

S&T POST

JULY-SEPT 2013



Check out our SETUP and NSTW stories inside

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NOW SHOWING

SETUP success stories

SETUP:
Touching lives
thru science

Gem job:
Geology Rocks!

Basilan's first
DOST scholar

DOST-IX RD Brenda
Nazareth-Manzano
is GAWAD CES
Presidential awardee

Safe drinking
water for
more Pinoys

Defining *inclusive growth* thru SETUP

According to the World Bank, "Inclusive Growth refers both to the pace and pattern of growth, which are interlinked and must be addressed together. Rapid pace of growth is unquestionably necessary for substantial poverty reduction, but for this growth to be sustainable in the long run, it should be broad-based across sectors, and inclusive of the large part of a country's labor force. This definition implies a direct link between the macro and micro determinants of growth."



In his fourth State of the Nation Address (SONA), President Benigno S. Aquino III pushed for inclusive growth in the second half of his six-year term. Such inclusive growth, he said, will be achieved by expanding the Conditional Cash Transfer or CCT program, pursuing good governance, and implementing various initiatives for the poor.

For its part, the Department of Science and Technology, with Secretary Mario G. Montejo at the helm, has likewise been doing a number of programs and projects that aim to benefit the poor. And "inclusive growth" has become one of its major foci. In fact, the Small and Medium Enterprise Technology Upgrading Program or SETUP and other identified programs and projects have become flagship initiatives. Proactively and aggressively pursuing SETUP's mandates are the regional offices who serve as the direct link to the people by actually meeting them face-to-face.

Immediately, SETUP catches the attention of most as it suddenly takes the spotlight. It is a national strategy that focuses on the support extended by the Department to micro, small, and medium enterprises or MSMEs. It encourages and assists MSMEs to adopt technological innovations to improve their operations and thus boost their productivity and competitiveness. The program enables firms to address their technical problems through technology transfer and technological interventions to improve productivity through better product quality, human resources development, cost minimization and waste management, and other operation related activities.

The program covers eight important areas where MSMEs in the country are mostly concentrated. These are food processing; horticulture and agriculture; marine and aquatic resources; gifts, decors, housewares; furniture; metals and engineering; information and communication technology; and pharmaceuticals.

Believing in the socio-economic impact on ordinary Filipinos, the editorial team has decided to give the program a little more promotional push.

For this issue of the S&T Post, SETUP takes the center stage. Winners of the search for the most outstanding SETUP adoptors are featured, with the national winner of the recently concluded 2013 National Science and Technology Week celebrations on the cover. The Post clings to that hope that the SETUP, in its own small but impactful way, would help define the meaning of inclusive growth via S&T.

The efforts of the Department through the years have started to pay off. Now, with its program leader, DOST Undersecretary for Regional Operations Carol M. Yorobe, SETUP has expanded its reach in terms of number of entrepreneurs, assistance, and areas covered.

If we would take a closer look not only on the number of jobs created by SETUP in the collective but also on how the program has changed the lives of these micro, small and medium entrepreneurs, then we can say that the DOST has defined in its own way the meaning of "inclusive growth."

Aristotle P. Carandang, PhD

S&T POST

VOL. XXXI No. 3

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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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S&T POST



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OUR COVER



Inspired by the staff's general penchant for movies, our cover is designed to look like a scene viewed from the movie camera's viewfinder. Starring, of course, is Fabian G. Espiritu, Farmtec Foods, Inc. CEO and President, who bagged the 2013 Best SETUP Adoptor award. His story and that of the 15 best regional SETUP adoptors are this issue's main feature to somewhat inspire other entrepreneurs to see how technology intervention can help enterprises become successful.

Also on the cover is a pop-out attachment featuring **Smarty**, STII's new mascot that is actually a stylized DOST logo in the form of a bird. A genderless entity that represents DOST's drive towards Smarter Philippines, **Smarty** will be used in most of DOST's promotional and information materials. **Smarty**'s first coming out was in July this year in some of the National Science and Technology Week's promotional collaterals. In this issue, STII formally introduces **Smarty** on the S&T Post cover.

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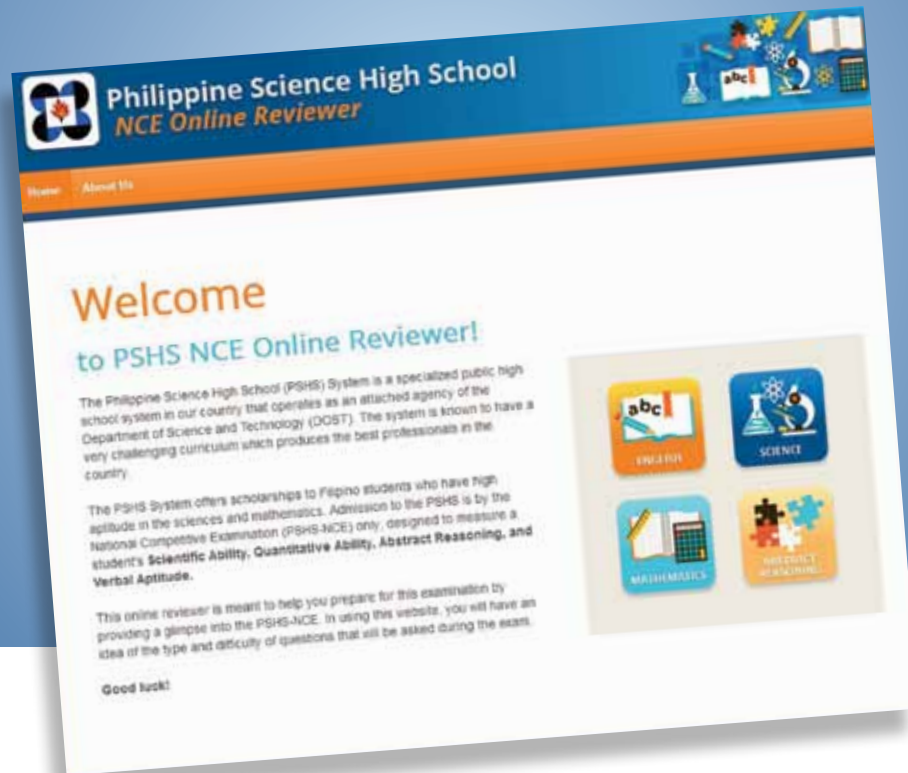
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Just a click away: Online reviewer for science scholarship exams now up



By MA. ELENA A. TALINGDAN
S&T Media Service, DOST-PCIEERD

ASPIRING SCIENCE scholars now have a handy tool to help them ace the qualifying examinations for the government science scholarship program via online reviewers developed by the Department of Science and Technology (DOST).

For elementary students aiming for a scholarship at the Philippine Science High School (PSHS), the PSHS Online Reviewer gives them better chances of passing the school's National Competitive Examinations. To access the free reviewer, the student may visit the following sites: pshsreviewer.dost.gov.ph and pshsreviewer.org. Meanwhile, graduating high school students may access the college reviewer at www.dostseireviewer.org. The reviewer familiarizes applicants with the examination and makes the scholarship accessible to more students.

According to Dr. Rowena Cristina L. Guevara, executive director of the DOST's Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD), the online reviewers are the official practice tests provided by the PSHS and the DOST. These are free and accessible through the Internet such that even students who live in the provinces and outside the country, especially those who can not afford the services of private review centers, can experience and learn from the exam simulation. The official online reviewer provides a uniform and accessible practice test environment that simulates the actual PSHS and DOST

examinations. The question grouping, time constraints, and format follow the actual examination while a pool of experts formulated the questions. The better test-taking strategies and practice drills familiarize users with the nuances of the exam, giving them better chances of passing the PSHS and DOST examinations.

In developing the reviewer softwares, project leader Dr. Susan P. Festin of the University of the Philippines said that her team benchmarked from current industry practice for online testing such as SHL and ExamBuilder. Both tests, for a fee, provide companies with assessment tools across various sectors. SHL provides a portfolio of more than 1,000 off-the-shelf assessment tests, while ExamBuilder provides exam authoring, delivery, reporting, and analytics.

The PSHS System implements a science-oriented curriculum in the secondary level and the DOST-SEI scholarships are for college students pursuing science and engineering course. Both PSHS and DOST provide scholarship benefits to successful examinees, allowing them to pursue their studies, with strong encouragement to follow the S&T track. These programs are in line with DOST's goal of building up a critical mass of scientists and engineers in the country.

The Undergraduate Scholarship Programs of DOST are open yearly to talented and deserving graduating high school students

who wish to pursue four- or five-year courses in priority science and technology fields. High school graduates who have not undertaken any college units may also apply. This is in compliance with Republic Act or RA 7687 Scholarships and the Merit Scholarships which both aim to produce and develop high quality human resources for the Science and Technology (S&T) and Research Development (R&D) efforts in the country and attain national R&D priority thrusts.

According to DOST-Science and Education Institute, the attached agency in charge of the DOST's scholarship programs, there are 3,500 scholarship slots in both applied and basic sciences programs for successful examinees in selected universities and colleges all over the Philippines. About 20,000 secondary senior students applied for the 2014 undergraduate scholarships. The list of courses in applied and basic sciences and the partner schools can be found at www.science-scholarships.ph

The DOST-PCIEERD is the monitoring agency for the development of the software programs, including said PSHS online reviewer, under its S&T human resource program.

MA. ELENA A. TALINGDAN



DOST to set up smarter electronics product dev't hub

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

THE DEPARTMENT of Science and Technology is set to establish a modern, world-class product development center for electronics industry in Bicutan, Taguig City. This was revealed by Engr. Peter Antonio Banzon from DOST's Advanced Science and Technology Institute in a recent forum on electronics and semiconductor industry at the New World Hotel in Makati City. The forum was part of DOST's Philippine Council for Industry, Energy, and Emerging Technology Research and Development's third anniversary celebration.

The proposed two-floor center will house state-of-the-art equipment and laboratory facilities specifically designed to cater to the electronics industry. The facilities will address the three major critical processes or steps in electronics product manufacturing, namely functional design, product prototyping, and product pilot releasing. These stages involve complex and highly important procedures to ensure products design quality and compliance to standard regulations.

"The center will basically support future R&D projects of electronics companies by providing access to tools and equipment as well as expert manpower in the product development center," Engr. Banzon said.

The electronic industry is a key player in Philippine progress being the leading industry by contributing to as much as 67 percent of the country's export share. In 2010, revenue from this industry reached USD31 billion. But a market study conducted by ASTI showed that given a conducive business environment and the necessary facility support, revenue can reach up to USD50 billion in 2016.

This potential will be highly maximized with the establishment of the center. Normally,



local electronic companies send samples abroad for product design and testing, which may cost as much as USD 5,000 to USD 30,000.

Through DOST's electronic product center, cost will be reduced to half and there will be a shorter turn around time unlike results from tests conducted abroad, which may take months. Further, companies can also easily mitigate risks to avoid certification test failure because of its accessibility. Thus, an increased foreign investment in electronics industry is expected.

The project has a total budget of PHP268 million, 90 percent of which will go to acquisition of the needed equipment. Currently, bidding for EMI Test System, one of the critical equipment required, is now ongoing. Building renovation will be followed by product prototyping which is targeted to start within the year.

Laboratory experts composed of consultant, engineers, and technicians will man the facility. When fully operated, the facility is

expected to generate around PhP3.8 million annual income only from member companies of the Electronics Industries Association of the Philippines, Inc., discounting other possible users.

Aside from the electronics industry, other potential users of the center include independent designers such as start-up businesses or incubation ventures, academe, other government agencies like National Telecommunications Commission and household appliance manufacturers and importers.

Late last year, DOST also launched the ADMATEL or Advanced Device and Materials Testing Laboratory, to cater to the semiconductor industry. Operation of the electronics product development center will complete the need of the country's electronics exports, which is composed of 25 percent electronic manufacturing sector and 75 percent semiconductor manufacturing sector.



inside!

Britannica
ULTIMATE
ENCYCLOPEDIA

STII's digital library beefs up content with Britannica Encyclopedia

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

BRITANNICA ULTIMATE Encyclopedia 2013 Edition is now available in STARBOOKS (Science and Technology Academic and Research-based Openly Operated Kiosk Station). This enhanced version of STARBOOKS was launched last July 25, 2013 during the Expo Science 2013 held in celebration of the National Science and Technology Week at SMX Convention Center, Mall of Asia Complex in Pasay City.

