and technology related initiatives for maximum socio-economic benefit, the DOST takes a big role in achieving the goals of sustainable urban water and sanitation.

According to Director Anthony Sales, the Department's mandate impels it to play a very important and multifaceted role, particularly in the area of technology, to address concerns in solid waste management, water safety, and water treatment. He also identified technology enterprise development in agro-forestry and processing, which are being handled by some of its agencies, as an important component in achieving sustainable urban water and sanitation.

Dr. Sales also mentioned some important hydrological studies of the DOST which included 'Isotopic Technique on Aquifers' of the Philippine Nuclear Research Institute, one of the research and development institute of DOST.

Food safety is also an important concern of the Department. The food safety framework requires that water supply plan for water districts and the technologies on

CONTINUED ON PAGE 9

PH has healthy machining industry, DOST survey reveals

By MARLYN RAMONES, *MIRDC*
and FRAMELIA ANONAS, *STII*
S&T Media Service

THE MACHINING industry in the country is in good shape, a survey of the Department of Science and Technology's Metals Industry Research and Development Center reveals.

The industry's smooth running is apparently fueled by the steady demand of the manufacturing and other industries, reflecting a vigorous economy that attracts investors.

"We are happy with this development as it mirrors the modest contribution of the DOST to the machining industry," DOST Secretary Mario Montejo said, referring to the support of DOST's Metals Industry Research and Development Center to the industry.

MIIRDC is the sole government institution directly supporting the metals and engineering industry, including the machining sector, through services that enhance their competitive advantage. Along with the machining and manufacturing sector, DOST-MIRDC also caters to the automotive/transport, industrial machinery, agriculture, metalworking, and construction industries.

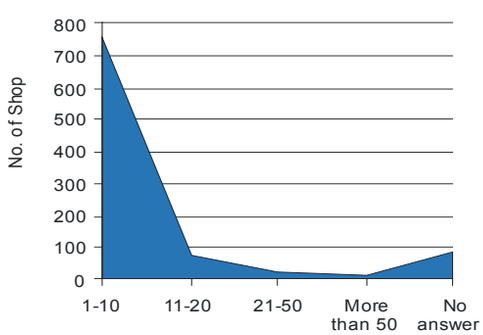


Figure 2. Production personnel in machine shop

Meanwhile, machining companies also serve the food processing, shipbuilding, mining, appliance, pressworking/stamping, tool and die making, power generation, electronics, and chemical processing sectors.

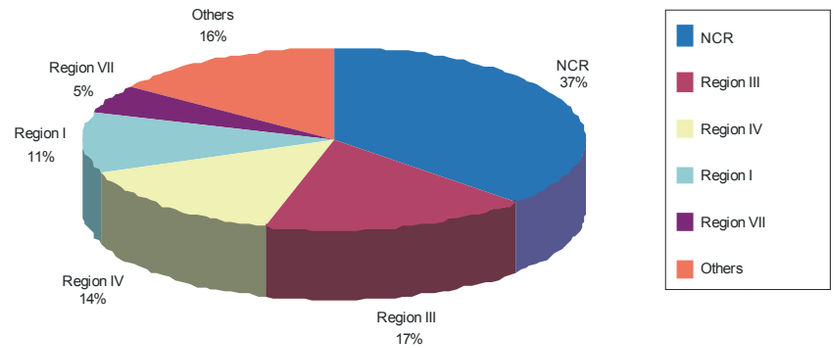


Figure 1. Geographical distribution of Machine shops

"We have a whole spectrum of services that aim to keep the metals and engineering industry competitive worldwide," Montejo said. DOST-MIRDC provides professional management and technical expertise services to keep the industry in full gear, he added.

MIRDC, ISO 9001:2008 certified institution, also provides training to engineers and technicians, and services to companies through information exchange, trade accreditation services, quality control and testing of metal products, research and development, and business economics advisory.

Because of the industry's good performance, most of the respondents are optimistic that business will flourish in the coming years. Some wanted to invest in new production process, specifically in the development of spare parts of sea and land transport equipment, and windmill to pump water and produce electricity. Some are gearing up towards automation and improvement of the design of agricultural equipment and other farm implements.

Said DOST-MIRDC national survey, covering the year 2007-2008, involves 955 respondents or 71% of the 1,350 identified machine shops. The survey details the over-all performance of the machining industry sector and gives a glimpse of the general profile of the machining sector in the country.

The survey shows that majority of the machining companies offer repair services, and the rest are into industrial parts fabrication, machine rebuilding, and engine reconditioning services. Most of the companies are located in the National Capital Region and the rest are widely distributed in various regions of the country.

Some 98 percent of the surveyed shops are Filipino-owned, with only two percent partly-owned by other nationals. Almost half of the shops surveyed have a capital that ranges between more than a hundred thousand pesos to a million pesos. A few percentage of the surveyed shops were established since 1990 onwards and a few of them have been existing for over 50 years.

Most of the production personnel involved in the machining industry are mostly males who work as engineers, designers, draftsmen, assembly die maintenance, inspection/quality control technicians, machine operators, laborers, R&D staff, and others. Other personnel in the industry are welders, fabricators, tool keepers, foremen, machine rebuilders, and molders.

Interestingly, the study revealed that micro shops are usually family enterprises in which the owner and some family members are hands-on in the business operation.

The 2009 Machine Shop Industry Study is now available at the DOST-MIRDC library at the DOST Compound, Bicutan, Taguig City.

DOST-10 inks partnership with IPOPhil to safeguard IPR

By TESS SUPERIORIDAD BALUYOS
S&T Media Service, *DOST-10*

APPLICATION FOR patents, trademarks and copyrights is now hassle-free and faster as the Intellectual Property Office of the Philippines (IPOPhil) has established a satellite office in Cagayan de Oro City. This means that applicants from Region 10 need not go to Manila or other branches to have their products registered.

IPOPhil recently launched its eighth satellite office based at the Department of Trade and Industry (DTI) regional office. The launching program was attended by representatives from the business sector, academe, inventors, research and development institutions, and government line agencies. Along with the launching was the signing of the Memorandum of Understanding (MOU) between IPOPHIL and the Northern Mindanao Consortium for Industry and Energy Research and Development (NORMINCIERD) as represented by the Department of Science and Technology Regional Office No. 10 (DOST-10).

DOST-10, being the lead agency of NORMINCIERD, is actively involved in the promotion and integration of all research and development efforts in industry and energy to contribute to the economic development of Region 10.

NORMINCIERD, organized by DOST-10, is a multi-disciplinary body from the government, academe and private sectors in Region 10. It endeavors to strengthen the system of collaboration to develop and enhance the capacity of institutions engaged in industry and energy researches.

The collaboration between DOST-10 and IPOPHIL calls for the strengthened utilization and promotion of intellectual property rights which would be beneficial to the business community.

Specifically, DOST-10, through NORMINCIERD, is to integrate the promotion and utilization of the Intellectual Property (IP) system and all IP-related matters into its developmental goals and programs. The move would encourage an IP-driven culture of innovation and healthy competitive attitude among its members.

IPOPhil, on the other hand, will assist the NORMINCIERD in integrating the IP into its developmental goals and programs by providing the IP information materials, resource speakers and experts from its pool of technical resource personnel.

Both parties will design and implement programs concerning the IP system and IP rights to encourage and facilitate the acquisition of IP rights and commercialization of intellectual creations among the NORMINCIERD members.

In this message during the launching program, IPOPHIL director general Ricardo Blancaflor said that the putting up of the satellite office in Cagayan de Oro City is a big challenge in fighting piracy.

"With the technology nowadays, inventions and creations are easily stolen, that is why the institution aims to provide an exclusive right granted to scientists, inventors, writers, artists, and other gifted citizens to their intellectual properties and creations that no one can take away from," he stressed.

Anyone caught violating the intellectual property rights will face a three year imprisonment and a P300,000 fine.

Intellectual property refers to any creation of products of the human mind or intellect, be it an invention or an original design, practical application of a good idea and a mark of ownership such as trademark, literary and artistic works.

IPOPhil is the lead government agency responsible for handling the registration and conflict resolution of the intellectual property rights, created by virtue of Republic Act 8293 also known as the Intellectual Property Code of the Philippines. It took effect in January 1998 under the then President Fidel V. Ramos. RA 8293 aims to protect businesses against piracy.

DOST REGION 11 . . . from p7

Integrated Water Resources Management be developed.

Attendant to the locally developed technologies of the DOST are various processes and infrastructures crucial to sustainability of water and sanitation especially in urban areas.

Partnerships created and strengthened

The collaboration among the members of the project team: DOST Region 11, Davao City Water District, Metro Kidapawan Water District, and Far Eastern University was initially forged and has become stronger as the project continues to reap one success after another.

Citing political will and cooperation as important to project implementation was the message of Davao City Councilor Marissa Abella, the chairperson of the Environment of the Davao City Council. As one of the speakers on the first day, she presented the Solid Waste Management and Environmental Programs in Davao City which is considered as one of the more successful initiatives in the country.

The implementation efforts for the action plans are very important, she said, referring to the city's efforts on reforestation using rubber tree, cacao, and coffee that also offer livelihood opportunities. "Diversity is key to sustainability," she added.

The overarching goal of the Swedish program is the provision of understanding and knowledge about the need for integrated approaches in sustainable water supply and sanitation services in urban areas. It is designed to increase the participants' capacity to initiate organizational and institutional changes needed for sustainable provision of these services. The Swedish Core Team is composed of Lars Bengtsson, Peder Hjorth, Kenneth M. Persson, Erik Sarner, Justyna Czemiel Berdtsson, and Agneta W. Flinck.

Balik Scientists recommend computing services for UP Cebu, strategic plan to save Taal Lake

By ALAN C. TAULE
S&T Media Service, *DOST*

AS THE saying goes, knowledge is the only resource one can keep giving away and yet retain whole.

The Department of Science and Technology hosted the Exit Report Presentations of four overseas-based Filipino scientists and technical experts under its Balik-Scientist Program (BSP) recently.

Dr. Norberto Ison, a visiting professor at UP Cebu and an expert on statistics, discussed the importance of creating a Computing Services Unit at the said institution, which was among his major recommendations after his first short-term stint as Balik-Scientist.

Dr. Ison said in his presentation at the DOST Conference Hall in Bicutan that a Computing Services Unit will enable UP Cebu to fully harness the range of information and communications technology applications. Likewise, the unit can enhance the operations of its instruction, research, extension, and administrative functions.

Meanwhile, at the PAGASA Conference Hall in Quezon City, the team of Dr. Josefino Comiso, a senior scientist at NASA; Dr. Catalino Blanche, an agroforestry expert at the US Department of Agriculture, and Dr. Terry Sarigumba, a soil scientist who retired as technology development leader for The Timber Company/ Georgia Pacific Corporation, discussed the latest developments in their respective initiatives to monitor the effects of environmental degradation and climate change through remote sensing applications.

The team, which counts Mariano Marcos State University as their main host institution and UP Los Baños as co-hosting institution, also touched on their contributions toward the crafting of a strategic plan of action to restore Lake Taal and other vital waterways now under severe environmental pressure.

