

SMARTER

Smarter Environment

Smarter Countrysije Smarter Economy

> Smarter Mobility

> > Smarter Living

> > > smaxter Cities

Smarter People

SmarterPhilippines

Quixotic as it may be

To dream the impossible dream To fight the unbeatable foe To bear with unbearable sorrow To run where the brave dare not go

Yes, this is the quest!

These first four lines of the old song 'The Impossible Dream" from the movie Don Quixote dela Mancha, a 1947 classic film, are a fitting introduction not only to the story of the DREAM project but also to the people who strive to reach what others might have called the impossible.

When the first few souls were "willing to march into hell for a heavenly cause" in order to sell the idea of the DREAM project, which by the way stands for Disaster Risk and Exposure Assessment for Mitigation, many an eyebrow raised that almost reached the stratosphere. And people were probably muttering that no Filipino can be good enough to engage into something as highly technical as what was proposed. Unfortunately for those non-believers, the DREAM project has already caught the attention not only of the powers-that-be but even the most ordinary of us Filipinos.

Despite such skepticism, the project has now become one of the more high profile components of the equally celebrated NOAH or the Nationwide Operational Assessment of Hazards that has put the Department of Science and Technology (DOST) into the limelight. It has also made the DOST a specimen under the microscope.

Perhaps, what has made DREAM as exciting as it is now may not only be the 3D maps it generates but also the information it shares that would help ensure the country's survival and future in an era characterized by extreme and rapidly changing climate. The maps would be useful in completing the flood models of our major river basins that actually cover 33 percent or about one-third of the land area of the entire Philippine archipelago.

What makes the project extraordinary is the fact that the DREAM team is composed of Filipino scientists and engineers; and it works at the interface of science, technology, and social science in order for the country to be capacitated for disaster preparedness and mitigation. The DREAM team said, "We may not be able to stop nature but we can prevent natural hazards from turning into a disaster" and impressed that the project taps on current climate science knowledge using state-of-the-art technologies for flood hazard mapping such as ISIS and LiDAR, among others, that can generate and communicate reliable and timely data for more accurate forecasts and impact scenarios. Their goal is to provide local government units and communities, especially those in the more vulnerable areas for sufficient lead time to prepare and respond appropriately.

The NOAH and DREAM are only two of the stimulating inputs to a bigger and more ambitious DOST initiative called "Smarter Philippines", and DOST Secretary Mario G. Montejo has promised more and exciting developments in the days to come as regards "smarter" actions. Another feature of the project worth emulating is the strong partnership it has developed between and among the DOST and its agencies such as the Advanced Science and Technology Institute, Philippine Atmospheric, Geophysical, Astronomical Services Administration, Philippine Council for Industry, Energy and Emerging Technology Research and Development, and the Philippine Training Center for Applied Geodesy and Photogrammetry of the University of the Philippines.

For the first quarter issue in 2013 of **The Post**, a more detailed discussion about the project and one of the technologies it uses – the LiDAR – have been reserved for the centerfold. More news and feature articles are highlighted to show how serious the Department is in developing excellent products and services – all for the benefit of the Filipinos.

Then maybe, Mark Twain was right after all when he said, "Keep away from people who try to belittle your ambitions. Small people always do that, but the really great make you feel that you, too, can become great."

Aristotle P. Carandang



VOL. XXXI No. 1

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The S&T Post is published quarterly by the Science and Technology Information Institute-Department of Science and Technology (STII-DOST) with editorial office at DOST Complex, Gen. Santos Avenue, Bicutan, Taguig City.

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OUR COVER

The S&T Post cover for this quarter is an artist's concept of how the Smarter Philippines umbrella program, through ICT, will tie together all major programs of the Department of Science and Technology clustered under seven major programs. At the end of the road, Smarter Philippines will see every Filipino enjoying a better quality of life, and the whole country benefiting from a better economy, better socioeconomic condition, and better prospects in the global arena.

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Smarting up Pinoys in Smarter Philippines

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

Mang Juan as they passed by the row of durian vendors. "Ambot," (I don't know) replied Mang Juan, shrugging his weary shoulders.

"Maybe just another government project that does not reach us," murmured Mang Juan in Bisaya.

But "Smarter Philippines" is not just "another" government project. It is DOST's umbrella program that will eventually lead to inclusive economic growth. In short, "Smarter Philippines" will help Mang Juan and Aling Maria plus their whole family, and even their neighbors, have a better quality of life in the future.

Just how, you ask. "Smarter Philippines" is DOST's latest foray in pushing the country's productivity, bringing in more jobs especially in the countryside, and building a better environment to improve every Filipino's life through science and technology. Launched on February 20, 2013 at the Marco Polo Hotel in Davao City, "Smarter Philippines" is the vehicle toward more efficient and reliable services in several sectors. At the finish line are world-class quality of products, services, and human resource, powered mainly by information and communication technology or ICT.

Better way of doing things

"At its core, 'Smarter Philippines' is a mindset – a conscious effort, a passion if you will – of continually finding better ways of doing things, a smarter way," DOST Secretary Mario Montejo said as he introduced the grand program to various sectors that attended the launch.

"For us at the DOST, this means leveraging science and technology to come up with new and better products, processes, services, and systems which will have the primary objective of improving Filipino lives," he added.

"This will be DOST's 'trademark program," he continued. "As an umbrella program for various ICT-driven projects, it will harness ICT as an enabling tool to attain this giant goal." The program will comprise several components such as Smarter Government, Smarter People, Smarter Economy, Smarter Mobility, Smarter Environment, Smarter Living and Smarter Cities.

As its name denotes, "Smarter Philippines" embeds intelligence into systems and infrastructures through ICT, making them in reality smart systems and infrastructures.

Sec. Montejo said the program will push the shift of paradigm from the Information Society to an even more revolutionary "smart society." It is anchored on President Benigno Aquino III's social contract spelled out in the National Development Plan.

In particular, "Smarter Philippines" is DOST's pitch for poverty alleviation and inclusive economic growth. It is not just for the industry and other institutions, it is mainly crafted for Aling Maria and Mang Juan.

Smarter Government

Smarter government is achieved through the project iGovPhils that will



MAIN FEATURES

DOST partners with UN-Habitat for Humanity (left). Sec. Mario Montejo introduces the concept of Smarter Philippines during the program launch on February 20, at Davao City

"At its core, 'Smarter Philippines' is a mindset—a conscious effort, a passion if you will—of continually finding better ways of doing things, a smarter way," DOST Secretary Mario Montejo

enable different government offices to provide better quality and reliable services to their respective clients such as Aling Maria and Mang Juan. The project will put relevant mechanisms to come up with interactive, interconnected and efficient government collaboration.

"The iGovPhils will enhance the e-capabilities of the government in addressing the President's call for transparency and service efficiency," Montejo said. "This is a significant step towards true e-governance."

Having a Smarter Government means that all government agencies will work with interoperable information systems and secure capability enhancing applications, such as Public key Infrastructure for data encryption, National Payroll System, Government wide email system, National Records Management and Information System and secure electronic payment facility.

iGovPhils will also integrate existing systems and information systems currently under development such as the Government Integrated Financial Information System, Philippine Government Electronic Procurement System and the Human Resource Management Information System.

Smarter government also cascades down to the communities through the e-LGU project.

For Aling Maria and Mang Juan, this will mean less queues when getting permits, birth and marriage certificates, passports, residence certificates, and other common government transactions. It will also result in less travel time as government transactions such as NBI clearances, driver's license, and others can already be processed in more accessible places such as malls and satellite offices. Aling Maria and Mang Juan will also avoid bureaucratic red tapes as Smarter Government is implemented. In the end, Aling Maria, Mang Juan, and all Filipinos will have improved interactive relationship with the government because of the increased transparency, efficiency, and trust in the government brought about by enhanced e-government systems.

Smarter People

This component aims to develop knowledge workers with 21st century skills (*Please see related article on 21st century skills*). The industry needs a different set of skills from workers now compared with a decade ago to cope with various technologies and developments that have occurred in recent years.

In Smarter People, DOST will work with the academe and the industry to come up with programs that will infuse the needed skills to students in preparation for their future IT-related careers, as well as to those who are currently in the industry.

Moreover, DOST has its scholarship program in place, from secondary and tertiary education up to post-graduate. Currently, DOST is working on solar powered, cloud top, thin client PCs for public schools.

Aling Maria and Mang Juan's children, as well as their circle of friends, will benefit from this program as they avail of trainings and even ICT-enhanced academic scholarships that will prepare them for their careers.

Smarter Economy

Smarter economy simply zeroes in on developing small and medium enterprises (SMEs) nationwide in terms of productivity, innovative spirit, entrepreneurship, connectivity to the global economy, economic image and trademarks, and even influence. DOST's Small Enterprise Technology Upgrading Program (SETUP) will be the vehicle in driving towards an energized economy. SETUP consists of a package of assistance to SMEs to adopt technological innovations for the improvement of their operations and increase their productivity and competitiveness. The assistance includes 1) infusion of appropriate technologies to improve operations; 2) human resource training, technical assistance and consultancy services; 3) design of functional packages and labels; 4) assistance in the establishment of product standards including testing; 5) database management system; and 6) provision of limited funds for technology acquisition.

SMEs form the backbone of the Philippine economy, comprising 99.6 percent of registered firms in the country that employ about 70 percent of the Filipino labor force. This sector contributes around 32 percent to the country's economic growth. This means that the success of SMEs will benefit the rest of the country, including Aling Maria and Mang Juan, which is why it is important to make these firms smarter.

If Aling Maria and Mang Juan have a business of their own today or later, they themselves can avail of the SETUP and enjoy its benefits. If they work in a SETUPassisted firm, they will enjoy increased wages and benefits as a result of the firm's increased productivity and product quality.

Smarter economy also spans across agriculture and aquaculture to address food security, as well as to the industry to make available important technologies usually sourced abroad, such as failure analysis facilities, and provide them at lower cost. This is just a few winks away from happening as the Advance Device Material and Testing Laboratory or ADMATEL is getting readied for the electronics and semicon industries.

With such support for the industries, Aling Maria and Mang Juan will be able to

Smarting up . . . from page 5

purchase gadgets such as mobile phones and computers at a much lower price.

Smarter Mobility

The smart transport system will provide our motorists traffic information including actual traffic flow in roads and other thoroughfares in kilometers per hour. Systems will also point to best route to take when travelling from point to point, including estimated travel time. There will also be image processing techniques and traffic simulation software to accurately measure travel time and traffic flow. This information will all flow to the traffic signaling control software to further enhance its intelligence.

Thus, in Davao City's congested streets, smarter mobility would do best for Aling Maria and Mang Juan who have to brave the traffic to get into the market early. Intelligent systems will help them choose the best routes, get into their destination on time, make their customers happy, and bring home the bacon... or the fried fish.

Still another smart solution to the clogging up of streets is mass transport via the Automated Guideway Transit System or simply AGTS, designed by DOST engineers in consultation with UP experts. The AGT stimulates the economy by reducing costs, speeding up the movement of people, and developing an industry. AGT is also environment-friendly because it has no emission as it runs on electricity.

Smarter Environment

Climate change is one worldwide phenomenon that people have to adapt to. The changing weather patterns and conditions need to be understood to avoid damages and loss of lives and property. One tool that can help people and decision makers do the right move is Program NOAH, an early warning system that is proving itself crucial in making people aware of weather conditions, particularly the possibility of rain, the amount of rainfall, how long it will rain, and location of floods.

No less than Pres. Benigno S. Aquino III said that, through Program NOAH, "forecast of rain intensity will no longer depend on speculations but on sound data that will come from the rain gauges installed all over the country. Water level sensors will give us the exact level of rainwater, while Doppler radars will give us real time information."

These information serve as basis for decision makers, such as local government executives, in coming up with important announcements such as suspension of classes of Aling Maria's kids and even office works of her customers. Most especially, the information will serve as basis in the evacuation of residents in affected areas, giving the local government and residents enough time to prepare for evacuation and avoid any danger of floodwaters rising.

One vital component of Program NOAH is the development of 3D maps through the Disaster Risk and Exposure Assessment for Mitigation or DREAM Program. The 3D maps are created via a technology called Light Detection and Ranging or LiDAR and will be used as basis in developing flood hazard models to warn communities in advance of potentially deadly floods.

Smarter environment will make Aling Maria and Mang Juan safer and more confident with the authorities' pronouncements during disaster.

Smarter Living

Smarter living relates to health, a basic concern that must be addressed at the individual level. Currently, there are still communities that are beyond the reach of health specialists, receiving only very basic medical services or none at all. Through ICT, DOST is putting in place systems and developing equipment that will make health services more accessible and even affordable to every Filipino. One of these is DOST's telehealth initiative to enable patients like Aling Maria and Mang Jose, and even medical professionals, to remotely consult with medical specialists somewhere in the globe in real time via the Internet.

The RxBox, proudly Filipino-made tablet device, will be an important tool for diagnosing diseases and illnesses, and managing disease data. Meanwhile, the eHealth portal will provide public health professionals, policy makers, decisions makers, and other key individuals and institutions to find important information, identify healthrelated concerns, make informed decisions, and propose solutions based on specific data found in the eHealth portal. Thus, it is not only Aling Maria and Mang Jose who will enjoy the benefits of Smarter Living but also their community and the rest of the communities in the country.

Smarter Cities

According to Sec Montejo, a smarter city constantly assesses how it performs in key areas, such as governance, the economy, the environment, citizen mobility, people or human resources, and how they live. A smarter city is also an instrumented, interconnected, and intelligent city.

"It strives to make itself 'smarter' by being more efficient, more innovative, more sustainable, more participative and equitable, and more livable," said Montejo. "All of these improvements will be via strategic use of the convergent technologies enabled by ICT."

Should Davao City become a smarter city, Aling Maria and Mang Juan will have better living conditions, socially and economically.

Smarter Davao City, a picture

Picturing a sample "Smarter Philippines" scenario in Davao, Sec. Montejo said, "Imagine all of Davao's barangays having broadband internetconnectivity, and people are accessing various government services, from e-payment and cashless transactions, for everything from a *cedula* to a passport to a business permit."

Imagine Davaoeños flocking to barangay health clinics to avail of e-health care services, watch a live consultation with a foreign specialist on the TV screen, and access important health information via mobile diagnostic tools. All these can be had when "Smarter Philippines" becomes fully implemented.

A smiling girl handed Aling Maria a brochure introducing "Smarter Philippines" and how it could help improve the lives of all Filipinos. Aling Maria browsed through the pages and, after a few minutes, gazed at Mang Juan. With a knowing smile she told her husband, "Makatabang kaayo kining proyektoha." (This project will help us a lot.)

As the couple made their way to work, Aling Maria could not help but beam from the thought that, very soon, she could try the "Google" and find her relatives over Facebook while checking out Program NOAH for the day's weather.

Togged! Generating data via RFID has never been as light

By ALLAN MAURO V. MARFAL S&T Media Service, DOST-STII

Radio Frequency Identification (RFID) technology could make the implementation of Department of Science and Technology (DOST)'s umbrella program Smarter Philippines more efficient and reliable, so said DOST's Information and Communications Technology Office (ICTO) Executive Director Louis Napoleon Casambre, in his opening remarks at the 2013 RFID Technology Awareness Workshop held at the ICTO-National Computer Center Building, Diliman, Quezon City.

To those a little late in technology information, RFID refers to any electronic device that uses radio waves to speed up the transmission of communication data for the purpose of identifying and sometimes locating and or sensing the conditions of objects, whether animate and inanimate.

The RFID is most commonly used nowadays in coffee and tea shops to tag customers as they wait for their orders to be prepared and handed to them. It is a small device, like a mini-saucer with small lights dotting its surface. Through the use of electronic codes, sensors, and other accessories, the RFID blinks when the customer's orders are ready for pick up at the counter.

The RFID is also used by motorists to indicate their location in an area.

"We believe that the RFID technology can complement the DOST's Smarter Philippines program, the essence of which is the effective generation, gathering, and analysis of data to enable timely and effective decision making and planning," Casambre said. "This leads to overall socioeconomic development."

RFIDs are important gadgets in the Program NOAH or Nationwide Operational Assessment of Hazards that uses DOST Smart sensors similar to those being developed by DOST to monitor weather and geological conditions, vehicular traffic flow, soil and water quality, and others will all be RFID devices.

developed monitoring sensors such as Automated Rain Gauges and Automated Weather Stations. These facilities transmit real-time data on the amount of rainfall, temperature, pressure, humidity and wind speed, direction, and velocity. RFIDs are also important in NOAH's DREAM project that uses Light Detection and Ranging (LiDAR), an equipment designed to survey the entire topography of the Philippines at very high resolution.

Casambre explained that smart sensors similar to those being developed by DOST to monitor weather and geological conditions, vehicular traffic flow, soil and water quality, and others will all be RFID devices.

"RFID is one of the most ubiquitous technologies in the world today, aside from

being an essential component of the global supply chain," Casambre said.

"Mobile phones and tablet devices have at least two RFIDs in them in the form of IMEI numbers, Bluetooth, and Wifi addresses. Each one of these devices is unique, and the RFIDs identify said devices to other devices and networks," he added.

RFIDs have been available for commercial use in the past decades, with significant contributions in industries such as logistics, and in manufacturing and retail, particularly in helping keep up with the demands of the information age. Using radio frequency to tag devices, people, and other objects saves time and keeps manpower costs down, and generally contributes to improving customer experience.



ICTO Executive Director Louis Napoleon Casambre explains the possible benefits of RFID technology. (Photo by Allan Mauro V. Marfal, S&T Media Service, STII)



Are you apt for the job? Arm yourself with 21st century work skills

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

Lenuel, 32, came home tired and hungry. He just went through a stressful day at the call center – for exam and interview. Yet again, it was a thumbs down. Armed with a college diploma, a professional license, and a high IQ, Lenuel appears to be a model applicant, if there is one, for the good credentials he has in his resume.

He pulled up the Classifieds section of a newspaper lying on the sofa and immediately noticed the attractive advertisement of another call center. He folded the page and carefully put it inside his body bag. Tomorrow, he will again try his luck.

Yet at the back of his mind was the thought that his application will again be nixed just like before. Report from the Business Processing Association of the Philippines (BPAP) indicates a 95 percent mortality rate among call center and BPO applicants. This is an alarming trend. Think of 100 candidates queueing for application and interview, and only five of them get hired.

So what is making Lemuel unmarketable to this sector which, at the outset, does not discriminate in age, sex, and socio-economic status? Perhaps Lemuel, being one of the 95 percent mortality, lacks the right skills.

With the Philippines topping the call center and business process outsourcing (BPO) industries in Asia, there are so many job opportunities that await the right candidate. However, the companies just can not find the right people with the right skills for the number of jobs offered.

Need for smarter people

"We need to develop 'smarter people' to keep abreast with the developments," said Department of Science and Technology Secretary Mario Montejo. "Developing smarter people means building up knowledge workers with 21st century skills."

Developing "smarter people" is one of the components of DOST's latest umbrella program called "Smarter Philippines" which aims to facilitate and deliver more effective and efficient services in several sectors.

Other components of the program include Smarter Government, Smarter Economy, Smarter Mobility, Smarter Environment, Smarter Living and Smarter Cities.

"For us at the DOST, 'Smarter Philippines' means leveraging science and technology to come up with new and better products, processes, services, and systems which will have the primary objective of improving Filipino lives," Montejo added.

"'Smarter people' are in a nutshell information technology-oriented," explained Dr. Alejandro P. Melchor III, deputy executive director for ICT Industry Development of the Information and Communications Technology Office (ICTO), DOST's lead agency in handling the BPO sector.

Smarter people, in short, are what the BPOs and call centers need.And these are the skills they are looking for: 1) critical thinking; 2) effective written oral, multimedia, and multilingual communication skills; 3) collaboration across networks; 4) creativity and innovation; 5) accessing and analyzing information; 6) initiative and entrepreneurialism; and 7) agility and adaptability.

Critical thinking

"The most important skill that BPOs are looking for in every worker is critical thinking," said Melchor.

"This refers to having a modern scientific mind," he added. "Science and technology is a wonderful way of developing critical thinking skills. Engineers, for example, think this way." Nowadays, there is a glut of information that can be instantly accessed. Critical thinking is what makes a person able to discern new challenges and opportunities out of this info glut. Critical thinking skill is what one needs in order to make high-impact decisions with clarity and confidence; think strategically in order to anticipate, initiate, and manage change; solve problems; and embrace risk and rejection as needed in entrepreneurial thinking.

Effective communication

This skill is the foundation in building a good career and lasting success, according to the American Management Association.

The 21st century worker needs to be able to express himself or herself whether face-to-face, via media, or via Internet such as e-mail exchange or online forums. BPOs and call centers communicate and coordinate with people of all nationalities. Thus BPO workers must have flexibility in dealing with people of various age groups, ethnicities, socioeconomic conditions, and profession.

Effective communication does not only mean being able to express oneself but also being able to listen to others.

"If we learn to listen to other people, there are so many things that you learn," emphasized Dr. Alice Joan Ferrer, executive director of the Regional Health Research and Development Consortium – VI, an advocate of listening skills development.

Presentation skills also count, which means today's worker should be able to speak well before an audience. As well, he or she should be able to assert his or her authority and earn the respect of other people.

Workers of today should also be familiar with multimedia platforms and should also be multilingual. For younger people like Lemuel, being savvy with the Internet, mobile phones, and other media commonly used in communication is definitely an essential skill. And, of course, it pays to be highly conversant in Filipino and other local dialects, plus English, which is the lingua franca in the world of BPO.

Communication is a two-way street, and if one can walk comfortably on this street, he or she is on the way to achievement.

Collaboration across networks

Management experts say that collaboration is no longer the same today as it was 20

years ago. Before, project collaboration across countries was a highly tedious task. But thanks to today's global economy, highspeed communication modes have enabled teams from various locations across the globe to work together virtually.

As such, today's workers like Lemuel, should get familiar with learning other people's methods, cultural references, and work habits to ensure effective collaboration. Learning to trust others in the midst of a virtual environment is also essential, as communication is only done via e-mails,net meetings, and conference calls with little or no personal interaction.

In network collaboration, today's worker should also be able to influence others which is a crucial leadership asset. He or she should also have a fair understanding of what is going on in the world in order to become an active and informed teammate and leader.

Creativity and innovation

Today's global economy has spawned so much progress and development in all facets of life. Alongside, this development has also produced unique problems that need new solutions. Yesterday's ideas are passé. What the industry needs now are creative and innovative people who can think out-of-thebox and attack problems from a new angle. In one BPO company for example, employees are enjoined to a monthly contest for most creative ideas that can be applied in the office and without the need for additional funds. Winners often receive monetary prize which, according to an insider, is not the main motivation in coming up with zany but practical ideas. "What is important is the recognition of our creativity," he said, "as this adds up to our reputation and value as workers."

Thus for Lemuel and other BPO hopefuls, they should be able to hone their planning skills and generate ideas; develop abstract thinking by exploring relationships, patterns, and association; and maintain curiosity.

Accessing and analyzing information

According to Mike Summers, vice president for Global Talent Management at Dell,"There is so much information available that it is almost too much, and if people aren't prepared to process the information effectively, it almost freezes them in their steps."

In this light, it is important for Lemuel to know where to find the right information at the fastest possible time, distinguish between fact and opinion, evaluate the relevance and

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Want to work in the call center and BPO industries? Consider the following facts.

According to the Business Processing Association of the Philippines (BPAP):

- Most outsourcing companies screen their applicants based on their English proficiency, learning ability, computer literacy, and speed and accuracy.
 - The most crucial factor in hiring applicants is communication skills.
 - Other areas measured are behavior, learning orientation, courtesy, empathy, and reliability.

According to the People Management Association of the Philippines, in across 28 industries in the country, research show that:

- 88 percent of overall job vacancies require college level candidates.
- 87 percent of job vacancies need only one to two years of experience
- > 50 percent do not require any experience at all
- 65 percent of job vacancies were entry level jobs
- Said job vacancies were not filled by fresh graduates because they lacked the skills and knowledge for the positions.
- 49 percent of the job vacancies remain unfilled because the right candidate could not be found.

Technopreneurship will keep ICT talents home

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

"We want to bring back our talents, keep them here in the Philippines and build their business here."





Representatives from ERDT's eight member universities and industry stakeholders attend R & D Summit 2012 held last December at the Diamond Hotel Manila. The event served as a venue for the ERDT consortium, a program of DOST, to present its agenda for research and development covering the following sectors: energy, environment, semiconductor and electronics, ICT, and manufacturing. (Photo by Gerry Palad)

The Department of Science and Technology's Engineering Research and Development for Technology (ERDT) Program revealed the need to promote a culture of "technopreneurship" among IT students and professionals in the country to keep them home.