A project of the Science and Technology Information Institute (STII), the information arm of the Department of Science and Technology (DOST), STARBOOKS is basically a stand-alone digital library of science and technology (S&T) materials in text, video, and audio formats. Being a stand-alone research tool, it does not need internet connection in order to be accessed and is very user friendly.

"It's like bringing the STII library to the far regions of the country," DOST Assistant Secretary and STII Officer-in-Charge Director Raymund E. Liboro stressed during the launch as he shared how STARBOOKS had been installed in several schools nationwide including in places where people have not seen a computer.

With the inclusion of the 32-volume Britannica Ultimate Encyclopedia, the STARBOOKS content is now more formidable, Asec. Liboro remarked.



Asec. Raymund E. Liboro receives Britannica Encyclopedia's replica/reproduction of its original three-volume 1771 edition from Rene D. Yanos, president of Thistle International Inc., exclusive distributor of Britannica Online in the Philippines. *(Text by Angelica A. de Leon / Photo by Henry A. de Leon, S&T Media Service, DOST-STII)*

Included in the encyclopedia are the Britannica Elementary Library, Britannica Student Library, and Encyclopedia Britannica Library. "Britannica is already an institution and its inclusion would mean that STARBOOKS contains general information as well," stated Rene D. Yanos, president of Thistle International Inc., exclusive distributor of Britannica Online in the Philippines.

Yanos shared to the audience how schoolchildren in the provinces are having a hard time carrying their books to school. The idea behind digitizing Britannica Encyclopedia, he said, was to eliminate this difficulty on the part of the children and make learning easier for them.

"We call it the digital divide," he added, referring to the educational challenges faced

by schools in the provinces compared with the big league academic institutions in Manila. This is a problem which Britannica Encyclopedia, in partnership with STARBOOKS, aims to address, Yanos emphasized.

A highlight of the event was the handover of a replica or reproduction of Britannica Encyclopedia's original 1771 edition in three volumes, as Thistle International Inc.'s gift to DOST-STII as its content partner for STARBOOKS.

Aside from an audio-visual presentation, the launch likewise featured a demo presentation of STARBOOKS, particularly the features of Britannica Ultimate Encyclopedia, by DOST-STII's Annie Lyn D. Bacani, science research specialist II and STARBOOKS administrative coordinator.

DOST to collaborate with ARMM to turn agro-forest raw materials into income source

By APPLE JEAN C. MARTIN
S&T Media Service, DOST-FPRDI

THE DEPARTMENT of Science and Technology - Forest Products Research and Development Institute (DOST-FPRDI) is set to assist the Autonomous Region in Muslim Mindanao (ARMM) in beefing up the region’s livelihood options. Particularly, DOST will help the ARMM turn its agro-forest raw materials into viable sources of income for the locals.

This plan was ironed out after a two-round talk among FPRDI representatives Mildred M. Fidel, chief of the Technical Services Division, and Maria C. Reyes of the Business Development and Intellectual Property Section, and ARMM’s Executive Secretary Atty. Laisa M. Alamyra and Manila Liaison Office Director Mr. Jolly S. Lais.

“Dir. Lais is envisioning livelihood projects that will turn some of ARMM’s untapped agro-forest raw materials into viable sources of income for the locals,” explained Reyes. “He is particularly interested in the Institute’s dryer for water hyacinth stalks, grasses and shrubs, as well as training courses on the preservative treatment of these materials,” she added.

Some areas of the region are frequently flooded due to the vast carpets of water hyacinth clogging the tributary streams of Liguasan Marsh.



(L-R) Maria C. Reyes and Mildred M. Fidelin meet with Atty. Laisa M. Alamyra (center) and staff at the ARMM-Manila Liaison Office in making use of DOST-FPRDI’s dryer to turn agro-forest raw materials as sources of income.

“The local government is about to identify some communities along Rio Grande de Mindanao that could be tapped as project cooperators. FPRDI, meanwhile, will help identify handicraft manufacturers willing to purchase the dried raw materials that will be produced,” said Reyes.

The ARMM officials are slated to visit DOST-FPRDI and some successful adopters of the FPRDI’s dryer.

APPLE JEAN C. MARTIN



DOST-led project to help local rubber industry stretch its prospects

By APPLE JEAN C. MARTIN
S&T Media Service, DOST-FPRDI

THE COUNTRY’S natural rubber industry is flexing up as it leaps toward competitiveness in the areas of production, processing and manufacturing by 2020, as projected in the National R&D Program for Natural Rubber Processing and Rubber Manufacturing. Anchored on the country’s National Rubber R&D Agenda, the program is a collaboration among the Departments of Science and Technology, Trade and Industry, Environment and Natural Resources, Agriculture, and the Philippine Rubber Industry Association.

Headed by Engr. Belen B. Bisana of DOST’s Forest Products Research and Development Institute (FPRDI), the sub-project is designed to improve the production of technically-specified rubber in Zamboanga Peninsula by training the farmers on latex tapping and handling, benchmarking and dissemination of best practices, and recommending facilities and equipment, among others.

According to Bisana, the world demand for natural rubber is expected to increase from 10.2M metric tons (MT) in 2010 to 15.4M MT in 2020. “Malaysia’s decreased production of natural rubber can be an opportunity for the country to expand export,” Bisana said. In 2010, the local natural rubber industry produced 395, 237 MT and generated around 277,420 jobs, with plantation sites mostly found in Regions IX, X, XI, XII, and ARMM.

Bisana likewise informed that by 2017, an international global tire manufacturing company based in the country, is “projected to produce 50,000 tires a day. This presents an opportunity for the Philippines to increase natural rubber production by 12 percent for this company alone.”

Sourced from rubber trees, natural rubber is harvested in the form of latex — a sticky, milky fluid collected by incising the bark. It is commonly manufactured into tires, footwear, gloves and latex products. Top consumers include Malaysia, Singapore, China, Korea, Japan and Taiwan.

In this article, *Dr. Aristotle P. Carandang* discusses how SETUP grew from a small seed in 2002 to a flourishing program to the present as it touches the lives of people, not only of entrepreneurs but also their workers, neighbors, and their communities. The article lays the ground for the stories in the following pages that prove how science, through SETUP, acquires a human face in people's lives that improved through the intervention of science and technology.

SETUP: Touching lives thru science

By ARISTOTLE P. CARANDANG, PhD
S&T Media Service, DOST-STII

When does science get a human face? This is one question that is also sometimes asked with a "how." And more often than not, appropriate responses seem unavailable.

For the Department of Science and Technology (DOST), answering the question does not have to be in a textual declaration. "Actions speak louder than words" may be a cliché that is, perhaps, the silent message that the DOST wants to send across.

Indeed, the actions taken by the science department through one of its flagship programs - the Small Enterprise Technology Upgrading Program or SETUP - has already reached the countryside. And yet some remain clueless about this national strategy that focuses on the support extended by the DOST to micro, small, and medium enterprises or MSMEs.

What makes SETUP essentially different is its unbelievably unorthodox treatment of MSMEs – not as inanimate institutions but as a collective of human individuals. The program actually encourages and assists them to adopt technological innovations to improve MSMEs' operations, thereby boosting their productivity and competitiveness. In terms of technical requirements, SETUP also enables MSMEs to address such concerns through technology transfer and technological interventions. In this manner, they are able to improve productivity through better product quality, human resources development, cost minimization and waste management, and other operation related activities.

The program used to cover six important areas where MSMEs in the country are mostly



DOST Undersecretary Carol M. Yorobe is SETUP program director.

concentrated. These are food processing; horticulture and agriculture; marine and aquatic resources; gifts, decors, housewares; furniture; and metals and engineering. Very

recently, however, the Department has included two other very important areas: information and communications technology and pharmaceuticals.



LEGEND:

222,039,703	Food Processing
94,917,506	Metals and Engg
53,152,750	Horti/Agri
42,401,300	Furniture
38,426,790	GDH
19,572,659	ICT/Electronics
10,532,500	Aquatic/Marine
5,295,000	Pharma/Health

2013 Target Budget Allocation Per Sector.

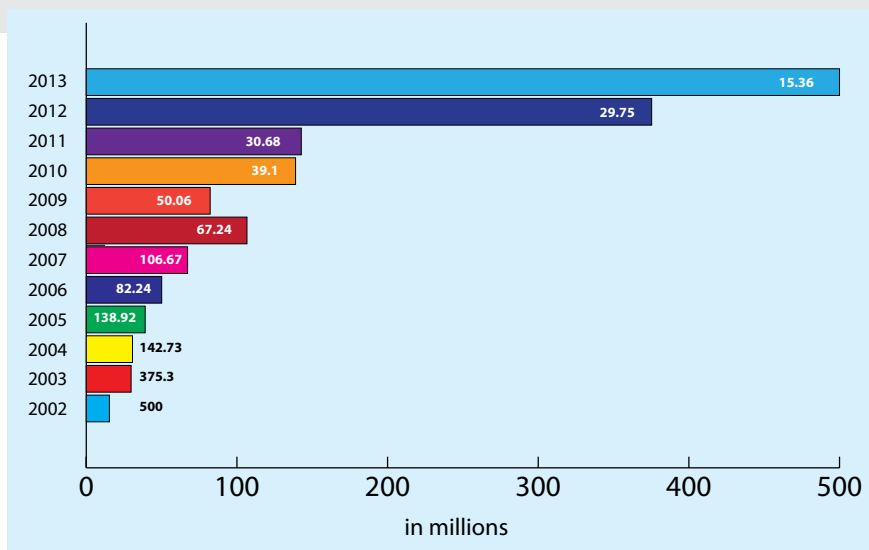


Table 1 shows the budget allocations of SETUP since 2002.

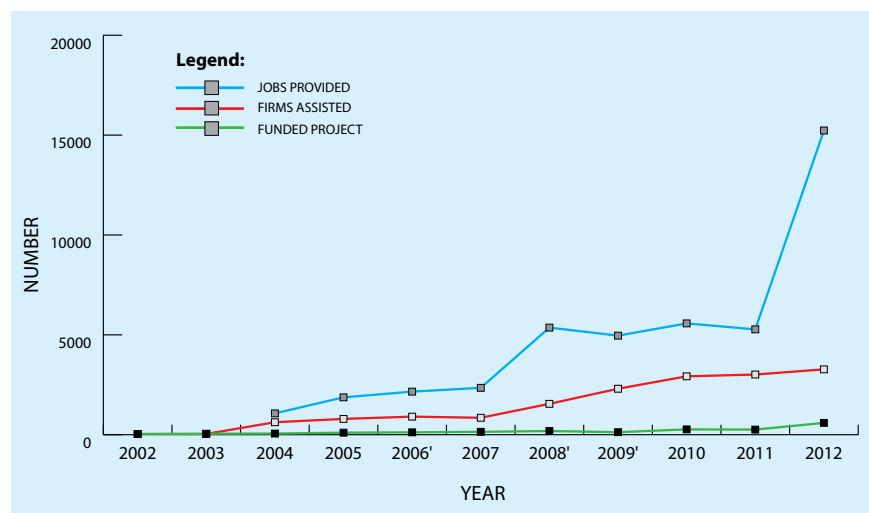


Table 2 shows the increasing trend of beneficiaries in terms of jobs generated and firms assisted since 2002.

THEN AND NOW

It was in CY2002 when the concept was presented and implemented with then Undersecretary Florentino O. Tesosro as its first program director.

Now on its 11th year, SETUP with its current Program Director - DOST Undersecretary for Regional Operations Carol M. Yorobe - has expanded its reach in terms of number of entrepreneurs, assistance, and areas being covered.

HITTING THE NAIL RIGHT ON ITS HEAD

From a meager P15.36M (budget in 2002 for its first year of operation), the efforts of its past and current leaders have started to pay off. In 2013, SETUP has received P500M and targets to assist 1,668 firms.

For the coming year, the program is targeting to reach 1,841 firms with a budget of P662.39M; a 132.5% increase from 2013.

INCLUSIVE IN EVERY SENSE

“Inclusive growth refers both to the pace and pattern of growth, which are interlinked and must be addressed together. Rapid pace of growth is unquestionably necessary for substantial poverty reduction, but for this growth to be sustainable in the long run, it should be broad-based across sectors, and inclusive of the large part of a country’s labor force. This definition implies a direct link between the macro and micro determinants of growth,” explained the World Bank. Then, President Benigno S. Aquino III pushed for it in the next half of his term. As he works for good governance, he also directs implementation of pro-poor agenda.