The Balik Scientist Program (BSP), originally established in 1975, is the DOST's strategy to encourage foreign-based Filipino scientists, professionals and technicians to apply for contracted short- or long-term stays in their homeland. This has succeeded in hastening the drive for sharing their expertise to accelerate knowledge transfer and technology development in the country's most vital sectors.

Science and technology at the Kapihan. Secretary Mario G. Montejo (left) orients the participants and other guests in the weekly Kapihan at the Diamond Hotel on DOST's collaborative project with the University of the Philippines to install locally developed landslide sensors in some landslide prone areas. DOST will roll out the technology once test runs are completed. Other guest in the forum hosted by veteran columnist Neal Cruz (right) was former President Joseph E. Estrada (middle). *[Photo by Gerry Palad]*

DOST eyes local development of light-measuring machines

By ALAN C. TAULE
S&T Media Service, *DOST*

THE DEPARTMENT of Science and Technology and members of the Electronics Industry Association of the Philippines, Inc. (EIAPI) are exploring the prospects of the local fabrication and commercialization of light measuring machines. These machines use the process called near infrared spectroscopy, or using the near-infrared region of the electromagnetic spectrum to identify and study chemicals.

The electromagnetic spectrum has longer wavelength and lower frequency than visible light.

"The local development of spectroscope is in line with DOST's strategic thrusts of developing local versions of expensive foreign technologies," DOST Secretary Mario Montejo said. "We want to offer to Filipinos technologies that are locally available and costs just a fraction of its foreign counterpart."

In a meeting held at the Advanced Science and Technology Institute, a DOST research and development agency located in UP Diliman, Balik-Scientist Dr. Jasper Tallada presented to DOST and EIAPI the importance of said technology to various industries. Tallada, an expert on rapid analysis instrumentation, formerly worked at the US Department of Agriculture.

"Near infrared spectroscopy basically operates on the natural phenomenon that different kinds of matter absorb light differently," Tallada explained. "Dark-colored materials, for example, absorb greater amounts of light rays than light-colored ones," he added.

Tallada is hosted by the University of the Philippines Los Baños and Mariano Marcos State University in Ilocos Norte.

Near infrared spectroscopy or NIRS is a tool that can be calibrated to identify different compositions of materials without compromising or destroying their structural integrity. "This technology has already been used in an ever-expanding variety of agricultural, medical, and industrial applications especially in advanced countries," he added.

Dr. Jasper Tallada presents to DOST and EIAPI the uses of near infrared spectroscopy.

Secretary Mario Montejo engages Dr. Jasper Tallada into a discussion about the prospects of developing spectroscopes locally. Left: Ramon Castillo, president of Innovatronix, and Engr. Peter Banzon (partly hidden), officer-in-charge of DOST's Advanced Science and Technology Institute. *(Photos by Alan C. Taule)*

An imported spectroscope costs around P5 million. If locally, developed, the cost of the machine will just be one third of the original.

Tallada also suggested that NIRS can be a potential venture for the DOST, through ASTI, in partnership with private firms or consortiums like the EIAPI. Such venture is seen to likely succeed based on projected increasing demand for said technology in the country even among small- to mid-sized business enterprises. Moreover, Montejo committed to purchase the first 20 units of spectroscope to be developed in the country.

Meanwhile, EIAPI members expressed initial interest to support Secretary Montejo's initiative. They are willing to have deeper discussions to begin developing the spectroscope locally, they said.

Three DOST execs conferred Gawad CES presidential award

Photo by DOST-ASTI

DOST execs shine in Gawad CES Awards. The Department of Science and Technology dominated the 2010 Gawad CES Awards as three of its directors bagged the prestigious presidential award conferred by President Benigno S. Aquino III on January 11, 2011 at the Rizal Hall, Malacañang Palace. With Pres. Aquino are the awardees (L-R) Engr. Denis F. Villorente, director of DOST's Advanced Science and Technology Institute; Dr. Urdujah A. Tejada, director of DOST Region 2; Dr. Patricio S. Faylon, director of DOST's Philippine Council for Agriculture, Forestry and Natural Resources Research and Development; and Dr. Mario C. Villaverde, Undersecretary of the Department of Health. *(S&T Media Service)*

DEPARTMENT OF Science and Technology directors dominated the 2010 GAWAD Career Executive Service (CES), as three DOST executives out of the four awardees received the prestigious presidential award conferred by President Benigno S. Aquino III on January 11, 2011 at the Rizal Hall, Malacañang Palace.

Awardees were Dr. Patricio Faylon, executive director of the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development; Dr. Urduja Tejada, regional director of DOST Region 2; and Engr. Denis Villorente, director of the Advance Science and Technology Institute. The other awardee was Undersecretary Mario Villaverde of the Department of Health.

"The recognition proves the point that we have excellent people leading the DOST agencies," DOST Secretary Mario Montejo said. "The accomplishments of our awardees show how science and technology helps in improving our country's delivery of its services."

The awarding body recognized Dr. Faylon's visionary leadership that pushed PCARRD-DOST to attain the Philippine Quality Award Level 1 (Commitment to Quality Management) in 2009 and subsequently obtain ISO 9001:2000 certification. PCARRD was the first DOST agency to obtain the ISO certification. As such, Malacañan acknowledged PCARRD as one of the 43 government agencies that implement a quality management system in compliance with the ISO 9001 standards. Faylon also established the Techno Gabay Program, a technology transfer modality that delivers much needed information and technologies to the countryside. It has been adopted by local government units in their agricultural extension programs.

Dr. Tejada was distinguished for initiating and successfully implementing community- based projects, including a number of hatcheries, grow-out ponds, and fish feed mills, and a training center for fishery products that helped move forward the aquaculture industry in the region. She was also responsible in reviving the peanut industry in Jones, Isabela and the conversion of coco wastes into useful products in Region 2.

Engr. Villorente was recognized for his efforts in helping promote research networking in the country through the Philippine Research, Education and Government Information Network (PREGINET), a nationwide broadband research and extension network that links the government, academe, and research institutions in the country, providing a faster and more reliable collaboration among researchers and scientists. PREGINET also established internet connectivity to government agencies, enabling them to comply with the Government Information Systems Plan.

Villorente also enabled Internet Protocol version 6 (IPv6) technology and awareness in the country and provided technical expertise to both government and private telecommunication companies, on the process of gaining IPv6 capability when the IPv4 addresses were exhausted. He also led the technical team in the certification of the automated election system for the May 2010 national and local elections, proving that a clean, credible and orderly electoral process is feasible in the country with the help of technology. He also pushed for the transition of ASTI's ISO 9001:2000 to ISO 9001:2008 certification last year.

The Gawad Career Executive Service (CES) Awards recognizes career executive officials who had exemplary performance and significant contributions, particularly in the areas of innovation, information and communication technology, social services, administrative reforms and public policy. *(Framelia V. Anonas, S&T Media Service)*

DOST Secretary Mario Montejo swears in newly appointed PAGASA officials

By VENUS R. VALDEMORO
S&T Media Service, *PAGASA*

Right photo: Sec. Mario Montejo (right), inducts Dr. Nathaniel Servando (left) as Acting Administrator of PAGASA, Below: Also sworn-in were (L-R) Engr. Catalino Davis, Dr. Vicente Malano, and Dr. Flaviana Hilario as Deputy Directors.

SECRETARY MARIO Montejo recently swore in newly appointed officials of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) led by Dr. Nathaniel T. Servando, acting PAGASA administrator; and the new deputy administrators, namely Dr. Flaviana D. Hilario, research and development; Dr. Vicente B. Malano, operations and services; and Engr. Catalino L. Davis, administration and engineering services.

Also present in the oath-taking ceremonies was Dr. Graciano P. Yumul, Jr. who served as the PAGASA Officer-in-Charge since August 2010 in concurrent capacity as Undersecretary for Research and Development of DOST.

Dr. Servando, in a short message thanked Secretary Montejo and Undersecretary Yumul for the trust given to him and vowed to continue the developments in PAGASA, particularly in the improvement of the forecasting capability of the agency that started during the stint of Dr. Yumul as OIC.

Dr. Servando started his career in PAGASA as Weather Specialist in January 1990 and on February 4, 2004, he rose to the rank of Deputy Administrator (Director III) for Research and Development and served as Officer-in-Charge at the Office of the Deputy Administrator for Operations and Services prior to his appointment. He has been the focal person in the ASEAN Sub-Committee on Meteorology and Geophysics since 2004 to present; focal person in Global Earth Observation System (GEOS) from 2005 to present; and member of the Philippine delegation to the UNFCCC Climate Change Negotiation and related meetings. Recently, Servando headed the Philippine Delegation to the UNESCAP/WMO Typhoon Committee 43rd Session held in Jeju Island, South Korea.

Dr. Servando received various awards to include among others the National Research Council of the Philippines Achievement Award in the field of Earth and Space Sciences on March 13, 2010; and Certificate of Merit from the DOST Secretary for early completion of Ph. D. in August 30, 2002. He has also published scientific papers in refereed journals.

He obtained his Master of Science degree in Marine Sciences, major in Marine Meteorology and Physical Oceanography from the University of Ryukyus in Okinawa, Japan and Master of Science and Ph. D. in Meteorology from the University of the Philippines in 1994 and 1998, respectively.

Meanwhile, the three appointed Acting Deputy Administrators also come from the ranks in PAGASA. Prior to their appointments, Dr. Flaviana Hilario served as chief of the Climatology and Agrometeorology Division. Dr. Vicente B. Malano was chief of the NCR-PAGASA Regional Services Division and Engr. Catalino L. Davis was chief of the Engineering and Technical Services Division.

Wood moisture meter wins national invention award

THE DIGITAL wood moisture meter of the Forest Products Research and Development Institute-Department of Science and Technology (FPRDI-DOST) bested 12 other entries to top the Outstanding Utility Model category at the 2010 National Invention Contests and Exhibits. Dr. Marina A. Alipon and two team members received the award at the SM Cebu Trade Hall last year.

The wood moisture meter is an electrical resistant type which is now being used in about 100 handicraft and furniture firms nationwide. It is excellent in reading the moisture content of Philippine wood species from 6 to 25 percent.

Dr. Alipon explains, "Knowing how much moisture is present in one's raw materials is key to making quality wooden furniture, builders' woodworks and handicrafts. The moisture content of wood products bound for temperate countries must be low enough (about 7-10 percent) so that these products do not distort, shrink or crack while in service. Otherwise, they may have to go thru very expensive repair jobs."

According to Alipon, the digital wood moisture meter was made to meet the needs of small players in the local furniture and handicrafts industries. "We wanted an alternative to the imported wood moisture meters in the market. Imported meters were not made to read local wood species and have to be recalibrated to give reliable readings; recalibration costs around Php 2,500 per species and takes time. Also, they cannot be readily repaired when they break down as their spare parts have to be sourced abroad.

The FPRDI meter, on the other hand, was designed with local businessmen in mind. Built using local spare parts, it can read the moisture content of popular local wood species and is Php 10,000 to 15,000 cheaper than the imported version at only Php 5,500 per unit.

The digital wood moisture meter project is a joint venture of FPRDI, the Advanced Science and Technology Institute (ASTI) and Alexan Trading. It previously won Third Prize in the 8th National S&T Fora and Competition in Industry and Energy Research and Development, and the F.O. Tesoro Technology Transfer Award in 2009. It has also been awarded a Certificate on Intellectual Property Rights by the Intellectual Property Office of the Philippines.