"We want to bring back our talents, keep them here in the Philippines and build their business here. It's one of our objectives," said Dr. Adrian Roy L. Valdez, who, along with Dr. Ariel C. Blanco, heads the ICT track of ERDT which is pushing for the country to be at the forefront of IT services and management worldwide.

According to Valdez, technopreneurship orientation among our local ICT talents will keep them from seeking employment abroad and instead make them more globally competitive right on Philippine soil.

ERDT is a consortium of eight universities, namely: University of the Philippines Diliman, University of the Philippines Los Baños, Ateneo de Manila University, De La Salle University, Central Luzon State University, Mapua Institute of Technology, Mindanao State University-Iligan Institute of Technology, and University of San Carlos.

The advocacy for technopreneurship was presented during a discussion of ERDT's four-year agenda for its ICT track at the R & D Summit 2012 held last December at the Diamond Hotel Manila. With the theme "Strengthening Synergies between Industry and Academe towards a Needsbased Research", the summit unveiled the results of ERDT's current partnerships with the academe and other sectors as far as its research and development (R & D) activities are concerned.

One of the ICT industries now gaining popularity is game development, a multibillion dollar global industry. Though the

FEATURE NEWS

Dr. Adrian Roy L. Valdez explains ERDT's Research and Development Agenda, as well as Manpower Development Agenda, for the country's ICT sector and enjoins young Filipino IT graduates to become "technopreneurs" in their own country instead of seeking greener pastures overseas. (Photo by Gerry Palad).

Philippines is fast catching on with this trend with some 60 companies established as of December 2011 and a bright future waiting in the wings, it was suggested that IT graduates, professionals and entrepreneurs should not focus on game development alone, rather should extend their sights toward the entire ICT track instead.

Skills needed in ICT industry

Thus, to further boost the capabilities of local manpower, ERDT has identified a set of soft skills and software engineering skills as pre-requisites to joining the ICT industry. These are English communication and presentation skills, adaptability to different foreign cultures, competence in project management, change management, requirement analysis, product development cycle, and documentation. Other required skills are problem-solving skills, adaptability to various programming languages, and knowledge in database management, data structures, data analytics, distributing and networking, and computer organization and architecture.

This required skillset for IT specialists was formulated following discussions and interviews with government agencies and private companies: namely PAGASA which is a service institute of DOST, Philhealth, Commission on Higher Education, Department of National Defense, Meralco, Procter and Gamble, Hewlett Packard, Deutsche Bank, IBM, Accenture, and other private firms.

According to Dr. Valdez, having these qualifications will make IT graduates



better prepared for the globally oriented workplace fast adapting to constantly evolving technologies.

ICT R&D agenda

In addition to its manpower development agenda, ERDT likewise presented its research and development agenda during R&D Summit 2012, covering three major areas of research: data analytics, information management, and hardware solutions. Among the hardware resources which ERDT plans to look into as possible solutions are cloud computing, high performance computing, invisible computing, and embedded system such as robots and smart sensors.

Through these research initiatives, ERDT hopes to come up with high-impact software and hardware products targeted to increase the productivity of government agencies and business establishments, as well as boost the quality of their products and services. Among these products are decision support systems, information management systems, intelligent systems, visualization systems, geographic information systems, RFID technology, and artificially intelligent machines.

ERDT likewise presented its agenda for its four other research tracks during R & D Summit 2012, namely: Energy, Environment and Infrastructure, Semiconductor and Electronics, and Manufacturing and Machinery. The consortium is currently undertaking 58 research projects funded by DOST in the amount of Php 500 million. Aside from R& D, ERDT also focuses on faculty development, infrastructure, and scholarships.

Arm yourself . . . from page 9

importance of other people's arguments, and know what to do with information that are conflicting, inadequate, and ambiguous.

Initiative and entrepreneurialism

This skill basically refers to one's ability to translate ideas into action. Having this flair means one has to have bucketfuls of creativity, innovation and risk-taking, and a deep well of planning and managing skills in order to achieve objectives.

Today's corporations have evolved from being top-down to a "flattened" model, thus employees are often left on their own to figure things out. Thus the mindset of the boss having all the information and the solutions to problems is already obsolete. Workers today need initiative and to do things without being told, including offering creative solutions to the company's unique problems.

Flexibility and adaptability

According to Clay Parker, president of Chemical Management Division of USbased BOC Edwards, companies constantly reorganize because of various changes and, because of this, some jobs may change or may even be phased out in the future. Thus this changing condition makes "adaptability and learning skills more important than technical skills," Parker said.

We Filipinos are known for our flexibility and adaptability, skills that Lemuel and today's workers should continue to harness. These skills entails being able to think critically, handle changes and tough situations, find solutions and deliver results especially in first-time situations, do various tasks simultaneously while understanding others' situations, and accepting responsibility.

Flexibilty and adaptability are very important, as good opportunities come to those who are willing to relocate or move from one position or job to another. This is one mark of a person's good managerial and leadership skills. Moreover, agility and adaptability make employers confident of their workers, trusting them to be stable even during turbulent times. Employers are also certain that their workers are able to cope with new and challenging responsibilities if the employees like Lemuel are agile and adaptable.

21st century skills

Today's businesses do demand more from the current crop of workforce. The 21st century skills are critical factors that affect the chances of applicants' success. However, these skills are rarely taught in traditional schools.

Educators should then be familiar with the current needs of the industry and infuse the development of these skills in their lessons. With a little creativity, students can actually catch on these skills when they go through relevant learning experiences.

MAIN FEATURES

Bigger opportunity in IT-BPO careers



The Department of Science and Technology's Information and Communications Technology Office (DOST-ICTO), industry partners, and a number of local government offices are pushing for Information Technology – Business Process Outsourcing as a career option to people, especially the youth, living in the regions.

Thus, ICTO in partnership with the Business Process Association of the Philippines, held a series of ICT road shows in selected cities of various provinces to introduce the IT-BPO sector and some of its key players and to promote the career field. One of the aims of the road shows too is to make people understand that it is not only call centers that compose the BPO industry but also other outsource sectors.

Cities that hosted the road shows include Palayan City, Tagbilaran City, Legazpi City, Bacolod City, Zamboanga City, and Davao City. In said road shows, players, experts, and executives from the IT-BPO sector shared their success stories and industry benefits from industry to participants, mostly graduating high school students with their parents.

Jesse Rebustillos, who currently works at Philippine Daily Inquirer Classified Ads section, credited his employer for giving him a chance to attend several trainings and workshops in the past to improve his skills as IT practitioner.

He said that as he was exposed to various industry conferences and seminars provided by his employer in the past, he was able to meet the relevant people in his industry and enabled him to be updated in the emerging trends.



Now, he is an IT project manager and handling a team of web developers and SEO specialists. For him, it is a very challenging and gratifying task and that's what makes his career much more colorful and enjoyable.

"Imagine being able to train young talents and being able to equip them with the knowledge, skills and attitude for them to be accepted in the global job market. For me that is career satisfaction at its best," Rebustillos said.

Meanwhile, Rosalie Buenaagua, SEO Specialist and a resident of Legazpi City, expressed her gratitude on the significant contributions made by the series of ICT road shows held in their province that helped communities there to increase their awareness about different careers in ICT.

"Dito sa Albay before, very vague ang idea ng call center and I am very thankful to the prime movers of the BPO industry who are here like Ms. Rey. Dahil sa kanya nakilala ng paunti-unti ang industriya ng BPO at call center at nabigyan ng opportunities ang kabataan dito," Buenaagua said.

(Here in Albay before, the idea of call center was very vague....Because of her, the industry is being recognized little by little and the youth are given opportunities.)

She also encouraged parents that aside from time, they should also invest on computer and internet for their children, which will eventually help young graduates in many ways.

IT-BPO also offers alternative career options for other graduates, especially for those courses that offer slim job opportunities.

During his interview in the radio

program "Bago Yan, Ah!" last year, Alejandro P. Melchor III, deputy executive director for ICT Industry Development of ICTO pointed out that in the IT-BPO field, four fast growing sectors are emerging, aside from the call center sector. These include the Healthcare Information Management Outsourcing, Finance and Accounting Outsourcing, Human Resources Outsourcing, and Animation and Game Development Outsourcing.

The Philippines could be a world leader in the said outsourcing sectors in the coming years, according to Melchor.

In the recent years, the country has produced sufficient number of students and graduates of Nursing, Information Technology (IT) and other multimedia related courses to fill up the need of the IT-BPO Industry.

Healthcare IT-BPO careers have expanded into various disciplines that open windows of career opportunities for nursing graduates and allied medical professionals. Through the IT-BPO sector, these professionals can opt to take alternative careers such as medical transcriptionists, medical secretaries, medical coders and billers, medical assistants, medical representatives, medical butlers and clinical research associates.

There is a big job prospect in healthcare insurance, even in the United States alone, as President Barack Obama's administration enacted a law that requires all American citizens to have healthcare insurance by 2014.

This is a big factor in providing opportunities for local residents, especially for those who belong to the 200,000 unemployed and underemployed nursing graduates in the country.

Upgraded water lily harvester for rivers

By GEORGE ROBERT E. VALENCIA III S&T Media Service, DOST-STII

year after the Department of Science and Technology's (DOST) launch of a locally-fabricated gizmo that can scoop out water hyacinths from river waters, the science agency is back with a much improved version. Named "Harvester II", the water hyacinthchomping gizmo is faster, more stable and controlled, and has better scooping and storage capacities. Overall, it has a more superior performance than its predecessor.

"The development of Harvester II shows that technology is highly dynamic and our Filipino engineers are highly capable of developing and improving machines that can be used in addressing pressing problems, such as the water hyacinth that congests our waterways," said DOST Secretary Mario G. Montejo. "Harvester II increases the government's capability to prevent disasters such as floods through local technologies."

The"High-Capacity Water Hyacinth Harvester", or "Harvester II", can collect triple its predecessor's storage capacity, or up to 12.5 cubic meters of plants and weeds. Its front conveyor system now consists of stainless steel mesh-type conveyor, with improved structure and mechanism for more efficient harvesting. All these, and the vessel's doubled speed, complete control gauges, increased stability at only 80 percent of its prototype's weight, plus improved aesthetics, complete the package that is the Harvester II.

Today, engineers from DOST's Metals Industry Research and Development Center (MIRDC), lead implementing agency of Harvester II, execute their final tests and modifications before its anticipated deployment this first quarter of 2013.

"Hopefully we will be able to perfect the Harvester, a machine suited to our waterways that we can reproduce and deploy soon," said Secretary Montejo.

One of DOST's High-Impact Technology Solutions (HITS), the Harvester II was developed under the



Two generations of water hyacinth collectors. The Water Hyacinth Harvester is a DOST- fabricated machine designed to remove free-floating water hyacinths in half-meter-deep rivers and waterways. The second machine, now undergoing final tests before deployment, has improved speed, stability, controls, scooping and storage capacities, aesthetics, and overall performance—a clear upgrade from its predecessor. (Photos by Henry A. De Leon and Zalda R. Gayahan, S&T Media Service, STII/MIRDC)

"MakiBayan" or "Makina at Teknolohiya Para sa Bayan" Program, through DOST-MIRDC's collaboration with the Project Management and Engineering Design Services Office and the Metalworking Industries Association of the Philippines. The Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD) funded the project, while the Society of Naval Architects and Marine Engineers served as consultants. The Laguna Lake Development Authority, Metro Manila Development Authority, and the Local Government of Muntinlupa City also provided assistance for the project's testing phase.

Weeding out water liliy, one of the world's fastest growing and most damaging plants, has remained a tall task for authorities. An exceedingly prolific aquatic plant that can render bodies of water impassable, clogged, or "dead", the water hyacinth – or "water lily" to Filipinos - has invaded many of the country's rivers and waterways. Among these are the Pasig River, the Laguna Lake, and the Liguasan Marsh of Central Mindanao. Meanwhile, the invasive specie's assault is a worldwide phenomenon as other countries in Asia, America, and Africa are also plagued by the infamous plant. (With reports from Concesa T. Cortez, MIRDC)

FEATURE NEWS

Now in the works: Dengue vector monitoring website

By LUISA S. LUMIOAN

S&T Media Service, DOST-STII



Red balloon marks indicate a high density of mosquito population. Areas with an OL trap index greater than 40 percent, marked by red balloons, must be on alert. School authorities and other concerned officials must wage an all-out clean up of breeding places and potential breeding sites, and conduct pest control. measures to prevent an imminent dengue outbreak.

Before the onset of the rainy season, the Department of Science and Technology (DOST) intensifies its dengue preventive measures by providing online information on mosquito population per community to serve as alert mechanism to concerned government offices and personnel.

In the pipeline is a dengue alert website that will enable public health practitioners to check out high-risk areas for dengue outbreaks and come up with early intervention measures. Developed by DOST through its sectoral council, the Philippine Council for Health Research and Development (PCHRD), the site is technically a "vector surveillance" tool containing data on population density and other information on *Aedes aegypti* mosquito which is the vector for dengue, or the organism that transmits the dengue virus to humans.

The population of the vector, or the *Aedes* mosquito, is reflected in the Ovicidal-Larvicidal (OL)Trap Index Monitoring Map that shows the weekly surveillance results of communities installed with the OL Trap.

The DOST-developed (OL) trap is a simple, affordable, and efficient tool for controlling mosquito population. An OL trap kit consists of a black container, a *lawanit* paddle where mosquitoes lay their eggs, and a pack of pellets used to make a solution that kills the eggs and larva of mosquitoes.



The website shows schools in Metro Manila where OL traps are installed. Clicking on the balloon will show the reported OL trap index and the corresponding recommended action.

Reports from dengue coordinators in schools installed with the OL trap are reflected in the monitoring map, which will then show areas where *Aedes* mosquitos settle, including the density of the mosquito population.

Through the weekly updates from the communities, public health practitioners can check out trends and recommend actions to be taken by policy makers and community leaders. This function puts the country one step ahead of the dengue menace, the peak season of which occurs during the rainy months.

A green balloon on the map would mean an index of less than 20 percent

which calls for close monitoring of hygienic condition and conduct of weekly inspection to identify potential breeding sites. On the other hand, a yellow balloon signals an index of 20-39 percent, which means that local officials must conduct special operations to eliminate all breeding and potential breeding places. A red balloon marks an index of 40 percent or greater, signaling concerned officials and institutions to conduct pest control measures.

DOST developed the monitoring map project in collaboration with the Department of Education, Department of Health, and Department of Interior and Local Government units.



Stepping up food authentication and integrity through DNA analysis

By MARIA JUDITH L. SABLAN S&T Media Service, DOST-STII

To check if the food is still fit for eating, Filipinos usually do it the traditional way: smell it. But though one's nose has been trained to smell spoiled food, there is a more foolproof way of ascertaining the safety of food. This more precise way of determining food fit to eat is done through the science of genomics, more specifically through a process called DNA analysis.

DNA, or deoxyribonucleic acid, is the basic molecule that carries the genetic information of all living organisms. It is not affected by high temperature and its structure remains in all tissues of a person, animal, or plant, making it an excellent material to identify organisms, even in food products. By analyzing DNAs in a certain food product, foreign species, or those organisms present in spoiled food, can be easily detected.

Thus, DNA analysis facilitates foreign species detection in food products which traditional food analysis may not notice.

According to Department of Science and Technology Secretary Mario G. Montejo, "Genomics can be a 'gamechanging tool' that could offer enormous rewards to our people."

The DOST which has identified genomics as one of its priority programs has funded researches in DNA analysis in food products by the Philippine Genome Center (PGC), a nationwide network of laboratories established by the University of the Philippines. PGC conducts tests and other activities related to species identification in food products.

As PGC Executive Director Dr. Carmen Padilla said, the PGC is "envisioned to be a world-class center of excellence in gene discovery and genomics research that effectively translates knowledge into applications beneficial to society, particularly, to the Filipino people." This includes DNA analysis to warrant food safety.

Ensuring food safety via DNA analysis

Normally, food analysis is sufficient but traits of a species such as size, shape and appearance are removed or altered due to processing, thus identifying the species of a plant or animal present in food can be uncertain.

Meat products may contain several species in different proportions, which, when mixed together, may be undetectable by the naked eye or by eating. DNA analysis is a stronger, more effective alternative to traditional methods of analyzing food.

Food adulteration

Species identification in food products via the PGC is one answer to the problem of food adulteration very common to Filipino consumers.

These days, food adulteration has become a common practice. To add bulk or volume to the product, some manufacturers as well as food processing factories purposely add different types of meat or ingredients different from what is originally required.

Recently, a big multinational company withdrew its product in the face of scandal involving beef pasta which was sold across Europe and was found to contain horsemeat. Also, Forbes reported online the widespread substitution of cheaper species of fish for more expensive and desirable ones in retail fish markets and restaurants in the United States, especially those that serve sushi.

Dangers of adulterated food

First of all, exotic or less desirable species used but undeclared in products, may pose a potential health risk to people, including pregnant women and children who are a sensitive group. This is because certain people have allergies to a particular ingredient or protein, thus consumption of an undeclared ingredient may result in serious health condition or worse, death. The same holds true for pregnant women who have to avoid certain foods which may affect their pregnancy.

Further, undeclared food adulteration or substitution may also lead to the consumption of prohibited foods by a sick person, a Muslim, or a strict practicing vegetarian.

The issue likewise poses a problem financially, as the consumer may not be getting his money's worth if a cheaper substitute is used in place of a supposedly more expensive yet higher quality fish or plant ingredient.

DOST is fully prepared to assist in Tubbataha Reef rehab - Montejo

By ANGELICA A. DE LEON S &T Media Service, DOST-STII

The Department of Science and Technology (DOST) has confirmed its readiness to lend assistance to the repair and restoration of the Tubbataha Reef with the expertise and capability of its Coral Reef Restoration Team.

"We can do something. We have the technology to help rehabilitate and repair the damage to the coral reef in Tubbataha," said DOST Secretary Mario G. Montejo.

The US navy vessel USS Guardian found its way into the reef despite warnings from park rangers that the area is protected, and ended up being grounded. The incident caused the Tubbataha Reef, one of the Philippines' premier tourist attractions and a UNESCO World Heritage Site, to incur damage and degradation.



Photo above shows coral fragments ready for transplantation after gathering and cultivating damaged corals in nursery sites.

The DOST-developed technology for reef rehabilitation involves transplanting newly restored coral fragment.



Environmental protection and preservation via science and technology is one of DOST's main advocacies under its Coral Reef Restoration Program, one of the Department's leading aquamarine initiatives under Sec. Montejo.

The Coral Reef Restoration Team, led by Dr. Filipina Sotto of the University of San Carlos in Cebu and Dr. Filemon Romero of Mindanao State University-TawiTawi campus, is one of the program's components. Other members of the team are composed of scientists from the UP Marine Science Institute and Bicol University.

In case the team will be called to assist, the members will make use of DOST's own technology for the direct planting of corals in order to re-populate the reefs and restore the unique beauty of Tubbataha Reef.

According to Sec. Montejo, they plan to tap the DOST trained and certified scientific divers from the Philippine Navy Coast Guard and PNP Maritime who completed DOST's first ever underwater scientific diving and coral reef restoration course last February 10 in Antique. Their training was conducted in partnership with the Philippine Association on Underwater Activities.

Under its Coral Reef Restoration Program, DOST now maintains 12 coral nurseries across the archipelago. Among these sites are Bolinao in Pangasinan, Panglao in Bohol, Anilao and Laiya in Batangas, Ticao Islands in Masbate, Boracay, Bataan, and Zambales.

AKBAY program brings S&T closer to the poor

By GEORGE ROBERT E. VALENCIA III S&T Media Service, DOST-STII

To be called progressive, any country must ensure development at the grassroots level, says National Scientist Dr. Lourdes Cruz, echoing the expert opinion of economists.

Following this principle, the Department of Science and Technology (DOST) launched its new campaign called AKBAY, or *Agham Para sa Kaunlaran ng Bayan*, to better bring the benefits of science to the country's poor communities through a set of simple proven technologies. At the helm of AKBAY is the National Research Council of the Philippines (NRCP), Asia's pioneer and DOST's basic sciences research arm which officially launched the program during its 79th anniversary celebration last December in Bicutan, Taguig City.

"AKBAY helps alleviate poverty by offering communities relatively simple, manageable technologies – often locallydeveloped – that can support food, fuel, and livelihood needs," says Dr. Cruz, who also currently serves as president of DOST-NRCP.

The country has produced excellent technologies through its research and development (R&D) programs over the years, and engaging poor communities to use these science-based tools has remained a challenge, she added.

AKBAY opened with four select technologies suitable to individual or group of households, namely: mushroom culture, worm culture, aquaponics, and biogas production.

Mushroom culture

Mushroom expert Claro M. Santiago, formerly with DOST's Industrial Technology Development Institute, led the demonstration of mushroom culture during the launch of AKBAY. Households can grow their own mushrooms through prescribed, relatively uncomplicated methods, he said, using simple ingredients such as discarded or dried banana



Dr. Santiago, also called "Mr. Mushroom Expert", (far right) demonstrates the proper method of growing mushrooms to Taguig locals. Mushroom culture consists of stacking dried banana leaves and rice straws and evenly placing or sandwiching mushroom spores in the stack. The setup would not spawn unwanted types of mushrooms, he said. (*Photo by George Robert Valencia III, S&T Media Service, STII*)

leaves and rice straw. Upon harvest, the mushrooms can be sold to augment income, or simply eaten, as there are several ways to prepare the nutritious and rather succulent fungi. While he recommends cultivating Volvariella and oyster mushrooms, he also assured that the method he prescribes would not spawn other or unwanted types of mushrooms.

Worm culture

Dr. Rafael Guerrero III, former executive director of DOST's Philippine Council for Aquatic and Marine Research and Development led the demonstration on proper worm cultivation. Worm culture or vermicomposting is not only economical, but is also a safer, sustainable, and more environmentally sound method of fertilizing soil, according to Dr. Guerrero.

Earthworms speed up soil decomposition, and in effect, enhance soil texture and condition. The resulting natural compost could substitute for chemical fertilizers, which makes vermicomposting a valuable technique for both farming and simple backyard cropping.

Aquaponics

The word "aquaponics" is derived from "aquaculture" which means "raising of fish", and "hydroponics", which refers to "planting without soil". An aquaponics system uses a non-sophisticated contraption or structure that could sustain both fish and plants. The process involves the cycling – or recycling – of waste water from the fish tank through continuous tubes that pass along a series of plant roots, which by principle "cleanses" the water from impurities that would otherwise pollute the fish tank, resulting in nourished, adequately watered plants and healthy fish culture.

Dr. Chito Sace, aquaponics expert from the Central Luzon State University, said that the technology is suited to raise tilapia, prawns, and other freshwater fish,



Dr. Rafael Guerrero, one of the country's leading vermiculture experts shows students some earthworms. Vermiculture, or growing earthworms, produces vermicompost, or waste coming from earthworms. Vermicompost is invaluable to planting as it provides excellent, nutrient-rich organic fertilizer and soil conditioner. (Photo by George Robert Valencia III, S&T Media Service, STII) Dr. Chito Sace explains to students how an aquaponics system works. The contraption mainly comprises a freshwater fish tank, leafy vegetables or plants, and tubes that hold a series of plant containers. Waste water from the fish tank passes through a set of tubes holding a series of leaf plants or vegetables which clean the water. By the time it completes the cycle (back to the fish tank), water is already purified. It is defined as a smart "green technology" as it requires minimal maintenance and is self-sustaining. (Photo by George Robert Valencia III, S&T Media Service, STII)



Agriculturist Porfirio Rodriguez (right) demonstrates the prescribed process for biogas production to efficiently derive fuel for heating, lighting, and cooking from organic sources, including human excrement. (Photo by George Robert Valencia III, S&T Media Service, STII)

and grow leafy vegetables like pechay, lettuce, kangkong, and other crops like tomatoes, bell peppers, etc., for food. It is a form of "smart agriculture" because it is virtually self-sustaining and requires minimal space for ordinary backyard setup.

Biogas production

AKBAY's fourth featured technology is biogas production which involves using organic matter like decaying food, kitchen scraps, animal and human wastes, among others, to produce methane. A combustible or flammable gas used for household heating, cooking and lighting, methane gas is odorless, colorless, and burns with a clear blue flame similar to that of LPG (liquefied petroleum gas).

Technology package for households

"These four were foremost among other well-established technologies we can identify for the AKBAY Program – they complement each other, are manageable, and form an ideal livelihood package", said Dr. Cruz.

In what way do these technologies work together to form a livelihood package? Simple.

Left-over mushroom beddings from the spent stack of dried banana leaves can be added to enhance earthworm culture. The same result can be achieved by adding dried effluent or discharged liquid from the biogas digester, an apparatus that converts wastes to methane, to the earthworms. Earthworm culture, if done well, would also produce a special "tea" that can be added to the aquaponics set-up to give the plants additional and instant nourishment – speeding up vegetables growth for harvest.