The DOST for its share of commitments, with Secretary Mario G. Montejo at the helm, has likewise been doing a number of programs and projects aiming at aiding the poor. The science department has solidly laid down its programs that point to inclusive growth – in its honest-to-goodness flagship initiatives. Proactively pursuing the SETUP mandates are the regional offices that serve not only as the direct link to the people but also as the face of the Department. After all, the regional offices are the ones actually meeting them face to face.

Another unique attribute of SETUP is its attention on gender sensitivity. It is so integrated in the program that one can hardly notice its lingering presence. The program truly gives equal chance to everyone regardless of sex, religious affiliation, political beliefs, cultural identity, socio-economic standing, and what not.

Under the scrutinizing lens of a microscope, one can see that SETUP has made a definable dent in jobs generation. In the collective, there have been 43,834 jobs created from 2002-2012.

But these figures would mean nothing if they were not translated to actual measurable benefits, socio-economic or otherwise. The truth of the matter, in solid reality, is that it has a heart that feels truly for the ones belonging to what experts call the bottom of the pyramid. Essentially, too, these numbers are in real terms and the lives the program has touched have changed for the better. Now, the human face that the DOST shows is not only a picture but one that smiles, gleaming with satisfaction brought about by science and technology.

Surely, what used to be obscure and marginalized has now owned a face that stands out in the ocean of successful individuals. This is how the DOST through SETUP has sketched in silence that human face while silently defining an expansive term called inclusive growth.

ARISTOTLE P. CARANDANG





Mr. Espiritu receives his award as the Best National SETUP Adoptor for 2013 from Sec. Mario G. Montejo.

Farmtec Food Incorporated is a testament that great things can start from small beginnings. In this article, *Maria Luisa S. Lumioan* narrates how Fabian G. Espiritu's hunger for innovation, coupled with DOST's support, has helped his humble garage-startup conquer the food ingredients market.

From Garage to Riches

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

In your bowl of steaming sinigang, crunchy snack, zesty condiment, or warm cup of tea, in one way or another, you might have encountered a product from Farmtec Foods Incorporated.

A major producer of dehydrated food ingredients, Farmtec Foods was recently awarded by the Department of Science and Technology (DOST) as the Best National Small Enterprise Technology Upgrading Program (SETUP) Adoptor for 2013 during the National Science and Technology Week, for having consistently proven the workability and financial feasibility of DOST's technologies.

Farmtec was established by Fabian G. Espiritu, who turned his old garage and vacant shed in Silang, Cavite into a processing plant and office. The firm's initial products were tamarind powder, chili powder, and shrimp powder.

Maybe these were just a drop in the bucket, but because of his perseverance and his eagerness to make things better, Espiritu was able to turn his micro enterprise into a flourishing business. And he is quick to give credit to DOST programs for the support he has received for his company.



TECHNOLOGY HELPS

DOST interventions started in 1999, when Espiritu adopted the technology of squash canton noodle making which he later expanded to include production of saluyot (jute) canton noodle and ube (yam) canton noodle.

The partnership continued in 2007, when Espiritu availed of Php 575,000 financial assistance from SETUP in order to acquire equipment for his quality control laboratory. SETUP is the program of DOST to encourage small entrepreneurs to adopt technological innovations by providing financial assistance which must be repaid in three years.

In addition, the company's technical and operations staff went through training courses on Good Manufacturing Practices, Hazard Analysis of Critical Control Points, Good Laboratory Practices, and microbiological analysis of food and water, with the help of the Food Services Team of DOST IV-A and Provincial Science and Technology Center in Cavite. Farmtec also received technical consultancy on cleaner production technology and energy audit.

As a result, the enterprise was later certified by SGS Phil. Inc., the world's leading inspection, verification, testing and certification company, as compliant to the standards of ISO 22000:2005 set for Food Safety Management Systems. The Islamic Da'wah Council of the Philippines also awarded the firm with Plant Halal Certificate in 2012.

With ensured quality control, Espiritu realized a 43 percent increase in production volume from 527 tons in 2007 to 756 tons in 2012. These upped sales from Php25M in 2007 to Php42M in 2012. Moreover, the conduct of in-house laboratory tests of products generated savings of Php1.5M annually, and cut delivery time to clients from 10 days down to only three days. Further, the adoption and use of a boiler powered by heat generated from use of liquefied



Rainbow of colors. Farmtec's various condiment products

petroleum gas resulted in annual savings from utility costs which reached Php 2.9M last year.

FOOD TO CONDIMENTS, TO SUCCESS AND BEYOND

After repaying the first SETUP assistance, Espiritu applied for another and was granted Php1.43M for the acquisition of a multi-function sterilizer. The equipment, which sanitizes food products using dry steam, serves as his alternative procedure in sterilizing powdered spices and other seasonings such as squid powder, turmeric powder, and anchovy powder.

Use of the machine cut the number of rejected products by a third. With total annual production volume for spices alone ranging from 28 tons to 42 tons, a 10 percent decrease in rejects has resulted in further increase in sales by more than 15 percent.

Apart from being the DOST Best SETUP Adopter for 2013, Espiritu is also six-time winner and nominee of various national and regional awards, which he said he owes to the agency. "DOST was instrumental in enhancing our productivity efforts to follow the standards of food

industry," he said. "We are receiving recognition because of the facilities we got through DOST-SETUP."

Farmtec has also increased its client base by more than 10 percent. Its domestic market includes 20 national and six multinational companies such as Ajinomoto Philippines Inc., Nestle Phil. Inc., Universal Robina Corp., McCormick Philippines, and RFM Corporation. Farmtec's export market covers the US, Japan, South Korea, the Middle East, and Australia.

The impact of the SETUP assistance to Farmtec extends beyond the company. The firm is able to provide employment and seasonal job opportunities to the community, and likewise provide additional income to farmers who supply the raw materials for their products.

MARIA LUISA S. LUMIOAN



Believe. This may well be Manuel “Jonnie” P. Maglaya Jr.’s mantra from the time Maglaya’s Wood Craft Store first germinated in his mind, up to the present when his business has just been named Region 1’s Best SETUP Adoptor. First, he believed and then he became happy. In this piece, STII’s *Allan Mauro V. Marfal* shares with us Jonnie’s journey in his own pursuit of happiness.

Jonnie’s PURSUIT of HAPPINESS

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

When I asked Mr. Manuel P. Maglaya Jr., or Jonnie to those who know him very well, what inspired him to put this kind of business, he replied with a very brief statement that meant a lot.

“Kasi sa umpisa pa lang alam ko na ito ang gusto ko pasukin at alam ko rin kasi dito ako magiging masaya.” (From the start I knew this is the kind of business I want to be involved in and I believed this is where I will be happy).

With the way Jonnie answered that question in just a split second, I immediately realized the main factor as to why Maglaya’s Wood Craft Store has been staying in the market for two decades and experiencing significant success in recent years.

The reason is very simple but definitely very essential to all of us.

UNEXPECTED INSPIRATION

Jonnie’s dream to build a wood craft business started way back, when he and his wife were still staying in the house of his father-in-law in La Union, who at that time, ran his own furniture business.

“Nagkaroon ako ng pagkakataong makita kung paano ginagawa iyong mga sinusuplay nilang cabinet, sala set at iba pang mga kagamitan, tapos naisip ko malaki ang chance na pumatok ito dahil kakaunti lang ang meron ganito sa lugar namin,” Jonnie said. (I had the opportunity to observe how they were making all the cabinets, sala set, panel doors and other furniture that they supplied. From that, it dawned on me that this kind of business has a high chance of being marketable as there were very few shops in our area.)

After falling in love with this potential new business, learning and familiarizing himself with the ins and outs, and realizing its potential,



Jonnie decided to build his own shop in the same year at Barangay Las-ud, Caba in La Union.

He does not deny that he had his doubts about their chances of keeping in step with the bigger players in the market. First of all, they had limited resources during the early years. Manpower, machines, and their own know-how were limited. Add to this the aspect of location. Their shop is situated very far from the main road.

SMILING AT ROAD BLOCKS

As they started with an initial capital of P50,000.00 and with only three workers at the helm, the firm had to make do with improvised equipment and small tools to produce the assorted wooden products.

“Sa ganitong negosyo po talaga, maliit ang halagang P50,000. Kasi sa presyo pa lang po ng mga ginagamit na makina, dagdag pa rin dun iyong mga kahoy na hindi rin po biro ang mga halaga at bilang ng dami na kinakailangan, eh,” Jonnie said. (In this kind of business, P50,000 is a very small amount because machines are too expensive, add to that the number of woods we need for our operations.)

Some may consider these kinds of shortcomings and challenges as major road blocks toward greater success. But not Jonnie. Instead, he took these as motivating factors and looked for other ways for his limited resources to work wonders for his starting business.

“Dahil lahat sa amin, masaya sa ginagawa nila, kaya kahit kulang at mahirap, napapalitaw namin iyong pagiging madiskarte na hinaluan pa ng sipag para makabuo pa rin ng de kalidad na produkto,” he said. (Because all of us were so happy in what we were doing, despite the lack of resources, we were still able to come up with quality products through our hard work and creativity.)

Riding on this mentality, Maglaya’s Wood Craft managed to gain the trust of a number of customers in their areas.

SETUP OPENS AND CREATES MORE DOORS

Sometime later, two representatives from the Department of Science and Technology (DOST) visited their shop and advised Jonnie to inquire about Small Enterprise Technology Upgrading Program (SETUP), a banner project of DOST that centers on enhancing the production of micro, small and medium enterprises via technology intervention.

DOST’s SETUP came at the perfect time for Maglaya’s Wood Craft as the demands and

business competition at that time got higher and tougher.

After attending a series of seminars about the benefits of SETUP and completing all the requirements needed, Jonnie was scheduled for an interview and an on-site visit from DOST. His application for SETUP assistance was approved.

Through this, Maglaya’s Wood Craft was able to acquire a thickness planer machine, which allowed them to create boards that are of even thickness throughout their length and width. Previously, the workers used portable planers to plane the board until it achieved its desired thickness.

It resulted in the increase of their production from three panel doors to 15-20 panel doors per day.

Maglaya’s Wood Craft also availed of the radial arm saw. It is used to cut boards easily and consistently without any outline made on the board, which helped the company increase its production volume from 800 bd ft to 2,000 bd ft per month.

As of now, Maglaya’s Wood Craft Store has a gross income of P60, 000 per month while expanding its market to the towns of La Union and Pangasinan. They have already refunded 97 percent of the total SETUP fund assistance with no delays and deferment made.

Jonnie is very grateful to DOST because aside from financial support, the Department also offered training on how to enhance the workers’ skills so that the quality of their products and services will be much improved.

As of now, Maglaya’s Wood Craft has six additional regular and three contractual workers who are hired on-call for big orders and projects.



Manuel P. Maglaya Jr (left) or Jonnie shows to a foreign customer in his La Union shop one of his finished products -- a panel door. Fueled by Jonnie’s passion, determination, guts and creativity, Maglaya’s Wood Craft Store managed to build a reputation as one of the top producers of world-class furniture such as sala set, cabinet, and panel doors in Northern Luzon despite being hounded by several challenges such as limited resources, strategic location and tight competition during the early years of their business operation. (Photos courtesy of Maglaya’s Wood Craft)

REAL HAPPINESS FOUND

Aside from the tremendous leap the company has made in terms of increasing the quality of its product and services, as well as increasing the income and job opportunities they generate in their area, there is another reason why the story of Jonnie and Maglaya’s Wood Craft Store is so compelling.

Just as what Jonnie said, he and his staff enjoy and love what they are doing and, with that, everything comes so easy to them, particularly in terms of creativity, guts, and resilience, even during adversity.

This statement about happiness and dedication may be oft-repeated but it remains pleasing to the ears, especially when it is all about a successful business venture like Maglaya’s Wood Craft Store.

ALLAN MAURO V. MARFAL



big from carabao to chicharon to success

Virginia G. Bilgera shares with S&T Post readers the story of chicharabao - chicharon made of carabao skin - and how DOST gave a Cagayan-based business that extra pleasant crackle, thus propping up its chicharabao products into the preferred snacks of its customers.

By VIRGINIA G. BILGERA
PSTC, Nueva Vizcaya

Ever heard of chicharabao? Better yet, ever tasted one?