Aside from Alipon, the other research team members are Engr. Gil Dolotina, Engr. Grecelda Eusebio, Gerwin Guba and Alvin Retamar.

The Philippine furniture sector is currently made up of about 15,000 firms, mostly small and medium enterprises. It employs 800,000 workers, including manufacturers, subcontractors and suppliers, and exports to the US, Europe, Australia, Great Britain, and Japan. ***(Rizalina K. Araral, S&T Media Service, FPRDI)***

Science workers association express full support to DOST Secretary Montejo

THE EMPLOYEES' associations of the Department of Science and Technology expressed their full support to DOST Secretary Mario Montejo upon his confirmation by the Commission on Appointments yesterday.

"We assure Sec. Montejo our full support to the programs, projects and activities of the DOST towards the fulfillment of its visions, missions and goals," the statement of support said. The declaration was signed by presidents of DOST unions and employees association and the United DOST Employees Assocaitions (UNIDEA), Inc.

In the declaration, the UNIDEA also committed to actively participate in the "promulgation, implementation and assessment" of said DOST activities.

UNIDEA also ensured Sec. Montejo of "on time but thorough, fast but complete and proper but humane procedures and performance of all related activities."

Montejo's appointment symbolizes, embodies and carries with it the renewed visions, missions and goals of the DOST, the employees said. Montejo's fresh approach in leading DOST is reflected in the new DOST slogan "Ignite the Mind," they added.

The statement was signed by UNIDEA executive board led by Vladimir Lopez, UNIDEA national president and Philippine Science High School Employees Union president, and the officers of UNIDEA's 20 association- and union-members representing the more than 4,000 DOST workforce. *(S&T Media Service)*

FPRDI technologies benefit Abra couple

By RIZALINA K. ARARAL
S&T Media Service

BARANGAY BACSIL was once a sleepy barrio in the northern town of Bangued, Abra. Today, it is alive with activity, thanks to the hard work and adventurous spirit of Mr. Romeo Balbin, Jr. and his wife Natividad.

For several years now, the Balbins have been doing their hometown proud by manufacturing world class wood furniture, builders' woodworks, bamboo home furnishings and mixed media handicrafts, and winning a slew of awards on the side. All of these directly or indirectly benefit the people of Barangay Bacsil where the Balbins' factory is located.

"We started as a partner in a big logging firm in 1986 but we eventually went into furniture production when we realized that Abra is very rich in raw materials that we can make use of," discloses Mr. Balbin.

"Today, we make all kinds of products – dining sets, sala sets, beds, China cabinets, TV racks, coffee tables, office tables, doors, door jambs, moldings and narra planks for floors. Our bamboo products include tiles, placemats, trays, coaster hot pads, umbrella stands, CD racks and hampers. We also make novelty packaging materials from local grasses and plants that abound in the province."

Thru the years, the challenges of the business seemed to have brought out the best of the Balbin couple's artistic, managerial and marketing talents.

Says Mrs. Balbin, "From 1994 to 2005, we were named four times the Top Seller in the Furniture Sector in the National Trade Fairs of the Department of Trade and Industry. We also received the same award in the National Economic Enterprise Development Trade Fair and the 'Impakabsat' Regional Trade Fair.

"Getting recognized was very exciting for us," she continues, "but our breakthrough came when we acquired the furnace-type lumber dryer (FTLD) of the Forest Products Research and Development Institute (FPRDI) as well as different bamboo processing equipment in 2005."

Mr. Balbin adds, "With help from the Department of Science and Technology's Small and Medium Enterprises Technology Upgrading Program (DOST-SETUP) and FPRDI, we were able to install a 3,000 board foot-capacity dryer which solved our big problem with molds and fungi attacking our raw materials. The dryer, as well as three kinds of modern bamboo processing equipment, enabled us to make better quality products faster and at lower cost. As a result, our volume of rejects went down, product prices went up and our income ballooned by 30 percent."

"We were able to expand our operations, hire more workers and hike their wages. Today, 22 regular workers and 900 sub-contractors work for us. Before we had the FTLD, we hired only 12 regulars and 180 part-time workers. With bigger operations, we opened new market outlets both here and abroad, especially in the US, Italy and Canada," he said.

All their success notwithstanding, the Balbins show no signs of slowing down.

"We want to keep learning about the latest technologies that we can use in the business," says Mrs. Balbin. "You can't stay in the game unless you are a tireless learner and are willing to take risks. You have to constantly innovate, to come up with designs or product lines so that you always have something fresh to offer the market."

Right now, the couple is studying the possibility of making engineered bamboo school desks for the Department of Education.

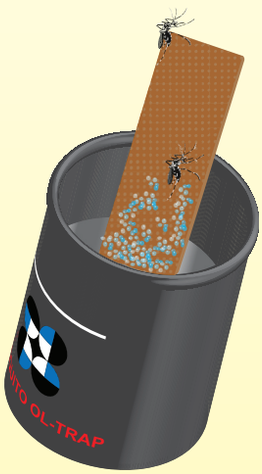
Mr. Balbin closes, "In all our ventures, we are happy that we have friends such as the DOST and FPRDI whom we can count on to help solve our technical problems."

DOST's *finest for* 2011

THE YEAR 2011 is undoubtedly the year of new beginnings for DOST. Among others, the Department will launch its finest projects for 2011 not only to make the public aware of what we've been doing at DOST but also to prove to everyone that local technology works.

Some of these projects have been around for some time, and some are still in the development phase. What binds them all together is the fact that all of them are proudly Filipino-made -- made by Filipinos for the Filipinos.

These projects are featured here at the S&T Post to give you, our readers, something to look forward to for the year Twenty Eleven.



Mosquito OL Trap to curb dengue

Photo by: Joy M. Lazcano

THE DOST-DEVELOPED mosquito OL trap system is a simple device that helps reduce the number of the female *Aedes aegypti,* the dengue virus carrying mosquito, by killing its eggs trapped in the lawanit strip of the trap. Following successful laboratory and field tests in the cities of Marikina and Quezon City, DOST kicked off the national roll-out of the Mosquito Ovicidal/Larvicidal (OL) trap system in Balyuan Convention Center, Tacloban City on February 19 this year.

"This activity started the ball rolling for our technology initiatives in curbing dengue," DOST Secretary Mario G. Montejo said.

DOST distributed 2,800 kits to identified household participants in Leyte during the launch. Said households will use the OL trap for a period of six months. The Department of Health, as partner institution, coordinated with local government units for the identification of participants.

Through the Industrial Technology Development Institute (DOST-ITDI), DOST distributed 200,000 mosquito OL Trap kits nationwide. Each household participant will receive four complete sets of OL trap kit and six-month supply of organic OL trap pellets.

DOST likewise allocated 2,800 kits for each of the 17 regions including the Autonomous Region in Muslim Mindanao, except NCR which will receive 5,200 kits because of the high number of dengue cases.

"This shows that the government is really bent on reducing the number of dengue cases in the country," Secretary Montejo added. "In fact, the DOST is in synergy with the Department of Health, both agencies are working very hard in coming up with solutions to fight dengue."

Laboratory and field testing in Marikina and Quezon City showed positive results.

Meanwhile Secretary Montejo urges communities to participate and support the project. "This is our fight, we hope that in the end we can overcome the dreaded virus that has put many into sufferings and mourning." *(Joy Lazcano, S&T Media Service)*

Locally-developed warning devices for hazard-prone areas

DISASTERS CAN happen anytime but accurate warning information can prevent major disaster damage to lives and properties.

"People can prepare themselves better and faster," Science Secretary Mario Montejo said on having correct disaster-related information in a post-landslide inspection in January this year at St. Bernard town of Southern Leyte. In the same inspection, Sec. Montejo announced that the science department is preparing hazard warning devices that deliver real-time information every hour.

The inspection came at the heels of rain-filled weeks that induced a series of landslides in St. Bernard. Reports have it that three children died and a number of houses were buried in mud. The local government relocated seven of its barangays (villages) declared as permanent danger zones by the multi-agency Hazard Mapping and Assessment for Effective Community-Based Disaster Risk Management or READY project.

"We are willing to partner with the Department of Science and Technology (DOST)," said St. Bernard Mayor Rico Rentuza. DOST's hazard warning devices will not only benefit St. Bernard but the whole of Leyte and other places prone to landslides, he said.

Warning devices

The hazard warning devices, all locally made, comprise automatic rain gauges, water level gauges, weather monitoring stations, and landside monitoring sensors. DOST with UP's Electrical and Electronics Engineering Institute are expected to roll out the landslide warning system technology within the year.

"We came here to bring S&T-based solution to the pressing problem of generating important and accurate disaster warning," Montejo told Leyteños in Waray dialect in a television interview. "We are accelerating the deployment of the landslide monitoring sensors in ten sites all over the country that are constantly affected by landslides."

The devices will enable DOST to generate hourly data on disaster areas. Because the gadgets are locally developed, they cost much less than their imported counterparts.

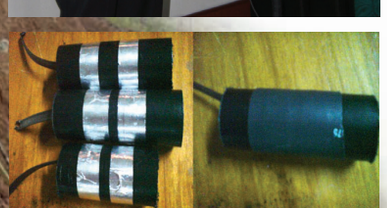
He also said that the landslide warning devices are cords with sensors in several segments buried 20 meters below the ground, even as he sketched for Mayor Rentuza how the devices would detect earth movement at that depth.

Landslide after the rains

"After three weeks of rain, there is no question that landslides will follow," said DOST Undersecretary for Research and Development (R&D) Graciano Yumul Jr, also concurrent Officer-in-Charge of Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