Several high schools and universities in Taguig City and eight barangays, namely, Ibayo, Tipas; Upper, Lower, and New Lower Bicutan; North and South Daang Hari; and Tanyag, were the first to learn about the program's initial technologies during the launch.

Meanwhile, Dr. Cruz also announced that these featured technologies of AKBAY will be expanded. "During the first quarter of 2013, we will develop the exhibit in DOST-NRCP as a permanent demo site that can be replicated in different regions or provinces in the Philippines," she said.

FEATURE NEWS

Goat's milk just gets better with DOST's spray drying device

By ALLAN ACE ACLAN S&T Media Service, DOST-STII



ot milk? Yes, goat's milk. And it just got better with Department of Science and Technology's technology intervention to the country's first local producer of powdered goat's milk.

Through DOST's -Industrial Technology Development Institute, Skysoft Incorporated inaugurated the first ever goat's milk powder processing plant in Sta. Rita Homes, Paranaque, Metro Manila last month. DOST's technology will help the company develop a more stable product from fresh goat's milk which has short shelf life.

This is done through the ITDIdesigned spray dryer that helps milk stay fresh even after being stored for several months. With the lengthened storage life of the company's goat's milk product, it is now poised to compete with the existing brands in the local market.

Before the launch, the developed product went through storage studies and subjected to physico-chemical, microbiological, and sensory analyses, assuring the safety and quality of the goat's milk produced through the ITDIdesigned spray dryer.

The launch was attended by DOST Secretary Mario G. Montejo. To date, Skysoft Incorporated is the country's first-ever producer of powdered goat milk from goats bred and raised at Skysoft's Boergoat Club Farm in Lingayen, Pangasinan.

Goat's milk is an excellent option for any patient who is cow's milk or soy milk sensitive and need to have an adequate calcium intake from a natural dietary source. It is also an excellent source of dietary calcium important in the prevention of high blood pressure, osteoporosis and other bone-related problems.

For menopausal women, goat's milk provides 13 percent more calcium than cow's milk and can be consumed comfortably even by those women with milk sensitivity. (With information from Violeta B. Conoza, S&T Media Service, DOST-ITDI)



Joint project with JICA launches comics, video to prepare folks for temblors, tsunamis

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

The Philippine Institute of Volcanology and Seismology, a service institute of the Department of Science and Technology (DOST-PHIVOLCS), and the Japan International Cooperation Agency (JICA Manila) launched two comics materials and a video in a bid to educate Filipinos, especially those in eastern shoreline communities, on disaster preparedness in the event of an earthquake and tsunami.

The launching took place during the inaugural session of "Info Sentro sa PHIVOLCS", a press conference held last March 7, 2013 at the PHIVOLCS Auditorium, University of the Philippines campus in Diliman, Quezon City.

The comics materials "Daang Mapanganib" and "Ang Huling Sayonara," which had been pre-tested in selected schools, as well as the video, tell the stories of Filipinos in Japan who experienced the earthquake and tsunami that hit Japan in March 2011, resulting in the death of more than 15,000 individuals and heavy structural damage.

The production of these info materials are among the initiatives under the four-year project billed as "Enhancement of Earthquake and Volcano Monitoring and Effective Utilization of Disaster Mitigation Information in the Philippines" – a collaboration between JICA-Manila and the Japan Science and Technology Agency (JST), which combines the expertise of both Japanese and Filipino specialists.

To develop these materials, PHIVOLCS and its partners JICA, JST, and the National Research Institute for Earth Science and Disaster Prevention deployed teams to Miyage, Iwati and Fukushima prefectures in Japan, some of the places most affected by the catastrophe billed as "The Great East Japan Earthquake and Tsunami." The teams conducted interviews with survivors in order to capture their experiences and identify the lessons learned.

According to PHIVOLCS Director Dr. Renato U. Solidum Jr., the materials will be distributed to different schools especially those along the country's eastern shoreline. Distribution will be coursed through the Department of Education and local government units.

"We will translate some of these [comics materials] into the different dialects. We will **20 S&T POST**



Comics for disaster preparedness. DOST-PHIVOLCS Director Renato Solidum (right) and Japan International Cooperation Agency (JICA) Chief Representative Takahiro Sasaki concur to a closer partnership in disaster preparedness as they present to the public the two comics produced through their joint project. Titled "Daang Mapanganib" and "Ang Huling Sayonara", the comics tell the stories of Filipinos who went through the great March 11, 2011 earthquake and tsunami that devastated Japan, and how they were able to recover from their loss. The comics also feature lessons learned and tips on what to do before, during, and after an earthquake or a tsunami. (Photo by Gerry G. Palad; Text by Framelia V. Anonas, S&T Media Service)

also produce a longer, full version of the video. Also, we are thinking of other ways to inform and educate more Filipinos on disaster preparedness, like tapping social media. Whatever information we have, we will certainly post on our website and Facebook page. We may also tap the power of text messaging," Dr. Solidum emphasized.

Meanwhile, JICA Chief Representative Takahiro Sasaki expressed his hopes that the video will be shown on local television.

In addition, PHIVOLCS and its partners are also producing self-evaluation toolkits for homes and buildings which will help households and building owners to determine whether their structures are strong enough to withstand disasters.

Aside from the launching, PHIVOLCS likewise presented its plans under the joint JICA-JST project. Among others, the institute is currently working toward obtaining improved earthquake information in real time. PHIVOLCS hopes to achieve this via the installation of broadband and strong-motion seismometers, advanced and rapid earthquake source analysis system, real-time intensity meters, and enhancement of tsunami warning system and real-time sea level monitoring system, among others.

"With broadband sensors, we are able to monitor the big earthquakes, and determine whether the earth moved horizontally or vertically. If it moves with vertical components, the risk of having a tsunami is greater. For volcanoes, these enable us to monitor volcanoes in real time, wherever we are as long as there is internet connection. This knowledge would allow us to anticipate future activities. Interpreting the data is better and faster now," explained Dr. Solidum.

Also in the pipeline is a portal site for improved disaster mitigation. "The processed data will be accessed publicly once we establish the portal, hopefully by next year," the PHIVOLCS director said.

"Info Sentro sa PHIVOLCS" is a regular press conference which aims to update the public on PHIVOLCS' latest accomplishments and plans under the Japan-Philippines partnership for disaster preparedness. Dr. Solidum explained that the term "Info Sentro" was coined by PHIVOLCS to mean that any information they gather should be shared with the public immediately.

YoSTI 2012 An eternity of science, technology, and innovation with EU and ASEAN COST

By ANGELICA A. DE LEON S & T Media Service, DOST-STII

Separated by land and water. History, culture, and general economic performance further thicken this demarcation line.

Yet, a whole world bridges this gap. This is the world of science and technology (S & T), the bedrock of industrialization and the wellspring of progress.

It is strong enough to drive Southeast Asia to quickly gather steam and surge faster as it darts toward economic development, enabling the region to take several strides closer to the economic achievements of Europe and the rest of the world.

What's brewing in Brussels

Science policy visit. The European Union (EU) and the Association of Southeast Asian

Nations (ASEAN) have partnered to take advantage of S & T and hitch a ride along its rapidly evolving path.

Last year, the two ventured into a year-long campaign to further strengthen their collaborations and boost their chances of achieving workable goals. This campaign resulted in the ASEAN-EU Year of Science, Technology, and Innovation 2012 (YoSTI).

In support of YoSTI 2012, the Regional EU-ASEAN Dialogue Instrument (READI) implemented a series of activities. One of these activities was a science policy visit of ASEAN Committee on Science and Technology (COST) national chairpersons



Sec. Mario G. Montejo at the courtesy call to Brunei Prime Minister His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah.



From left: Usec. Dr. Carol M. Yorobe, Usec. Prof. Fortunato T. dela Peña, Marie Curie Fellow Jennifer Constantino, Glenda Dorcas T. Sacbibit, and Dr. Alexander A. Lim of the ASEAN Secretariat, during the ASEAN COST ministers' science policy visit in Brussels, Belgium.

in Brussels, Belgium from December 11-13, 2012, led by COST chairman Dato Paduka HjSuhaimi HjGafar, permanent secretary of the Brunei Ministry of Development. The Philippine delegation was composed of COST chairperson Usec.Fortunato de la Peña, Dr. Carol Yorobe, and Ms. Glenda Dorcas Sacbibit.

During the discussions in Belgium, three focus areas were selected for the SEA-EU-NET 2 project, namely water, food, and health which were deemed consistent with the Krabi Initiative's eight priority areas. Crafted during the 6th Informal ASEAN Ministerial Meeting on S & T held in Krabi, Thailand in December 2011, the Krabi Initiative is a spinoff from the European model to serve as a blueprint for the region's aspiration: to achieve economic integration and a single market by the year 2015.

It was also mentioned during the talks that Brunei, in particular, and EU are currently formalizing a cooperation agreement on different areas, including S &T.

The issue of funding was also tackled. It was particularly suggested that a joint funding scheme between ASEAN and EU member states be instituted.

Meanwhile, YoSTI 2012 and its impact from both the ASEAN and EU perspectives *continued on page* 23

7th Informal ASEAN Ministerial Meeting on S&T: Providing regional leverage for progress

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

Science and technology (S&T) is strongly positioning itself at the frontlines in the global march toward progress.

At a rapid pace, it is re-defining our world by blazing trails that spark a domino effect: It begins by reshaping humanity's way of thinking, causing industry leaders to streamline and improve their systems, allowing business establishments and institutions to create higher-value products and services, thus boosting industry capabilities and raising the citizenry's quality of life.

In the end, this positive chain of events translates to the one thing every nation aspires for: progress with selfsustainability.

The view from ASEAN: Regional cooperation for S&T

World leaders have affirmed their commitment to S&T to inch closer to national progress and gain for their countries the competitiveness and economic footing necessary to penetrate the world market and gain international respect.

Southeast Asia is in step with this global surge toward S&T advancement via its commitment to regional cooperation. The Philippines is actively playing its part in this undertaking.



Brunei Prime Minister His Majesty Sultan Haji Hassanal Bolkiah Mu'izzaddin Waddaulah (center) with ASEAN COST ministers at the palace during their courtesy call.

Last December, Secretary Mario G. Montejo led the Philippine delegation to the 7th Informal ASEAN Ministerial Meeting on Science and Technology (IAMMST-7) held in Jerudong, Brunei Darussalam. The rest of the delegation was composed of Undersecretary Fortunato T. de la Peña, national chairperson of the ASEAN Committee on Science and Technology (COST) Philippines; Engr. Zenia G. Velasco, focal point person for the ASEAN Plan of Action on Science and Technology (ABAPAST); and Glenda Dorcas T. Sacbibit, focal point person for ASEAN COST-Philippines.

IAMMST-7 provided a venue for S & T ministers and senior officials from the 10



ASEAN S&T ministers and COST national chairpersons

member ASEAN nations to look into matters and issues which will help drive the region's S & T sector forward and provide the much needed fuel for economic growth.

One of the things agreed upon was the establishment of scientific standards for the region. The Philippines was proposed to spearhead the development of a concept paper on the topic, to be presented at the 65th Meeting of COST to be held in May 2013 in Clark, Pampanga.

Another proposal was the reorganization of COST into clusters according to the thrusts of the Krabi Initiative in alignment with the six flagship programs of the committee.

Crafted during the 6th Informal ASEAN Ministerial Meeting on Science and Technology held in Krabi, Thailand in December 2011, the Krabi Initiative is a spinoff from the European model to serve as a blueprint for the region's aspiration: to achieve economic integration and a single market by the year 2015. The Krabi Initiative's eight priority areas are: developing innovations for the world market, a regional digital society, embracing new media and social networking, green technology, food and energy security, water resource management, biodiversity, and lifetime scientific learning.

7th INFORMAL ... from p22

However, it was decided that a study be undertaken to determine the most feasible way to implement the reorganization. The ABAPAST was assigned to develop the terms of reference for the said study.

Furthermore, additional funding for training programs, technology spin-off companies, and other revenue-generating projects, may also be underway, with the proposed ASEAN Innovation Fund (AIF). This new funding source will support the existing ASEAN Science Fund (ASF), the central funding body for S&T trainings and seminars. Unlike the ASF however, AIF will use the principal sum, and not just the interest earned, to pump cash into these projects and get the ball rolling faster for their implementation. The private sector, dialogue partners, and international agencies are being eyed to contribute to AIF's coffers. ABAPAST was once again tasked to produce a concept paper on the creation of the AIF, together with the Advisory Body on the ASEAN Science Fund.

ABAPAST's role is further strengthened with the ministers instructing the advisory body to formulate the mechanisms for the performance review of the various COST sub-committees, which the body has been tasked to undertake.

The ASEAN is not acting alone however. With the advent of the China-ASEAN Science and Technology program which was launched in September 2012 in Nanning, China, ties between ASEAN and economic powerhouse China are set to firm up, and expected to move S&T several steps forward in the region. To fast-track developments in this area, COST was tasked to finalize the Memorandum

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were highlighted via the presentations of COST Chairman Gafar and Maximilian Metzger, division head of the Federal Ministry of Education and Research in Germany.

Gafar mentioned that Horizon 2020 aims to increase cooperation between EU and ASEAN, as well as reinforce the policy dialogue. Promoting the implementation of the Krabi Initiative's eight thematic tracks will also help strengthen and advance the two regions' S&T collaboration as well as increase participation among ASEAN nations, said Gafar.

Metzger, meanwhile, affirmed that not only has science been part of international cooperation, but it also plays an important role in peacekeeping efforts. He cited the following factors as reasons for continued and increased cooperation between EU and ASEAN: greater regional integration in Southeast Asia, tremendous growth in S & T capacities within the region, increase in scientific output resulting from the collaboration, and strong economic partners.

In his closing remarks, Dr. Pichet Durongkaveroj, COST chairperson of Thailand, expressed his desire for an eternity of science, technology and innovation working together to address three grand challenges: food, water, and energy. He also mentioned the problem of aging societies and emphasized that countries should look into ways of coping with this development, particularly ways of surviving with a smaller labor force brought about by a graying population.

Informal talks. The delegates also met for informal talks with representatives of the European Commission, European Union Member States, and the SEA-EU-NET project. The meetings focused on an exchange of thematic priorities and major policies, possibilities for priority alignment and joint actions, as well as a presentation of instruments of regional cooperation.

Among the topics discussed were issues on bioenergy, information and communications technology, food, agriculture and biotechnology, environment, among others.

In sharing the Philippine experience, Usec. de la Peña mentioned during the talks that energy consumption reducing transport is a big issue in the country. He informed the other delegates about one of DOST's premier projects – the Automated Guideway Transit System or AGT which is projected to use up less energy – as one of DOSTdeveloped technologies being prepped up as a key solution to the pressing problem in transportation. De la Pena also mentioned

of Understanding on ASEAN-China cooperation.

S&T collaborations with India are likewise moving along, with the ASEAN-India Fund and the ASEAN-India Science and Technology Development Fund earmarked for S & T project partnerships between the two.

Aside from these, the ministers commended the successful holding of various S & T events within the region in 2012. Among these are The International Triple Helix Conference in Bandung, Indonesia; ASEAN Workshop on Early Warning System for Tsunami Disaster in Banda Aceh, Indonesia; Biofuel Workshop in Kuala Lumpur, Malaysia, and the various activities in celebration of 2012 as the ASEAN-EU Year of Science, Technology, and Innovation.

other initiatives being undertaken in the Philippines, such as energy consumption reduction programs for industries and the use of seaweed as a third generation biofuel.

In addition, Dato Dr. Madinah Mohamad, COST chairperson of Malaysia suggested a study which will identify the common aspects of Horizon 2020 and Krabi Initiative while Germany suggested a consolidation of bilateral programs.

Aside from the science policy visit by COST chairpersons, READI held other activities last year in support of YoSTI 2012. These included science journalist encounter and scientific workshops and policy discussions about bridging the gap between research and innovation, and the like. Next on READI's agenda is the Pilot Networks of Excellence for which preparations are now underway.

YoSTI 2012 may have come to a close. Yet, its conclusion is merely the beginning of increased and more effective collaborations between EU and ASEAN. Proof of this are the projects of READI. These were developed to create an impact in the lives of people in every sector of society and push both regions to grab hold of the S & T machinery for national and regional development. It is by achieving these that the gap between EU and ASEAN will finally be minimized, or close.

ITM 3.0 sparks DOST workers to help orphans, Pablo victims

By ALLAN ACE ACLAN, ALLAN MAURO MARFAL, CATHERINE JOSUE, Ma. LUISA LUMIOAN, and FRAMELIA ANONAS

s Christmas season is all about gift-giving and sharing all the blessings that we are getting, several employees from Department of Science and Technology (DOST) joined hands and acted as foster parents to hundreds of children from different orphanages in Metro Manila. This is the main feature of the Ignite the Mind 3.0 celebration held last December 19, 2012.

In connection with the theme "Changing Lives", various activities were conducted that were geared towards helping the children. These include: film showing of ABS-CBN's educational television show Matang Lawin, Tree planting with DOST officials and exhibit- educational tour at Mobile Planetarium. All of these were held in the Science Heritage Center of DOST.

A total of 155 children from three different orphanages, namely Parenting Foundation, Marilac Hills and Verlanie experienced being loved and cared for by the science community for a day.

These activities were designed not only to promote science and technology to the young but also aimed to give the poor and parentless children hope and better appreciation of good life.

Marilyn Antonio, an employee from DOST's National Computer Center (NCC), felt "great" in spending time with orphans and abandoned children "It is a great opportunity to share God's love even in a very limited time," Ms. Antonio said.

"I really enjoyed the time even though it was bitin sa oras. I really got tired but it was very fulfilling," Ms. Gizella Natividad Savella, also of NCC, said.

She realized that she has many things to be thankful for, and added that the activity made her appreciate what she has, aside from teaching her to be more patient.

"Blessings also come in the form of time, material goods, and love." Marilyn Antonio DOST-NCC

Meanwhile, Vernie Versoza, a social worker from Verlanie, recognized the efforts of DOST in making this yuletide season memorable for these children.

"Nakakatuwa na sa kaunting oras na naimbita iyong mga bata, hindi lang sila basta pinakain at pinasaya, marami din silang natutunan na related sa science dahil sa mga exhibit at film showing na kinonduct," Mr. Versoza quipped.

Helping Pablo victims

Aside from the orphans, victims of typhoon Pablo were also given attention by the DOST family. In a fund raising and charity activity billed as "Sulong Tulong para sa Mindanao" (S&T Mindanao), DOST raised a total of around P321,758.00 as of February 14, 2013 and collected various donations in kind. "Sulong Tulong para sa Mindanao" is a continuing activity, thus the amount is expected to increase as donations and pledges continue to pour in.

Aside from raising funds, DOST also sent to Mindanao some experts from Program NOAH to make a study on typhoon Pablo's effects. DOST officials believe that in addition to financial and other kinds of help, the people need to know the scientific explanation of what actually happened before, during, and after the wake of Pablo.

Sec. Montejo expressed pride and satisfaction over DOST people's willingness to share and extend help to the survivors of the calamity, as he articulated in his welcome message. Attended by employees and officials from



DOST's various sectoral councils, institutes, advisory bodies, regional offices, and provincial S&T centers, the year-ender became more memorable as the DOST family looked outwards to extend a helping hand.

"For what we have done today, as we do a collective effort to extend our help, and for continuously extending support and sharing our love to our fellow Filipinos in Mindanao, I am truly satisfied," he said.

"Sulong Tulong para sa Mindanao", chaired by DOST's Philippine Council for Health Research and Development (PCHRD) Executive Director Dr. Jaime C. Montoya, was held in conjunction with ITM 3.0, an initiative under the IEC (Information, Education, and Communication) Campaign of DOST's "Changing the Mindset" program, spearheaded by the Science and Technology Information Institute, a service institute of DOST. The program aims to develop a culture of science among Filipinos via an efficient system of content development and information dissemination.

This year, ITM's objective of awakening the spirit of oneness within the DOST population went a step further by uniting employees and officers in the act of reaching out to survivors of typhoon Pablo.

With ferocious winds rushing up to 200 kilometers per hours, typhoon Pablo ravaged parts of Mindanao, Central and Eastern Visayas last December 4, leaving a death toll of over a thousand with hundreds more missing in its wake. Among the victims are DOST personnel in the regional offices, namely Region X, XI, CARAGA, IV-B, and VIII.

"I am really moved as we embrace the theme for this yearend gathering "DOST @ 54: Changing Lives" as we begin to genuinely touch the lives of our fellow Filipinos," Sec. Montejo further said in his message.

Earlier, Fr. Jerry Orbos, SVD officiated a mass and acknowledged DOST's efforts to help alleviate the situation of the survivors.

The four "rings" of Christmas

Fr. Jerry Orbos, SVD, described as "miracle priest", emphasized that Christmas is also about the solemnity of the Advent, the preparation for the coming of the 'Christ the King '.

Advent is the season for Christians expecting and preparing for the celebration of the Nativity of Jesus Christ that starts on the fourth Sunday before December 25, which is the Sunday between November 27 and December 3.

"Advent is the time for cleaning up, and clearing up. It is that painful but liberating time to let go of excess baggage that we do not need for the journey. It is the time for getting rid of things, habits, mind sets, situations, and even persons that harm us, and destroy us. Let go!" Fr. Orbos said.

Fr. Orbos discussed the four "rings" of Advent. He said that just like the four candles in the Advent wreath, there are also four "rings" of Advent: prepa-ring, clea-ring, implo-ring, and bea-ring. PREPA-RING: Fr. Orbos said that the hearts of many Filipinos, like the manger, should be cleansed of whatever thorns, thumbtacks, or toxic chemicals that prevent us from welcoming the baby Jesus.

CLEA-RING: Christmas is the time for us to reach out to each other in peace and reconciliation. He encouraged the people to break down the walls of hatred and indifference and be real brothers and sisters again.

IMPLO-RING: He believes that prayer is the key to a meaningful Advent and Christmas season. It is in these quiet, hidden moments with the Lord in grateful prayer that we know and feel "what's it all about".

BEA-RING: He said that all our personal preparing, clearing, and imploring will amount to nothing if they do not lead us to become better and more loving persons. The grace of God must bear fruit in concrete expressions of love, especially to the less fortunate among us.

"Christmas is just around the corner. As we busy ourselves to make Christmas happen in our own homes, please set aside something to make Christmas happen in the lives of other people," he ended.



Miracle Priest Fr. Jerry Orbos delivers the homily on the thanksgiving mass program as part of the celebration of the Ignite the Mind 3.0, a year-end celebration of the Department of Science and Technology. During the Mass Fr. Jerry Orbos emphasized that Christmas is "about the Solemnity of the Advent, the preparation for the coming of Christ the King."



DOST helps the earth, one tree at a time. Director Romulo T. Aggangan of DOST's Forest Products Research and Development Institute (in green shirt) firms the soil around a narra seedling while Director Nuna E. Almanzor of DOST's Industrial Technology and Development Institute (middle) and Executive Director Jaime C. Montoya of DOST's Philippine Council for Health Research and Development keep twigs away from the hole.

Tree planting

Greening the country requires a collaborative effort among the populace. And a good place to start is in one's own backyard.

In support of the National Greening Program (NGP), the government program that targets to plant 1.5 billion trees in 1.5 million hectares of public lands by 2016, DOST executives led a tree planting activity as part of the ITM 3.0.

The planting site, the Healing Garden, is a formerly idle space within the DOST Central Office in Taguig City. The garden, one of the DOST's entries to NGP, is a collaborative project among DOST's Administrative and Legal Service, National Capital Region office, and Philippine Council for Health Research and Development.

In the implementation of NGP, DOST is responsible for the development and transfer of appropriate technologies; and information, education and communication or IEC.

This is in line with Executive Order No. 26 "Declaring an Interdepartmental Convergence Initiative for a National Greening Program" issued by President Benigno Aquino III in February 2011.

To help achieve its target, NGP employs science-based technologies such as clonal technology to produce high quality seedlings of indigenous forest trees; and mycorrhiza, a natural soil inoculant to improve soil quality of the planting sites.

To date, about 116.5 million seedlings have been planted in the country's denuded and degraded lands, according to Department of Environment and Natural Resources (DENR), the agency that monitors NGP's progress.

NGP harmonizes all the country's greening efforts. It is being implemented in collaboration with various government agencies including DOST, DENR, and Departments of Agriculture, Agrarian Reform, Education/Commission on Higher Education, Health, Interior and Local Government, Public Works and Highways, Transportation and Communications, National Defense, and Justice.



DOST officials (*clockwise*) Director Renato U. Solidum, Jr. of PHIVOLCS, Executive Director Rowena Christina L. Guevara of PCIEERD, Administrator Nathaniel T. Servando of PAGASA and Deputy Director Corazon C. Bernido of PNRI, each plant a tree in support of the National Greening Program.