Chicharabao is chicharon made of carabao skin instead of the usual pork skin. It is as crispy and chewy yet less health-threatening than the pork variety. As such, it has become the snack of choice of the health conscious who at times crave for this favorite Pinoy crunchy.

Chicharabao is produced by Carne Ybanag, one of the four business units of Lighthouse Cooperative, and the Best DOST SETUP Adopter of Region 02 for 2012. This recognition came after availing SETUP assistance twice- first in 2006 to upgrade processing and packaging/labeling of its processed meat products, and again in 2009 to upgrade its chicharabao production.

CRUNCHING UP ITS PRODUCTION

Carne Ybanag availed in the Phase 1 of SETUP's Innovation Support System (ISS) the following equipment that greatly puffed up its production: meat bone cutter, meat mixers, floor type vacuum sealer, blender, slicer, chest type freezer, slicing machine, foot stamp sealer and upright freezers.

In Phase 2, the company was able to acquire stainless working tables, stock pots and cladding. DOST also facilitated the design of the firm's rice hull fed furnace.

More than the technology upgrading of its facilities, DOST also improved Chicharabao's packaging and labeling design through the Packaging Research & Development Center (PRDC) of DOST's Industrial Technology Development Institute (DOST-ITDI). The production system was also enhanced through the Manufacturing Productivity Extension Program of DOST's Technology Application and Promotion Institute (TAPI), as well as trainings on Good Manufacturing Practices, 5s and Cleaner Production Technologies provided by DOST-ITDI.



Photos by DOST II



Lighthouse Cooperative regularly participates in many techno and trade fairs as part of goodwill and product promotion.



Secretary Mario G. Montejo and some DOST Officials take time to taste Carne Ybanag's chicharabao.

Chicharabao was crunching bigger but DOST II regional and provincial offices continued to assist Carne Ybanag. The company went through technology trainings and promoted its products in S&T fairs and linkages.

The more exciting aspect of DOST's support is when the agency encouraged Carne Ybanag to play "big brother" to neophyte SMEs engaged in food processing in the province of Cagayan.

AND THE CARABAO SAID MOO-RE

S&T interventions to Carne Ybanag evidently beefed up the firm, as it churned out processed meat products with improved quality and shelf life. Soon the company expanded to other product lines as it increased production volume from 3.4 percent to 29.17 percent, sales by 15.4 percent to a whopping 800 percent.

Some of Carne Ybanag's proofs of success and impact as a successful SETUP Adopter of DOST.

Its income increased from P30,000 per month to P240,000 per month as a result of the rise in employment from 20 percent to 500 percent, and productivity by 25 percent to 143.47 percent.

GRASS IS MUCH GREENER NOW

Alongside these improvements came various recognitions to Carne Ybanag, including Business Excellence Award, Outstanding Agri Entrepreneur of the 2012 GAWAD SAKA Award, National Finalist & Regional Productivity Olympics Award, three Regional GAWAD SAKA awards, seven Provincial OTOP SMED awards, and National Finalist in the OTOP SME Award.

Proudly Cagayan made, Carne Ybanag is proud of DOST's interventions that greatly contributed to its standing as a successful SME today.

VIRGINIA G. BILGERA



With merely P3,000, Amanda Battad started her marine products business and eventually flowed with the current of success to achieve its present status. **Framelia V. Anonas** tells us how Amanda did it, with the help of DOST.

UNDER THE SEA

She started with three

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

Amanda's Marine Products, with P3,000 capital and three workers at the start, was able to wave high its bounty from the sea business through technology upgrading.

With a capital investment of Php 3,000, BS Chemistry graduate Amanda Battad started in 1990 what is now called Amanda's Marine Products. Like most starters, she began by buying dried fish from neighbors and sold the stuff in wet market in nearby provinces. Soon Amanda was able to move her tuyo (dried fish), daing (dried fish cut open), and bagoong (fish sauce) products in Divisoria markets with the help of three staff who formed the core of her business operations.

Soon, Amanda was producing her own marine products which spurred the growth of her business culminating in the construction of the company building.

Photos by SETUP



TECHNOLOGY INTERVENTION SAILED AMANDA'S ON HIGH SEAS

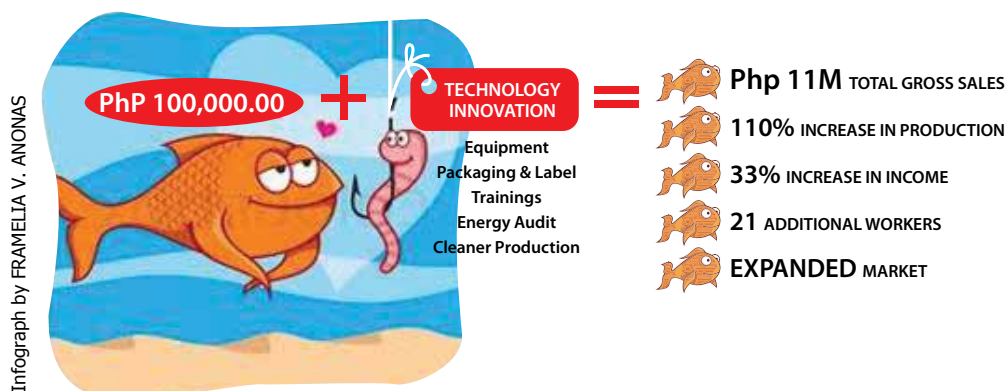
But the real breakthrough came in 2005 when the company availed of the DOST- Industrial Technology Development Institute's support in improving the label design of its sautéed shrimp paste or bagoong alamang product. That was the start of the partnership between the company and DOST-PSTC-Bataan.

The improved packaging enabled the company to make a crack in the international market in 2007 when one consolidator who ordered bagoong na alamang exported it to the USA, Canada, and Australia. Encouraged by the move, Amanda's also started exporting its products to Dubai and other Middle East countries.

Yet despite its burgeoning market abroad, Amanda's production was still antiquated, making the workers continually up on their toes cooking bagoong in carajay or wok. As the orders kept piling, Amanda realized she needed to improve her procedures and facilities to meet the demands of her clients, local or abroad. Her next move: avail of DOST's SETUP.

With a grant of P291,832.86 from DOST-SETUP, Amanda's was able to purchase several equipment, including vacuum packaging machine, grinding machine, stainless steel cooking tub, and refractor. Technology intervention greatly improved Amanda's product quality and productivity. Such improvement, tied together with aggressive marketing strategies, enabled the company to break into restaurant giants like Chowking, Mang Inasal, Cabalen, Goldilocks, and Marisco.

Amanda's also availed of other forms of technical assistance from DOST-III PSTC Bataan, such as the improvement of packaging and label design heat penetration test food safety and good manufacturing



practices (GMP) cleaner production energy audit.

MPEX CONSULTANCY PROGRAM INNOVATION SUPPORT SYSTEM

The opening of new opportunities following the company's technology upgrading ushered in another new challenge to hurdle. This time, Amanda's has to drastically increase its production volume in order to cope with the increasing demand. This opened the door to the second phase of SETUP intervention in which the company was able to acquire a 300-liter double jacketed kettle.

Moreover, the company also availed of laboratory services, namely nutrition facts analysis, chemical analyses, and microbiological analyses.

RIDING THE CREST OF SUCCESS

The interventions provided by DOST pushed Amanda's income 47 percent higher in 2012 during the second year of its SETUP implementation compared with its 2009 income when its SETUP Phase 1 was just ending.

Aside from improving its product quality and productivity, it was also able to comply with the requirements of GMP and BFAD through the acquisition of tools and equipment like stainless steel double jacketed kettle.

From its local clients composed of popular fastfood and restaurants, Amanda's reached across the seas with its product export to USA, Canada, Australia, Dubai and other Middle East countries.

Amanda's too was able to join local and international trade fairs such as Philippine Fiesta in New Jersey, USA; North Luzon Trade Mission in Los Angeles, USA; and OTOP Seminar in Thailand.

IMPACT TO THE COMMUNITY

Following its apparent success in marketing its greatly improved products, Amanda's reinforced its manpower which now numbers to a maximum of 50 warm bodies compared with a lean 20-worker line up in 2006 before DOST came into the picture.

It also put on a pushpin to Balanga City on the fish processing map after Amanda's was featured in radio and TV programs such as Kabuhayang Swak na Swak of ABS-CBS last June 2013, Unang Hirit of GMA 7 and others.



FRAMELIA V. ANONAS





MPMPC representative receives the coop's plaque.

SETUP's intervention energizes the people of Mindoro Progressive Multi-Purpose Cooperative in Mindoro Occidental to work even on Saturdays to get closer to their dreams. **Flor Princess L. Arriola** and **Maria Ethelwinda G. Coronacion** tell us why.

SATURDAY WORK FEVER

By FLOR PRINCESS L. ARRIOLA and
MARIA ETHELWINDA G. CORONACION
PSTC, Occidental Mindoro

Photos by DOST-MIMAROPA



The MPMPC office and the multi-purpose center stand proudly along the National Highway in Mamburao.



MPMPC members meet regularly to update the members.

Saturday marks an end to a laborious week for most working people, but not for Sofia Fabillar. For her and the rest of the members of Mindoro Progressive Multi-Purpose Cooperative (MPMPC), working on a Saturday means another day closer to their progress.

Initially called the Tangkalan Women's Cooperative, Fabillar's group was formed in May 2003 primarily to help its members generate livelihood, and to provide cash and equipment loan to them. Their homebase, Brgy. Tangkalan, was considered one of the poorest barangays in Mindoro Occidental. In spite of the barangay's abundant natural resources, education and employment opportunities were quite scanty so the group found it essential to help its members find access to such opportunities.

The members found the coop services very helpful in meeting their needs, and so more members joined the coop. With its increased membership, the coop decided to expand to accommodate more members and help more people. In 2007, the Tangkalan Women's Cooperative became Mindoro Progressive Multi-purpose Cooperative.

The newly-formed coop focused on agricultural enterprises, such as feed milling and hog raising. The coop also supplied rice to the National Food Authority, as well as fertilizers and pesticides not only to members but also to other farmers in nearby towns. The ultimate goal of the coop's services is hinged on alleviating poverty in the community.

SETUP supported the purchase of this re-circulating batch-type mechanical dryer.



In 2009, MPMPC sought the Department of Science and Technology's (DOST) assistance through the Small Enterprises Technology Upgrading Program (SETUP). The coop wanted to address the need to lessen post-harvest losses, especially during the rainy season when drying rice and corn is difficult and spoilage is very common. DOST, in cooperation with the provincial government of Mindoro Occidental, assisted the cooperative by providing a mechanical dryer facility fitted with rice hull furnace. The equipment can produce 6.3 metric tons per batch for about 14 hours. The acquired technology generated PhP 682,710 in its first year, and, in just three years, the cooperative earned a cumulative income of

PhP 1,323,000, with a return investment of 30 percent.

With the success of the cooperative's endeavors, Fabillar now envisions a micro-finance project. Also, she wants to build a one-stop-shop where members can showcase their produce and even avail a buy now-pay later service especially in tough times. Further, she wants to provide vocational courses for

the members who would want to venture to other businesses.

Because of the many activities and plans that need to be ironed out and implemented, Fabillar and her key people continue to work on Saturdays. Other working people may see Saturday as a "rest day" but for Fabillar, working even on this day is vital in reaching for the ultimate goal of every member of the coop.

"Lahat naman ng tao may hilig. Yung iba dyan mahilig mag gupit ng buhok o mag-manicure o kaya handicrafts. Pwede nating turuan sila tapos pahiram ng gunting, upuan tapos konting pera para makapagsimula. Kahit papano ay panggastos nila sa araw-araw habang naghihintay ng ani. Lalo ngayon na matindi ang pag-ulan, baka wala na rin silang

hintaying ani," Fabillar said. (All people have something they love to do. Some love cutting hair, doing manicure, or designing handicrafts. We can provide training for those interested and provide them with scissors and chairs, and lend them some money for capital. This will give them something to provide their family with while waiting for harvest, especially this rainy season when they might lose their harvest.).

The cooperative now has set up branches in Mindoro Occidental. It has also been actively participating in environmental campaigns like the Clean and Green Project and the No to Mining Campaign. Further, it has established an annual tree planting activity and in-house training to promote awareness on water and energy conservation. The coop also gives cash donations to schools, churches and TV stations through calamity relief programs, conducts medical missions, and provides scholarships. These efforts are the cooperative's way of giving back what it owes to the community.