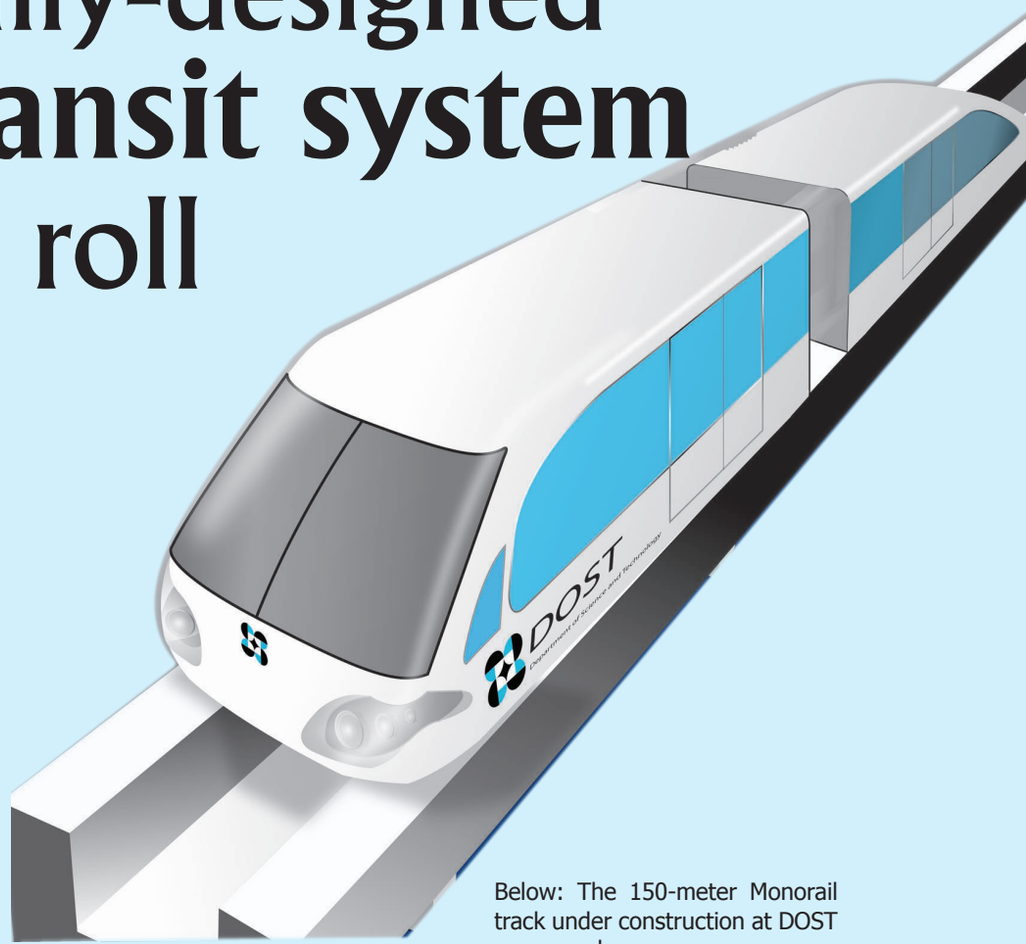
He explained that prolonged rains loosen the soil which gives way with all the weight it carries. He also observed many fallen coconut trees in almost all landslide-stricken areas.

"Trees help the soil to hold on, but in the case of coconut, it may not be of help when the soil loosens due to rain," he explained. "Coconut trees have shallow roots that make the soil vulnerable to landslides." Moreover, coconut trees also fall on houses and even people, aggravating the already troubled condition. *(Framelia V. Anonas, S&T Media Service)*



Photos by: Engr. Joel Marciano, Engr. Marc Talampas and Gerry Palad

First locally-designed **mass transit system** ready to roll



Below: The 150-meter Monorail track under construction at DOST compound.

THE FIRST Filipino designed electric-powered automated guideway transit system or AGTS is ready to roll down a 150-meter test track currently under construction at the sprawling Department of Science and Technology Complex in Bicutan, Taguig City.

Two test-chassis of the AGTS will be ready very soon, DOST Assistant Secretary Robert O. Dizon said. An engineer himself, Dizon closely supervises the AGTS design team composed of young DOST engineers with diverse engineering specializations.

DOST also expects the completion of a longer two-kilometer demonstration rail track at the University of the Philippines in Diliman by middle of the year.

"I believe that our AGTS design suits local conditions for mobility. We want to ease travel around highly populated urban centers particularly Metro Manila and the rapidly industrializing adjacent provinces", DOST Secretary Mario G. Montejo said.

MMDA Chair Francis Tolentino also said that AGTS could be an ideal transport mode around the historic Intramuros district. He cited the numerous schools within and around the famous walled city.

Montejo explained that rail mass transit system is not new in the Philippines. He cited the ageing railways system in Luzon that went on track during the Spanish colonial era.

The AGTS design team has considered the peculiar local geographic and urban development layout and tropical weather conditions in designing the AGTS, he added. It will also cost a lot less that imported mass transit systems currently operating in Metro Manila.

Photo by: Joy M. Lazcano

President Aquino expressed interest in the development of AGTS during a meeting with Montejo and other top DOST officials in Malacañang last December. *[Rodel Offemaria, S&T Media Service]*

Crushing malnutrition through Pinoy Foods and MGM Mix

TODAY'S CHILDREN are tomorrow's leaders. By all means let's protect them. Let's start with their health.

The Food and Nutrition Survey in 2003 revealed a startling finding: Among children aged 0 – 5 years old children, 27.6 percent are underweight, 30.4 percent are short, and 5.5 percent are thin. Malnutrition is creeping among more than a fourth of our country's children.

To stop malnutrition from its tracks and bring back good health to Pinoy kids, the DOST's Food and Nutrition Research Institute developed a package of interventions. FNRI experts first met with mothers and caregivers in selected communities and taught them the basics of nutrition, breastfeeding, complementary feeding, and backyard food production. Taking one step forward, FNRI also developed complementary and snack foods to help add needed nutrients in children's diet.

Labeled as Pinoy Foods and MGM Foods (for micro-nutrient growth mix), these complementary and snack foods, respectively, were developed for children six months to two years old.

"At 0-5 years, the nutrition needs of children must be met," says Julie Dorado, team leader of the FNRI group conducting community-based nutrition education activities in several nutritionally-depressed provinces in the country. "Otherwise, damage will be irreversible."

Pinoy Foods

Malnutrition usually starts after the baby gets weaned from breastmilk, which is around 6 months to two years old. Around this time, mothers may unsuspectingly give their babies food that lack important nutrients such as "am" (liquid from boiling rice) or, worse, junk foods.

To meet the needs of babies at this age, FNRI developed the Rice-Mongo Instant Blend, Rice-Mongo-Sesame Ready-to-Cook Blend, and Rice-Soy Instant Blend. These complementary foods are easy to prepare and packed with nutrition. The rice-mongo blend contains 96kcal and 3g protein per 20g-sachet. The rice-mongo has 89kcal and 3g protein, while the rice-soy blend has 97kcal and 3.4g protein per pack of 20g.

The Pinoy Foods are currently used in feeding programs in pilot barangays that registered high numbers of malnourished kids. The food packs will be launched within the year for commercialization after some field tests around the country.

Meanwhile, the MGM foods are currently being developed for eventual roll-out after efficacy and effectiveness studies. *(Framelia V. Anonas, S&T Media Service)*

Photos by: JR Gavino

Clinical tools over the Internet

Rx Box

RESEARCHERS FROM the University of the Philippines have just added another important use of the Internet to Filipinos: to bring health care expertise and assistance to underserved communities in the country.

Said researchers worked in two groups at the UP-Philippine General Hospital's National Telehealth Center, and the UP Diliman Electrical and Electronics Engineering Institute, Department of Computer Science and the National Institute of Physics to develop a telehealth system that would allow remote physicians to consult with experts remotely.

An important instrument developed for this telehealth system is the RxBox, an instrument that uses ICT to measure, store and send patient information, such as heart rate, ECG, blood pressure, pulse rate, and blood oxygenation. The RxBox saves the information then transmits it via wired and wireless networks to a remote medical specialist who reads and interprets the sent data. This way, the specialist can assist the doctors at the base station personally attending to the patient.

"The RxBox is a local technology that responds to the health care needs of our people from areas that have inadequate access to quality health professionals and facilities," Department of Science and Technology Secretary Mario Montejo said. "This can be a very helpful tool, especially to the government's Doctors to the Barrios program."

A special software designed by the researchers called Triage enables the RxBox to accept referrals from various media sources, according to Dr. Alvin Marcelo, director of the UP-PGH-NTC and project leader of the Emergency Center and Coordinating Services (ECCS).

ECCS is one of the two components of the DOST-funded National Telehealth Program for which the RxBox was developed. This component mainly designed softwares to be used in a telecenter that will respond to phone and Internet inquiries regarding poisons and trauma initially, and to diseases, outbreaks, and disaster scenarios eventually.

The other component is the Lifelink that aims to design and implement a remote, real-time GSM-based biomedical diagnostic facility such as the RxBox for use in underserved communities in the country.

"Most specialists are concentrated in urban areas, thus there is a big need for their services in rural areas that have limited access to doctors and health facilities," informed Dr. Luis Sison, UP Diliman's Vice Chancellor for Research and Development and project leader of the program's Lifelink component.

Aside from measuring vital signs, the RxBox is also equipped with other features to facilitate the transmission of important patient information. It also has a probe camera to capture and send images of patient or body parts being examined.

Its hands-free video conference mode enables doctors from different locations to consult each other. Further, its sound transmission feature enables doctors to listen to and save actual patient sounds.

The research team is also designing a custom software for the RxBox to smoothly interface with computers, server databases, mobile phones, and personal digital assistants (PDAs).

"There are already two units deployed for field testing," revealed Sec. Montejo. "So far, the RxBox has shown to enhance communication protocols in the tests. The final results of the field tests will be very valuable inputs in making the technology available to our citizens soon."

The development of the RxBox is in line with DOST's thrust of harnessing telemedicine to better serve the health needs of Filipinos. Telemedicine uses electronic signals to transfer health information between two or more locations, and to provide medical expertise and services to people in remote areas. *(Framelia V. Anonas, S&T Media Service)*.

Schoolchildren to go high tech with DOST's PC Tablet

SCHOOL CHILDREN, especially Grade 1 pupils, will soon go high tech with PC tablets on their desks rather than books and paper.

This almost paperless classroom and every techie kid's ultimate dream will soon be realized through DOST's Advan-Aced Science and Technology Institute (ASTI), the developer of the first Pinoy PC tablet.

The PC tablet, ready for pilot testing within the year, is initially designed for Grade 1 pupils.

The tablet will look like a coverless notebook, its open face (actually the monitor) displaying basic personal computer functions such as writing, reading and storing documents, with optional Internet capability.

It will be distributed free to public elementary schools first, making the Philippines the first country to do so.

If and when affordable, there is no limit to its use by students, doctors, nurses, engineers, scientists, the police and military, businessmen, and practically by anyone now using personal computers.

The tablet computer is one of the priorities of Science Secretary Mario G. Montejo. Tasked to lead the project is DOST-ASTI.

Branded tablet PCs are priced anywhere from $200 and up. At P3,000, the DOST-ASTI version would bring the cost down roughly to about $68 for a basic model.

"We could incorporate features like USB ports, a web cam, wireless, third generation connection, all in at an affordable price," Banzon said. "We will use free and open source software."

Exact specifications of the PC tablet will be determined after a thorough study of ASTI. According to Peter Banzon, head of ASTI's R&D, the PC tablets are initially designed for basic electronic book reading, or physical book replacement. Basic multimedia functionality like play videos and open interactive courseware may also be added on top of the ebook function, Banzon said.

Other aspects that ASTI is looking into before finally developing the tablet include security issues, usability issues, power need, and price.

"We also want the tablet PCs to be reliable and to last for years. We need to study the capacity of textbooks that are to be loaded. We need to know how long a child can use a tablet PC without causing eye and wrist strain," Banzon added.

"We need to look at the feasibility of replacing physical books, for example, whether it is cost-friendly," he continued.

"There is actually a bill in Congress limiting the weight of backpacks to prevent back injury among school children who carry overweight bags. Replacing hard copy with electronic books is one way to lessen the load. But then again, we need to know whether while we are preventing back pains, whether we are causing eye strains from reading e-books for long periods."

"Physical books are easy to read but e-books save trees, are easy to distribute, are practically weightless, easy to fix and change," Banzon explained. "We have to know how many textbooks to replace with e-books, how much the budget of the Department of Education (DepEd) is on textbooks..."

These concerns will be addressed alongside the development of the inexpensive tablet PC, Banzon said.