Floating candles

To symbolize DOST's unwavering hope in being able to help transform the Filipino society through S&T, DOST officials led the lighting of the floating candles that were consequently released into the fountain at the DOST square. The floating candles made a dramatic and symbolic sight as they gracefully sailed their tiny flames on the still, dark water, signifying the impact to the country of S&T initiatives when taken as a whole.

S&T workers show off their talent

Science and technology workers proved once again that they are not only good in science-related tasks, such as performing



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experiments in the labs, but also in performing on stage, as they did in the DOST's Gut Talent portion of the ITM 3.0 celebration held last December 19.

Western Bicutan cluster serenaded the crowd with their version of "Tuloy-tuloy pa rin ang Pasko"-- a song that somewhat set the tone of this year's ITM celebration as it aptly reflects the experience of most Filipinos, who continue to imbibe the Christmas spirit amidst trying times.

Western Bicutan Cluster includes DOST Central Office, Metals Industry Research and Development Center, Philippine Council for Health Research and Development, Philippine Textile Research Institute, and National Research Council of the Philippines.



A dance number was performed by DOST-NCR, while a medley of traditional Filipino Christmas songs was rendered by Quezon City cluster composed of Advanced Science and Technology Institute, Information and Communications Technology Office, Philippine Atmospheric Geophysical and Astronomical Services Administration, Philippine Institute for Volcanology and Seismology, Philippine Nuclear Research Institute, Philippine Science High School System, and Technology Resource Center.

Forest Products Research and Development Institute and Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development of the Los Baños cluster performed a song interpretation.



The final presentation from East Bicutan cluster got cheers from the crowd as the performers moved to the beat of Gangnam Style and other hip dance hits. East Bicutan cluster include Food and Nutrition Research Institute, Industrial Technology Development Institute, Philippine Council for Industry, Energy and Emerging Technology Research and Development, Science



and Technology Information Institute, Science Education Institute and Technology Application and Promotion Institute.

DOST's Gut Talent has been a part of the tradition of Ignite the Mind, a year-end consolidating activity of the Department, which was on its third year last 2012.

Raffle prizes

To sustain the spirit of fun that marked previous ITMs, raffle prizes were awarded to DOST personnel and other workers within the DOST system, including security and janitorial personnel. Modest prizes in cash and in kind elicited happy faces from winners and exuberant applause from their friends and officemates. This year, the total amount of prizes in cash summed to Php 26,500, plus various prizes in kind.



Water-repellent and anti-microbial Silver lining smarts up this cotton-pine textile



By JULIUS L. LEAÑO JR. S&T Media Service, DOST-PTRI

NATURE PROVIDES a vast material base for new textile developments in the Philippines. Likewise, nature holds the key to so many clues and ideas to advance research and development of textiles.

One example is the lotus leaf. Just like the more known *gabi* (taro) leaf, the lotus leaf has a water-repellent surface which inspired researchers at the DOST-Philippine Textile Research Institute to look into the development of water-repellent textiles.

Spurred by the attention given by DOST Secretary Mario Montejo to PTRI's award-winning Christmas Belen made of taro leaves in 2010, PTRI has been continuously spinning possibilities into the broad range of functional and smart textiles it has committed to deliver.

"It has been a dream, until towards the end of 2012, when PTRI has finally developed a textile material that is comfortable, breathable but surprisingly water repellent and even anti-microbial," revealed Dr. Carlos C. Tomboc, PTRI director.

Waterproof surfaces exhibit the socalled "lotus effect," referring to the lotus' leaf ability to prevent water from drenching its surface. Tiny crystalline waxy bumps or protrusions and tiny hairs on the leaf's surface trap the water droplet, stopping the water from reaching the lotus leaf's actual surface. To imitate this phenomenon, experts used several techniques to mimic the hydrophobic leaf, including chemical modifications via hydrophobic coatings and plasma treatments.

Finally, a team of young and vibrant chemists of PTRI's Chemical, Dyes, Auxiliaries and By-Product Utilization Section of its Research and Development Division was able to break into this phenomenon and come up with a finishing technology.

After several attempts using various materials to make textile water repellent, the team was able to zero in on something that is just in the pocket: silver.





"It bridges the old and the new," Nora B. Mangalindan, chief of PTRI's R&D Division, described the smart silver-lined textile.

"Old" refers to the use of existing finishing equipment of textile mills and the popular silicon-based finishing in applying the lining. And the "new"? It is the use of silver nanoparticle and silver oxide nanocomposite to make cotton and pineapple fabrics water-repellent and even anti-microbial.

This new technology is a refreshing new addition to the dried-up textile finishing technologies used in the Philippines. Moreover, it does not entail expensive switching cost in textile processing machineries.

According to Jeannie Lynn J. Cabansag and Evangeline Flor P. Manalang, both registered chemists and the project leader and research staff, silver nanoparticles were submerged in silicone oxide solution and applied to various textile materials.

Silver is known for its ability to kill various microorganisms, thus when used as repellant in textiles, it is good for the health.

In this study, silver was found to be active against *Klebsiella pneumoniae* and *Staphyllococcus aureus* which causes pneumonia and skin infections respectively. The silver oxide thus was noted for its water-repellent property and, together with the silver nanoparticles, the finishing formulation made the fabric water-repellent and anti-microbial. Silver also protects fabric, assuring less damage and longer use.

Conventional water repellent-finishes literally form a coating on textile surfaces which compromises the breathability and comfort that cotton-based fabrics are known for. Anti-microbial properties would be provided by yet another finishing.

However, in this technology, the finishing is applied on the fiber and yarns of the material and the anti-microbial properties of the silver nanoparticles are already dispersed in the silica network. With this, comfort and form are not necessarily traded-off over function.

Taking *gabi* (taro) leaf-effect as an inspiration and applying it on textiles is dubbed as PTRI's gabi or 'lotus' feat for 2012. The silver nanoparticles as anti-microbial agent in this water-repellent nano-finish gave it the added silver-lining.

This development is part of the string of PTRI-developed technologies that integrates nanotechnology to textile finishing, now coined as "nanofinishing."This new technology produces smart, bio-functional, and truly Philippine-made textiles.

TRIVIA: Flax (*Linum usitatissium*), which is a wetland plant out of which linen cloth is made, is considered to be the world's oldest textile fibre.

In 1983, fabric remnants dating from around 7000 BC were found in the cave of Nahal Hemar in the Judean Desert, Israel. Flax is an erect *annual plant* growing to 1.2 m (3 ft 11 in) tall, with slender stems. The *leaves* are *glaucous* green,

slender *lanceolate*, 20–40 mm long and 3 mm broad. The flowers are pure pale blue, 15–25 mm diameter, with five petals; they can also be bright red. The fruit is a round, dry *capsule* 5–9 mm diameter, containing several glossy brown *seeds* shaped like an *apple* pip, 4–7 mm long.

In addition to referring to the plant itself, the word "flax" may also refer to the unspun fibers of the flax plant which is widely cultivated in Canada, Russia, Ukraine, France, and Argentina.

SOURCE: Guiness World Record







Dr. Antonio Miguel Dans The doctor walks the talk

(*Left*) **On badminton mode**, Dr. Dans with wife Leonila. (*Above*) **Bike Tours.** The couple during a tour to Bagac Bataan. (*Below*) With 3-time Philippine cycling champion Victor Espiritu.

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

hen the report on the controversial, debate-riddled Sin Tax Reform Bill was finally ratified by both the Senate and the House of Representatives last December, one of those cheering in the sidelines was Academician Dr. Antonio Miguel "Tony" Dans, 1997 Outstanding Young Scientist awardee of NAST.

For Dr. Dans, former chairman of the Adult Medicine Section at UP-PGH and professor at the UP College of Medicine, smoking is the country's public enemy number 1. A lot of Filipinos young and old are deep into the habit, he says, because of environmental factors such as exposure to smoking advertisements, exposure to parents who smoke, and the low price of cigarettes.

This is precisely why he batted for the Sin Tax Bill to be enacted into law – so that additional taxes will be imposed on sin products like cigarettes and alcohol, thus making them unaffordable to many Filipinos.

Lifestyle is a reaction to the environment

The issue is part of a bigger problem, according to the doctor. "A common misconception these days is that lifestyle is something we choose – we choose to smoke, we choose not to exercise, we choose not to eat healthy. Our plan of action has been to educate people so they make the proper choices."

"However, there has been a lot of empiric observation in the past years that education and counseling will not change how people behave. There's a meta-analysis of the literature by Dr. Sha Ebrahim who showed that in several studies totaling 150,000 patients, counseling did not change people's lifestyle,"explains Dr. Dans who is involved in the RE-LY (Randomized Evaluation of Long-term Anticoagulation Therapy) Trials in the Philippines.

He adds that doctors themselves are another proof. Some of them smoke, eat unhealthy, and do not exercise, despite the fact that they are doctors. The new belief, says Dr. Dans, is that people's lifestyles are actually reactions to the environment.

"They eat unhealthy because 'cup noodles' and fast food products are cheaper than vegetables. Common people do not exercise because there are no areas near their homes where they can do this. And lastly, people smoke because cigarettes are cheap."

The new idea now, he says, is that people's lifestyles are simply reactions to the environment. Hence, there is a need to change the environment. Aside from the Sin Tax Law, Dr. Dans favors banning ads and putting warnings on tobacco boxes.

He also cites other countries' efforts to promote a healthier environment: parks are being built near homes, buildings are being redesigned so that people can work standing up, bike to work, and use the stairs instead of the elevator and escalator.

Professional ethics in medicine

Another issue which Dr. Dans feels strongly about is professional ethics in medical practice.

He elaborates, "Doctors know the science. But there are many things that hinder this science from reaching the public. And these problems have to do with physicians' self-interest."

Thus, he proposes the following solutions: control doctors' ownership of medical equipment, regulate the pharmaceutical industry and its relationship with doctors so as not to affect the latter's decision when prescribing medicine to their patients, and regulate and protect scientific research so that the real results will come out and be disseminated to the public instead of results which favor those who funded the research.

"There are a lot of studies now that show that the funder can influence the results," he emphasizes.

General practitioners are not inferior to specialists

Another mission is to debunk the prevailing notion that primary care practitioners are inferior to the medical specialists. He presents his argument by emphasizing that primary care practitioners (for example general internists and family physicians) keep up with diseases of all the organ systems and therefore see a broad range of diseases. They will refer a patient to a specialist only if the case requires it.

"It's important that a healthcare system has enough of these primary care physicians. If not, a single patient could have up to 12 doctors separately for his body parts," he argues.

Evidence-based medicine

His prime advocacy however, is evidence-based medicine (EBM).

In 1997, NAST presented him with the Outstanding Young Scientist award in the Health Sciences category for his contributions in promoting EBM which helps use research data in clinical practice and for establishing a sound surveillance program which defines risk factors in cardiovascular diseases.

"The science of keeping up with the literature," is how Dr. Dans defines EBM. "It's important for the students. Imagine, there are 30,000 studies published a month at the National Library of Medicine in the US. This represents only half of the world literature. In one year alone, there might be around 10,000 articles published on hypertension. How do you keep up with that?"

A more important question, according to the doctor, is:How do you know the good studies from the bad studies?

"One must know good research from bad research, how to distinguish good evidence from bad evidence. That's what we teach, so that doctors will not be dependent on what pharmaceuticals say. So a doctor can tell himself, 'This is a study with good results but with bad methodology. So I'm not going to prescribe this stuff to my patients,'" Dr. Dans elucidates.

He and other members of his team conduct a three-day workshop on distinguishing good research from bad research, twice a year, to doctors. They also wrote the book "Painless Evidence-based Medicine." The book outlines the criteria for distinguishing good evidence from bad evidence in studies, ways on how to track and appraise literature, how to recognize if there's bias in a particular study, and how to remove this bias.

"Not all doctors are doing research but all doctors use research. All doctors need to learn these criteria and that's what we teach them," he remarks.

The doctor walks the talk

Despite his busy schedule as a doctor, professor, and researcher, Dr. Dans regularly takes time out to unwind and engage in pastime activities.

He plays badminton twice a week and goes ballroom dancing with wife Leonila, a pediatric rheumatologist and clinical epidemiologist. "My wife and I like to dance. I'm not good at dancing but I admit it's good exercise," he shares.

On weekends, the couple and their kids Sandra, Miguel, and Nicki hop on their bikes, sometimes taking long journeys in Bataan. This is an activity under Philippine Bike Tours – a company which he put up last December for local and foreign tourists.

"It's a 32-km. tour covering six mountain climbs. We show them historical sites and other interesting things like an albino carabao, among others. During the cold season, the tours ended at a beach club where hundreds of baby turtles are released almost every night as part of Bataan's *pawikan* conservation program," the doctor gushes.

For him, Philippine Bike Tours is a dream come true because it fuses two of the things he loves most: his motherland, and biking. Plus, "you're also providing an infrastructure for health. Instead of sitting in a bus, you're biking. The bike is an under-appreciated machine but is one of the most efficient machines ever invented by man," Dr. Dans remarks.

Indeed, the doctor-professor walks the talk. Early in the interview, he spoke about how some doctors themselves lead unhealthy lifestyles – smoking and failing to exercise to take off unwanted pounds and keep themselves fit. Dr. Antonio Miguel Dans is certainly not one of them.



DOST teams up with major cable providers for 24/7 weather channel

By MONA CARINA E. MONTEVIRGEN & GEORGE ROBERT E. VALENCIA III S&T Media Service, *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) has sealed an agreement with the country's biggest cable provider alliance, the Philippine Cable Television Association, Inc. (PCTA), to create "DOSTv", a 24/7 cable weather information channel to complement the services of DOST's main weather agency, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

DOSTv shall broadcast accurate and up-to-date weather information of PAGASA, along with hourly satellite and Doppler images and weather sensors data from the Program NOAH website. NOAH, or the Nationwide Operational Assessment of Hazards, is DOST's flagship program for disaster preparedness under the directive of President Benigno Aquino III.

The partnership between DOST and PCTA was formalized through the signing of a Memorandum of Agreement (MOA) recently during the PCTA 2013 Convention at the SMX Convention Center in Pasay City.

"This partnership significantly contributes to our ongoing efforts to mitigate the destructive effects of natural calamities such as typhoons and monsoon rains under the backdrop of climate change", said DOST Secretary Mario G. Montejo.

DOSTv will be administered by the Department's information arm, the Science and Technology Information Institute (DOST-STII) and is scheduled to debut this May 2013, to be carried by around 90 percent of PCTA's cable franchisers. PCTA has more than 300 cable provider members all over the archipelago, according to PCTA Chairman Engr. Elpidio M. Paras.

Apart from DOSTv, PCTA members in the MOA also agree to host stations



weather data gathering sensors, servers, and equipment to be provided by PAGASA, especially for its regional offices' unreached areas and to improve the weather agency's forecast capabilities.

"This is an important milestone for the cable industry as it is for the economy. Our lives are greatly affected by weather and climate, especially those in the regions whose primary source of income is agriculture", said Paras.

DOST-STII Director Raymund E. Liboro meanwhile stressed that "now is the time to look for means to increase the risk perception, mitigate the hazard, and prepare communities" as unprecedented meteorological events have recently struck the country.

Program NOAH Executive Director Dr. Mahar Lagmay presented during said convention a brief shocking footage of people being swept away to their deaths by even a knee-level flashflood.

"Had these people known the danger of an impending flashflood, they would have run in time for safety," he said."It is what we're trying to avoid—the surprise—for it is what causes disasters and loss of lives. We simply cannot stress enough the importance of information."

PCTA Chairman Paras also cited the importance of collaboration with weather and disaster experts, noting Cagayan de Oro's recent linkage with PAGASA and Program NOAH. According to him, the linkage spurred by Cagayan de Oro's devastating experience with typhoon Sendong enabled a two-hour warning before typhoon Pablo of last year hit the city, and resulted in zero casualties. An unprepared neighbor, Compostela Valley, unfortunately, was left with many fatalities, he said.

TRIVIA: Diosdado P. Banatao is one of the successful Pinoy technopreneurs of today. Dado, known all over Silicon Valley, has formed the high-technology company called Mostron together with Francis Siu with a starting capital of half a million US dollars. The company was a manufacturer of motherboards in 1984. He then founded the Chips and Technologies in 1985 specializing in system logic chip set for IBM's PC-XT and the PC-AT. In just four months, the company was selling chip sets and earned \$12 million in profit. Dado then launched his third start-up company, S3 Graphics, in Santa Clara, California. S3 focused on enhancing the graphic capabilities of personal computers by using a graphic accelerator chip which Banatao invented. In 1996, the company became the leader of the graphic-chips market, beating a strong competitor, Cirrus Logic, Inc.. In the same year, Chips & Technologies was sold to Intel for about \$300 million. In 2000, he decided to start his own venture capital firm named Tallwood Venture Capital with a capital of US\$300 million, all of which came from his own pocket. *[Source: Hirahara, Naomi (2003). Distinguished Asian American Business Leaders. Greenwood Publishing Group.]*

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Department of Science and Technology

DOST website among PH's most popular gov't sites

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

THE DEPARTMENT of Science and Technology (DOST) website, dost.gov.ph, is among the most popular government websites in the country, claiming the number two spot in terms of number of hits as of February 13, 2013.

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This data was revealed by alexa.com, a leading provider of free global metrics for websites and which ranks 30 million sites all over the world.

The site's overall ranking in the country as of February 13 is 288. Traffic rank per country is calculated by combining the number of average daily visitors to dost.gov.ph and number of pageviews on the site from Internet users in the country over a certain month.

Based on statistics summary in alexa.com, visitors to the site spend approximately more than one minute per page view and a total of three minutes per site visit. The site is especially popular among Internet users in Cagayan de Oro City where it ranks number 20 and in Sucat.

Among the leading search queries for the DOST site in the past month are PAGASA weather forecast, Philippine weather, and Project NOAH, which refers to Nationwide Operational Assessment of Hazards. Project NOAH is one of DOST's big-ticket projects for timely and accurate disaster prevention and mitigation.

Project Noah's web portal, noah. dost.gov.ph, is among the DOST site's most visited subdomains which also include phivolcs.dost.gov.ph, pagasa. dost.gov.ph, and pcaarrd.dost.gov.ph by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, one of DOST's sectoral councils.

DOST is the country's main hub of science and technology activities including research, policy formulation, and program formulation to support national development via technological self-reliance and greater private sector participation in research and development. Aside from Project NOAH, the agency's other flagship projects include TeWS or "Establishment of a Cost-effective Local Tsunami Early Warning System for Selected High-risk Coastal Communities of the Philippines", Small Enterprise Technology Upgrading Program (SETUP), Automated Guideway Transit, and the Balik Scientist Program.

DOST's new lab to cut scan procedure costs

By ALLAN ACE ACLAN S&T Media Service, DOST-STII

STARTING THIS year, Filipinos may avail of cheaper medical diagnostic tests as the Department of Science and Technology (DOST) is set to locally produce Technetium-99m (Tc-99m). This silver-gray, radioactive metal is used for medical and research purposes, including evaluation of the medical condition of the heart and other organs, and studying blood flow.

This prospect comes with the recent unveiling of the Radioisotope Laboratory building at the DOST's Philippine Nuclear Research Institute (PNRI) office in Diliman, Quezon City. The laboratory, which houses the generator plant for the isotope, is the first Tc-99m production facility in the Philippines.

PNRI Director Alumanda de la Rosa said that producing Tc-99m locally will cut at least 50 percent of hospital procedures. She also added that by February, PNRI would be able to provide all the Tc-99m-based radiopharmaceutical needs of hospitals at a cost lower than the current prohibitive cost of imported radiopharmaceuticals.

Also called Molybdenum 99, Tc-99m is a radioactive tracer chemical used in almost 80 percent of diagnostic imaging procedures such as bone and lung scans, and renal scintigraphy. It is widely preferred because of its short-lived gamma rays and its capacity for normal imaging techniques.

Over 35 hospitals around the country with nuclear medicine centers have to import Tc-99m generators, thus making medical procedures too costly for the public. A typical imported generator costs \$1,000 – higher than its cost in Indonesia which is \$388. However, the local production of Tc-99m will make diagnostic tests more

affordable and accessible to a wider segment of the population.

The facility was completed with assistance from the International Atomic Energy Agency (IAEA) to ensure that the laboratory complies with good manufacturing practices and radiological safety requirements.

The facility also aims to localize the production of radiopharmaceutical products and make them available to government hospitals, particularly for charity patients, at a subsidized cost.

Meanwhile, DOST-PNRI is preparing the installations of Tc-99m hot cell facility for the production of Tc-99m generators and studies on quality control procedures for the preparation/production of Tc-99m and Tc-99 radiopharmaceuticals.


Health info gadget for health professionals, LGUs

By LUISA S. LUMIOAN S&T Media Service, DOST-STII

A NEW tool that can store health-related information for science-based, timely decisions of community chiefs has been created. This is what is keeping the Department of Science and Technology-Philippine Council for Health Research and Development (DOST-PCHRD) and Ateneo de Manila University- Institute of Philippine Culture busy lately.

Called eHealth Technology Assisted Boards for LGU Efficiency and Transparency (e-TABLET), the technology uses a computer tablet in which local health workers can input health-related information such as dengue cases in their locality.

The information will be transmitted to and viewed in their own gadgets by the local leaders who can make informed decisions to address any health-related problems in the community that might come up from the keyed information.

"The e-TABLET is one of DOST's latest technology made possible by information and communications technology," said Science Secretary Montejo. "Harnessing the potentials of ICT, the DOST aims to come up with early warning systems for deadly diseases such as dengue." Dr. Ma. Regina Estuar, research director of the Ateneo Java Wireless Competency Center which built the prototype, explained that e-Tablet would ease the burden on field health workers who currently have to use different systems to input data for different purposes.

For instance, a health worker can use SPEED (Surveillance in Post Extreme Emergencies and Disasters) for reporting dengue and leptospirosis, and another system for reporting data on health services, and so on.

"With the e-TABLET a midwife only needs to open the device, click on one application, and everything will be there," she said.

Dr. Estuar further explained that there will be no need to discard the current information systems being used by Department of Health because the e-TABLET will only act as interface. The application will work at the back end to send the crucial information to the DOH system and the local government unit. Local health workers also need not undergo another training just to be able to use the technology.

"Hopefully we could build a prototype for pilot municipalities before the next election." she revealed.

The pilot municipalities include Paombong, Bulacan; Gimba, Nueva Ejica; Dinalupihan, Bataan; Anilao, Iloilo; San Jose de Buenavista, Antique; Alcoy, Cebu; Dumalingao, Zamboanga del Sur; Veruela, Agusan Del Sur; and Isulan, Sultan Kudarat.

Hon. Donato D. Marcos, President of League of Municipalities in the Philippines (LMP) and mayor of Paombong, Bulacan, expressed his gratitude to DOST-PCHRD and ADMU for identifying LMP as a partner and beneficiary of the e-TABLET through a message delivered by his representative.

eTablet, is just one of the initiatives of DOST-PCHRD in developing user-friendly information and communication technology solutions to accelerate the gathering and processing of health related information for policy making and delivery of quality healthcare services.

Saving more lives with DOST rescue boats

By ARJAY C. ESCONDO S&T Media Service, DOST-STII

LOS BANOS, Laguna – Realizing flooding as a perennial problem with the country being visited by about 20 tropical storms a year, DOST Director Alexander Madrigal initiated a project for a faster response in time of disasters.

Thus, the Department of Science and Technology, through its CALABARZON office, designed and fabricated sturdier, cheaper rescue boats.

According to Dr. Madrigal, "with better features, lower cost, and higher efficiency, the DOST fiber glass rescue boat can ensure effective and efficient rescue operations in CALABARZON."

"Strong enough to be operated by an outboard motor, yet light enough for paddling,"says Engr. Eric Bautista of Technical Services DOST IV-A. Also, the DOST designed rescue boat costs about Php180,000, only a third of the price of commercial rubber rescue boats, he added.

The boat can accommodate 8-12 passengers and has removable seats, creating more space to transport luggage and large domestic animals. Moreover, it is featured with small compartments for medical and rescue equipment storage.

Made entirely of fiberglass materials, the DOST rescue boat is designed mainly for inland flooding. According to Engr. Bautista, unlike the conventional rubber rescue boats, fiberglass boats will not puncture easily in case of contact with pointed objects such as fences.

"Also, with the boat being lighter, it can be maneuvered easily during rescue operations in communities with narrow areas," he added. Aside from development of rescue boats, a proposal is underway to provide local cooperators with an ideal fabrication shop for the fiberglass rescue boats. These cooperators include local fiberglass makers such as Samahang Cooperatibang Mangingisdang Bayog and the People's Organization Buklod Tao.