When asked about her working principle with regard to running the cooperative, Fabillar responded, "Dapat walakang tinatago sa miyembro. Isa pa, tinatanggap ko lang yung tapat... Kahit ano itanong mo sakin, magiging honest at transparent ako. (You should not hide anything from your members. One more thing, I only accept honest people in the cooperative... Ask me anything, and I'll be honest and transparent to you). This principle has set the value of the coop's nine long and fruitful years.

There are still many residents of Brgy. Tangkalan who are mired in poverty. But the MPMPC has committed to strive, and even continue working on Saturdays, to work for the benefit of the people and the rest of the province's populace.



A worker bags palay before storage or distribution.

Because its resources were limited, the MPMPC sought assistance of the Department of Agriculture in purchasing a feed mill mixer and in conducting a series of trainings to enhance the farming expertise of the cooperative's members. Private firms also conducted trainings on the usage of fertilizers and application of pesticides.

Due to these interventions from supportive agencies, the cooperative came up with better deals than before. Despite the members' low income, they were able to augment it through the market share of 25 percent from the cooperative in Mamburao and neighbouring areas in Paluan, Sablayan, and Abra de Ilog. The members were able to generate funds to send their children to school, construct sturdier concrete houses, and buy appliances like television sets and refrigerators.



FLOR PRINCESS L. ARRIOLA and
MARIA ETHELWINDA G. CORONACION



Bonifacio Belen stands proud with her award in this photo with Sec. Mario G. Montejo.

Who would have thought that P1,500 would eventually turn into a million after less than 10 years? With hard work, innovation, and technology intervention, Belen's Pinahamis did it, as **Maria Judith L. Sablan** relates in this story.

MILLION PESO PILI

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

Photos by HENRY A. DE LEON



A typical day in Belen's pinahamis.

Philippines' Region V or Bicol region is surely famous for its majestic Mayon volcano and spicy dishes such as Bicol express or laing. However, one more thing that makes the region special is the pili nut. Pili is a nut derived from pili tree, scientifically known as *Canarium ovatum*, that normally thrives in the Bicol region. Delicacies made from pili are best as pasalubong or souvenirs.

In the island province of Catanduanes, particularly in Brgy Sto. Niño in Virac, one of the successful pili businesses is Belen's Pinahamis na Pili Atbp. Pinahamis in Bicolano means "sweetened" and, following the development of the company, Belen's story is indeed a sweet success.

STARTING SMALL

With a capital of only P1,500, Ms. Bonifacio ventured into making sweetened pili and other delicacies in 2003. After almost seven years as a micro-enterprise in the food processing industry, Ms. Bonifacio heard of DOST's program and sought help for her business. She applied for DOST SETUP and went through training on production of chocolate coated pili in 2010 at DOST's Food and Nutrition Research Institute as part of technology trainings and competency building provided to SETUP adoptors.

In 2011, Belen's Pinahamis was granted assistance for the acquisition of aluminized carajay (pan), which amounted to P322,960.00. Carajay is a big customized pan where the pili and other delicacies are cooked and sweetened. DOST Region V and DTI Catanduanes provided further assistance in packaging the products.



GROWING BIGGER

Through the DOST SETUP intervention, Belen's improved the quality of its products and increased its product lines from eight to 14. Among its products are mazapan de pili, glazed pili nut, salted pili nut, choco coated pili, crispy pili, caramel coated pili nut, pili brittle, roasted pili nut, taro chips, squash molido, yema de pili, squash chips, pili tart, and polvoron de pili.

Sales eventually increased from merely P7,500 to P276,336 per month and Belen's grew from micro to a small enterprise. In fact, Belen's received an order for 250 kg of assorted products per week for export to Japan but due to raw material limitation, the company had to turn down the order. At present, there is no direct export but Belen's supplies 100 kg of products to a Manila-based exporter.

As Belen's grew, it had to have additional labor to match its expansion. Previously, Belen's had only two staff who worked in production. But now, there are six regular staff and 27 more indirectly working in the various stages of production. With a previous asset of P30,000, Belen's now has about a million. The improved production earned Belen's its Food and Drugs Administration accreditation.

GETTING RECOGNITIONS

Because of Belen's entrepreneurial success, its owner, Ms. Bonifacio was awarded as Outstanding Catandungan Entrepinoy in 2011. Her business was also recognized as successful microbusiness by ARDCI NGO Groups, Inc. It also inspired the establishment of the Pili Village Enterprise Project in Brgy. Sto. Niño in Virac, Catanduanes.

Recently, it won in the Regional Science and Technology Cluster Fair as one of the outstanding DOST SETUP adoptors.



MARIA JUDITH L. SABLAN





An award to recognize the Trappist products' excellence, as this photo shows.

The Trappist monks prayed, ate, and loved. These may well be the qualities of Trappist Monastic Products' business success. Oh, but there's a fourth ingredient too. It's called "innovate." That's right, the monks innovated as well, in order to groom their products for the export market. *Alicia Sol A. Salazar* tells us more.

PRAY EAT LOVE

Grow big through prayer, hard work, technology & innovation

By ALICIA SOL A. SALAZAR
S&T Media Service, DOST-VI

The food processing activities of the Trappist monks started way back in 1974 with a small production of preserves from locally grown fruits for the purpose of supporting their daily needs. Their products became so saleable that they had to increase their production to meet the surging demand.

This development encouraged the monks to expand their processing activities. They named their company as Trappist Monastic Products and constructed a building solely for business use and purchased additional equipment for production. Aside from the monks, 24 workers, mostly out-of-school youth and working students, were hired.

HEAVEN SENT

But the market competition for processed products also became more aggressive, so the monks availed of the packaging and labeling assistance of DOST in 2004 to have the edge both in technology and aesthetics. The DOST-ITDI Packaging Research and Development Center in turn developed a more attractive packaging and labeling for the products. Their efforts paid off as awareness for Trappist products surged, subsequently increasing the company's sales to a significant level.

In 2006, Trappist availed of the DOST Manufacturing Productivity Extension Program for Export Modernization to properly position its products in the export market. After a thorough study, DOST experts recommended the improvement

DOST VI



Workers went through important trainings to make sure that they have the most suitable workplace and produce the best quality food products.

of techniques in equipment operation. Upon implementation, the techniques resulted in a total fuel savings by Php338,400.00 annually. Likewise, DOST identified some critical technological needs of the company like the lack of a filling machine.

This encouraged the company to avail of the SETUP Innovation System Support Fund (ISSF) for the acquisition of the above mentioned equipment. Furthermore, it is one of the beneficiaries of the cleaner production program that further improved the product's quality.

PhP 10,000.00
(in 1974)

Technology Innovation

- Adoption of new technologies to improve production efficiency and product quality
- Compliance to existing standards such as cGMP/HACCP
- Development of appropriate packaging and label design to prolong shelf life and comply with food safety requirements and Philippine labelling laws.
- Continuous R&D on product and process to innovate new products with superior quality

In 2012, the company availed once again of the assistance under the SETUP Innovation System Support Fund (ISSF) to procure a form fill seal horizontal machine, printing of labels and development of packaging materials for its new product line with an aim to improve product quality, enhance product presentation and increase product shelf-life.

DOST's series of technological interventions enabled Trappist to efficiently and effectively meet its growing market demand.

Presently, the company is one of the most successful food processors in the region. Its products are available in all seven outlets of Iloilo Supermarket, Iloilo

Producers Association, Guimaras Trade and Industry Center and at its own gift shop in Guimaras. It penetrated the Boracay market by supplying three retail outlets in said island. The company likewise has an existing export market in Guam. Currently, negotiations are ongoing between the management of SM supermarkets and with exporters from China, Japan and United States.



Some of the most popular Trappist products among tourists and supermarket buyers. (Photo by Framelia V. Anonas)

ALICIA SOL A. SALAZAR





From children's book seller to the most sought after furniture maker in Bohol, Grace Alcala's serendipitous success places her among SETUP's most inspiring stories.

As they say, if destiny wills it, it will happen. This was true in the case of businesswoman Grace Alcala who is engaged in dual ventures: book selling and furniture making. In this article, *Joy Lazcano* relates how serendipity played its part in the making of Total Woodkraft, Region VII's Best SETUP Adoptor.

SERENDIPITY

led entrep to go
from books to furniture, to SETUP

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

Grace Alcala sells children's books in the island province of Bohol. She would visit the home of her prospective clients to chat with them and eventually offer them her products.

And then, she would notice their furniture. They would express their frustrations about the lack of reasonably priced customized furniture. In addition, Grace also observed that Boholanos have this culture of having new furnishings in time for the fiesta celebration in May.

She connected the dots. Despite her lack of knowledge in the business, she came up with the idea of venturing into furniture. Eventually, Grace devoted less of her time in the book business and shifted her energy more on her new venture.

Initially, she was producing wooden bookstands and cabinets which were slowly noticed in the province. Orders came in trickles and peaked in the month of May. Eventually however, her venture made a headway and Grace formally named it Total Woodkraft.

The business became lively as both local and foreign customers began making inquiries about her ensemble of furnishings. Yet, there were concerns about the quality of the wood as they reportedly shrunk at some time. Wood normally shrinks due to its moisture content when it is not properly dried. This caused the company a lot of costly reworks.



Photos by TOTAL WOODKRAFT Facebook

Photos by FRAMELIA V. ANONAS



The problem began threatening Total Woodkraft operations. Anthony Lacaran, Total Woodkraft operations head, says that “before, we were afraid to take orders especially from foreigners since our lumbers would shrink and warp.” Consequently, the company resorted to using plyboards for the meantime as alternative lumbers.

Meanwhile, Grace did not totally leave the book business. Eventually, she got acquainted with Department of Science and Technology (DOST) Provincial Director Marcial Tanggaan with whom she made a transaction involving a set of children’s books. This chance encounter led Grace to DOST’s Small Enterprise Technology Upgrading Program (SETUP) which would revitalize her fledgling furniture business.

SETUP is DOST’s gift to the micro, small, and medium enterprise (MSMEs) sector. It provides assistance in improving MSMEs’ manufacturing capabilities through a package of technical assistance and equipment upgrading.

Hence, in 2004, DOST conducted various evaluations of the business’ operations to ensure that Total Woodkraft would get the proper technology interventions. Based on DOST’s assessment through its Forest Products Research and Development Institute, Total Woodkraft would need a 3,000 board feet (bd ft). of furnace-type lumber dryer to extract the moisture from the lumbers used before processing.

Also, DOST upgraded the company’s wood processing technologies by introducing wood processing equipment to enhance the design and production of the furniture. DOST also ensured that

the skills of Total Woodkraft’s workers will be in line with industry standards. It also connected the company to a network of various industry players to strengthen its stake in the industry.

SETUP extended additional assistance to speed up production and cut working time by three-fourths.

From previous earnings of PhP1.8M, Total Woodkraft now makes around PhP4M annually and has raised its lumber requirements from 2,000 bd ft. to 4,000 bd ft. as a result of DOST interventions. And with its competent workforce, the company has reduced its reworks from 20% to 5%.

Now, Grace’s Total Woodkraft enjoys the support of both local and foreign markets, with a product line exclusively crafted for local high-end hotels, restaurants, and resorts in Bohol. With the rising demand for their products, Grace’s company has now transferred to a bigger production area in Sta. Felomina, Albuquerque, Bohol.

Indeed, serendipity has shown the way for Grace Alcala.

JOY M. LAZZANO





Teresita Polcarpio receives her award, another feather on her cap.

TAP's bags are really tops! In this article by [Joy M. Lazcano](#), find out how TAP, or Teresita Alcober Polcarpio, climbed her way to the top through SETUP.

the Lady wears TAP's

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

Mrs. Teresita Alcober Polcarpio's fancy over native seagrass bags goes way back in 1997 when she was still an active community worker. Her first foray into business was in food processing. However, she said that there was something magical about native handwoven products that made her choose over her previous food venture.

What began as a fascination has now become an established company name - TAP's Handmade Products - which develops local handwoven products and presently employs 200 workers in the province of Leyte.

Thus, her passion for these native products rewarded her as orders came from as far as Europe and Japan.

SEARCH FOR SUCCESS

Mrs. Polcarpio realized the potentials of handwoven products when she attended a handweaving seminar on seagrass. At that time, she was producing buko pies and cassava cakes that she sold to a nearby hotel in Tacloban City.