ASTI previously developed a courseware on science and mathematics for Grades 1 to 6 for the DepEd and DOST's Science Education Institute. The courseware has been distributed free to all levels of public elementary schools; a version for high school is under development.

Banzon said the courseware could be the initial content of the tablet PCs. *(Paul Icamina, S&T Media Service)*

Savings on insecticide and labor costs

Bt eggplant more profitable than regular crop

By PAUL M. ICAMINA
S&T Media Service

BT EGGPLANT could yield net incremental benefits of around P50,000 per hectare compared with planting the varieties now used by farmers. This is based on more marketable yields and savings and from reduced insecticide and labor costs by planting the Bt eggplant, according to Sergio R. Francisco of the Philippine Rice Research Institute's (PhilRice) Socio-Economic Division.

Bt eggplant is so-called because its genes have been encoded with the insecticidal proteins of *Bacillus thuringiensis* (Bt) to develop resistance against the fruit and shoot borer insect, a major pest of the eggplant.

The Bt eggplant was developed by the India-based Maharashtra Hybrid Seeds Company and is undergoing field trials for safety and effectiveness prior to commercial distribution and cultivation in the country.

Francisco made the assessment on the potential economic impact of the Bt eggplant to serve as a basis for recommending to farmers an effective strategy to manage fruit and shoot borer infestation in eggplant.

About 177,000 metric tons of eggplants were harvested in 2003, or about one-fourth of the vegetables produced at that time.

Almost half of the harvests come from Pangasinan (with the highest output), Quezon, Isabela, Nueva Ecija, Pangasinan and Quezon. About a third of the hectarage are in Pangasinan (3,990 hectares) and Nueva Ecija alone, followed by Nueva Ecija, Cebu, Batangas, and Quezon.

In the past, eggplant was a cheap vegetable, available throughout most of the year, says Francisco, adding that production is now seriously affected by a host of problems, most serious of which are pests.

The fruit and shoot borer is one of the major pests, causing yields to decline since 1997 – a trend that has not been reversed since.

Yield losses from fruit and shoot borer infestation ranges from 20 percent to 92 percent, Francisco says.

Pesticides cost would be reduced by an average of 47 percent due to less frequent application.

In the early vegetative stage, the larvae of the fruit and shoot borer feed within the leaves, causing shoots to droop and wither. At fruiting stage, larvae bore into the fruit, making them unmarketable and unfit for human consumption.

Because the fruit and shoot borer decreases yields and profitability, farmers spray chemicals to control infestation which occurs from the early vegetative stage to fruiting.

Some farmers use pesticides indiscriminately, often using the wrong chemicals and wrong dosages.

Many farmers spray their eggplant crop two or more times a week, with some even spraying as frequently as every other day, which is 60-80 times during a normal fruiting duration of at least four months. Eggplant farmers in Nueva Ecija may even spray twice per week on average.

Heavy chemical spraying is not so effective because the fruit and shoot borer larvae feed inside the eggplants. Indiscriminate pesticide use even allows the borer to become tolerant to the chemicals.

But due to the nature and biology of the pest, no other methods – except the removal of damaged fruits and shoots – are effective, Francisco points out.

"The adoption of Bt eggplant would greatly minimize, if not totally eliminate the use of pesticides, minimizing the hazards posed to farmers and consumers," he says, adding it will also prevent the pollution of waterways and groundwater and harm to other insects.

More than that, he argues, "it has the potential to reduce poverty and improve food security." Consumers would have adequate supply of eggplants with low insecticide residues and sold at a lower price, he says.

And the capital previously used to buy insecticides can be channeled to other farm needs, Francisco adds.

Francisco's assessment is based on discussions with farmers in the eggplant-producing provinces of Pangasinan, Nueva Ecija, Quezon, Batangas and Nueva Vizcaya.

He interviewed scientists, officials of seed companies, extension workers and product regulators. He also analyzed data from the Department of Agriculture, Bureau of Agricultural Statistics and PhilRice.

Farmers reported that the yield losses due to the fruit and shoot borer range from 28 percent to 64 percent. Profitability declined substantially, with profits barely breaking even.

Even if yields did not decline, more than half of the harvests were not marketable, prompting them to shift to other crops such as yellow corn and green corn where the risk of losses is much smaller even if the profits are less.

Most of them were planting hybrid eggplant seeds – from 50 grams to100 grams per hectare, at a cost of P400 to P1,400.

They were spraying from 5 liters to 115 liters of pesticides – an average of 31 liters in a 5- to 6-month production period. The expenditure on pesticides was around P14,581.

On average, farmers sprayed 37 times, spending about P7,398 for hired labor.

Most of them indicated willingness to cultivate Bt eggplant even if the seed price will be a bit higher.

According to the scientists Francisco interviewed, the seed cost would increase by 50 percent to 100 percent. But yields would also increase by 47 percent if farmers used Bt eggplant, they said.

Even if the cost is increased by 100 percent, seeds are a small portion of the total production cost, Francisco says, pointing out the savings in pesticide and application labor could easily compensate for the more expensive seed price.

Pesticides cost would be reduced by an average of 47 percent due to less frequent application. According to other estimates that Francisco cites, Bt eggplant could cut spraying by 50 percent to 60 percent, reducing expenditure on insecticides by as much.

Hired labor would decrease by 10 percent to 25 percent because pesticides would be reduced, if not eliminated.

Assuming that fruit and shoot borer could be fully controlled by planting Bt eggplant, Francisco says it would mean that marketable yield would increase by the same amount of yield losses – ranging from 28 percent to 64 percent – when planting ordinary eggplant.

The additional cost that farmers would incur on the high assumption that seed price of Bt eggplant would double is P1,335 per hectare, Francisco says.

On the hand, the resultant increase in profits for Bt eggplant technology would be P49,802 per hectare, he says.

The net present values of adopting the technology to control the fruit and shoot borer is P1,864 million out of the P29 million total investment in the development and commercialization of the Bt eggplant, Francisco says.

"This implies that Bt eggplant technology is economically acceptable," he says.

DOST to carry out clinical trials, mechanization to boost VCO industry

By RODEL G. OFFEMARIA
S&T Media Service, *STII*

A FIVE-YEAR roadmap speckled with uncharacteristic attention to details is being laid out to buff up the sputtering virgin coconut oil industry in the Philippines.

The roadmap stretching from 2010 to 2015 aims to plug all the leaks starting from the coconut farmlands to the store shelves, and resolve the testy issues on the health benefits attributed to VCO among others.

Department of Science and Technology Secretary Mario Montejo said complete clinical trials should be implemented to validate VCO's health advantages scientifically. Results of such clinical trials will be useful to either tidy up muddled views especially among the medical sector or set the industry to a new direction.

Montejo also said DOST will try to help small VCO producers nationwide to mechanize their production and standardize processes to improve efficiency, cost, output, and consumer acceptability.

The new DOST commitments came out following the presentation last year at the DOST main office in Bicutan of the VCO roadmap by Dr. Fabian M. Dayrit, dean of School of Science and Engineering at Ateneo de Manila University along with VCO Philippines president Teresa Santos, former ABA party-list Rep. Leonie Montemayor, VCO exporter Jun Pacheco, Philippine Coconut Authority Administrator Cesar Villariba, and PCA's Dina Masa.

Santos disclosed that VCO's popularity among domestic consumers peaked around 2007 that the largest chain of drugstores in the country alone posted average monthly sales of P150 million.

Numerous health benefits attributed to consumption of VCO include risk reduction on cholesterol, heart, and weight conditions. It's also said to be an excellent hair and skin moisturizer.

Apart from olive oil, coconut oil is the healthiest oil in the planet based on previous studies, says Dayrit who's been working with the coconut sector for five years now.

But the health claims became a touchy issue because these were not backed by solid information that clinical trials can generate. Santos' group said medical doctors are non-committal when patients ask about VCO's health benefits.

Sales has since slipped industry-wide that even the drugstore chain is posting a monthly average of only about P10 million, Santos added.

But Dayrit and Santos noted a rising demand for VCO in foreign markets, which makes the full implementation of the VCO roadmap critical especially in the light of growing competition from Indonesia, the world's leading coconut producer.

Citing government data, VCO Philippines said "coconut supports about 25 percent" of the rural population and the country's 5th export product.

In 2007, DOST's Philippine Council for Industry and Energy Research and Development initiated the "S&T Program for VCO", which covered "studies on improving quality, shelf life, packaging, and hazards and environmental management". The program produced science-based "recommendations to improve the capability and skills" of industry players.

But PCIERD noted an industry shift "from single product processing systems into multi-product enterprises" that cater to the burgeoning health and wellness industry.

This development posed new challenges. "Maintaining quality consistency became complex," PCIERD noted.

Apparently, the industry needed a new and integrated development track to cope with the expanding opportunities brought by the development and demand for new VCO-based products like coconut milk, water, flour, and more recently low glycemic index sugar from coconut sap.

PCIERD picked up the cue and "initiated the formulation of the VCO Industry Roadmap". A technical working group was formed to sift through numerous issues and decide on the roadmap's features. The group includes AdeMU, Bureau of Export Trade Promotions of the Department of Trade and Industry, Philippine Coconut Authority of the Department of Agriculture, United Coconut Associations of the Philippines, and the VCO Producers and Traders Association of the Philippines, Inc. or VCO Philippines.

Overall, "the roadmap envisions a new VCO industry composed of new enterprises producing non-traditional functional and health food products" for the emerging health and wellness industry.

The roadmap has three key components. First, it aims to spread the news on VCO's enhanced quality and safety and functional benefits; substantiate health claims through long-term studies; upgrade production systems and products; secure GMP, HACCP, and organic certifications; and implement industry clustering.

Second, it wants to promote VCO as flagship product to the health and wellness sector through an integrated marketing and communications strategy.

Finally, "the industry will focus on local market development along with expanding the production of current and new players" to support an anticipated surge in demand.

Note: PCIERD is now merged with the Philippine Council for Advanced Science and Technology Research and Development. The two Councils are now known as Philippine Council for Industrty, Energy, and Emerging Technology Research and Development (PCIEERD).

DOST – NRCP honors Filipino researchers

Photo by: Gerry Palad

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

IN THE recently held 78th General Membership Assembly, March 9, 2011 at the grand ballrooms of the Manila Hotel, the Department of Science and Technology -- National Research Council of the Philippines gave tribute to twelve Filipino researchers for their outstanding achievements in research in the realm of basic and applied sciences and social sciences including the humanities.

The Council recognized their scientific works' contribution to the welfare of the nation and the citizenry and how the works enriched the country's knowledge in the twelve scientific disciplines including education and international relation, math, medicine, pharmacy, biology, agriculture and forestry, engineering and industry, physics, chemistry, earth and space sciences, veterinary, social sciences, and the humanities.

DOST Secretary Mario G. Montejo and NRCP President Alvin B. Culaba awarded the following achievers with the gold medallion, plaque of recognition, and cash reward of Php25,000.00. PL AGHAM Representative Angelo B. Palmones, and 2010 Nobel Laureate for Chemistry Dr. Richard F. Heck witnessed and gave prestige to the awarding ceremonies.