General Nakar in Quezon, recognizing the potential flooding of Agos and Daraitan river system during heavy rains, acquired an additional unit of the fiberglass boat. Currently, areas in San Mateo, Cainta, Batangas and Malolos have their own units.

In close coordination with MARINA, RDRRMC, and local cooperators, continuous promotion of the DOST designed rescue boats especially to LGUs outside the region will be done.

LiDAR leads the way

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

DREAM-LiDAR 3-D Mapping Project, or Disaster Risk Exposure and Assessment for Mitigation-Light Detection and Ranging Technology Project, is now moving at top speed to meet its projected December 2013 deadline as far as data acquisition for all the 18 major flood-prone river basins is concerned. The project is a research and development initiative implemented by the University of the Philippines through the Grant-in-Aid program of DOST.

At present, DREAM-LiDAR has completed data acquisition for Bicol, Pampanga, and Compostela Valley. Data acquisition involves aircraft-borne LiDAR technology scanning the river basin to create 3D maps of geographical locations of objects on earth – from buildings to water bodies and land features – showing depth and elevation. The LiDAR-equipped aircraft will next be deployed in Mindanao where data acquisition will start in Cagayan de Oro.

The LiDAR technology, widely used in the UK for the past 15 years, offers three-dimensional (3D) laser scanning and mapping. In the UK, it is used in both airborne and ground surveying for flood risk assessment and forestry management activities.

According to Program Leader Dr. Eric Paringit, the team is confident that by June this year, 10 out of the 18 river basins would have been covered in terms of data acquisition, leaving only eight river basins to be covered for the rest of 2013.

"They're doing the processing faster now," said Raymund E. Liboro, director of DOST's information arm, the Science and Technology Information Institute.

"It has something to do with some new techniques that they learned as they explore the technology. Creativity is also involved here," Dir. Liboro explained further.

He cited the case of Compostela Valley where data acquisition, which began in January 15, actually took only three to four days. However, rains delayed the work and so data acquisition was only completed after two weeks. The final product—3D maps and highly-detailed images out of which flood hazard models were created – were delivered by February.

Another breakthrough development and major physical output under the DREAM-LIDAR Project are the barangay level flood hazard maps for all 33 barangays surveyed in Compostela Valley. Flood hazard maps show the extent of flooding in an area as well as the expected depth of the floodwaters.

"This is the first time something like this has been done, and it could only be possible if you have highly detailed topographic maps to begin with," Dir. Liboro stressed.



The DREAM team plans to duplicate this feat for all the 18 river basins in its coverage: Marikina River, Cagayan de Oro River, Iligan River, Agno River, Pampanga River, Bicol River, Cagayan River, Agusan River, Panay River, Mag asawang Tubig River in Oriental Mindoro, Jalaur River in Panay, Ilog-Hilabangan River in Negros Island, Agus River which cuts through Lanao del Sur and Lanao del Norte, Mindanao River which cuts through Cotabato City, Datu Piang, and Midsayap, Tagum-Libuganon River which passes through Bukidnon, Compostela Valley, Davao del Sur, Davao del Norte, and Agusan del Sur. Tagaloan River in Misamis Oriental, Buayan-Malungun River in Mindanao Island, and Davao River.

Dir. Liboro added that a forum cum roadshow on DREAM-LiDAR was held recently to encourage applications developers to exploit and develop the technology. Aside from apps developers, the roadshow was also attended by scientists, researchers, and programmers.

Complementary technologies

Aside from LIDAR, the DREAM Project has also tested and is currently making use of other mapping technologies to support and complement LiDAR's capabilities. One of these is called the MDL DynascanTechnology, a 3D mobile high-speed laser scanner which can be mounted on any moving platform for both sea and land laser surveying. It refines the LiDAR data from the airborne system by creating finer details on measurements along the river or survey river geometry. The scanner was used in the Bicol, Pampanga, and Compostela Valley surveys.

Another is the Halcrow ISIS-TUFLOW, a 2D flood and tide simulation software for flood modeling. It particularly simulates the complex hydrodynamics of floods and tides using full 2D free-surface shallow water equations. This software was used to generate data for the Pampanga River Basin.

Program NOAH, under which the DREAM-LiDAR belongs, has made it to rappler.com's list of Top 5 most awesome government projects in the country today, with its disaster science research initiatives and top-flight technology for disaster management and prevention.







The DAC operates LiDAR equipment onboard two Cessna 206 aircrafts to acquire detailed and up-to-date 3D datasets – from mountains and volcanoes to buildings and other man-made structures. In addition to the LiDAR technology is the Synthetic Aperture Radar (SAR). This technology obtains, through satellite, finely detailed topographic images even during nighttime or inclement weather.

Data Validation Component (DVC)



DVC performs ground validation of the data acquired by the DAC team. The DVC goes on field to take the necessary data from the river basins, including bathymetric and hydrometric data. Bathymetric data shows the depth of water and the shape of underwater terrain, with seafloor terrain shown as contour lines. Hydrometric data, on the other hand, pertain to water characteristics such as quality and density.

Data Processing Component (DPC)

Closeup of Pampanga area



The LIDAR point cloud



DREAM team checks out aerial photo of an area in Pampanga.

The DPC group integrates the LiDAR and SAR data to produce Digital Elevation Models (DEMs) or 3D representations of terrain surface. Ideally, every three hours of DAC acquired data would need six days of DPC processing.







Flood Modeling Component (FMC)





The FMC inputs rain data, soil type, and land cover on DEMs to simulate river conditions to produce flood models in order to produce flood hazard maps. Expected output will be very beneficial for disaster and mitigation preparedness.



- UK provides technical assistance and technology exchange to Project NOAH
- Since topography changes from time to time due to natural processes, surveying should be done every five years
- LiDAR technology was used before Project NOAH which came as an aftermath of Sendong. When Sendong hit the country, government simply tapped LiDAR for the project.
- "The Philippines has 20 typhoons a year. That's an awful lot. With climate change, you can have a lot more Science has determined that climate change is a major problem." – Steph Lysaght of the British Embassy in Manila
- The Philippines loses an average of 5 percent of GNP or billions of pesos for every disaster
- In the UK, LiDAR data, collected over a 15-year period, is constantly being updated and refined Now, there is 70 percent coverage of England and Wales, including many major urban areas and rural flood plains
- LiDAR data can be used in many applications: flood modeling, infrastructure planning, archaeological surveys, urban visualization, emergency planning, environmental monitoring, risk assessment, urban design and planning, agricultural assessment, asset planning, and wind farm site selection

STARBOOKS goes to Tarlac

By ALLAN ACE ACLAN S&T Media Service, DOST-STII

STUDENTS AND researchers at the Tarlac National High School Annex and Carlos P. Romulo Library may now access the latest and most relevant science and technology (S&T) information for free, even sans internet connection, via a stand-alone onsite research kiosk developed by the Department of Science and Technology (DOST).

Called the Science and Technology Academic and Research-Based Openly Operated Kiosk Station or STARBOOKS, the first-of-itskind research tool in the country, contains a huge collection of digitized S&T resources in both text and video/audio formats on a wide range of topics. These include food and nutrition, health and medicine, emerging technologies, energy, environment, appropriate livelihood technologies, investigatory projects and theses in different fields.

Students, members of the academe and government employees witnessed the signing of the Memorandum of Understanding (MOU) between the Government of Tarlac and DOST's information arm, the Science and Technology Information Institute (STII) to signal STARBOOKS' Tarlac launch last February 28, 2013 at the Bulwagang Tarlac in Tarlac City. The MOU was signed by Tarlac Governor Hon. Victor Yap and STII's Chief of Finance



DOST-STII Finance and Administrative Division Chief Arlene S. Centeno and Governor Victor Yap of the Provincial Government of Tarlac (far right) lead the signing of the Memorandum of Understanding for the installation of DOST STARBOOKS (Science and Technology Academic and Research-Based Openly Operated Kiosk Station) in Tarlac National High School Annex and Carlos P. Romulo Library, held at the Bulawagan Tarlac, Tarlac City on February 28, 2013.

and Administrative Division Arlene Centeno, representing STII Director Raymund E. Liboro.

In his message, Director Liboro said,"We at the DOST always support initiatives that encourage our people to develop new ideas because of this kind of knowledge explosion, and even inspire one's capacity for entrepreneurship and research for socio-economic development."

The STARBOOKS kiosks were acquired by the Tarlac National High School and Carlos P.

Romulo Library to become its first beneficiaries in the province.

Previously, 143 STARBOOKS kiosks were already installed in various provinces in the country including schools in Davao and the Cordillera region.

To orient its beneficiary institutions on the proper use and operation of STARBOOKS, STII conducted a seminar and workshop last February 27 at the same venue.

Bacteria may help address water pollution

By MALUISA S. LUMIOAN S&T Media Service, DOST-STII

CERTAIN TYPES of bacteria may help in waste water cleanup, according to a Department of Science and Technology funded study.

The team headed by Prof. Arlene Llamado of the University of the Philippines Los Baños isolated five bacteria cultures from soils of an abandoned mine site in Mogpog, Marinduque to determine if these can form biofilms. Then the team assessed the bacteria's potential in wastewater treatment applications.

Biofilms are the slimy substances secreted by certain types of bacteria, just like the slime on unbrushed teeth or the film on top of leftover soup. In hospital settings, biofilm-forming bacteria are notorious in spreading hospitalacquired infections because they are resistant to antibiotics and cleaning agents.

However, the researchers wanted to take advantage of the ability of microorganisms to form biofilms because they are negatively charged therefore they can attach to positively charged metal ions.

"By the simple idea of negatively charged polymers attaching to positively charged ions, we actually have a potential to remove heavy metal ions from wastewater," explained Prof. Lllamado.

She further explained that they collected samples from a mined out site where there is low concentration of organic elements and high concentration of copper, because they expected that bacteria living in these soils would have resistance to heavy metals.

All of the bacteria samples isolated from the site exhibited ability to produce biofilms. Further evaluation showed that all of these isolates were capable of removing heavy metals in water-copper solution. The planktonic cells of each bacterial isolate ate up the copper within six hours of contact time. Since actual wastewaters may contain multiple metals, the team also tested the isolates in mixed metal solution containing copper, cadmium, lead, and zinc. Results revealed that three out of the five isolates decreased their efficiency in removing copper when exposed to mixed metal solution. Interestingly, one of the isolates called NV17 has shown dramatic increase in its ability to remove copper in multimetal solution. However, Professor Llamado said that the reason for this occurrence was not yet tackled in the study.

Subsequent analysis of the bacteria revealed that the isolates NV112 an NV1A are species of *Rhodococcus*; NV17 and R11 are species of *Bacillus*, and NV2A is *Pseudomonas sp*.

Prof. Llamado revealed that further study is underway to test the ability of these bacterial isolates in removing metals in actual wastewater.

PHIVOLCS sets up tsunami detection and warning system in Corregidor Island

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

THE PHILIPPINE Institute of Volcanology and Seismology (PHIVOLCS) and the Advanced Science and Technology Institute (ASTI), both agencies under the Department of Science and Technology (DOST), set up a Community Tsunami Detection and Warning System in Corregidor Island before the end of January to serve its Manila Bay coastal communities.

The system is a Grant-in-Aid project of the DOST titled "Establishment of a Cost-Effective Local Tsunami Early Warning System for Selected High-Risk Coastal Communities of the Philippines" or TeWS. It aims to provide coastal folks with a reliable yet cost-effective device for tsunami forecast via real-time information and signals that allow Local Government Units (LGUs) to implement appropriate disaster response in affected areas. Aside from its efficiency and low-maintenance quality, the technology is designed by local scientists and experts from DOST, ASTI, and PHIVOLCS, thus proving the Filipino's ingenuity and world-class capability in developing sustainable and technologically sound solutions to national problems.

The tsunami detection equipment is composed of a platform with a pole to which different sensors are attached: the ultrasonic tide sensor which notes the rise and fall of the sea level, dry sensor which determines whether water has receded immediately after a large earthquake thus indicating a very high possibility of tsunami occurrence, and wet sensors installed at heights of 1m, 5m, and 10m, which detect if tsunami water has already hit the pole. The sensors at the tsunami detection site communicate all signals to alerting sirens using GSM-communication developed by ASTI. Experts from both the PHIVOLCS and ASTI designed the sensors and the whole system.

The two DOST attached agencies are now in the process of selecting which communities within the Manila Bay cluster will pilot the tsunami alerting sirens.



TSUNAMI EARLY WARNING SYSTEM FOR LINGAYEN GULF. PHIVOLCS Director Renato U. Solidum (extreme left) discusses the Tsunami Early Warning System for Lingayen Gulf to DOST Region I Director Elsa Chan at the Bolinao School of Fisheries, Bolinao, Pangasinan during the test launch of the Community Tsunami Detection and Warning System. Shown at right is the set of alerting sirens with communication module. With them in photo are (from left) Engr. Felipe Andrada of DOST-PSTC (Provincial Science and Technology Center) Pangasinan, George Mesina of ASTI, and Engr. Angelito Lanuza of PHIVOLCS.

Last December 14, DOST, together with PHIVOLCS and ASTI, test-launched the complete set of detection and warning equipment for its Lingayen Gulf cluster at the Bolinao School of Fisheries in Bolinao, Pangasinan. The five pilot alerting sirens are located in barangays Gueset, Pugaro, and Binloc in Dagupan City, barangay Poblacion in Bolinao, and barangay Poblacion in Lingayen. PHIVOLCS and ASTI are now waiting for the LGUs to submit their evacuation plans based on hazard maps provided to them.

Aside from the Manila Bay and Lingayen Gulf clusters, the project covers three other clusters: Albay Gulf, Subic Bay, and Lubang Island in Occidental Mindoro. Under the plan, each cluster will have one detection system composed of an ultrasonic tide sensor, wet and dry sensors, as well as five pilot coastal communities for alerting sirens. Alerting sirens in three project areas namely Albay Gulf, Lingayen Gulf and Subic Bayclusters are now operational.

Meanwhile, representatives from PHIVOLCS and ASTI have begun communicating with Occidental Mindoro LGUs regarding the installation in Lubang Island. Talks with Batangas City authorities are also set to commence before the end of January. Located south of Occidental Mindoro across the Verde Island Passages, Batangas City, along with neighboring coastal communities, is expected to greatly benefit from the project.

Project leaders also plan to coordinate with local agencies such as NAMRIA (National Mapping and Resource Information Authority) regarding the TeWS initiative. Pasay city adopts bioreactor bioreactor technology to lessen market wastes

By ALLAN ACE ACLAN S & T Media Service, DOST-STII

ORGANIC PALENGKE (wet market) waste is no longer a problem in Pasay City after they adopted the Department of Science and Technology (DOST)'s bioreactor technology.

Known to be the "Premiere Gateway to the Philippines," Pasay city opted for the bioreactor to deal with its mounting *palengke* wastes, a move that ironed out the city's collaboration with the Department of Science and Technology-National Capital Region (DOST-NCR) and the Industrial Technology Development Institute (ITDI).



To stop its perennial problem on mounting market disposals, The Department of Science and Technology –National Capital Region granted the local government of Pasay City a bioreactor, The said technology was developed by the Industrial Technology Development Industry. The official turnover ceremony was held on February 13, 2013 at the composting compound located at the Libertad Market, Pasay City. In photo is DOST-NCR Director Teresita C. Fortuna

The bioreactor technology, developed by the DOST-ITDI, produces organic fertilizer from biodegradable wastes. It minimizes landfill disposal, does not emit toxic compounds, and has low energy cost.

In the turn over ceremony held at the composite site located at the Libertad Market, Pasay City, DOST-NCR Director Teresita Fortuna said that in all 17 cities in Metro Manila, Pasay is the third city that adopted said technology.

She also added that this collaboration between DOST-NCR and LGU-Pasay,



Compost produce through the ITDI's Bioreactor Technology granted DOST-NCR to the local government of Pasay City .

together with DOST-ITDI, was made possible through the signing of the Memorandum of Agreement which took place at Pasay City Hall on May 2, 2011.

Pasay City established the bioreactor facility with higher one-ton capacity in Makabayan St., Brgy. 91, near the Libertad Market.

"Masaya kami at kami ang nabiyayaan ng DOST ng ganitong klaseng teknolohiya. Lalo pa't nakilala ng tao ang Libertad market dahil sa masamang amoy nito dulot ng tambak-tambak na basura na mula sa palengke," said Brgy. Captain June Severino de la Peña of Barangay 91. (We are happy for DOST's technology especially that people are already noting Libertad Market's foul smell because of market waste.)

DOST-NCR provided the funding for the fabrication of a 500-kg capacity bioreactor. ITDI on the other hand, provides the training seminars and technical support to the local government unit on the said city.

The bioreactor technology in Pasay City, which became operational last January 2013, was handed over by DOST - NCR to the city government through its Solid Waste Division. It will remain at the city for one year while the city fabricates its own equipment.

DOST NEWS

S&T good news up at DOSTKUSYON

By GEORGE ROBERT E. VALENCIA III S&T Media Service, DOST-STII



Secretary Mario G. Montejo gives the media a walk-through of DOST's plans for 2013 during the recent DOSTkusyon. This includes a new ICT-centered program called "Smarter Philippines", a new high-tech facility called ADMATEL, and developments on big projects such as Project NOAH, 3D or LiDAR mapping of the Philippines, the Automated Guideway Transit, the MakiBayan Program, and Tuklas Lunas Centers, among others. (*Photo by Gerardo Palad, S&T Media Service, DOST-STII*)

WHAT'S S&T good news? Simply put, it is about what science and technology, or S&T, can do to improve the lives of Filipinos. And the better news: technologies locally developed by our own scientists and researchers are available to help do this.

Now we can get our regular dose of S&T good news from our own scientists and experts through the Department of Science and Technology's (DOST) "DOSTkusyon," a bi-monthly press conference organized by DOST's Science and Technology Information Institute. Launched this February at the La Breza Hotel in Quezon City, this year's first "DOSTkusyon" had DOST Secretary Mario Montejo introducing the "Smarter Philippines", DOST's latest umbrella program that focuses on using information technology to develop or innovate products or processes for particular sectors.

"DOSTkusyon is an important step for DOST [because] there are a lot of developments going on inside [the system] that we would like to share to people in the country," said DOST spokesperson Raymund Liboro, also director of DOST-STII.

Stronger manufacturing industry will reverse aging economy, says NAST

By ANGELICA A. DE LEON S&T Media Service, DOST-STII THE ECONOMY may be backsliding, but this situation can be reversed to make the country coast along a route that leads to national progress.

This was how Academician Dr. Michael Tan, University of the Philippines professor and member of the National Academy of Science Technology and (NAST), an advisory body of the Department of Science and Technology (DOST), summed up the NAST-organized Round Table Discussion (RTD) on the country's economic situationer. During the discussion, the term "development progeria" was used to describe the Philippine economy in comparison with

progeria, a medical condition seen in young children that causes them to age faster than normal.

The economy at present is said to be "a young economy mimicking a mature one," like a child afflicted with progeria, and this may worsen the country's poverty situation, according to National Scientist Raul V. Fabella.

A child suffering from progeria develops an enlarged head, small and wrinkled face, baldness, and dry skin, among others. However, despite this seemingly rapid aging process, the patient displays limited growth, remaining small in stature with limited movement. The patient remains in this condition until death which mostly occurs in his teenage years.

"Aging" economy can be reversed

The Philippine economy displays similar symptoms, according to Fabella. He noted that its limited growth is due to several factors, namely the depreciation of the Indian rupee which threatens the local BPO industry, the stock market and real estate bubbles, the country's exclusion from the list of preferred sites for direct foreign investments in tradables, and the overvaluation of the peso, among others.



Secretary Montejo answers different media queries about previously discussed plans and projects of the DOST for 2013 and beyond. He is joined by Dr. Amelia P. Guevara (left), undersecretary for research and development, and Dr. Teresita C. Fortuna, director of the National Capital Region Office. (*Photo by Gerardo Palad, S&T Media Service, DOST-STII*)

"DOSTkusyon" provides venue for the media to get new and important S&T information from DOST's various offices and agencies. Aside from information materials, DOST-STII also provides online streaming for journalists who cannot attend the conference.

"DOSTkusyon" also featured the newly installed Advanced Device and Materials Testing Laboratory or ADMATEL at the DOST's Industrial Technology Development Institute, DOST's oldest research and development agency. The ADMATEL houses state-of-the-art facilities for failure analysis to provide services to the local electronics and semiconductors industry. Undersecretary for Research and Development Amelia Guevara said that failure analysis, previously done abroad, is expensive and takes much time.

"DOSTkusyon", through DOST-NCR Director Tess Fortuna, also gave an update on DOST's Small Enterprise Technology Upgrading Program, or SETUP, that provides a package of technology support to the country's micro, small, and medium enterprises.



DOSTkusyon lets science journalists, TV, and radio reporters hear first-hand from DOST experts, to enable faster, reliable, and up-to-date communication of information to public. It is facilitated by DOST's information arm, the Science and Technology Information Institute, and held every first Wednesday of the month. (Photo by Gerardo Palad, S&T Media Service, DOST-STII)

"I commend DOST-STII for organizing 'DOSTkusyon'," said Dr. Alejandro P. Melchor III, Smarter Philippines program leader and deputy director of DOST's Information and Communications Technology Office. "This is a winsome and useful avenue for us to present our projects to the media, and to also help us engage and communicate with the public, for whom our services are intended."

For details on "DOSTkusyon," please contact DOST-STII Public Affairs at (632) 837-2071 local 2148 or fax (632) 837-2195.

Fabella, citing studies by Rodrik in 2008 and by Berg and Miao in 2010, said that a 10 percent overvaluation of the currency leads to a growth reduction of 0.2 percent.

These factors hinder industries, thus limiting the movement of business activities and making the economy dry and wrinkled instead of being fresh and rosy.

In his synthesis of the discussion however, Dr. Tan said that unlike progeria which is incurable, development progeria is receptive to treatment, and thus can be cured.

One kind of treatment or solution suggested during

the RTD was to strengthen the manufacturing industry.

Strengthening manufacturing industry

Dr. Ramon L. Clarete, dean of the University of the Philippines Diliman School of Economics, suggested that efforts should focus on export-oriented manufacturing industry.

Sixty percent of the total number of exporting firms in the country comprises small and medium-scale enterprises (SMEs) that generate 53 percent of total employment volume and make up 99.6 percent of all registered businesses in the country.

Additionally, Calixto V. Chikiamco, president of the

Foundation for Economic Freedom, suggested a manufacturing industry rooted on agricultural growth and productivity, or agroindustrial growth. "Agricultural growth and development supports the manufacturing sector by providing a higher domestic market, affordable labor, and supply of raw materials," said Chikiamco.

As one of its priority programs, DOST leads and supports industry development initiatives, including those that strengthen local manufacturing. Through its Small Enterprises Technology Upgrading Program (SETUP), the agency provides a package of technology assistance to bolster the productivity and competitiveness of SMEs including those engaged in exports. Among the industries DOST's SETUP currently supports include food processing, metals, ICT and semicon, furniture, agriculture, aquaculture, among others.

However, to promote net exports, Dr. Clarete cited the significance of peso undervaluation, echoing Fabella's earlier statement about overvaluation as one of the factors negatively affecting the economy. "When you have a low exchange rate, and you're in the export business, your revenues in pesos will be lower. And then your cost are in pesos so your profits are going to be squeezed. So the lower the exchange rate or the stronger the peso, the lower would be your profits," Dr. Clarete explained.

DOST, IPO push for intellectual property protection

By LUISA S. LUMIOAN S&T Media Service, DOST-STII

"PROTECT YOUR intellectual property right from the start," advised Carmen Peralta, director of Intellectual Property Office Philippines (IPO-Phil), to a group of young technopreneurs during the Investors and Start-ups Forum held at the UP-Ayala Technohub in Quezon City last January 11.

Organized by the Department of Science and Technology-Technology Resource Center (DOST-TRC), the forum was part of DOST's bid to promote IP awareness to strengthen its technology business incubation program. Under this initiative, private or public entities called business incubators or accelerators provide assistance to start-up companies via affordable services and facilities, administrative and technical support, mentorship, and linkages to clients and investors.

According to Dir. Peralta, a strong intellectual property (IP) portfolio could boost the value of a start-up company. She cited The Economist claims in 2005 that 75 percent of the value of publicly-traded companies in the US was based on IP.

IP refers to any creation or product of the human mind including inventions, original designs, practical applications of a good idea, mark of ownership, literary and artistic works. Protecting IP rights through patents, utility models, industrial design, and copyrights will ensure that any commercial gain from the use, production and sale of a product or creation will go to the inventor or creator, and not to someone else.

Further, the IPO-Phil director emphasized that the "first to file" rule applies in the country, so it is important for start-up companies, especially when technology is at the core of their business, to study their IP protection strategy as early as possible and get advice from professionals.