Mrs. Polcarpio felt a sense of success with the venture since most participants in said seminar considered bags only as souvenirs. With Php15,000 as a start-up capital, Mrs Polcarpio started her backyard enterprise producing simple handwoven bags, trays, mats, and placemats with two workers and 16 commissioned weavers.

Earlier, TAP's used seagrass as raw materials for the products until the Policarprios discovered ticog, a local plant abundantly available in their hometown. "Unlike any other straws, ticog has a softer feel," explained Mrs. Polcarpio.



Photo by FRAMELIA V. ANONAS





Photo by FRAMELIA V. ANONAS

Having a good business sense added more to the success of TAP's. Mrs. Policarpio explored various government assistance programs for small and medium enterprises (SMEs) and attended government organized trade fairs to promote and at the same time sell her products within the region. These also acquainted her with the kind of products that her market needs.

Later, her products became a staple of trade fairs in Leyte which gave her the opportunity to join the Toronto Trade Fair in 1998.

The wave of success went on as her products were again picked for the Houston International Exhibit in 1999.

FROM SIMPLE TO MORE INTRICATE, MORE INTERESTING

With TAP's frequent participation in trade fairs, the company gained numerous clients even outside Leyte. It was also during a trade fair that Mrs. Policarpio's products were noticed by then Department of Science and Technology (DOST) Provincial Director Rogelio Gola which serendipitously led



Mrs. Policarpio to DOST's Small Enterprise Technology Upgrading Program (SETUP), a program meant to assist SMEs with their technological upgrading needs and know-how to match local and global market competition.

Prior to SETUP's interventions, TAP's produced simple bag designs for the local market. After exposure to various trade fairs, Mrs. Policarpio saw the need to keep up with market trends and upgrade the quality of her products.

Through the help of DOST, SETUP provided industrial sewing machines



to make sewing quicker and better on their handwoven products. SETUP also provided technical assistance on natural fiber treatment for ticog raw materials, plus basic and advanced dyeing using natural dyes.

SETUP also provided plant and process layout for efficient production system and product line diversification.

TAPs is also a beneficiary of DOST's commitment to the Great Women Project. "Some 200 women weavers who provide the *ticog* mats that serve as raw material of TAPs benefited from the project," PSTC-Leyte Director John Glenn Ocana said. "DOST GAD also conducted at TAPs the DOST-developed gender sensitivity tool."

Finally, Mrs. Policarpio mentioned that her partnership with DOST through SETUP, has rolled out scores of opportunities for TAP's Handmade Products to be on top of their business.





A recognition from DOST means that the campaign is excelling in what it does.

Region IX Best SETUP Adoptor Wood Tech Builders has grown by leaps and bounds. No less than the Department of Science and Technology (DOST) has been a part of this journey which has seen the furniture company take the leap from being a mere spin-off venture to an established firm with its own identity. **Espie Angelica A. de Leon** tells us more in this article.

INTO THE WOODS

SETUP spins high what was once a spin off

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

Photos by DOST-IX



Wood Tech Builders' wood working area

After only four years in the business, Wood Tech Builders, Inc. in Dumalinao, Zamboanga del Sur, has risen to be a major supplier of kiln-dried wood products in Cebu City. With 31 different kiln-dried furniture items in its product portfolio, Wood Tech is truly enjoying the fruits of its efforts to expand, improve, and upgrade.

DOST's SETUP provided the furniture company with P1.8 M worth of funding in 2010 for the establishment of a kiln dryer facility (24,000-bd ft capacity) developed by DOST's Forest Products Research and Development Institute (FPRDI). The facility, which includes a wood processing plant, is where lumber are dried for durability. It is especially practical for drying lumber in huge volumes.

FPRDI also provided technical consultancy on project site assessment, kiln dryer design, furnace design, and kiln dryer construction. From the Industrial Technology Development Institute (ITDI) -- another R&D agency under the DOST system -- employees received training on charcoaling of waste and charcoal briquetting. These services made up Phase I of DOST's assistance to Wood Tech Builders.

For Phase II, SETUP released P 4M in May this year as financial assistance for upgrading of the kiln dryer facility, with FPRDI providing technical consultancy on kiln dryer design and furnace design. In addition, Mr. Alvin Ang,



Charcoal briquettes made from saw dust.



owner of Wood Tech Builders, also plans to install a dehumidifier on the dryer facility and upgrade the kiln dryer production capacity to 40,000 bdf.

With these DOST interventions, the firm now complies with proper plant layouting standards while workers have upgraded their know-how on wood processing technologies. In addition, Wood Tech Builders is now capable of churning out 31 types of high-quality kiln dried wood products – doors and door parts, tables, chairs, dining sets, mouldings, planed stocks, stair components, Globus TV stand, octagonal coffee set, and even a lechon tray.

These items have propelled the firm into becoming one of the industry forerunners in Cebu City. Sales grew as

well, increasing by 30 percent in the local market over the average income of Alvin Bazaar, Inc. (supplier of general merchandise items, the original company from which Wood Tech Builders spun off). Finally, what was once a six-hectare tree farm lot owned by Ang is now a fully operational wood processing facility actively beefing up all other economic activities in the area. Merely four years after its establishment, Wood Tech Builders is now a multi-million enterprise with annual gross sales of more than P13 M – a huge leap from its 2.4 M annual gross sales prior to DOST-SETUP’s intervention.

These benefits cascade down to Wood Tech Builders personnel, customers and the entire community in Zamboanga. The company’s thriving

business revitalized other economic activities in the vicinity, thus making more jobs available to the locals. Free tree seedlings and free cooking fuel were provided as well. In particular, the wood processing plant built inside the kiln dryer facility paved the way for the implementation of important development projects namely, a poultry farm at the back of the plant, a newly constructed road near Wood Tech Builders, and a rice and corn mill facility adjacent to the processing plant.

Now that the kiln dryer facility is in place, Wood Tech Builders also plans to participate in the development of the region’s bamboo industry, as bamboo products are currently in demand and require kiln drying as well.

ESPIE ANGELICA A. DE LEON





Highland Fresh Milk Processing Plant is the cream of the crop among Region X's roster of SETUP adoptors.

From fresh cow's milk to *mozzarella fior di latte*, Gouda and white cheese, yoghurt, butter and more, Highland Fresh Milk Processing Plant's products are of the highest quality. The creamy add-ins would not have been possible without the aid of technology upgrading. **Teresita Superioridad Baluyos** relates the story behind this.

got milk? How DOST-SETUP creams up dairy products



Photos by DOST-X

By TERESITA SUPERIORIDAD BALUYOS
S&T Media Services, DOST-X

The Highland Fresh Milk Processing Plant or Highland Fresh, in El Salvador, Misamis Oriental was established in 1987 by the Northern Mindanao Federation of Dairy Cooperatives (NMFDC) that started with seven primary cooperatives and one associate cooperative in Bukidnon and Misamis Oriental.

Assisted by the then Philippine Dairy Corporation, now the National Dairy Authority (NDA), Highland Fresh started as a household-based milk production and processing facility, serving more than 800 dairy farmer-members through the cooperative's dairy animal stocks dispersal program, technical assistance on dairy management, pasture and forage management, milk production and processing and marketing. The cooperative later received various assistance that enabled it to establish a milk processing facility with a capacity of 500 liters of raw milk per hour on a rent-to-own scheme and operates two compact dairy farms that raise Holstein Friesian, Holstein Sahiwal, Jersey and other breeds of dairy cattle.

Yet despite Dairy Fresh's increased raw milk production of up to 3,500 liters daily, stiff competition has made it urgent for the cooperative to innovate and add value to its product line. Finding help at the Department of Science and Technology Regional Office No. 10 (DOST-X), Dairy



PhP 12,000,000
(in 1992)



Technology Innovation

- Upgrading of existing and defective equipment to produce quality butter, cream and mozzarella cheese
- Laboratory analysis (product nutritional facts)
- Consultancy services particularly on Cleaner Production Technology



- ✓ Increased productivity sales up to 178%
- ✓ Increased production of raw milk from an average of 42,000 liters to 46,000 liters per month
- ✓ Savings in fuel cost is up to 20%
- ✓ Improved handling and sanitation
- ✓ Reduced instances of contamination and spoilage from 4-5% down to 1%.
- ✓ Increased in umber of direct dealers/ distributors by 2%.



DOST-SETUP's various technology interventions improved productivity from an average of 42,000 liters to 46,000 liters of raw milk per month, increased product sales up to 178 percent, shot up savings in fuel cost of up to 20 percent, and enhanced handling and sanitation while reducing instances of contamination and spoilage from 4-5% percent down to 1 percent.

Highland Fresh's six-month production from October 2012 to March 2013 churned out 252,130 liters of milk bars; and 197,508 liters of liquid milk that yielded a total of 70,882 liters for cheese, yoghurt and butter. Gross sales pumped up to P23 million from P16 million in 2009.

Fresh discovered an array of technology intervention packages that will help cream up its production, namely Manufacturing Productivity Extension, Cleaner Production Technology Assessment, Good Manufacturing Practice Assessment and Training, packaging and label designing, and laboratory analyses. Highland Fresh availed of DOST's Small Enterprise Technology –Upgrading Program assistance and pumped up its dairy processing with advanced equipment such as cream separator, mozzarella stretcher, and chiller.

The new equipment paved the way for Dairy Fresh's value addition and creation of milk products, including cream, butter, Gouda cheese, white cheese, mozzarella cheese, yoghurt and other milk products and by-products on top of its traditional flavored, homogenized, and pasteurized milk. The cream separator, for instance, can separate cream from milk at the rate of 300 liters per hour compared with 1.3 liters in one hour using the ordinary blender.

Technology indeed not only adds but also creates value, something like the creamy top that melts in the mouth as you sip your fresh milk to start the day.

TERESITA SUPERIORIDAD
BALUYOS





Grace Belviz receives another award from DOST, this time as BEST Technology Adoptor for Region XI.

Photos by DOST-XI



Durian jam tastes more heavenly because of its fine quality brought about by technology upgrade.



Some of the appetizing durian food products of Rosario's.
(Photos by Henry A. de Leon)

Arnel M. Rodriguez relates how durian, a strongly-scented fruit that abounds in Davao, became an enchanting aroma of success to Emmanuel and Grace Belviz, owners of Rosario's Fruit Stop. This is, of course, via technology intervention by DOST.

THE SCENT OF A DURIAN

By ARNEL M. RODRIGUEZ
S&T Media Service, *DOST-XI*
Photos by DOST XI

Rosario's Fruit Stop is a family-owned business producing fresh durian fruit. Although the Belviz family was already well known in Davao City for producing some of the best durian fruits in the locality, this fact did not make them relax on their seats. There was too much durian coming from their farm, and this made the family worry. The Rosarios realized that the mere selling of fresh fruits was not enough for the business to be profitable and sustainable.

Emmanuel and Grace Belviz, the husband and wife team running the company, thought of a strategy to diversify their company's product offering and venture into new markets. In 2001, the couple delved into fruit processing with minimal capital and little knowledge on the food processing business. Tapping the local market, the company produced durian candy and minimally processed frozen durian. However, after four years, the venture failed to take off as expected. The setback was caused by the short shelf life of products, limited production know-how, and inadequate capitalization. The manual cooking-mixing system also brought forth problems in quality and consistency standards, and it made their employees get tired quickly.

In 2006, the Belviz couple got to know of DOST's SETUP program through a friend. Initially daunted by the paperwork required in the application for SETUP assistance, they were glad that DOST XI's SETUP staff assisted them in every step until they finally received the check for the funding assistance.



As if on cue, the cooker-mixer equipment they were set to acquire under SETUP was displayed by a Manila-based supplier in a local food trade exhibit just a few days after they received the check. The new equipment proved to be a major boon to their production process. The equipment spared the employees from the back-breaking work of mixing the tough durian-and-sugar mixture by hand.

The company also received additional assistance from DOST such as trainings on Good Manufacturing Practices and technical consultations ranging from plant lay-out to product development under the MPEX Program. The label design and packaging were also improved, giving their products a competitive advantage over a multitude of similar durian-based

products, especially those displayed at the Davao International Airport.

Later acquiring Halal certification, Rosario's flagship durian jam product also became popular during Ramadan, when eating is only allowed before dawn and after dusk. With the product sales growing steadily and production system improving greatly, Rosario's was able to pay up DOST-SETUP's financial assistance.