Socorro M. Rodriguez (Ph.D. Science Education) was honored for her significant contributions in education and governance. Dr. Rodriguez, as the current research director of Emilio Aguinaldo College, infuses the culture of research among the students.

Ma. Louise Antonette N. de las Peñas (Ph.D. Mathematics) was lauded for her significant research and publications in mathematical crystallography, particularly her skillful use of the techniques in color symmetry and group theory to investigate periodicity and symmetry – these are the fundamental concepts in the study of diverse objects such as tilings, geometric lattices, and crystal structures.

Jaime C. Montoya (MD Internal Medicine/Infectious Diseases) was feted for his zeal and persistent efforts in conducting researches especially in the field of infectious diseases, which likewise merited him with numerous awards including the DOST – NAST Outstanding Young Scientist Award in 1998 and Ten Outstanding Young Men in 2001. Dr. Montoya, as the President of the Science Council of Asia and the Council in 2010, led the 10th Science Council of Asia Conference held on June 13 – 16, 2010 at the Sofitel Philippine Plaza, which focused on addressing the health challenges in the Asia Pacific Region.

Ms. Araceli M. Lozano (DOST – ITDI Microbiologist) was recognized for her research on the production of anti-fungal and anti-tubercular antibiotics using locally isolated microorganisms, oxytetracycline-containing biomass for animal feed and dextran polysaccharide using coconut water as substrate. The Council also lauded her work on the isolation of bioactive compounds from lichens, algae, and higher plants.

Paciente A. Cordero, Jr. (Ph.D. Agriculture) was honored for his passionate interest in Philippine aquatic resources and ecology resulting in the publication of several technical papers and books. The Council commended his innovative, multi-harvesting, and pruning method of Guso, *Kappaphycus alvarezii,* a species of sea-vegetable considered as one of the most important commercial sources of carrageenans. Dr. Cordero's most noteworthy discovery was the species of marine red algae from Ilocos Norte Province, which he named after the then Philippine President Ferdinand Edralin Marcos – the *Porphyra marcosii* Cordero.

Virginia L. Barraquio (Ph.D. Food Science) was lauded for her microbiological studies on local dairy product development, which provided great contributions to the research in dairy technology. The Council noted Dr. Barraquio's developed technology for the production of probiotic dairy products like cheese, cream cheese, sour cream dips, and yogurt ice cream, as well as her researches on the foaming and anti-bacterial properties of milk and lactic acid bacteria and biogenic amines for dairy products and processing.

Elmer P. Dadios (Ph.D. Mechanical Engineering) was commended for his outstanding research in the fields of robotics, intelligent systems, and industrial automation. Dr. Dadios is considered to be one of the country's experts in these fields, earning him a number of prestigious international and national awards including one of the 50 Men and Women of Science and Technology given in commemoration of the DOST Golden Anniversary (50th Foundation Anniversary).

Jasmin E. Acuña (Ph.D. Educational Psychology) was recognized for her lifetime commitment to excellence in research on social sciences and business management for which she received various recognitions, such as the Most Outstanding Researchers of the University of the Philippines Diliman and First Prize Winner of the UNESCPO Literacy Research Award. She has notable innovative researches and publication on language and cognitive development, the Filipino family, human behavior in organizations, conflict resolution, business and psychology in the work place, work values, and values orientation.

Armando S. Somintac (Ph.D. Physics) was honored for his outstanding work on incorporating multiple quantum wells and quantum dots into photo-detectors and laser-diodes. The Council commended his efforts in developing and fabricating various nano-materials for solar cells and opto-electronic devices.

Antonio C. Laurena (Ph.D. Agricultural Chemistry) was awarded for his considerable contribution to the study of the biochemistry, molecular biology, and genetics of various Philippine plants, in particular those with economic importance such as papaya, coconut, and indigenous legumes.

Regalado T. Jose, Jr. (Anthropologist) was recognized for his pioneering work that contributed to the country's art history, especially the study of colonial church art and architecture with tools for conducting research on a more scientific basis. The Council lauded his efforts in locating the Philippine art masterpieces in various collections in Spain, Mexico, and other countries.

Salcedo L. Eduardo (DVM, Ph.D. Parasitology) was recognized for his outstanding contributions to the development of basic research in veterinary medicine particularly in the field of veterinary parasitology. The Council commended his pioneering work in helminthology – study of worms, their taxonomy and effects to their hosts. Dr. Salcedo has identified 29 new species of parasitic worms from various animal species in the Philippines and in Europe.

DOST studies extending brown rice shelf life

By PAUL M. ICAMINA
S&T Media Service

THE DEPARTMENT of Science and Technology (DOST) is fast-tracking research on extending the shelf-life of brown rice to close the deficit between the production and consumption of white cereal, the country's staple.

"To address the persistent rice shortage, we propose a shift in our preference from white rice to brown rice," says Science Secretary Mario G. Montejo. "If all of us eat brown rice, we can chew up the rice shortage."

"In milling the palay to brown rice, you get 10 percent additional yield compared with white rice, which is equivalent to the country's rice production deficit," he points out.

"We should think outside the box, we should change our mind set. We should look at the problem, which is lack of rice," he says. "Adding brown rice could fill the gap."

Lengthening brown rice shelf-life

For a start, DOST will develop ways to lengthen the shelf life of brown rice which is shorter than that of white rice. The DOST is now developing a process, which will be completed in 2011, "to solve this disadvantage," Montejo says.

At the same time, he wants to put brown rice on the base of the food pyramid, starting with its price that must be made comparable to that of white rice.

Because of the low demand, brown rice is currently more expensive and not available in many markets.

The DOST will also fortify brown rice with vitamins, minerals and other essential micronutrients.

Montejo proposed the major shift of the country's cereal preference during the Technology Incubation Marketplace event, one of the DOST's fast-track efforts to ease the country's problems.

With the bran and the nutrient-rich embryo intact and with fewer broken grains, the whole-grain milling recovery is as much as 10 percent higher than for white rice, says Dr. Emil Q. Javier, president of DOST's National Academy of Science and Technology.

What is brown rice?

Brown rice is unpolished whole grain rice that is produced by removing only the hull or husk.

The remaining bran gives the brown color to the grain. Rice becomes white or polished when the bran layer is stripped off in milling, the whitening process.

Brown rice may come from long- or short-grain and even sticky rice. It is produced during the first stage of milling when the hull is removed. The next stage of milling removes the bran layer, leaving milled white rice.

Benefits of brown rice

Brown rice is not metabolized and digested as quickly as white rice so that even with less consumption, a person feels full and does not get hungry easily, according to the Brown Rice Advocates, a coalition of government and non-government institutions that wants to change consumer rice preference.

As a result, it says, brown rice lowers the per capita rice consumption, hence reducing the national requirement for rice.

Brown and white rice contain similar amounts of calories, carbohydrates and protein, fatty acids and fiber. But because only the outermost layer of the grain of rice (the husk) is removed, many

vitamins and dietary minerals – such as Vitamin B1, Vitamin B3, iron and magnesium – remain in brown rice, according to the Philippine Rice Research Institute.

With white rice, the next layers underneath the husk are removed during the second stage of the milling and subsequent polishing process, leaving mostly the starchy endosperm or white grains. As the bran layer is removed to make white rice, the oil also goes; that oil may help lower cholesterol

Rice bran contains Vitamin E, which lowers excess fat and cholesterol and provides antitumor protection. The bran's layer contains very important nutrients such as the vitamin B complex.

Brown rice is rich in fiber and essential oils. Fiber is known to prevent major ailments such as gastrointestinal and heart diseases. The essential oils in the bran were also shown to prevent heart diseases because these decrease cholesterol, a major risk factor in heart disease.

Brown rice has high phytin which is a strong antioxidant; while phytin reduces iron absorption in the body, this can be corrected by eating a variety of fruits and vegetables.

Important minerals in brown rice

The American Journal of Clinical Nutrition estimates that one cup of brown rice provides 88 percent of the daily value for manganese, the trace mineral that helps produce energy from protein and carbohydrates. Manganese helps in breaking down fatty acids that are important for a healthy nervous system.

One mineral not added back into white rice during fortification is magnesium. One cup (195 grams) of cooked long grain brown rice contains 84 micrograms of magnesium while one cup of white rice contains 19 mg.

Brown rice contains many nutrients. Gamma-oryzanol, an antioxidant found only in rice bran, strengthens the muscles and turns fat to lean body mass. It improves blood circulation, prevents blood clots and enhances hormonal balance.

The alpha-lipoic acid, an antioxidant, restores liver function, slows the aging process and converts glucose to energy.

Glutathione peroxidase reduces mucus excesses, boosts the respiration, detoxifies the body, and helps prevent alcoholic cirrhosis, rheumatoid arthritis, multiple sclerosis, acne and asthma.

Superoxide dismutase, an antioxidant enzyme, treats cataracts, arthritis and many symptoms of premature aging. Proanthcyanidins facilitate wound healing, strengthen arteries, veins and capillaries, and improve blood circulation.

Inositol hexaphosphate is beneficial in the treatment of cancer, cardiovascular disease and kidney stones.

Brown rice is not only healthier than white rice. Because there is less milling involved in its production, brown rice also helps reduce power consumption. Brown rice production reduces the power demands of milling by as much as 65 percent, says Javier.

Savings in brown rice

The fuel savings in milling is 50-60 percent because the polishing and whitening steps are eliminated, says Dr. Rogelio V. Cuyno of the of the Asia Rice Foundation.

"The milling time is also shortened; labor is less; and the cost of equipment, if the mill is dedicated to brown rice, is much lower because the miller doesn't have to install polishers and whiteners," he says.

Science Secretary Montejo congratulates new PSHS scholars

Department of Science and Technology Secretary Mario G. Montejo congratulated passers as of the National Competitive Examination (NCE) by the Philippine Science High School (PSHS) conducted on November 6, 2010 for grade six students all over the country. The examination is administered to aspiring elementary students who would like to take specialized science and mathematics education at the PSHS.

There were 1,114 passers out of 20,233 applicants who took the one-step screening around the nation. Qualifiers are encouraged to visit the nearest PSHS campuses before February 10 for pre-enrol or they may visit www.pshs.edu.ph or www.dost.gov.ph for more information.

PSHS was a brain child of the New York University Professor Dr. Leopoldo V. Torralballa. The school was patterned after the Bronx High School of Science, New York. He envisioned a Center of Excellence in science and mathematics for gifted high school students in the country which was realized in 1963 when the first PSHS campus was established in Quezon City. Today, PSHS has grown into 11 campuses nationwide.

PSHS scholars receive monthly stipend in addition to free tuition fees and free loan of textbooks. Uniform, transportation and living allowances are also provided by the school administration according to the financial capacity of the scholar. In line with these, scholars are expected to meet the highest standard of scholastic achievement and behavior.

Secretary Montejo encourages non-passers and other high school students to pursue careers in mathematics and science in the future. *(Joy M. Lazcano. S&T Media Service)*

LOOKING AHEAD:
Towards a gender fair S&T community

By LOUIE ALONSO BELMONTE
S&T Media Service, *STII*

SCIENCE AND technology has long been recognized as the fuel for economic development. It is the unyielding driving force that pushes for the swift improvement of humans and their communities.