A person of a company with a novel, inventive and useful product, process or improvement of a product is advised to file a patent to obtain a 20-year exclusive right over the product. This means that no one else is authorized to develop and sell his or her product other than those formally authorized. The person or company that owns the patent receives royalty whenever other people or entities use the product for commercial purpose.

IPO Phil has waived its fees for the first 1,000 patent applications under the Patent Protection Incentive Package. However, Peralta clarified that this applies only to those inventors and researchers who are collaborating with institutions which are Innovation and Technology Support Office (ITSO) franchisees.

A utility model, or an innovation that is not sufficiently inventive, is given seven years patent protection.

Meanwhile, an industrial design, referring to the aesthetic aspect of a product, can have a five-year patent protection that can be renewed twice.

While patents, utility models, and industrial designs require registration, a copyright does not as it can be filed immediately from the time of publication or recording and other such moments of expression. Copyrights last 50 years after the death of the owner.

The forum also featured a panel discussion on start-up founders under the DOST-TRC Open Technology Business Incubator (Open TBI) and UP Enterprise, two of several incubators set up in the country via DOST's business incubation program. The start-up founders pitched their companies and products as well as shared the challenges and demands of starting up a business.

Moreover, the speakers also revealed that there are financing companies that can help private incubators, accelerators and angel investors beef up their businesses.

Registering the first patent for a pencil



Hymen L. Lipman of Philadelphia, is credited with registering the first patent for a pencil with an attached eraser. In 1862 Lipman sold his patent for \$100,000.

In 1840, Lipman succeeded Samuel M. Stewart, then the leading stationer in Philadelphia. Three years later, he started the first envelope company in the U.S.

In 1862, Lipman sold his patent to Joseph Reckendorfer for \$100,000, who went to sue the pencil manufacturer Faber for infringement. In 1875 the Supreme Court of the United States ruled against Reckendorfer declaring the patent invalid because his invention was actually a combination of two already known things with no new use.

Source: PDXretro.com

Sweet sorghum eyed as alternative source of income for farmers

hurting the farmers," he elaborated.

He explained how the crop's profitability can turn the tide in favor of tobacco farmers who use too much pesticides in order to protect the leaves. He emphasized that sweet sorghum is a multi-purpose crop. It can be used not only as food, but as feed and fuel as well.

"In the tobacco industry, one major issue is fuel," he revealed. The cheapest source of energy in flue-curing, according to Dr. Layaoen, is fuel wood. This largely explains why mountains in Ilocos are denuded. The trees are being cut to gather the wood for flue-curing. "Even the *kaimito* trees and other fruit trees were not spared," said Dr. Layaoen. "I'm a witness to this predicament in our environment."

Tobacco is one of the leading cash crops in the Ilocos region.

Dr. Layaoen also explained that sorghum has an extensive root system, making the crop drought tolerant. Producing a grain of sweet sorghum also does not require a lot of water, unlike other grains. Further, the equipment for sweet sorghum production is the same equipment used in sugarcane juice processing.

However, Academician Alvin B. Culaba, NAST's focal person on energy, revealed that market acceptance of the crop continues to be a subject of research. Acd. Culaba, a member of the NAST Engineering Sciences and Technology Division, is involved in research activities on alternative and renewable energy sources including biodiesel and bioethanol, advanced energy conservation technologies, and the monitoring of energy programs in the Philippines, among others.

Another institution undertaking research initiatives is MMSU, the nerve center of sweet sorghum studies and development in the country. Dr. Layaoen is at the forefront of MMSU's sorghum experiments and nationwide testing of different varieties. Ethanol production is one of the university's areas of research.

In his overview of the sweet sorghum industry in the Philippines, Dr. Layaoen shared that Ilocos Norte is the ideal place for planting sweet sorghum because of its long dry season. However, it was suggested that small farmers adopt a cropping system which rotates sweet sorghum with pigeon peas at a ratio of 3:1. Pigeon pea restores soil quality and provides fuel for the production of jaggery or concentrated juice.

Dr. Layaoen added that a farmer's cooperative has been set up in Ilocos to provide the seeds, as well as a village-level bioethanol distillery using sweet sorghum as feedstock. Its end product—hydrous ethanol—is used to make moisturizers and hand sanitizers, which are now commercially available.

Aside from moisturizers and sanitizers, sweet sorghum may also be used to make syrups and fresh juices, among others.

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

SWEET SORGHUM may be the next crop that will bring income to farmers affected by the Sin Tax Law. This was one of the major points raised during a recent focus group discussion mounted by the National Academy of Science and Technology (NAST), an advisory body of the Department of Science and Technology.

Titled "Are We Ready for Sweet Sorghum Bioethanol?" experts and other stakeholders discussed the strong potentials of sweet sorghum as a raw material for bioethanol.

"Tobacco farmers will lose their jobs if taxes will increase, and demand for tobacco products will slow down,"explained guest speaker Dr. Heraldo L. Layaoen, vicepresident for planning, development and external linkages at the Mariano Marcos State University Batac (MMSU) in Ilocos Norte. "We have a ready substitute for this—sweet sorghum."

"It generates employment and may replace the tobacco industry without

FPRDI starts developing standards for e-bamboo

By RIZALINA K. ARARAL S&T Media Service, DOST-FPRDI

TO ENSURE the quality of engineered bamboo or e-bamboo made in the Philippines, the Department of Science and Technology's Forest Products Research and Development Institute or FPRDI has started to develop manufacturing standards for e-bamboo products, especially floor tiles.

This is in preparation for the expected rise in the use of e-bamboo as a popular material for housing and furniture components here in the Philippines. E-bamboo refers to bamboo-based composite products made of a combination of bamboo strips, slats, strands, particles, fibers or veneers.

Project Leader Dr. Marina A. Alipon informed, "We checked the physical and mechanical properties of e-bamboo made by various companies and organizations across the country because we wanted to come up with quality standards that we could submit to the Bureau of Product Standards' Accreditation of Innovative Technologies for Housing (AITECH). "

Alipon's team was able to come up with data on the optimal strength requirements for locally made e-bamboo and submitted the information to AITECH for approval. "Our goal is for our products to eventually become competitive in both local and foreign markets," she said.

E-bamboo can be used in different ways just like solid wood. Being man-made, it can be designed to meet specific performance requirements. It is also often stronger and less prone to warping than their counterpart solid wood products.

Worldwide, e-bamboo is produced primarily in China and sold in North America, Europe, Japan and Korea. Local production is very minimal, hampered by varied factors including the lack of raw materials.

> According to DOST-FPRDI's Director Romulo T. Aggangan, "The future certainly looks bright for the country's bamboo industry especially with all the attention it received last year from the national government."

Dir. Aganggan said that such attention given to our bamboo industry will also cascade to e-bamboo products.

Executive Order No. 879 created the Philippine Bamboo Industry Development Council which is tasked to push for a robust and sustainable bamboo sector nationwide, with the help of other government agencies and the private sector.

"Our policy makers have finally seen the potential of bamboo enterprises as engines for economic growth, especially in the rural areas," Dir. Aggangan added.

The world market for bamboo products amounted to US \$12 billion in 2012 and is expected to rise by US \$20 billion in 2015, he revealed.

One of the government's flagship projects, the National Greening Program, included bamboo in its priority reforestation crops. Likewise, Executive Order No. 879 directs the Department of Education to use bamboo in at least 25 percent of the school desks and other furniture requirements of all public schools nationwide every year.

"That is a big market for our bamboo producers, and fore-bamboo manufacturers," he enthused.



DOST-FPRDI is developing national standards for local e-bamboo products such as this floor parquet (right) and door made in Bukidnon

DOST, NSC of Taiwan to review joint research proposals

By ANGELICA A. DE LEON S & T Media Service, DOST-STII

THE DEPARTMENT of Science and Technology (DOST), along with the National Science Council (NSC) of Taiwan, is set to review proposals for joint research initiatives between Filipino and Taiwanese researchers on the following areas: (1) nanotechnology, genomics, and biotechnology in health and agriculture; (2) climate change and geosciences/ geohazards; and (3) use of sensors toward "smart cities."

These three have been identified among the new priority areas for cooperation under the 2013 Manila Economic and Cultural Office (MECO) –Taipei Economic and Cultural Office (TECO) Joint Research Program.

To provide a venue for Filipino and Taiwanese science experts to converge and explore possibilities for research and jumpstart these collaborative activities under the MECO-TECO joint program, DOST and Taiwan's NSC mounted the MECO-TECO Joint R & D Workshop from December 17-18 at the Heritage Hotel in Manila.



Dr. Antonio Laurena discusses his presentation on "Genomics for Agriculture: Crop Varietal Improvement" during the plenary session on Agriculture. At the presidential table are (from left) Dr. Desiree Hautea, Dr. Chih-Wei Chang, Dr. Zueng-Sang Chen, Dr. Milagros Peralta and Dr. Grace Chu-Fang Lo.

The workshop, which drew the participation of 61 experts from the Philippines and 14 from Taiwan had three plenary sessions, particularly for the fields of agriculture, health, and nanotechnology as well as four breakout sessions for agriculture, health, and climate change, and geosciences.



In summary, the participants came up with the following recommendations:

The Agriculture breakout session led by Dr. Milagros Peralta of the University of the Philippines Los Banos (UPLB), enumerated the following as possible topics for research: ground water utility, soil quality/soil remediation, precision agriculture/forestry/fisheries, aquatic biodiversity and conservation, crops aquatic stock improvement, and nanomaterials for agricultural applications. Dr. Peralta also suggested that information pertaining to research visits, workshops, training courses, and sandwich programs for graduate students be included in the research proposals.

continued next page



Dr. Cynthia Saloma during the open forum for the plenary session on Agriculture.

The Agriculture sector group in a roundtable discussion during the breakout session on Nanotechnology, Genomics, and Biotechnology for Health.



DOST, NSC . . . from page 49

On the other hand, the Health group, led by Dr. Reynaldo Garcia of the University of the Philippines Diliman, submitted three capsule proposals. These are "Genomic Studies on Diabetes Type 2 on Philippine and Taiwan Population" that will look into genomic variants associated with diabetes mellitus in Filipino and Taiwanese populations, "Philippine-Taiwan Initiative Against Dengue Virus" that aims to screen natural product extracts and molecular-based drug design, and "Development of Nano-based Diagnostics based on Gold and Chemiluminescent Detection of Tropical Diseases: Case for Dengue" that aims to conduct a point-of-care testing of tropical disease (dengue) using gold nanoparticles and chemiluminescent detection.

Meanwhile, the Climate Change and Geosciences/Geohazards group proposed a Phase III of their ongoing project under the Taiwan-Philippines Geodynamic Integrated Project entitled "Geology and the Environment: Interdisciplinary Investigations on Tectonics, Natural Resources and Geohazards."

The MECO-TECO Joint Research Program funded Phase II of this collaborative undertaking. Represented by Dr. Decibel D.



Discussion of the Health sector group during the breakout session on the fields of Nanotechnology, Genomics and technology for Health.

Eslava of UPLB, the group named the following as possible collaborative activities: joint research/fieldworks/surveys, organization of and participation in scientific conferences, short-term visits of researchers and graduate students, and scientific and technical access to laboratory and library facilities. PHIVOLCS' Dr. Renato U. Solidum Jr. and Dr. Teresito C.

Bacolcol are among the contact points for the group's proposals.

Proposal submissions ended March 30, 2013 after which DOST and NSC will independently review the proposals. All endorsed projects will be set for implementation in August this year.

TRIVIA: Harmless and beneficial bacteria far outnumber harmful varieties. Because they are capable of producing so many enzymes necessary for the building up and breaking down of organic compounds, bacteria are employed extensively by humans–for soil enrichment with leguminous crops, for preservation by pickling, for fermentation (as in the manufacture of alcoholic beverages, vinegar, and certain cheeses), for decomposition of organic wastes (in septic tanks, in some sewage disposal plants, and in agriculture for soil enrichment) and toxic wastes, and for curing tobacco, retting flax, and many other specialized processes. Bacteria frequently make good objects for genetic study: large populations grown in a short period of time facilitate detection of mutations, or rare variations.

SOURCE: Britanica.com

Innovation marks studies of HS studes in Philippine International Fair

By ALLAN ACE ACLAN S & T Media Service, DOST-STII



IN THE first ever Philippine International Scientific Fair organized by Department of Science and Technology - Philippine Science High School, many aspiring young scientists proved their sensitivity in confronting issues of today by formulating different solutions via S&T.

One proof is the participation of more than 60 high school students from the country and abroad who presented their brilliant researches during the event's Community Fair in order to build a better world through S&T.

With the theme "Building a Scientific Culture," the fair aims to instill among the students the values of research and proper application towards building a culture of science among the youth. The fair was A world that does not continuously renew itself through scientific minded and technologically innovative youth cannot possibly advance.

held last February 5, 2013 at Ynares Center, Antipolo City.

One of the studies is "Obtaining Biodiesel from Seeds" by Tristen Zheng Jun Lei, Jonathan Chua Yu Jing, and others of Raffles Institution from Singapore who explored alternative energy source from fruit seeds. According to the researchers, seeds from fruits are renewable and easily obtained. Biodiesel from seeds are also produced in a shorter period of time compared with the conventional fossil fuel.

> In the experiment, the team extracted lipids from crushed papaya, longan, and durian, and compared it with the lipids of other different seeds. Lipid, or oil, from the seeds with the highest yield was converted to biodiesel through transesterification.

According to Encyclopedia Britannica, transesterification is

an organic process in which the combination of an alcohol with an ester produces a different alcohol. The process is commonly used in the commercial scale operations to produce biodiesel.

The team concluded that papaya seeds contain more lipids than the other fruits and that it is most efficient when it comes to extracting lipids and therefore has the potential to be converted into a biodiesel.

Aside from papaya seeds, the *bitaog* (*Callophylum inophyllum*), according to students of Philippine Science High School –Eastern Visayas Campus is another possible source of biodiesel. Bitaog is found throughout the Philippines, especially along the seashores where it forms a characteristic strand. The research of Patricia Otida, Theresa Tenterio and Keanu Esconde was based on the study of Arvin Agner et al. in

2010 which revealed that the seeds of *bitaog* are good source of biodiesel.

The research attempted to test an AC60 Kubota engine using bitaog seed-produced biodiesel. One hundred milliliters of said biofuel was mixed with 50% commercial petroleum diesel which powered the engine in 15 minutes.

Results show that the biodiesel from *bitaog* may successfully work on dieselpowered engines, proving that *bitaog* biodiesel is an efficient diesel substitute.

Meanwhile, students from Thailand found another solution for alternative source of energy. Pnayawat Tonanon, Wachiriw at Suntawan, and Sarote Boonseng from Mahidol Wittayanusorn School investigated the appropriate dye for dye-sensitized solar cell (DSSC), a low-cost solar cell belonging to the group of thin film solar cells.

The study explained the electronic transition of UV-visible (ultraviolet) absorption and provided the global structure of porphyrin and its derivatives. It proved that porphyrin is appropriate as dye in DSSCs.

Apart from the Community Fair, the 1st Philippine International Science Fair also featured Science Congress, Students Summit, exhibits, sessions with S&T experts, study critique, and other activities geared toward generating greater interest on S&T and highlighting its indispensable role in solving pressing national problems.

The experts who participated in the event were Dr. Edsel Maurice T. Salvana, hailed as one of Ten Outstanding Young Persons of the World for 2012; National Scientist Dr. Lourdes J. Cruz, 2010 L'Oreal-UNESCO Woman of Science awardee; and Earl Martin Valencia, named one of the New Faces of Engineering for 2007 in Los Angeles.

Cater King Food Corp: From mere caterer to food business royalty

By JENNIFER PALAGANAS S&T Media Service, DOST-NCR

CATER KING Food Corp. is a Filipinoowned company incorporated in 1984 as a food manufacturing and service business. The company was started by Mrs. Teresa Dula Laurel in 1976 to provide the catering needs for parties and wedding receptions of friends and other families.

The catering business soon gave birth to two fastfood restaurants which catered to students at Manila's University Belt.

Goto King, the first product brand of Cater King, was established in 1984 – at a time when "goto" as merienda was sold in carinderias and by ambulant vendors. It enjoyed immediate success that Cater King shifted from being a sole proprietorship into a corporation.



Laging mainit, (aging masarap!

Decades of experience and expertise, quick and efficient service and variety of food offerings at competitive prices, make the Goto King brand a viable franchising opportunity.



In 1989, Cater King ventured into food processing under the brand name Mama Rosa. Mama Rosa's product lines include bottled seafood products, pickles, and relishes, as well as sauces and condiments. Produced in small batches using the finest of ingredients, these high quality products are now being exported abroad with the Filipino community as its main target market. The Mama Rosa Restaurant, another venture, which took its name from

the founder of Cater King, the late Rosa Eco Dula, is also known as a fine dining restaurant serving Filipino specialty foods.

Because of its expanding business interests and the increasing demand for its products, Cater King Food Corp. sought DOST's assistance via SETUP for the acquisition of additional equipment such as chiller, freezer, meat slicer, sausage stuffer, meat grinder, foot stamping sealer, pressure cooker, marinator machine and steam jacketed kettle. These equipment, coupled with technical assistance and trainings from DOST experts, enabled Cater King Food Corporation to improve its process control, plant lay-out, and compliance to Good Manufacturing Processes.

Moreover, the firm increased production to 500 percent, sales by 500 percent, and generated employment by 2 percent. In addition, the company was able to minimize cross contamination with the establishment of a process line for Pinoy Deli Meals, and expand its product lines to include the Pinoy Deli brand.

Today, Goto King continues to go from strength to strength and is now a successful business franchise with outlets abroad, including Abu Dhabi where the restaurant caters to Filipino and Arab clientele -- another proof of how businesses can grow from that one brave initial step into the entrepreneur's world.

Grants-in-Aid program boosts MINSAC's homecare products



By JENNIFER PALAGANAS S&T Media Service, DOST-NCR

THE MOTHER Ignacia National Social Apostolate Center (MINSAC) is the social development arm for the poor of the Congregation of the Religious of the Virgin Mary (RVM). It operates as a social work agency implementing community-based services for children, youth, women and their families.

One of the projects of MINSAC is the provision of livelihood to women and parents of their scholars in Payatas, Quezon City. The livelihood project includes a sewing program and homecare products manufacturing.

DOST-NCR provided assistance for the upgrading of the production of homecare products, specifically detergent powder, fabric conditioner, disinfectant and bleaching agent, dishwashing liquid and liquid hand soap.

Before DOST-NCR's intervention, workers were mixing their products manually. Through DOST-NCR's Grants-in-Aid program, the MINSAC Livelihood Center was provided with a mixer, a pen type PH meter and free product testing for their powder detergent. MINSAC was also provided with a free label design to enhance the marketability of its products.

Because of DOST-NCR's technical interventions, the total sales and volume of MINSAC's products increased by 2000 percent. In addition, the center was also provided with more livelihood opportunities for parent recipients, allowing MINSAC to add more workers to their production and enable the staff to earn higher wages.

MINSAC's products may be purchased through its congregation centers nationwide, schools, retreat houses and small retailers and are usually sold to households within the area or in Quezon City. Their products are also available in selected grocery stores in Quezon City.



DOST-Quirino implements three Grants-in-Aid projects

By THELMA C. BICARME S&T Media Service, DOST-PSTC Quirino

DIFFUN, QUIRINO -- The Department of Science and Technology (DOST)-Provincial Science and Technology Center here has reported its successful implementation of Non-Core SET-UP projects amounting to Php 305,000 aimed at strengthening operations of linkages and start-up entrepreneurs for the development of the province.

These projects, funded by the local Grants-in-Aid program of the DOST regional office, include a freshwater prawn hatchery in Diffun, a Product Development and Training Center (PDTC) in Maddela, and the conduct of an S&T Caravan in Nagtipunan.

Freshwater prawn hatchery

The freshwater prawn hatchery was established at Quirino State University (QSU) fish farm with the main objective of providing access to post larva (PL) for fish farmers in the province.

Around 120 breeders were purchased as research on PL production is now being conducted by Mario Valdez, who is in charge of the project. Through this initiative, PL cost will go down from Php 2.50 to Php 1 per PL and availability of prawn in the province will be ensured.

The total fund for this project was Php185,000 from DOST and Php665,000 from QSU.

Product development and training center

THE PDTC, on the other hand, was established at the Maddela Institute of Technology with the goal of developing new products from available raw materials in the area, for commercialization.

The project, with a start-up amount of Php 60,000 from DOST, is also set to provide the following: proper packaging and labels of new products, product analysis, trademark certification, and training of would-be adoptors.

Among the products developed were the squash-based chips and vegetable mix longanisa, fruit wine (taro, cassava, and rice), and banana-based processed foods (banana blossom sisig and pickle).

S&T Caravan

Meanwhile, the S&T Caravan provided livelihood trainings on soap making and mushroom and essential oil production, as well as lectures on packaging and labeling, intellectual property rights, climate change, renewable energy, biogas operations, furnace design and operations, food safety, and presentation of DOST programs and services.

The activity was supported by Mayor Nieverose Nemeses who shelled out P100,000 as counterpart.









By IMELDA CASTRO-RIVERO & PAULINA P. NEBRIDA S&T Media Service, *DOST-I*

Ilocos farmers earn succulent benefits from calamansi squeezer

TAGUDIN, ILOCOS Sur – Seven years ago, members of the ASAP Tagudin – Samahan ng Magkakalamansi Development Cooperative (AT-SMDC), the lone calamansi juice plant in Ilocos Sur started their calamansi juice production enterprise. Each of the 15 members shelled out P2,000 each for the initial capital. After some time however, their number dwindled, until only four members were left behind to manage the cooperative. Sensing the uselessness of their efforts, they considered closing shop.

Until the Department of Science and Technology (DOST) came along.

Thanks to DOST's assistance via its Grants-in-Aid (GIA) Program, the calamansi growers have reduced their cost of labor while improving productivity and penetrating more markets. Priced at P18 per 330 ml bottle, the delicious and healthfriendly ready-to-drink juices are now the rage in trade fairs within and outside Metro Manila, offering a better alternative to softdrinks and other bottled beverages in the market.

DOST's gift of hope

So what fired up their hopes and brought back their confidence in their calamansi products?

First of all, Ilocos Sur Cooperative Development Authority Specialist Teresita Bunoan prodded them to keep on believing in their product.

As it turned out, it wasn't only the members of the cooperative who believed



in the potential of their calamansi juice concoctions. DOST shared this belief as well.

DOST's GIA Program, under the project entitled "Improvement of Calamansi Juice Processing", provided the calamansi processors with a mechanized squeezing machine that facilitated extraction of calamansi juice. Product label design was also improved.

To further increase productivity and compliance to food safety, DOST also provided seminars on current good manufacturing practices (cGMP), training on financial management and consultancy under the Manufacturing Productivity Extension (MPEX) Program and the Consultancy on Agricultural Productivity Enhancement (CAPE) Program in 2009.

Under DOST 1's CAPE program, the farmers were introduced to better technologies and cultural management practices such as pruning of overcrowded old trees, appropriate fertilization, and control of pests and diseases. CAPE further ushered another GIA project for the calamansi growers by providing them with training on vermicomposting wherein starter earthworms were distributed for the composting process. The training enabled the farmers to produce their own organic fertilizer which is now being used in their calamansi farms.

They were also given pruning shears and pruning saw, pesticide sprayers, grass cutter and some high-quality planting materials from accredited plant nurseries. The pruning shears and saw facilitated trimming of overcrowded old calamansi trees into manageable height and removal of unproductive branches which allowed for better light penetration and air circulation. This resulted in new vigorous shoots which produced more fruits. Pruning also eased pests and disease management and harvesting of fruits, thus reducing cost of labor and risks in harvesting from old and tall trees.

Growing market, increasing popularity

Now, AT-SMDC's calamansi juices are perhaps among the best-selling items under the government's OTOP (One-Town-One-Product) program during the 2012 Kannawidan Ilocos Festival Trade Fair held near the provincial capitol in Vigan City, Ilocos Sur.

"Vigan loves our calamansi juice. They know the health benefits and some of them return for more because they claim their cough or cold are healed with this, shared Narcisa Leal, calamansi grower and AT-SMDC member.

Leal further revealed that students and residents from other provinces such as Nueva Ecija, Nueva Vizcaya, Cagayan, Isabela, among others, visit their plant to learn about calamansi production. "Some of the visitors also want to produce calamansi juice in bottles but we tell them they have to join our training seminars," she added.

This positive news certainly bodes well for the future of Ilocos Sur's one and only calamansi juice plant and its farmers. Though they have already captured the interest of a wider market, they have chosen not to sit on their laurels. Instead, AT-SMDC's calamansi juice producers continuously set their goals higher in order to increase production and grab an even bigger slice of the market.

DOST III spends P41 million to assist SMEs

By MARITES BATAC S&T Media Service, DOST-Region III



John 'n Mico chicharones in the new ziplock standup pouches.