As the initial round of SETUP funding was now fully paid, the company availed of Phase II SETUP assistance. This time, Rosario's wanted to acquire a walk-in freezer for raw materials and other products, slicer, refractometer, pH meter, and plastic crates.

Not resting on the mounting aroma of its durian products, the company continues to experiment and develop new products such as durian yema, durian chips, durian dip, vacuum packed frozen durian, and frozen durian pulp. What's more, it has also diversified into other locally available fruits such as marang (johey oak), mangosteen, guava, and guyabano (soursop).

Rosario's Fruit Stop continues to expand its product lines by developing innovative products catering to the increasingly sophisticated tastes of its customers with the help of DOST. Recently asked about DOST's SETUP Program, Mrs. Belviz states, "We were able to move on and overcome hurdles and challenges because of SETUP, and we are glad DOST XI stepped up to the challenge in helping MSMEs like us."



The Belviz couple receive the Certificate of Ownership from DOST-XI Regional Director Anthony Sales for having paid in full DOST-SETUP's financial assistance for technology upgrading.

ARNEL M. RODRIGUEZ





Mr. Allan Rafols receives his award from DOST Sec. Mario G. Montejo

Rafols Machine Shop and Engineering Services in General Santos City typifies what it's like to earnestly adopt the Small Enterprise Technology Upgrading Program (SETUP) of the Department of Science and Technology.

Sheryl Demillo tells us why.

REGION 12's IRON MAN of the manufacturing industry

Photo by FRAMELIA V. ANONAS



By **SHERYL T. DEMILLO**
S&T Media Service, *DOST-XII*

Downed by Allan B. Rafols, the firm offers the following services: fabrication, repairs and maintenance or machining, engine reconditioning and towing services.

From the start of its operation in 1960 up to 2009, the firm persistently encountered problems in terms of quality and production which drastically impeded its potential to grow further.

Fortunately, inspired at long last by a number of successful SETUP adopters in the region, Rafols Machine Shop and Engineering Services finally welcomed DOST XII's interventions and adopted the DOST-SETUP in 2010.

Through the DOST-SETUP, the firm was able to acquire one 20-foot Lathe Machine, appropriately designed to address demands for heavy duty works while taking on the smaller jobs as well. With the

Photo by FRAMELIA V. ANONAS



Photo by SHERYL T. DEMILLO



DOST Sec. Mario G. Montejo during a project visit to the new building of Rafols Machine Shop in General Santos last year. Also in photo are (from left) Dr. Zenaida P. Hadji Raof Laidan, DOST XII regional director, and Dr. Carol M. Yorobe, DOST undersecretary for regional operations.

machine's size capacity and high precision, the firm has attained top speed and quality performance as manifested both in its services and finished products. At present, it is the only shop in Region XII that can perform heavy duty works involving machining/ repairing/ reconditioning of marine engine parts and of engine for vehicles, such as vehicle differential. It also does machining, repairing, milling, and accessories, among others.

Rafols Machine Shop also availed of DOST's Manufacturing Productivity

Extension Services that assists small and medium-scale manufacturers to attain higher productivity. Because of this, management capability has been extensively enhanced and technical competence of its skilled workers has improved significantly.

Moreover, the firm also acquired DOST's assistance for technical training of its personnel on equipment operation and maintenance as well as product appearance improvement.

With DOST's interventions, the firm is now producing world-class products with high technology content, enabling it to be more competitive and thus meet the demands and requirements of the market. Productivity has been bolstered as well while sales figures have increased impressively from PhP100,000 to PhP2.5M monthly. Consequently, the shop's monthly sales digits have pulled its annual income from PhP8 M to more than PhP55 M.

These positive developments enabled the firm to open additional firm branches and construct another building with an area of 815 s-m. as production site for expansion with an area three times bigger than that of the old 270-sq m building.

Because of its expansion and additional line of services, Rafols Machine Shop has reached other provinces outside the region like Davao del Sur, Davao del Norte and Lanao del Sur. It has generated more jobs as well, increasing its employment from 50 to 110 regular workers.

From a relatively small-scale firm, Rafols Machine Shop and Engineering Services, has made the leap to a medium-scale enterprise.

DOST has indeed made a difference, creating an impact not only on the firm's market status, but also on the locality by generally strengthening linkages and networks with its backward and forward industries appreciably increasing revenue. With these developments, the living standards of many families have been upgraded and economic development in the region has been significantly promoted.

SHERYL T. DEMILLO



Shai Singa-Claver pens this article recounting how this Baguio-based enterprise turned from mere sweet store to a gratifyingly sweet success story that has become part of many tourists' agenda in the country's summer capital.

TARTLAND BEFORE TIME

A story of sweet success

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

Photos by DOST-CAR

“Pasarabo”, the Ilocano term for goodies given by someone to well-wishers (Filipino: pasalubong) is embodied in this DOST assisted company because of its quality baked products that are popular among tourists and locals alike. As the company continues to grow in the food processing industry, the Tartland Baguio Pasarabo credits its success not only on the efforts of the proprietor/manager but also on the various entities that helped achieve its success.

The Tartland Baguio Pasarabo is a single proprietorship business that started as a home-based, part-time baking enterprise in August 2003. The proprietor, Ms. Angelita Dela Cruz-Reyes started with the production of boat tarts and lengua de gato at her residence in Amparo Heights, Camp 7, Baguio City. With the success of what was then her part-time business, she was encouraged to venture into a full-time enterprise, expanding her product lines to include leche flan, cheesecakes, chocolate coated lenguas, raisin oatmeal cookies and garlic pretzels. Since Tartland was known as one of Baguio's best producers of lengua de gato, this goodie became its star product.

HYPING UP THE BUSINESS

In 2007, Ms. Reyes approached DOST-CAR to avail of the Small Enterprise Technology Upgrading Program. The proposed project, “Upgrading of Tartland Baguio Pasarabo” was consequently





approved on June 28, 2007, with SETUP providing P350,000.00 for the technology upgrading of the business. Through the project, she was able to acquire important equipment such as a three-deck oven, one unit spiral mixer, one unit vibra sifter and one unit stainless sink table.

Just a year later in 2008, Tartland availed of DOST's consultancy services, such as the Manufacturing and Productivity Enhancement (MPEX), trainings on Good Manufacturing Practices and Cleaner Production Technologies for MSMEs, and product promotion during DOST S&T fairs and exhibit.

Following the DOST interventions, the firm's annual gross sales and production have drastically increased. Tartland prior to the entry of SETUP assistance had 20 workers. Now, there are 20 direct and 120 indirect workers helping in the production and marketing of the delectable goodies. Of course, along with the DOST assistance is the hard work and determination of Ms. Reyes to succeed in her food processing business. In fact, the success of the firm has enabled the cooperator to fully pay the SETUP assistance in June 2011.

SWEET REWARDS

The company that was once a home-based business received accolades not only from its loyal customers but also from prestigious organizations. In October 2009, the Tartland Baguio Pasarabo was awarded by the Regional Tripartite Wages and Productivity Board-CAR the "Business Excellence and People Development Award" for being the Regional Winner under the category of Small Enterprises for the Industry Sector during the Productivity Olympics of 2009. This award was confirmed by the National Wages and Productivity Commission in 2009. Specifically, the company was one of the Finalists for the Best Productivity Improvement Program under the Small Enterprise-Industry Category.

As a business proprietor, Ms. Reyes was also awarded by NEGOSYO as the Most Inspiring CAR Microentrepreneur in July 2008.

The technology assistance provided by the DOST-CAR is a continuing process. Tartland's application of new technologies to improve the production efficiency and product quality of the firm in order to be more competitive in the market is ongoing. Ms. Reyes also ensures that her firm continues to comply with existing standards such as the GMP.



As she learned from experience, she vows to continuously do product development innovation to come up with new and improved product lines. Tartland's research and development on product and process has never stopped which is one of the reasons why the firm continues to thrive in the food processing sector.

Indeed, the Tartland Baguio Pasarabo has marked its niche in providing quality baked food products in the City of Baguio. And true to its brand name, their products indeed speak of high quality "pasalubong" for all customers not only in the region but in the country as a whole.

SHAI SINGA-CLAVER





Esther S. Uy

Gladys C. Giberson describes the journey of Marjeck Food Products which, despite a rough start finding its pitch, is now on its way to oodles of success.

MIKIn' melody IN HER HEART

By **GLADYS C. GIBERSON**
DOST-CARAGA

Esther S. Uy, owner of Marjeck Food Products, is a risk-taker, but firm in her vision. According to her, the recipe for the company's success has been simple --- taking a fragmented business, and adding up ingenuity with a handful of passion.

"One will find success a laborious endeavor without having the thirst for building something that inspires you," Uy says.

Although in recent times, an authentic rags-to-riches story fabricated on honesty and hard work is scant, the success of

Marjeck Food Products shows that this tale still happens. With the dream to start a small business for the family, Esther, with her husband John and their children, moved to Butuan City from Cebu in 1989 to take over a small onion business from John's sister. Uy recalls how the whole family used to beat the sunrise to begin preparing and distributing fresh onions in the market.

STARTING THE MIKI BUSINESS

Having spent most of her time inside public markets, Uy saw the need for a local producer of fresh *miki*. Since majority of *miki* suppliers came from Cebu and there was high demand for said noodles in Butuan City, she realized it was an opportunity to expand her family's product line.

"I was really optimistic with the idea. So after discussing the proposal with my husband, I went to the Technology Resource Center (TRC) of DOST in Manila to learn the process of making noodles," she recalled. "When I came back from the training, I bought a portable cutter and a slicer from the profit earned in selling onions, and then rented a roller from a nearby bakery."

One week after she embarked on her family's new business, she hired their first four employees. "It wasn't easy, but we have to start somewhere," she confessed.



Photos by DOST-CARAGA



At first, Uy and her workers spent long, arduous hours just to churn out five kilos of fresh *miki* a day, bringing only minimum sales return. So she decided to improve the recipe and texture of her product. It took her several trials before perfecting her *miki*'s flavor and texture.

MOVING FORWARD

The overwhelming response from customers encouraged her to move forward. Aside from improving her production, her product's exposure was also boosted through the help of the Department of Trade and Industry. This provided her the opportunity to expand the product line to include *odong* and *misua*.

But then, there was a problem: the climatic condition of Caraga is not conducive for drying. This factor hindered the company in meeting the increasing market demand. Uy thought of a drying technology that may be available at the DOST, so in 2007, she sought DOST's assistance.

Through SETUP, Marjeck wrapped up a Php 465,141.00 financial assistance for the acquisition of its mechanized production equipment that hastened its operation. DOST gave further assistance for the microbiological analysis, nutrifacts, and packaging and labeling.

Today, DOST continues to provide technical assistance, trainings and consultancy services to Marjeck such as the Manufacturing Productivity Extension Program, food safety, cleaner production technology, energy audit, preventive maintenance and other related trainings.

As expected, the company continued to grow. It is currently the major local producer of fresh *miki*, *pancit canton*, *odong*, and *misua*, catering to the demands of consumers from Butuan City, Agusan del Norte, Surigao City, Surigao del Norte, Gingoog City and Misamis Oriental and other parts of Mindanao. The increased production and sales also provided employment opportunities to the locals.



With a renewed enthusiasm, Uy is currently working on expanding Marjeck's market not only in Mindanao but in the Visayas and Luzon regions.

Uy is now the president of the Caraga Regional Association of Traders and Entrepreneurs in Food, also known as the CREATE Food, Inc., an organization of food processors and producers of Caraga Region that assists producers who are not yet capable, financially or logistically, to market their products on their own.

GLADYS C. GIBERSON



The story of the House of Polvoron is one that strikes a chord among readers simply because it's a story of triumph borne out of hard work. It's that often told tale of how a small family business grew from strength to strength to eventually emerge as one of the market leaders in its field. **Ma. Aurora F. Marcelo** tells us how.



The House That Polvoron Built

Ms. AURORA F. MARCELO
S&T Media Service, DOST-NCR

Like most businesses in the Philippines, MFP Home of Quality Food Corporation, makers of the widely popular House of Polvoron (HOP), started as a two-man enterprise in the late 1980s with the matriarch Rose Caliwara making and selling polvoron in her mother's kitchen while her husband Ding Caliwara handled delivery and production. Polvoron is a popular Filipino dessert made with toasted flour, powdered milk, sugar and melted butter, tossed in special ingredients such as cashew nuts, crisped rice, and others, then pressed in a special mold.