However, the United Nations weighs that science, technology and innovation policies of most countries rarely sufficiently address the full range of gender issues that are connected with science and development.

While S&T policies all around the globe tend to support women's participation in S&T, they seldom consider the need for institutional transfiguration or the gender dimensions of research and development.

The UN Millennium Project's Science, Technology, Innovation Taskforce even stated that "women are central to economic and social development," where it recognized that "reducing gender inequality is essential for reducing hunger, containing HIV/AIDS, promoting environmental sustainability" and achieving development goals.

While the Philippines is on the top ninth position in the Global Gender Gap Index 2010 Report for addressing gender gap globally, there are lots of work to be done to address gender inequality in various fields, and one of them is in S&T.

DOST and GAD

Addressing gender concerns in science and technology community pose a challenge to DOST Gender and Development (GAD) Focal Person and Assistant Secretary Ma. Lourdes Orijola. Armed with gender knowledge, wit and clear perspective, Orijola's strategy is gender mainstreaming which would hopefully address the gender issues in science and technology.

"We are pushing for gender equality. Basically, science and technology is the driver to total development whether in human resource, societal improvement or economic development," Orijola explains. "Equality is a UN prescription. It is one of the UN principles."

"We want to mainstream gender because science and technology cannot be discriminating. Gender mainstreaming is essential to addressing the needs of women and men," she adds.

Gender mainstreaming, as Orijola articulates, is a globally accepted strategy for promoting gender equality. Mainstreaming involves ensuring that gender perspectives and attention to the goal of gender equality are central to all activities – policy development, research, advocacy/ dialogue, legislation, resource allocation, and planning, implementation and monitoring of programs and projects.

The UN definition of gender mainstreaming incorporates assessing implications for women and men of any planned actions and polices, as well as making the considerations and experiences of women and men an integral part of any policy and action so they will both benefit equally.

She also pointed that gender mainstreaming is an approach in implementing Republic Act 9710, otherwise known as the Magna Carta of Women (MCW) which was signed into law on August 14, 2009. MCW is also the national translation of the UN Convention on the Elimination of All Forms of Discrimination Against Women (UN-CEDAW) signed and ratified by the Philippine government in 1981.

According to Orijola, the DOST's Gender Mainstreaming Program is an affirmation and response to MCW. The law mandates all government offices, including government-owned and controlled corporations and local government units, to adopt gender mainstreaming as a strategy for implementing the law and attaining its objectives.

One of the outstanding accomplishments of DOST pertaining to GAD is the development of DOST GAD Training Modules which were used in the orientation activities regarding GAD concepts and gender responsive planning and budgeting among DOST agencies.

The orientations, Orijola says, raised the DOST community's awareness on gender and corrected the misconceptions about GAD. It likewise enhanced the skills of DOST agencies in the preparation of GAD Plan and Budget.

GAD orientations likewise hope to institutionalize GAD concerns in mainstream development processes and agenda and not just in the peripheral programs and projects of DOST agencies –making the institution a gender responsive government agency.

However, Orijola said that DOST should institutionalize GAD into its system for the continuity of projects and activities that would help the institution move forward. She cited the institution's sad experience that once the assigned focal person for GAD was replaced, there were "lull periods" so the next one assigned need to start all over again.

"We continue good initiatives and programs and it should not be personality-based. It should be program-based," she explains. "The only way to do things is continuity, select the good programs and check the bad ones. If there is no way of improving the bad ones, then discontinue."

"For good programs like GAD and all other mandated programs, it should really be managed well and provided the necessary support so we can move forward in a much faster pace," she says.

Women in S&T

The Millennium Development Goals (MDGs), while not addressing S&T specifically, target a range of goals which can only be achieved if S&T and innovation are used in the development of products and processes.

As a cross-cutting goal, gender equality and the empowerment of women also play a key role in the development and implementation of successful strategies to use science and technology to help achieve targets.

Women's participation in S&T is now gaining ground in the country. According to Orijola, there are many Filipino women now who are graduates of various science, mathematics and engineering courses.

Based on the statistics of the Commission on Higher Education, 2008-2009 female graduates in the fields of natural science, mathematics, information technology, medical and allied courses, engineering, agricultural, forestry and fisheries reached to 134,100 as compared to 104,376 male graduates. There are more women graduates in the field of medical and allied courses while there are more engineering male graduates (36,242) as compared to female (12,206).

"The issue is not on how many men and women are entering (S&T)," Orijola stresses. "The real issue is on the gender responsiveness of technologies that the S&T community is producing and the researches being done."

Technologies and researches should give particular consideration on the unique features of women and their roles in society, she points out.

Orijola added that whatever researches, projects and programs the DOST community would do, it should be gender sensitive and researchers should take into account that their technologies are not hazardous to the health of both women and men.

In the paper presented by Stanford Professor Londa Schiebinger to the UN Division on the Advancement of Women on October 2010, she said that gender experts in S&T are now shifting emphasis away from critique and toward a positive research program that employs gender analysis as a resource to stimulate gender-responsible S&T.

Scientists and engineers, Schiebinger added, respond well when learning how analyzing gender can enhance their research in terms of creativity and social applicability.

Meanwhile, Orijola noted that GAD programs are in sync with DOST Secretary Mario G. Montejo's vision of local innovations.

"Women are part of local innovation. Women are very creative. Some women scientists from ITDI are part of the team that developed the Ovicidal Trap for dengue mosquitoes. And certainly, the FNRI has developed the supplement for young children which is very friendly for housewives because women are the ones taking care of their kids. The monorail is also gender friendly. Women don't have to rush and run after public transportation. It is less hazardous for people," she noted.

Looking Forward

Orijola said that as a science community, DOST should also look for ways to address poverty since it cuts across age, gender and beliefs, and would help the society to move forward.

"Our technologies should ensure that we can address poverty. And whatever policies that we will come up with regarding the Technology Transfer should more or less address the very basic concern of our society which is poverty," she added.

S&T, engineering, innovation, and education are fundamental in promoting the integral development of the country which encompasses the economic, social, educational, cultural, scientific and technical fields, including job creation, to confront poverty, in the framework of integration of the gender perspective in policies.

With all these considerations in mind, Orijola believes that the GAD Focal Point system in the DOST needs to go in-depth gender analysis that will eventually lead to organizational change as the agencies will embark in institutionalizing gender mainstreaming in their own offices.

S&T undoubtedly plays an important role in development that will only intensify in the coming years. It is imperative that gender analysis be mainstreamed into all aspects of science, including policies, programs and funding arrangements.

Sources:

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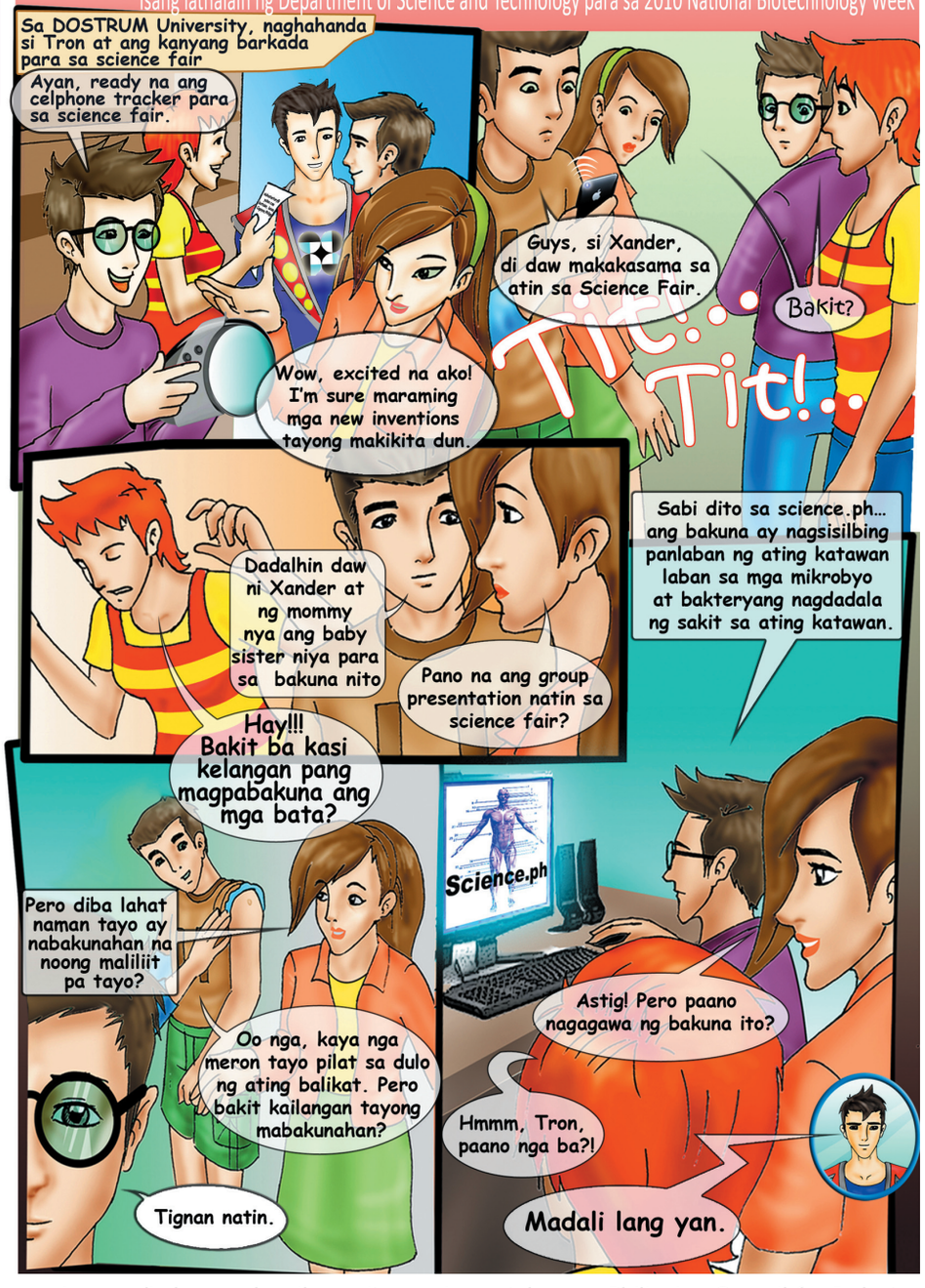
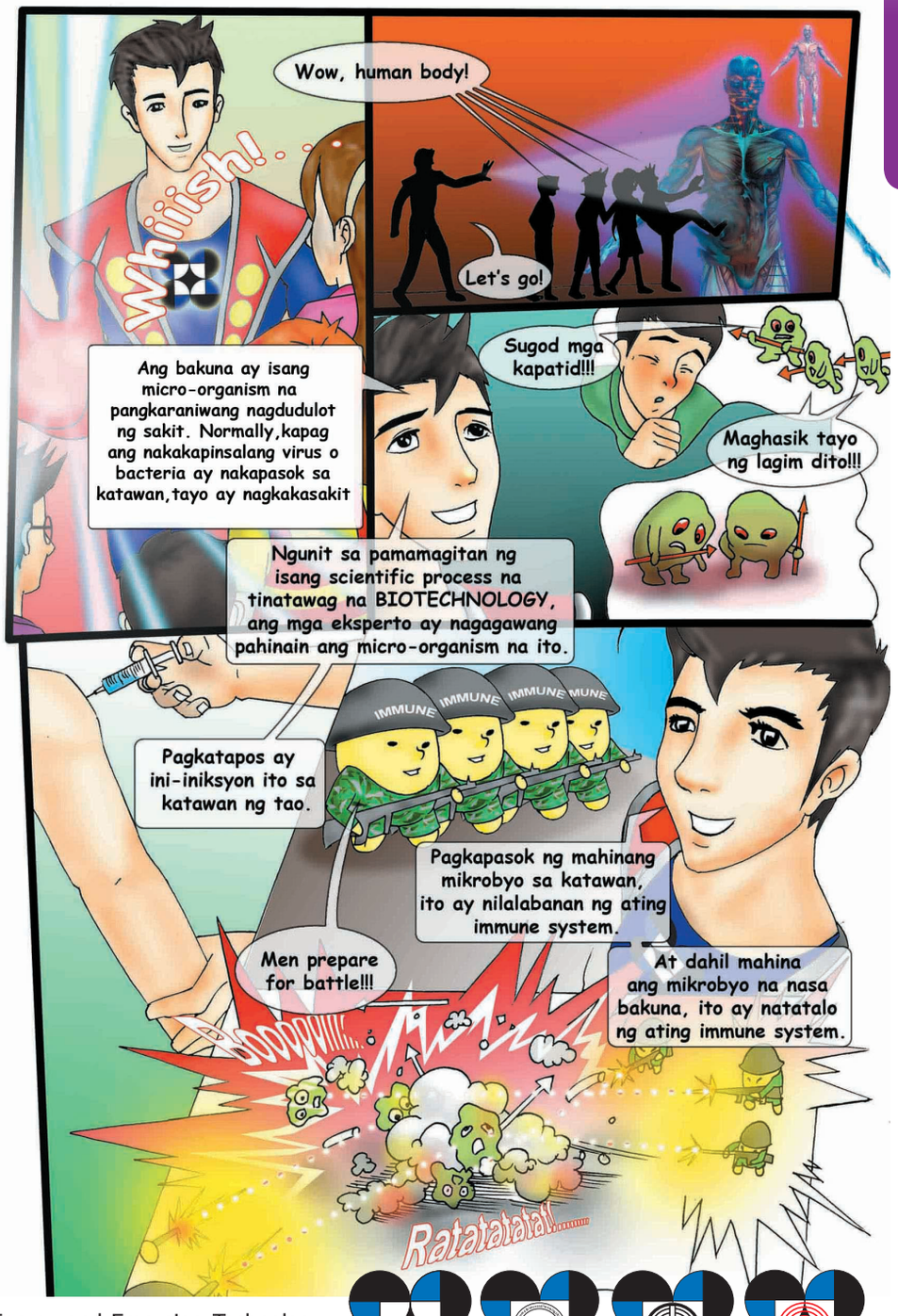
- Gender, Science and Technology, Londa Schiebinger, Professor, Stanford University, USA presented at the United Nations Division for the Advancement of Women, October 2010
- CHED Statistics, Higher Education Enrollment and Graduates, Discipline Group, Sex and Academic Year: AY 2005/06-AY2009/10
- Implementing Rules and Regulations, Magna Carta of Women, Republic Act 9710
- Gender and Science, United Nations Educational, Scientific and Cultural Organization (UNESCO)
- Gender News, February 2011, Stanford University
- Global Gender Gap Index 2010 Report, World Economic Forum