CONTINUING ITS commitment to assist in the development of small and medium enterprises (SMEs) in Central Luzon, the Department of Science and Technology (DOST)-III regional office spent Php 40.7 million last year to enable said enterprises to acquire appropriate technology interventions to modernize and upgrade their production processes.

A total of 56 SMEs involved in food processing, metalworking, machine shop operations, to name just a few, received assistance under the Small Enterprise Technology Upgrading Program or SETUP, the flagship program of DOST geared toward the development of SMEs.

One of them is a home-based enterprise started by the husband and wife team of Arturo and Myra Bustillo in Mexico, Pampanga. In 2003, with just Php 2,000, they started making pork *chicharon*, a local delicacy well loved by Kapampangans, which they sold around their neighborhood, in *tiangges*, and local trade fairs.

What started as a kitchen enterprise soon became their regular source of income as demand for their product grew. To cope with this growing market base, they needed to upgrade their traditional method of cooking and processing equipment. Through SETUP, the Bustillos were able to upgrade their processing methods that increased their daily production output. They were also able to avail of the packaging and label design services of DOST-III. From ordinary hand sealed plastic packages, their products are now sold in zip lock standup pouches which extended the shelf life of their product. This means that their products can now be transported to other places without spoiling and thus open new market outlets.

Their product label, John 'n Mico Food Products, also received a facelift with a new and improved design, making it more attractive to consumers. They were also provided with training on good manufacturing practices to ensure that they conform to industry standards.

With the new processing equipment and label design, they are confident that they can break into big institutional buyers like supermarkets and malls.

According to DOST-III Director Victor B. Mariano, 2012 has been a banner year for SETUP implementation in Region III.

"We hope to be able to assist more SMEs avail of SETUP assistance especially in other identified priority areas such as health, aquatic and marine sector," he said.

Straight from the Cordillera The sweet news of muscovado sugar processing

By SHEILA MARIE SINGA-CLAVER S&T Media Service, DOST-CAR

THEY USED to buy commercial sugar before. But now, they process their own sugar – and it's muscovado sugar. Better still, they plan to market their own homemade product to nearby barangays as well as to other municipalities.

This was the incredibly sweet news from Lias, in the municipality of Barlig in the Cordillera Region. Here, a DOST-backed community-based project site on muscovado sugar processing is located. Its success proves that efforts of the government, even with limited technology assistance, have been reaching its intended beneficiaries even at the grassroots level.

A few months ago, members of the DOST-CAR management and staff headed by Dr. Julius Caesar V. Sicat visited the site in Lias, a small community of subsistence farmers and vegetable growers nestled among the lush and thick rainforests of Barlig.

The site houses a mechanized sugarcane extractor – a technology developed by MIRDC-DOST – which enabled the residents to be self-reliant in terms of sugar production. The equipment was funded under the DOST-CAR Grants-in-Aid program for 2012.

Aside from the provision of the extractor technology, the provincial S&T Center of Mountain Province extended the necessary training on muscovado Song by residents of Lias, Barlig, Mountain Province

Here in Changyasan)



processing and likewise negotiated for the provision of sugarcane planting materials to the community. As their counterpart, the community constructed the building to house the equipment which is now being used as a common service facility for all residents of Lias.

During the informal program following the site visit, Dir. Sicat expressed his appreciation for the residents' collective effort in ensuring the sustainability of the project. He commended them for coming up with their counterpart in putting up the common service facility for muscovado processing as well as the heartfelt songs composed and rendered by the residents themselves during the program. Despite the language barrier, the message of the songs was understood because as Dir. Sicat explained, the message of a song, when rendered from the heart, transcends any communication gaps present.

In closing, he reiterated that DOST will continue to provide technical assistance needed to guarantee that the objectives of this community-based project will be achieved.

REGIONAL NEWS

1 st song:

Mayamayaman tako We thank you Kan Kabunian ay wachad uchu Father God, who is in Heaven Finantayam nan charan yo For the guidance along the way Enmali ay anap apo- ay ay salidummay To our officials who came today.

Ammay ay laji tako A pleasant evening to all of us *Chakayo ay enmali* Especially to our visitors *Ay marpu sin ad tungchu* Who came all the way from afar *Niyali sin asatan tako- ay ay salidummay* To bring our equipment

Chitako ay mankailiyan We, the villagers Chackel uytako iyaman Have much to thank Sin inyali cha ay pagsayaatan For the blessing brought Ili tako ad Changyasan*- ay ay salidummay Here in Changyasan

Chakayo ay kailiyan Fellow villagers Uytako pay asaton Let us harvest Unas ay nuwanuwan Our sugarcane aplenty Muscovado uyna kaammaan- ay ay salidummay To produce muscovado

Uytako laok This (muscovado) we mix Tambong ay kaimasan To our most delicious "tambong-tambong" Angkay sas uykmi kanan That is all we have to say Merry x'mas to everyone- ay ay salidummay Merry Christmas to everyone!

> DOST-CAR representatives and some of the CBP beneficiaries during the project visit in Lias, Barlig, Mountain Province.

2nd song: AZUCAR AY MUSCOVADO

Iba-a ay imangya To our fellow people from Mangyaan* Naor-ornong takos na Ammay nan arkiw tako Let us rejoice as we gather here today Ragragsakon tako ay usto To welcome our visitors

Ammay tay inmali cha We are so glad you came Narpo sin opisina DOST ay kanan cha Staff and officials from DOST At man turnover cha To turn over the project

Chackel oy mi iyaman We are very grateful that you have Tay oyyo pinondohan At inmali nan dapilan Financed this (sugarcane juice extractor) Tayway oy min kilingan So we can process our sugarcane

In ali yo nan unas ay hawayan You brought the Hawaiian variety At ta oy mi sim siman Asukar ay muscovado So we can process sugar called muscovado *Tay nangina nan lako* Since this is expensive

An sangon say oymi inluto The first we tried to cook Nascob ay muscovado Was burnt muscovado Tay achi cami sigurado Since we are not yet sure Sin atton mi ay manluto The process of cooking (muscovado)

Chawaton mi kasin kan chacayo Once again we ask a favor from you Ta oy yo casin isuro Nan atton ay manluto To teach us more on how to process Asukar ay muscovado Muscovado sugar

Ang cay sas uymi kanan That's all we have to say At saramat si nowa nowan But words are not enough to express our heartfelt gratitude Ta way usaron chi ka adowan For the things you've given us that will be used by many Ya umus ka Apo-wan To God be the glory!

> *Changyasan or Mangyaan is the old name of Lias.



This chicken business is no chicken

By HAROLD A. CASTRO S&T Media Service, DOST-VI

"NEVER STOP, never settle." This is a strong statement coming from a young entrepreneur who believes that starting from a small dream can turn into something big, an accomplishment.

Mark Anthony Cueva, Operations Manager of Chicken Oro, said everything just started by raising chicken in their yard, then dressing the chickens and finally dealing with consumers.

He manages a company established by Johnmark Agrilink in 2001. A third party contractor which dresses live chickens for Vitarich until 2006, his company's product is mainly dressed chicken and also sells processed and unprocessed chicken articles. Processed articles include blood, crop, large intestines, and others. The unprocessed articles include fats, feet, gizzard, head, liver, neck, proven, small intestines, and spleen.

In 2004, Vitarich discontinued the contract and the original incorporators decided to close the dressing plant and sold some of its assets.

Vitarich after two years asked Johnmark Agrilink to be the exclusive distributor for their live and fresh dressed chickens in Negros Occidental to avoid breach of contract. The dressing plant was reopened but it was operated manually.

The following year in 1994, More Distribution Inc. was established by friends who graduated in high school, specifically, the class of 1994, and the business slowly grew. Entering a contract with a growing business like Vitarich ensured the company that it will not experience run-outs of supply. The partners saw opportunity for growth in business and decided to continue growing chicken commercially.

From then on the business already averaged 10,000 to 50,000 heads per month.



Chickens are placed in a stunning machine with conveyor at the processing plant of Chicken Oro Marketing in Bacolod City.

Currently, the company averages 26,000 per month.

The growing market of the company called for the expansion and upgrading of its production facility. This prompted the company to seek the assistance of DOST under the Innovation System Support Fund assistance since it was interested in acquiring the necessary equipment.

Under the project "Process and Product Improvement of Dressed Chicken" in 2009, DOST assisted the company to avail of one stunning machine with conveyor and one automated chilling tub system.

The acquisition of the equipment in 2010 has increased production volume by 30 percent from 274,426.51 to 356,754.46 kgs in the first year after the intervention and 20 percent thereafter. The sales too increased by 30 percent from Php 24,841,586.88 to Php 32,294,062.94 in the first year and 20 percent thereafter. It has also improved the quality of products with reduced manual handling of chicken during production.

The equipment has been instrumental for the dressing plant to become fully automated and a key to surpass the Double A standard required by the National Meat Inspection Services (NMIS).

The company now known as Chicken Oro Marketing is aggressive to tap establishments since it is competitive in terms of pricing and marketing cost. Moreover, it asks support from the local government to encourage commercial establishments to get their supply from established suppliers and not from backyard operators.

Aside from the equipment, the company also availed of consultancy such as Energy Audit and Cleaner Production to enhance efficient operation and improved quality.

"You just need to start up the business that you like and always ask a blessing from God," Cueva said during a live interview in an Unlad Pinoy segment aired over Bombo Radyo Iloilo.

Chicken Oro's story just goes to show that technology intervention can grow a business from chicken feed into something big.

DOST Biliran inaugurates new home

By ROMEO L. DIGNOS PSTD, DOST-PSTC Biliran

THE DOST Biliran Provincial Science and Technology Center (PSTC) has finally settled on a place it can call home.

The inauguration of the newly erected DOST Biliran PSTC building within the Naval State University (NSU) campus in Naval last November was led by DOST-VIII Regional Director Engr. Edgardo Esperancilla and Dean of the NSU College of Education Dr. Minerva Sanoza, who represented NSU President Dr. Edita Genson.

The proposal for establishing the DOST Biliran building started in 1992 when Biliran became a full-fledged province. DOST-VIII was then under Regional Director Redia Atienza with Ronaldo Villaver as provincial coordinator for Leyte and Biliran PSTC.

DOST is hopeful the center will provide better services and open more opportunities for assistance to its target clientele.

In her message delivered by Dr. Sanoza, Dr. Genson emphasized that with the establishment of the new building, DOST will "continue to be an important entity in partnership with the academe like NSU for the goal of promoting and developing the country." More services are poised to be made available at the new center when an S&T library as well as a small laboratory for



Aside from DOST employees and officers, NSU University Board Secretary and Biliran Campus Director Matias Bentor and faculty members were also present during the occasion together with national agency partners such as Department of Education, Technical Education and Skills Development Authority, Department of Labor and Employment, Philippine Information Agency, and Department of Trade and industry, among others. They were joined by beneficiaries of DOST's SETUP program.

Meanwhile, the DOST-VIII family was joined by DOST Technology Application and Promotion Institute Executive Director Engr. Edgar Garcia and his staff to conduct evaluation of TAPI program implementation

New Samar PSTC building inaugurated

By IRENE LAZARRA

S&T Media Service, DOST-PSTC Samar

DOST-SAMAR PROVINCIAL Science and Technology Center (PSTC) finally has its own building with the inauguration of the Provincial Science and Technology Center building inside the Samar State University (SSU) in Catbalogan City last December.

Like the Regional Office, the new PSTC building was designed with comfortable and spacious rooms for the staff and a conference room cum mini library.

The blessing was officiated by Rev. Fr. Dionisio Calderon while the ribbon-cutting ceremony was led by DOST Regional Director Edgardo M. Esperancilla with guests of honor SSU President Eusebio T. Pacolor and SSU President Emeritus Simon P. Babalcon. The occasion was also attended by DOST-VIII personnel and Provincial Science and Technology Directors, SSU employees and Samar SETUP beneficiaries.

The PSTC is headed by PSTD Rosella L. Gopo, assisted by staff Engr. Joseph Albert O. Lledo and Emelyn A. Maglahus.



in Biliran.

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EVCIERD RTWG and BPO members headed by Dr. Socorro O. Bohol of NwSSU (center).

By ENGR. RAMIL T. UY S&T Media Service, DOST-VIII

TACLOBAN CITY – DOST VIII's quest to expand its S&T services is heavily boosted by its partnership with the Eastern Visayas Consortium for Industry and Energy Research and Development (EVCIERD).

In recent years, EVCIERD has become the source of consultants for the implementation of DOST's programs on Consultancy for Agricultural Productivity Enhancement, Manufacturing Productivity Extension Program, Energy Audit, Food Safety Assessment, and the Cleaner Production Technology.

The consortium also co-sponsored several major activities. Among these were the Visayas Cluster S&T Fair and Exhibits held at the Tacloban City Convention Center from September 24-28, 2012, and the Regional Invention Contest and Exhibits 2011. An entry from one of its members topped RICE's national level competition held in conjunction with NSTW 2012 at the Mall of Asia in Pasay City.

Looking forward to 2013

Banking on its impressive accomplishments in 2012, EVCIERD bared its plans for 2013 last January 16-18, anchored on the realization of Region 8's Regional Development Plan and addressing the R&D concerns of the industry and engineering and energy sector.

The plan dwells on EVCIERD's five identified Key Result Areas, namely: capability building, R&D projects, resource generation, promotion and technology transfer, and operations and management.

In the joint Board of Director and Regional Technical Working Group Meeting held last January 18, 2013 in Tacloban City, the RTWG, headed by its Chairman Dr. Francis Pitogo of Northwest Samar State University (NwSSU), presented the plan to the board headed by Dr. Socorro O. Bohol, NwSSU president. After thorough deliberations by the board and some suggestions and comments, the plan was approved and will be implemented within CY 2013.

The following are the R&D Priorities of EVCIERD for CY 2013:

- R&D for Agribusiness: 1) Functional Foods to include sago and Palawan (both product development), 2) mussel, 3) fresh water prawn, and 4) tinapa.
- R&D on ICT: ICT and other engineering devices for industry applications
- Other Priorities: Rubber

EVCIERD has already confirmed its cosponsorship of the August 19-21, 2013 Regional Inventions Contest and Exhibits (RICE 2013) which will be held at Robinson's Place Activity Center, Tacloban City. Additionally, EVCIERD is looking into the possibility of conducting benchmarking in Vietnam and Cambodia or China to enhance the knowledge of its members on the current technologies used in the industry and energy sectors of the said countries.

Four additional rain gauges installed in Region II

By OLIVER T. BACCAY S&T Media Service, DOST-II

TUGUEGARAO CITY -- The Department of Science and Technology (DOST) Region II has installed additional four automatic rain gauges (ARGs) to help local government units (LGUs) give early warning forecasts of rains and typhoons that frequent the region and cause floods.

Benjamin Nicdao, science research specialist, said the four automatic rain gauges were installed at Alfonso Castaneda, Nueva Vizacaya and in the cities of Ilagan, Cauayan and Santiago, all in Isabela province.

"The four are additional to the five ARGs that were earlier distributed and installed in the five provinces of the region," Nicdao said.

He said the rain gauges play a vital role in giving accurate and timely information on the extent of rainfall and analyzing its capacity to create flashfloods in the low lying areas.

Nicdao further urged LGUs to have their own ARGs and install them in the appropriate places, especially in frequently flooded areas.

He reported, that Camalaniugan and Penablanca in Cagayan, as well as Tumauini, San Pablo and Cabagan in Isabela have their own ARGs.



Region II has 50 new SETUP projects

By OLIVER T. BACCAY S&T Media Service, DOST-II

TUGUEGARAO CITY -- The Department of Science and Technology-II added 50 Small Enterprise Technology Upgrading (SETUP) projects this year in addition to the 92 put up from 2002 to 2011.

DOST-II has received the biggest grant for the SET-UP project this year, amounting to Php 49.3 million.

According to DOST-II Asst. Regional Director Amancia Magusib, this amount is higher than the total accumulated amount spent for the projects implemented between 2002-2011, which was Php 41 million.

Magusib stated they even surpassed the target number of projects proposed for this year as they only proposed a budget of P36.6 million. However, the national office noted the productivity of the northern region and its good collection rate, and thus approved Php 49.3 million, translated into 50 projects.

"We are really lucky that this year, we were given more than what we were expecting. With this, we expect more small- and



medium- entrepreneurs that will augment the region's force towards economic and human development," Magusib added.

Majority of the projects implemented are on food processing, furniture making, aqua-culture, metal and engineering, information and communications technology, horticulture and agriculture, gift and home decors, and pharmaceuticals.

Also, Magusib reported a very satisfactory collection rate of 85 to 90 percent from the SMEs that were assisted previously.



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Dumaguete studes ace DOST's nuke quiz



Winners of the Philippine Nuclear Science Quiz Bee –National Level Competition 2012 with their coaches at the closing ceremony of the 40th Atomic Energy Week on December 14, 2012 at the DOST-Philippine Nuclear Research Institute with sponsor, former Congressman Hon. Mark A. Cojuangco (middle). The winning teams were from the Ramon Teves Pastor Memorial Dumaguete Science High School (champion); Philippine Science High School - Western Visayas Campus (second place); and the Philippine Science High School - Southern Mindanao Campus (third place). (S&T Media Service)

By ALLAN ACE W. ACLAN S&T Media Service, DOST-STII

STUDENTS FROM Ramon Teves Pastor Memorial Science High School emerged as champions in the Department of Science and Technology 's first ever Philippine Nuclear Science Quiz Bee-national level competition held recently at the Nido Fortified Science Discovery Center, SM Mall of Asia, Pasay City.

The whiz team from Region VII, composed of Alec Benjamin G. Ramirez and Hannah Jael M. Cadusale with their coach Lourdes D. Lee, bested 21 other qualifiers out of 192 schools that participated in the elimination rounds conducted per region.

They received P20,000 cash, a Medal of Recognition for each team member,

a trophy for the school and a Plaque of Recognition for the coach.

Placing second was the Philippine Science High School -Western Visayas team who received P15,000, followed by third placer Philippine Science High School -Southern Mindanao team who received P10,000.

"The nuclear quiz show intends to make nuclear science more interesting to the Filipino youth and highlight its benefits to the society," said Dr. Alumanda dela Rosa, director of DOST's Philippine Nuclear Research Institute, the organizer of said nuke quiz. The nuclear quiz bee, held in collaboration with the Department of Education to celebrate the 40th Atomic Energy Week, has the theme "Nuclear Science, Technology and Innovation: Engine for Growth and Development." The event featured exhibits, technical sessions, guided tours of facilities and laboratories, and video showing at the DOST-PNRI in Diliman, Quezon City.

Started in 1973, the annual celebration is mandated under Presidential Proclamation No. 1211 to generate awareness of the Filipino people on the beneficial uses of nuclear science and technology in food and agriculture, health and medicine, industry, energy, and the environment.



Math whizzes. The 15th Philippine Mathematical Olympiad winner Justin Edric Yturzaeta (middle) of the Jubilee Christian Academy is joined by other math whizzes Mikaela Angelina Uy of the SaintJude Catholic School and Farrell Eldrian Wu of the MGC New Life Christian Academy. The three will be further trained by the Mathematical Society of the Philippines for the 54th International Mathematical Olympiad in Santa Marta, Colombia in July this year. (Photo by Marco D. Melgar, S&T Media Service, DOST-SEI)

By GEORGE ROBERT E. VALENCIA III S&T Media Service, DOST-STII

EDRIC YTURZAETA, 16, of the Jubilee Christian Academy topped this year's Philippine Mathematical Olympiad (PMO) held January 26, 2013 in De La Salle University Manila.

Yturzaeta bested 3,400 high school students from all over the country who competed for the PMO qualifying exam last year. Placing second and third respectively are Mikaela Angelina Uy, 17, of St. Jude Catholic School and Farrell Eldrian Wu, 12, of MGC New Life Christian Academy.

Yturzaeta received P15,000 and a medal, plus trophy for his school. Meanwhile, Uy received P10,000 while Wu got P5,000, plus a medal for each, and a trophy for each respective school. The coaches individually received P5,000 and a certificate.

"I had no idea I will win in the country's toughest and most prestigious math tournament," he said. "Thank God much for the blessing." Topping the PMO, however, does not guarantee a seat in the Philippine delegation for the International Mathematical Olympiad (IMO), according to Mathematical Society of the Philippines President Jumela Sarmiento.

"The three winners will still undergo subsequent trainings and tests by the MSP, together with the other 17 finalists, which is part of its 'stringent but necessary' selection process," she said.

"But more or less, the PMO is the closest math competition we have to the IMO because the level of difficulty and the format of the questions are already similar or comparable to IMO," Dr. Sarmiento said.

The 54th IMO will be held in Santa Marta, Colombia on July 18 -28 this year.

The country's highest awards so far in the IMO were two silver medals by Jerome Khohayting of Xavier School in 1989 and Carmela Lao of Saint Jude Catholic School in 2010. The country also won a number of bronzes. It is not farfetched that Filipino contenders can soon get the gold. "Judging from the quality of the finalists and winners of the PMO, it is exciting to look forward to [them] bringing home that highly-coveted gold," said DOST-SEI Director Filma Brawner.

Organized by the MSP, the 15th PMO was sponsored by the Department of Science and Technology (DOST)'s Science Education Institute which is mandated to develop the science, engineering, and mathematics education in the country.

The PMO, conceived in 2008 as a venue to identify and reward mathematics excellence among students in the country, has enabled the Philippines to carry on its medal haul in the International Mathematical Olympiad, the most prestigious mathematics competition in the world," said Director Brawner. "The high degree of competition in the PMO brings out the potential of our math students."

DOST-NAST awards winners of 2012 Magsaysay Future Engineers/Technologists Competition

By ANGELICA A. DE LEON S&T Media Service, DOST-STII

A NEW crop of young scientists, engineers, and technologists were awarded for their innovative and valuable research projects in biotechnology, machinery, engineering products and sources, and product development, further boosting the belief that local talent in science and technology is not lacking.

The awardees were the finalists of the 2012 Magsaysay Future Engineers/ Technologists Competition (MFETC), mounted by the Department of Science and Technology (DOST) and the National Academy of Science and Technology (NAST), an advisory body of DOST and the country's highest recognition and advisory body in science and technology.

Former Senator Ramon B. Magsaysay along with NAST President William G. Padolina handed out the awards in ceremonies held late last year at the Hyatt Hotel Manila, following a formal research presentation by the finalists.

Katherine Marie J. de Asis, a BS Manufacturing Engineering and Management graduate of De La Salle University (DLSU) and a merit scholar of DOST during her college years, grabbed the grand prize for her research titled "Crab Claw Meat Extracting and Crab Shell Granulating Machine". The study aims to develop a safer and more hygienic "3in-1" machine – an extractor, heater, and granulator rolled into one – for productive extraction of blue swimmer crab meat and conversion of shell waste into usable material.

Second prize went to Joshua Arvin Lat of the University of the Philippines Diliman, represented by his teammate Rod Xavier Bondoc, for his research titled "SOUL SYSTEM: Secure Online USB Login System."The project, which focused on the design of an online authentication system providing greater security for websites, won first prize at Kaspersky's IT Security for the Next Generation Asia-Pacific Cup 2012 held in Hongkong and Kaspersky's IT Security for the Next Generation World Cup 2012 in Netherlands.



2012 Magsaysay Future Engineers Technologists Competition (MFETC). Former Senator Ramon Magsaysay rallies young Filipino engineers to be more competitive in science and technology (S & T), areas deemed as strong catalysts for national progress, during the 2012 Magsaysay Future Engineers/Technologists Competition (MFETC) held at the Hyatt Hotel Manila. Mounted by the Department of Science and Technology and its advisory body, the National Academy of Science and Technology, MFETC seeks to honor outstanding research projects of college students in engineering and related courses and encourage the youth to S&T related courses. (Photo by Jerry Palad/related photo next page).

Third prize was bestowed to Samuel Matthew G. Dumlao of Ateneo de Manila University for his research entry titled "Design and Implementation of Linear Feedback Shift Register in Cyclic Redundancy Check (CRC) Using the Front End of ASIC Design Flow."The study tackledthe adaptation of the CRC (a technology which detects accidental alteration of data during transmission and helps maintain data integrity) algorithm as an external feature for a microprocessor core.

Special citations were given to the rest of the finalists, all from UP Los Baños: Raymond Joseph A. Marqueses, "Automatic Power Strip Design for Standby Power Reduction at the University of the Philippines Los Banos"; Luis Felipe D. Lopez, "Optimization of Steam Explosion Parameters in the Pretreatment of Sweet Sorghum Bagasse for Bioethanol Production"; and Chiliast B. Juan, "Analysis on the Effect of Various Factors to the Voltage Drop of a Single-wire Earth Return (SWER) Distribution System in Lipa Soil Series."

Open to college students in engineering and related courses, the MFETC is held annually to encourage young Filipinos to build a career in science and technology, regarded as conduits to national transformation and development.

According to Magsaysay, having more scientists, engineers, and technologists among today's crop of professionals will boost the country's potentials.

The top three winners received cash prizes of P 50,000, P 30,000, and P 20,000 respectively aside from plaques of appreciation. DeAsis' alma mater, DLSU, will also receive a PhP 500,000 research grant upon approval by DOST of a research or project proposal. Meanwhile, those honored with special citations received PhP 10,000 each with plaques of appreciation.





2012 NRCP Achievement Awardees. DOST Secretary Mario G. Montejo and NRCP President Lourdes Cruz (2nd row, middle) lead the conferment of awards to 12 Filipino researchers (seated) at the DOST-NRCP 80th General Membership Assembly held on March 13, 2013 at the Pandanggo Hall, Manila Hotel. The said awarding ceremony recognized scientific works promoting the welfare of the nation and its citizenry and enriching the country's knowledge in the 12 scientific disciplines. These include education and international policies, math, medicine, pharmacy, biology, agriculture and forestry, engineering and industry, physics, chemistry, earth and space sciences, veterinary, social sciences, and the humanities. (*Photo by Henry A. de Leon, S&T Media Service, DOST-STII*)

DOST-NRCP honors excellent Filipino researchers

By ALLAN ACE ACLAN S&T Media Service, DOST-STII

THE DEPARTMENT of Science and Technology - National Research Council of the Philippines (DOST-NRCP) recently honored 12 Filipino researchers in the 2012 NRCP Achievement Awards for their outstanding works and innovative discoveries. The awarding was held during the 80th General Membership Assembly last March 13, 2013 at the historic Manila Hotel.

The awardees' scientific works were recognized as tools promoting the welfare of the nation and the citizenry and enriching the country's knowledge in the 12 scientific disciplines spanning basic, applied sciences and social sciences.

DOST Secretary Mario G. Montejo and NRCP President Dr. Lourdes Cruz handed out a gold medallion, plaque of recognition, and cash reward of Php 25,000.00 to each awardee.

Sec. Montejo also introduced to the researchers DOST's latest umbrella program called "Smarter Philippines" and enjoined all researchers to harmonize their efforts to the program.

DOST-NRCP will be celebrating its 80th Foundation Anniversary on December 8, 2013.

The awardees were:

DR. EVELINA M. VICENCIO (Ph.D. University of Philippines Diliman) who was honored for her unwavering leadership and service to Philippine education with her intensive involvement in the development of peer-refereed publications and research reports that benefitted many Filipino learners.

DR. FIDEL R. NEMENZO (D.Sc. Mathematics. Sophia University, Japan) who was lauded for pioneering the development of research in applications to algebraic coding theory in the country and for elevating the status of Philippine mathematics through his engagements as visiting professor and researcher of many prestigious institutions.

DR. TRINIDAD P. TRINIDAD (Scientist 2 of the Food and Nutrition Research Institute) whose pioneering studies on the bio-availability of minerals such as iron, zinc and calcium absorption and whose work on the use of coconut flour, root crops and legumes as sources of dietary fibers earned praises from DOST-NRCP.

DR. IRENEO L. LIT JR. (Director of University of the Philippines–Los Baños Museum of Natural History), a taxonomist who earned recognition for his pioneering work in the field of coccidology and for his researches on effective management of pest insects including quarantine measures and control of household and food industrial pests.

DR. SEVERINO S. CAPITAN (Ph.D. Animal Physiology, Punjab Agricultural University) whose notable researches on artificial insemination and estrus synchronization, which involves manipulation of cattle's reproductive processes, led to significant genetic improvement and population increase among carabaos in the country.

DR. ALVIN B. CULABA (National Academy of Science and Technology Advisory Council Member) who was commended for his pioneering work on life cycle assessment methodology in the Philippines and Asia, and for his significant contributions and inspiring leadership in the formulation of national policies and the setting of directions for the growth and development of mission oriented scientific research in the country.

DR. NIMFA B. OGENA (University of the Philippines Population Institute), an outstanding researcher whose scholarly contributions span several substantive and methodological areas. Among the most notable were her works on women's role in sustainable development, reproductive health and quantitative approaches for examining female status which have contributed to national and international policies. DR. ALIPIO T. GARCIA (University of Philippines-Baguio), honored for his pioneering works in ultra –high vacuum – thin film growth in the country, his significant contribution in the field of material science and semiconductors, and his unwavering support for the development and promotion of physics education in the Philippines.

DR. FLORENTINO P. SUMERA (Professor of Chemistry, Material Science and Engineering, UP-Diliman), for his work on the synthesis of coconut fatty acid derivatives for biofuels and biodegradable polymers with potential environmental and medical use.

DR. JOSE S. BUENCONSEJO (Department of Musicology, UP-Diliman) conferred for his in-depth, insightful research on the epistemology of an indigenous Filipino-Asiatic ritual as well as his documentation of indigenous Philippine musical traditions in the context of local cultural meanings.

DR. CARINA G. LAO (The Philippine Atmospheric, Geophysical and Astronomical Services Administration) for her expertise in the field of meteorology as well as her scientific researches on the tropical cyclone tracks and unusual movements of typhoons, and

DR. JEZIE A. ACORDA (UPLB College of Veterinary Medicine) who received the award for his significant contributions in the field of veterinary medicine specifically on medical imaging techniques and complementary alternative veterinary medicine such as acupuncture stimulation.

Established on December 8, 1933 through the passage of Act 4120 by the Ninth Philippine Legislature, the National Research Council of the Philippines (NRCP) primarily aims to promote and support basic research in the country along various scientific disciplines including education and international policies, math, medicine, pharmacy, biology, agriculture and forestry, engineering and industry, physics, chemistry, earth and space sciences, veterinary, social sciences, and the humanities.


By FLOR PRINCESS L. ARRIOLA Clerk, PSTC-Occidental Mindoro Ma. ETHELWILDA G. CORONACION PSTD, PSTC-Occidental Mindoro

Being Rich with Sweets



Grace Dinglasan, owner of Richblitz Sweets

LIFE IS sweet, but it gets sweeter when you dream, and it is sweetest when you make your dream a reality. For Grace D. Dinglasan, a dedicated single parent, it all started as a prayer. It was so sincere that God listened and rewarded her hard work with bliss.

Ms. Dinglasan took Fine Arts at the College of Holy Spirit and had zero business skills when she started her buy-and-sell business. However, it did not last long so she ventured into another avenue — direct selling — but she had the same frustrating experience in sustaining it. However, she kept on believing that she will soon find a venture in which she will succeed.

While working in Manila, she frequently visited restaurants and bakeshops serving various baked goodies. Fascinated by what she saw and tasted, she finally decided to try something new: homemade sweets.

A cheesy beginning

Her first baked goodies were launched at the Goto Mami Restaurant owned by a relative. On the spot, she just tried a recipe from borrowed eggs, sugar and flour, baked it, then put it on display. Soon the serving dish was empty and people were asking for more. That same day she named her creation "Cheesy Cake".

So excited was Grace with the turnout that she tried to replicate what she just did in her own kitchen. Using a borrowed pizza oven, she recreated the cheesy cake she launched at the restaurant. She walked around town with her cheesy cake, then into government offices and schools in San Jose, Occidental Mindoro. Her cake sold like the proverbial hotcake, making her happy to realize that she has the sweet touch.

But selling cheesy cakes was just a fraction of the job. The real challenge was in making them. Grace at that time was practically on her own, working with the ingredients with just a hand mixer, and baking them on top of a small stove. With only three workers to help her, production capacity was only at 190 to 200 cheesy cake bars per day, and her monthly gross sales was around PhP 19,000 only. Customers with large orders were a sweet pleasure but her limited budget and inadequate equipment made the pleasure somewhat bitter. When she could not meet her customer's needs, she felt like giving up.

continued next page





Ms Dinglasan in her booth during a fair



Packaging of Cheezy cake bars in the firm's production area

bar that has become a favorite pasalubong item from San Jose, Occidental Mindoro

The freshly-baked Cheezy cake

BEING RICH . . . from page 67

Tired and stressed, Grace continued to explore ways to address this problem and pleaded for God's guidance and strength.

The answer to Grace's prayers came during the AGBILIWA Provincial Agro-Industrial Trade Fair and Exhibit held at the municipal plaza where she introduced her business as Richblitz Sweets. It was also during this event that Engr. Bobby C. Matira, then PSTD of DOST's Occidental Mindoro Provincial Office, who was on the lookout for new products, took notice of her tasty cakes. When Engr. Matira introduced to her DOST's services that could help improve her business, Grace at first could not believe what was happening, but she grabbed the opportunity nevertheless.

Learning along the way

On January 2010, Grace received a golden opportunity when DOST-MIMAROPA gave her a slot among a select group of MSMEs in the region to join the "Experiential Benchmarking Training for MSMEs," which took them on visits to various food plants in Bago City, Bacolod City, Iloilo City, Guimaras, Tigbauan, Guimbal, Kalibo and Numancia. The exercise was aimed at enhancing over-all performance and productivity of participating MSMEs by instilling best practices and experiential learning on technological, strategic and operational procedures to further stimulate the MSMEs to improve on current standing and market share and to eventually integrate training and benchmarking findings into the MSME workplan.

The activity opened Grace's eyes on the principles of competitive food processing as she learned from the experiences of other firms, particularly those that specialized in baked goodies like butterscotch, yema, and pastillas.

DOST's S&T intervention gave Grace more leeway to be more creative and innovative with her products. Apart from the trademark cheesy cake, Richblitz Sweets started making muffins, all-occasion cakes, buko pies, Brazo de Mercedes, banana bread, and cookies. She also included funny and exciting designs, such as flowers and famous cartoon characters such as Angry Birds and Hello Kitty to make her products more appealing.

Richblitz Sweets products initially were packaged in plain grey cartons with cheaply printed labels. There was no



Souvenir photo during the Experiential Benchmarking Training for MIMAROPA MSMEs held in Region VI wherein Grace Dinglasa (front row, fourth from right) of Richblitz Sweets was among the participants

sign of sweetness in the functional but doldrum packaging, something that was not appropriate to the yummy pastries contained inside.

Dolce vita, sweet life

Aside from the improvement in product quality and production volume, the attractive packaging of her items made them stand out among the rest. The result of the technology intervention is caramel success – more efficient operations and quicker service, increased income, and additional employment.

From nothing to something, Richblitz Sweets has dripped into people's taste buds. Currently, the business is even more flourishing because of support from the DOST. Now, the firm's production average per day is 1,152 cheesy bars. Monthly gross income increased to PhP 150,000 and employment generation doubled from three workers to six.

Grace would always quote, "God is always first before anything else. There are no excuses when it comes to our Lord." Surely the answer to her prayer is indeed a big success that serves as a topping for a sweet life.



Story from the MIMAROPA Stars, a collection of 20 success stories of SETUP-assisted and community-based projects of DOST-MIMAROPA. Edited by Dr. Ma. Josefina P. Abilay, et. al.

Sweet guilt-free options for unhealthy sugar



By ARJAY C. ESCONDO S&T Media Service, DOST-STII

FILIPINOS LOVE sweets, and this is proven by our love for sweet delicacies ranging from rice cakes to preserved fruits and jams. However, Pinoys have large risk of contracting diabetes, with about 1.4 million Filipinos suffering from diabetes mellitus.

As such, artificial sweeteners and sugar substitutes can be very appealing to people looking to cut their calories or control blood sugar. However, studies have shown that artificial sweeteners can be bad for the health. But nature has provided more alternatives that can give us guilt- and worry-free indulgence of our favorite sweet treats.

Palm sugar: the next big thing

Coconut palm sugar has garnered attention not only in the international scene but locally as well for reportedly being a lowcarb sugar substitute and more nutritious than typical table sugar.

Pure coconut palm sugar is a natural product made from nectar or sap of the coconut palm tree. According to studies, coco sugar has a naturally low glycemic index (GI) which has led some to claim that it is a valuable sugar substitute for people with diabetes or those looking to control blood sugar. GI is a measure of how sugarbased food impacts blood sugar, wherein high GI foods cause rapid rise in blood glucose levels in humans.

Aside from the low-GI content, palm sugar also offers health benefits as it contains other elements needed by the body such as potassium, phosphorus, nitrogen, magnesium, among others.

Kaong palm sugar

As the demand for alternative sugars increases, a team of researchers led by Dr. Lydia Manguiat of DOST-Calabarzon, has found another healthy substitute in kaong palms (*Arenga pinnata*). Kaong palms or sugar palms are best known for its fruit processed into salad ingredient and the popular kaong vinegar.

In a recent study under the "Development of Low GI Palm Sugar" Program, researchers found out that kaong sap contains a GI value of 40 which is five points higher than coco sap sugar.

"While a tad higher compared to coconut sap sugar, kaong sap sugar is still categorized as low GI foods," said Dr. Manguiat.

According to Dr. Manguiat, kaong sap sugar has been in existence ever since, especially in Cavite and Quezon. It is served as a local delicacy in the form of *pakaskas.* "With its distinct caramel taste, the local palm sugar can be developed into a high-value commodity, as well as its by products," she added.

According to Dr. Lorenzo Lapitan of Cavite State University, "Kaong palms have a high potential for sugar production due to the abundance of palms in the country coupled with its high sugar conversion ratio."

According to CavSU's studies, a single kaong plant can produce 2500 liters of sap which totals roughly to about 1000 kg of sugar per hectare.

Similar with the coco sap sugar, kaong palm sugar is also a very good source of many key minerals and vitamins including potassium, magnesium, protein, calcium, and iron in beneficial quantities not present in refined sugar.

"The program will greatly enhance the palm industry, which can help our local farmers augment their income as well as providing healthy options to sweet lovers," Dr. Manguiat claimed.

Aside from kaong, other local palms such as nipa and buri are being studied for their sugar production potential and other by products such as syrups and vinegars.

Heartbroken? Try water for healing



By CATHERINE ROSE JOSUE S&T Media Service, DOST-STII

ARE YOU heartbroken this Valentine's Day? Even if you are happily married or in a satisfying relationship with someone, you may still be at the losing end where your heart is concerned. Your lifestyle, without you knowing it, may be leading you toward health risks that can cause life threatening heart conditions.

Heart related diseases are considered as among the leading causes of death around the world. Two known health risks that can lead to serious heart conditions are high cholesterol and high blood pressure.

The good news is that both can be prevented. And believe it or not, this can be done through a glass of water.

According to the Daily Nutritional Guide Pyramid for Filipino Adults developed by the Food and Nutrition Research Institute of the Department of Science and Technology (DOST-FNRI), drinking 8 glasses of water a day can improve overall health, including prevention of health risks like high blood pressure and high cholesterol.

Cholesterol is a waxy, fat like substance called lipid found inside cells and blood. Naturally occurring in the liver, cholesterol can also be found in the food we eat,which is mainly from animal fat. Actually, cholesterol is necessary for bodily functions such as in the production of various hormones, bile acids and vitamin D. But, too much of it can be harmful. High levels of cholesterol can block blood flow resulting in thickening, narrowing and hardening of artery walls. This limits oxygen from reaching the heart. Worse, this may lead to heart attack or even something as drastic as death.

Water plays a vital role in preventing these heart-breaking developments from happening. Drinking water can actually thin the blood, thus help the blood pump more smoothly. Moreover, it helps eliminate toxins and increases metabolic rate. And since exercise together with the right kind and amount of food intake contributes to the lowering of cholesterol, water is once again needed in order to replace water lost during exercise.

On the other hand, high blood pressure also known as hypertension, refers to the force of blood pushing against the arterial walls as it make its way through the body. High blood pressure can threaten healthy arteries and can lead to heart disease and stroke. It is also known as a silent killer because there are no real symptoms.

Water plays an equally important role in lowering blood pressure as well since blood is composed of water. Dehydration, or loss of water, affects blood pressure. When the body is in dehydrated condition, the flow of blood to the kidneys will be reduced. Thus, the body reacts and tells the brain to constrict the veins and arteries, making the blood pressure go higher. But with enough water intake, blood will flow normally to the kidneys, thus averting the occurrence of health risks.

Drinking the right amount of water likewise helps flush excess salt intake in the body, which also causes blood pressure to rise.

To have enough water that will keep your heart healthy, have a bottle of water with you during the day. When exercising, always make sure to drink water before, during and after workout. Try the habit of beginning and ending the day with a glass of water.

If you have a hard time remembering to drink water, you can actually make a schedule or a reminder. Use urine as an indicator. If it's dark yellow and has a strong odor, it means you should drink more water. The urine of a well-hydrated person is odorless and almost colorless.

So next time you go out for your Valentine's dinner, remember to drink water after meals. Not only will it help hydrate the body, it is also free.

Color your diet red, yellow, and green on Valentine's Day

By CATHERINE ROSE JOSUE S&T Media Service, DOST-ST//

DID YOU know that aside from the color red, other colors may also be fashionable on Valentine's Day?

February may be the love month but love is not just about romance. Love includes self-love, or loving oneself, in order to be happy, productive, and be able to take care of loved ones.

One way of loving yourself is by taking good care of your body by eating the right kinds of food – from fruits, vegetables, and other foods which come in a burst of colors. According to the Daily Nutritional Guide for Filipino Adults developed by the Food and Nutrition Research Institute of the Department of Science and Technology (DOST-FNRI), one should take three servings of ½ cup of cooked vegetables and 2-3 servings of fruits every day.

There are many color-filled healthfriendly dishes which you can whip up for your partner, or your family and friends to perk up your Valentine's Day lunch or dinner. Not only do they make the most romantic day of the year more exciting; they also make you healthier, more glowing, and more energetic.

For sun-burst orange-and-yellow Valentine treat, choose from a variety of foods such as melons, mangoes, peaches, papaya, oranges, banana, pineapple, passion fruit, carrots, sweet potatoes, squash and sweet corn. The vibrant colors of orange and yellow food look great on the plate and also help the eyes and skin. Carotenoids are responsible for these bright colors. The most common carotenoid is the beta-carotene which can be converted from foods into vitamin A in the body. This nutrient promotes good vision, a strong immune system, and helps reduce the risk of heart disease.

There are many ways to prepare your sunshiny Valentine treat. You can make your own homemade carrot and squash soup. You can also sprinkle grated carrot, papaya, mangoes or sweet potatoes to cheer up your salad. Or you can whip up a chunky fruit salad of melon, mango, peach, papaya, orange, pineapple, and sweet corn. For a dash of protein, you can mix tuna with sweet corn and use it to fill sandwiches.

The greens can actually make your heart red healthy, aside from lowering the risk of colon cancer for their full fiber content. For fresh and crisp hearts day feast, there are many greens to choose from, including asparagus, spinach, lettuce, cucumber, broccoli, sprouts, cabbage, green beans, green peas, green pepper, leeks, spring onion, green apples, grapes, and kiwi fruit. Many of these green foods are good sources of lutein which helps protect the eyes from macular degeneration that leads to blindness.

To eat more green foods, serve green vegetables with meals everyday. If you are fond of stews and stir fried food, leeks can be a welcome green addition, just like how green peas can freshen up pasta dishes, curries and even plain boiled rice. For breakfast, spring onions and green peas can fill up omelets.

Blue and purple hearts may not be good, but blue and purple foods are good for the heart. Choose from grapes, plums, prunes, eggplant and raisins, all packed with anthocyanins that protect us against cancer and risk of heart disease. Moreover, these foods tend to help lower blood pressure and cholesterol levels.

To increase your blue and purple food intake, try adding a tablespoon of raisins to breakfast cereals or porridge. You can also make a healthy coleslaw using grated carrot, thinly sliced onion, shredded cabbage and raisins mixed with low-fat yogurt to keep the calories down. For pasta lovers, eggplant is a welcome addition to the meat mixture for lasagna.

White foods such as onions, garlic and turnips are known to reduce heart disease, as well as pain and swelling associated with inflammatory conditions like osteoand rheumatoid arthritis. Garlic contains antioxidant called allicin that acts as natural antibiotic and helps reduce blood pressure.

Add more whites to your diet by adding onions and garlic to stir fried foods, pasta dishes, stew and curries. You can also make your own onion garlic dip or roast onions in a little olive oil to go with vegetables. Finely chopped onions can be mixed also with tuna, chicken and egg sandwich fillings.

Red foods such as strawberries, cherries, red apples, tomatoes, grapefruit and red peppers are high in lycopene that can help protect against cancers of the lung, colon, breast and skin. The reds may also help lower blood cholesterol and reduce the risk of heart disease.

To have more red in your diet, add sliced red peppers and apples to salad, or a can of tomato sauce or chopped tomatoes to stews and casseroles. Home-made tomato soup is also a welcome treat. You can also try adding a handful of strawberries and red apples to breakfast cereals or porridge.

With many colors to choose from, Valentine's Day will not only be colorful and hearty but also healthy. Enjoy the love month this year and the following years with a healthy heart, strengthened by food with a rainbow of colors.



Merry Mix With Media











Serious science journalists stashed away their pens and papers, donned their best shimmery outfits, and took the games seriously, resulting to a night of fun and laughter. DOST-STII's simple way of showing its appreciation to its media partners, Merry Mix with the Media is indeed a fabulous way to cap a productive year.

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DOST 's Newly conferred Scientists. Dr. Aida Baja Lapis from DENR (left) and Dr. Rodel Suralta of PhilRice (right) took oath as Scientist 1 at the central office of the Civil Service Commission on December 19, 2012. The said oath-taking was led by the Philippine Scientific Career Council Chairman and Civil Service Commissioner Francisco T. Duque (middle). The 2006 Merit System for the Scientific Career System constitution and by-laws specifies the scientist rank requirements, which include scientific discoveries and inventions or technology, machine, or utility model patents, comprehensive documentation of research accomplishments for the last 10 years. The merit system aims to give credit to researchers devoted to research and development, invention and innovation, science and technology education, training, and services.





Department of Science and Technology (DOST) Secretary Mario G. Montejo (right) discusses the possible areas for collaboration on various DOST ongoing programs with USAID Mission Director for the Philippines and the Pacific Islands Gloria D. Steele who made a recent courtesy visit to jumpstart the partnership plans between DOST and USAID. Ms. Steele is a Filipino and a career member of the U.S. Senior Executive Service and served as Senior Deputy Assistant Administrator for the Bureau for Europe and Eurasia from 2001-2004. Also in the photo (middle) is Science and Technology Information Institute Director Raymund E. Liboro. (Photo by Henry De Leon, S&T Media Service, STII).



COMELEC, DOST ink accord on 2013 national polls. Bicutan, Taguig City --- Commission on Elections (COMELEC) Chair Sixto S. Brilliantes and DOST Secretrary Mario G. Montejo signed a Memorandum of Agreement to work for clean and credible automated elections this coming May through the help of DOST's technical expertise. Commissioner Brillantes said that "without the technical support from DOST, we will not have the most acceptable results of election." (*Text by Ceajay N. Valerio; Photo by Henry de Leon; S&T Media Service*)



RxBox for smarter living. DOST Secretary Mario Montejo (second from right) discusses the features of the RxBox (foreground) to Department of Health Secretary Enrique Ona who acknowledged the importance of the project in making medical and health services more efficient. RxBox is a device that monitors the health status of the patient in a remote location. The information is viewed and stored in the local computer, then transmitted to the doctor's workstation in real-time for viewing and analysis. The features were discussed by the research staff from DOST's Advanced Science and Technology Institute (rightmost). Others in photo are (L-R) representative from PhilHealth, DOST-National Capital Region Director Teresita Fortuna (partly hidden), and DOST-Phil. Council for Health Research and Development Executive Director Jaime Montoya. M.D. (By Framelia V. Anonas, S&T Media Service)



Watch out for the best Filipino inventions in Region IV-B MIMAROPA with the kick off of DOST's Regional Contests and Exhibits (RICE) on

April 16-17 at Calapan City, Oriental Mindoro.

RICE will run from April to November 2013 to serve as qualifying round for the National Invention Contests and Exhibits where the qualifiers will vie for the top honors on six categories.



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Ang Mosquito Ovicidal/Larvicidal Trap 0 Mosquito OL Trap ay isang pamamaraan na ginagamit upang makontrol ang paglaki ng populasyon ng mga lamok na nagdadala ng dengue gaya ng Aedes aegypti at Aedes albopictus.

Ito ay maaaring gamitin sa bawat tahanan, gusali pampubliko negosyo, at pribadong ng establisyemento, sakahan, palaisdaan, paaralan at at iba pang lugar na posibleng pamugaran ng mga lamok.

Ito ay abot-kaya, simple, at inirerekomendang gamitin buong taon hindi lamang sa panahon ng tag-ulan.

Ang Mosquito OL Trap ay bahagi ng malawakang kampanya ng pamahalaan para labanan ang paglaganap ng sakit na dengue sa bansa.



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