SI TRON AT ANG BARKADA SA DAIGDIG NG BIOTECH

Isang lathalain ng Department of Science and Technology para sa 2010 National Biotechnology Week





Ang paglimbag ng komiks na ito ay sinuportahan ng Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD). Konsepto at Kuwento ng Science and Technology Information Institute (STII).


WANTED
WANTED
WANTED
WANTED
Pagkatapos ay minamarkahan ito ng ating immune system. Sa susunod na umatake muli ang mikrobyong ito,ito ay kilala na ng ating immune system kaya natatalo muli ang mikrobyo.
Ibig sabihin ba nito, pag nabakunahan ako, di na ako magkakasakit?
WANTED
Hindi, Norty. Isang uri ng mikrobyo lang sa bawat bakuna. Kunwari, nabakunahan ka ng flu vaccine, hindi ka na magkaka-flu. Pero pwede ka pa ring magkasakit ng polio.
Kaya kelangan ko din ng bakunang polio para di ako magka-polio.
Ah, kaya pala may iba't-ibang uri ng bakuna.
Isang bakuna para sa isang uri ng sakit.
Salamat, Tron!
WHOA!
Walang anuman. Basta tatandaan nyo: ang bakuna ay mahalaga.
At mayroong bakuna dahil sa bio...bio...
BIOTECHNOLOGY
Cell
Nucleus
Chromosome
DNA
chromosome


Ano ba ang Biotechnology?
Ito ay ang paraan ng paggamit ng isang buhay na bagay o living thing upang makagawa ng isang bagong produkto o proseso na kapaki-pakinabang sa tao.
Tulad ng pagbago sa DNA ng mikrobyo upang ito ay humina at maging bakuna...
At ang pagmarka ng mga antibody sa kalabang mikrobyo.
Lahat yan ay nagawa sa pamamagitan ng biotechnology!
Marami pang produkto ang nagagawa ng biotechnology, tulad ng suka at keso. Ganun din ang insulin. Biotechnology din ang tawag sa teknolohiyang paggamit ng bakteryang kumakain ng dumi sa tubig upang ito ay maging malinis muli.
Ang galing naman ng biotechnology! Marami pala itong nagagawa para sa atin.
Katulad ng bakuna na mabuti pala para sa ating katawan.
Tama kayo diyan. Ang galing talaga ng siyensya, at ang galing ng biotechnology...
Uy, may nagtext!!!
Tit! Tit!
Si Xander, papunta na daw sya dito dahil tapos na ang bakuna ng kanyang kapatid.
Yeheeey!
THE END

A Scholar's *Response*

FOR SOMEONE like me who lives within the poverty line, I had a strong belief that education is one of the keys that will alleviate my family's condition. But getting the education that I deserve had been a struggle way back then. In 1998, there was no certainty to my high school education until the Cagayan de Oro City Water District (COWD) granted me a scholarship. I could still remember back then that my mother became teary-eyed when she heard the announcement over a local broadcast station that I got the scholarship. But the scholarship grant did not only give an impact to my parents but it also gave me hope anew. Indeed, the grant that covered my tuition, matriculation, uniform, books, projects, and even my monthly P220 allowance meant a lot.

I enjoyed the COWD scholarship at the Mindanao Polytechnic State College (MPSC) where I got my high school education. Yet, more than the monetary assistance, the scholarship grant served as my inspiration to strive harder, to be at my best, to excel. It inculcated in me that poverty is never a hindrance after all because an institution like COWD is willing to provide an equal footing for poor students who deserve the best education. It reminded me that I am never helpless because there is an institution that is willing to provide assistance to anybody who embodies determination, perseverance, and excellence.

I must admit that maintaining a scholarship was hard because there was pressure and somehow I had to maintain some standards in order to keep my scholarship. But despite the difficulty, I managed to discipline myself. I strived hard and with the grace of God, I was able to meet the expectations. My determination to be at my best and my perseverance despite the trials brought me to even greater heights.

When I graduated valedictorian at MPSC, I landed in two scholarships for college. One scholarship was from the Department of Science and Technology (DOST) and the other one was from Xavier University-Ateneo de Cagayan (XU-AdC). I can categorically say were it not for these scholarships, I perhaps bid my college dream goodbye. But because I was among the privileged few to have the scholarships, the once hazy dream of having a college degree finally became vivid. Indeed, all the hardships and sacrifice I have done paid off since the college scholarships took care of all my financial worries in college.

I must say that the scholarships awarded to me helped shape the person I am today. I would not have been an electronics engineer without the scholarship grants. Without the values that the scholarship grants instilled in me, without the learning and formation I got from the prestigious schools, without the inspiration that gave me the will not to settle with what is mediocre, I would not have been where I am today. With this, I would be forever grateful to all the patrons who in one way or another paved the way for the realization of my dream and my family's dream as well. You will always be a part of what I am, where I am, and what I will still become. To all my patrons, a million thanks for sculpting my life into a beautiful masterpiece! And most of all, to God, an infinite thank you for the provision of the things that I need and the things that I truly deserve. Thank you as well for letting me taste the best things in life.

> Without the inspiration that gave me the will not to settle with what is mediocre, I would not have been where I am today.

Raymond Paasa Dalay, ECE
XU-AdC BSECE Batch 2007
DOST Scholar 2002-2007

Editor's Note:
This is a letter emailed to DOST's account. We felt from the deep gratitude of the sender how DOST's scholarship program made an impact to his life. We now share it to you with hopes that it will also inspire others

Photo by: Framelia V. Anonas

The winners in PCAMRD's NARRDS best Paper Awards with AGHAM Partylist Representative Angelo B. Palmones (ninth from left), DOST-PCAMRD Executive Director Cesario R. Pagdilao (6th from left), and DOST Undersecretary for Regional Operations Carol M. Yorobe (rightmost).

DOST Undersecretary for S&T Services Fortunato dela Pena (right) with Philippine Ambassador to Austria H.E.Ms. Lourdes Yparraguirre (middle) and Sharon Rivera (left), alternate representative to the International Atomic Energy Agency. All three represented the Philippines in the 54th session of the General Conference of the IAEA in Vienna, Austria.

ASEAN delegates consolidate results of R&D mapping for infectious diseases. (From left, seated: Mr. Jun Nakagawa, Technical officer of WHO WPRO; Dr. Bernadette Ramirez, Lead Scientist of WHO TDR; Dr. Le Tran Binh, ASEAN SCB Chair; Dr. Carol M. Yorobe, Focal Point for the Philippines of the ASEAN Sub-Committee on Science and Technology Infrastructure and Resources Development, and Undersecretary for Regional Operations, DOST; H.E. Mr. Lim Kong, Undersecretary of the Ministry of Mines and Energy in the Kingdom of Cambodia; Dr. Jaime C. Montoya, Focal Point for the Philippines for the ASEAN Subcommittee on Biotechnology and Executive Director of PCHRD-DOST. With them are the ASEAN representatives.

Photos by: Alan C. Taule

The PAGASA wind profiler launched. DOST Secretary Mario G. Montejo led the inauguration of the PAGASA wind profiler on March 1 at the DOST-PAGASA grounds. This weather observing equipment uses radar or sound waves to detect the wind speed and direction at various elevations above the ground. Readings are made at each kilometer above sea level all the way to the troposphere, or the area between 8 and 17 kilometers above sea level. Data gathered from this equipment provides a more comprehensive reading useful for meteorological forecasting and timely reporting for flight planning. Left photo: Sec. Montejo leads the ribbon-cutting ceremony with DOST Undersecretary for R&D Graciano P. Yumul, Jr. (left), and PAGASA acting administrator Nathaniel Servando and DOST Undersecretary for Regional Operations Carol M. Yorobe. *(Alan C. Taule, S&T Media Service)*

Ignite the mind

DOST, twenty eleven and beyond.