At the start, the Caliwara couple sold their polvoron in schools, factory cafeterias and offices in southern Metro Manila. They did not even have a brand name yet until the year 2000 when the couple's eldest child Charlotte joined the business. "House of Polvoron" (HOP) was coined from Charlotte's school project at the Asian Institute of Management. By 2002, HOP was not only sold at the SM Snack Exchange and in Robinson's Supermarket but was also able to break in at SM Megamall Hypermarket.

WIDENING MARKET, IMPROVING PRODUCT

HOP's popularity rests in its melt-in-your-mouth goodness. Christine, one regular customer attests, "It is really tasty. You can tell that that only finest ingredients were used." The polvoron brand also comes in a number of varieties: crisp rice, classic, cashew, cookies and cream and pili flavors.

With a bigger market to supply, the company knew that it needed to boost its output by transitioning from a manual to a mechanized operation. Thus MFP sought DOST's help through the Small Enterprise Technology Upgrading Program (SETUP), first in 2004 for package development, and in 2005 to acquire the necessary equipment and technical trainings to realize MFP's first phase of productivity and quality improvements.

DOST's Innovation System Support for the company included a kettle with scraper type mixer for melting butter, ribbon mixer for mixing wet and dry ingredients, automatic band sealer for secondary packaging of the polvoron in pouches, and a shrink packaging machine for packaging polvoron in boxes.

"Since the intervention (from DOST), our employees are happier and more productive, because they do not have to do things manually as before," said Charlotte Caliwara, now MFP's operations head.

In addition, experts from DOST-NCR and DOST's research and development institutes organized trainings on food safety and MPEX. Marilou Tymiko, production assistant supervisor, welcomed the changes brought about by these trainings. "Before, we can just wear shorts and sleeveless shirts to work. But now, we have a new system that we have learned through the trainings from DOST," she said.



POWDER PUFF UP

DOST's comprehensive package of assistance produced remarkable results. With a bigger production output, the two-man company became a 63-staff strong family corporation. From a 200-square meter facility adjacent to the owner's house, MFP is now housed in a 3-storey, 910-square meter facility in Las Piñas in compliance with Good Manufacturing Practices (GMP) requirements. MFP too was able to raise its production output by 138 percent. As a result, the company's revenue rose from PhP4 million in 2004 to PhP25 million by end of 2012. Another notable impact of DOST's technical interventions is the significant extension of the product's shelf life from three months to one year.

MFP holds both a GMP and a Halal certification, and is targeting to have an HACCP

certification by end of 2013. To date, MFP has already established its own R&D laboratory with the aim of producing more variants of polvoron. More important, MFP products are now being sold in 12 international markets, namely US, Canada, Saudi Arabia, Malaysia, Singapore, Netherlands, Korea, Taiwan, Japan, China, Australia and the United Arab Emirates.

MORE PRODUCTS IN LINE

With a tougher international market to please, HOP applied for a second phase of assistance from DOST in 2012 to mechanize its remaining manual operations. At the same time, the company continued to innovate, adding three more varieties to its polvoron line: purple yam, choco covered and sugar free.

It comes as no surprise then that in the last three years, HOP was able to maintain a seven percent growth rate among its existing domestic customers. Aside from a growing number of



distributors nationwide, HOP bagged major retailers like SM Supermarket, Hypermarket, SaveMore, Rustans and Shopwise.

So how did all these come about from that sweet little treat called the polvoron from one mother's kitchen? As is often said, a good product is its own best advertisement. And the House of Polvoron can really stand proud for elevating the simple polvoron into a sought after proudly Pinoy delicacy.

AURORA F. MARCELO



SETUP boosts support to entrepreneurs

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

Science Secretary Mario G. Montejo pledged more support to micro, small and medium enterprises through the enhanced Small Enterprise Technology Upgrading Program (SETUP) of the Department of Science and Technology (DOST).

SETUP, a nationwide strategy to boost the operation and productivity of micro, small, and medium enterprises (MSMEs) by providing collateral and interest-free loan for technology innovations, has been helping thousands of small enterprises since its implementation some ten years ago.

Banking on SETUP's success in previous years, DOST now aims not only to provide enhanced firm-level S&T interventions through increased support fund and strengthened S&T consultancy services and trainings but also to provide industry-level interventions.

Such interventions include development of Industry S&T Road Maps as well as the establishment of industry support services such as innovation centers, technology incubators, testing centers and technology resource centers.

Montejo declared that these strategies would lead to the establishment of SMARTER MSMEs that would sustain economic growth, respond to globalization challenges, prepare for ASEAN community, and help address pressing national problems. He defined SMARTER MSMEs as Sustainable, Market-Oriented, Agile, Resource-efficient, Technology-based, Environment-friendly and Responsive firms.

SETUP as a tangible support to countryside development and inclusive growth

Montejo noted that SETUP has proven itself

as "a very viable program for creating jobs in the countryside."

Around 94.5 percent of SETUP projects are located outside Metro Manila.

He explained that for every P50,000 worth of assistance to small enterprises, one sustainable job is created. Further, if the salaries of the workers for one year were factored in, the value created is even higher than the actual financial support given to MSMEs, he added.

He emphasized that the funds given to MSMEs are paid back to the government within a certain period.

As of June this year, DOST has supported 1,299 MSMEs through SETUP, with assistance amounting to P 256M – or one half of this year's target.

When SETUP started in 2002, it initially helped 31 MSMEs with assistance amounting to P 15M. For the past three years, the budget for SETUP has increased from P 139 M in 2010, to around half a billion pesos in 2013—a significant jump, according to Montejo. In 2012, DOST assisted a total of 3,272 MSMEs with a value of support amounting to P 375M for 593 projects.

The priority sectors eligible for SETUP include food processing; furniture; gifts, house wares, decors; marine and aquatic resources; horticulture and agriculture; metals and engineering; information and communications technology; and pharmaceuticals.

Assistance under SETUP may be availed in terms process and equipment upgrading, product development, technology training, adoption of cleaner production technologies, energy efficiency, productivity improvement, food safety, laboratory and testing services, packaging assistance and many more.

DOST awards outstanding science communicators



DOST HONORS THE COUNTRY'S TOP SCIENCE JOURNALISTS. (From left) Department of Science and Technology Undersecretaries Louis Napoleon C. Casambre and Fortunato T. de la Peña and Assistant Secretary Raymund E. Liboro (far right) with 2013 Gawad Scriba awardees Dr. Custer Deocarís of Radyo Agila for radio broadcast, Paul Icamina of Malaya for print, and Donna May Flavíer of Panahon TV for television (holding the trophies) during the closing ceremony of Expo Science 2013 in celebration of the National Science and Technology Week last July 27 at SMX Convention Center. .



Timothy James Dimacali, GMA News Online's Science and Technology Editor bags the Gawad Scriba Award for Science Communicators under the Cyber Press category.

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

THE DEPARTMENT of Science and Technology (DOST), through its information arm, the Science and Technology Information Institute (STII), gave recognition to the country's top science journalists and media advocates through the conferment of the Gawad Scriba: DOST Media Awards for Science Communicators during the closing ceremony of the National Science and Technology Week last July 27, 2013 at SMX Convention Center in Manila.

The Gawad Scriba, simply called the DOST Media Awards in previous years, is a fitting new name, with "scriba" being the Latin word for "writer." It honors individual science writers and broadcasters as well as media organizations from both the public and private sectors, for their concern and involvement in the promotion of science and technology information in the Philippines.

Awardees for the Professional Category were Paul Icamina of Malaya for print, TJ Dimacali of GMA News Online for cyber press, Dr. Custer Deocarís of Radyo Agila for radio broadcast, and Donna May Flavíer of Panahon TV for television.

"The media have been our faithful partner in promoting S&T solutions to the country's pressing problems, said DOST Assistant Secretary and STII Director Raymund E. Liboro. "It is only befitting that we express our gratitude as well as give recognition to their role in heightening the public's awareness in S&T", he added.

DOST also gave special citation to Dr. Ronald M. Henson for his book, "Popularizing Science thru Mass Media," which illustrates how simple but informative writing can appeal to a wide audience.

Another special citation was given to Business Mirror, in appreciation of its unceasing support to and extensive coverage of science and technology related events and activities.

The 2013 Gawad Scriba panel of judges included Dr. Maria Theresa Velasco, dean of the College of Development Communication in UP Los Baños; Erwin Oliva, senior lecturer at UP Diliman; and Rene Pizarro of Hyundai Asia.

ARIJAY C. ESCONDO





Slowly but surely. The competition tested the students' mettle in seven grueling but fun rounds of science-oriented games meant to equip students with valuable and practical knowledge in science which can be used in everyday life. The competition was organized by the Department of Science and Technology's Science Education Institute, as part of the recent National Science and Technology Week also called Expo Science 2013 which ran from July 23-27, 2013. (Photo by Gerardo Palad, S&T Media Service, DOST-STII)

Smartest kids clash in science skills competition

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

IT WAS serious, grueling competition alright but the fun never stopped as 10 elementary schools competed against each other during the "Smarter Kids, Smarter Scientists: The Ultimate Clash of Science Smarts" held last July 24 at the Manila Ocean Park.

At the end of the final round, Baclaran Central Elementary School emerged as overall champion, receiving P10,000 in cash and a trophy. C.P. Sta. Teresa Elementary School and Centex Manila received P7,000 and P3,000 respectively and a trophy each for their second and third place finish. Meanwhile, Silahis ng Katarungan Elementary School and Pamplona Elementary School each received P2,000 as fifth and fourth place winners.

"Smarter Kids, Smarter Scientists: The Ultimate Clash of Science Smarts" was aimed at equipping kids with practical lessons in science that can be useful in their daily lives. "By sparking the interest of the students, we may lead them in choosing careers in the field of science in the future, (and they) will lead us toward building

a Smarter Philippines," explained DOST-SEI Director Filma Brawner.

Participating schools vied to outwit and outplay each other in seven rounds of science-oriented games which tested the students' skill, attention to detail, alertness, rational thinking, tenacity, enthusiasm, and resourcefulness which are character traits of a scientist.

Among the games in the elimination round were "Steady Hand" which required the kids to steadily guide a metal loop through the curved wire without touching it, thus testing their patience and hand-eye coordination; "Dimaryp" in which the children built an inverted pyramid using soda cans; "Pencil Chase" where a player caught pencils on one hand in an incremental number at every try; "Popsi Puzzle" whose objective was to solve pattern problems by moving and re-arranging pieces of popsicle sticks to form the required pattern; "Egg on the Rise" where participants made eggs float in the water using salt; "Candy Taxonomy" which involved segregating candies according to colors

and shapes; and "Matchstick Clay Table" which required players to make a sturdy miniature table out of matchsticks and a slab of clay.

"My classmates and I find the games exhilarating and fun especially the "Dimaryp" game," said Jochelle Jacinto, a Grade 6 student of Pamplona Elementary School.

For Summer Constantino of C.P. Sta. Teresa Elementary School in Bagumbayan, Taguig City, the competition was "tougher and more challenging than I expected it to be."

Among the participants were the elementary schools of Jose Rizal, Daniel Fajardo, Bagong Tanyag, Andres Bonifacio, and Sun Valley.

Organized by the Department of Science and Technology's Science Education Institute in cooperation with the Manila Ocean Park, the elementary level competition was part of Expo Science 2013 held last July at the SMX Convention Center, Mall of Asia Complex.



DOST Undersecretary Fortunato T. Dela Peña (4th from right) with Philippine Science High School (PSHS) System Director Josette T. Biyo (5th from right) formally open the Aghamazing Na, Scienterrific Pa! exhibits of the PSHS during the Expo Science 2013 last July 26, 2013. (Rodolfo P. de Guzman, S&T Media Service, DOST-STII)

Pisay studes showcase robotics, math magic and chem wonders

By RODOLFO P. DE GUZMAN
S&T Media Service, DOST-STII

IF THE future rests in the youth, then the students from the Philippine Science High School (affectionately called “Pisay” or “PhiSci”) are just the perfect fit. They took centerstage on the last day of the celebration of the National Science and Technology Week of the Department of Science and Technology (DOST) as the young brilliant minds in the country presented their research studies and talents in robotics.

The last day event titled “Aghamazing na, Scienterrific pa!” featured student exhibits from the PSHS system that focused on the students’ scientific studies in the 12 campuses all over the country, including the newest campus in the SOCCSKSARGEN region in Mindanao.

Some of the most promising researches included the following: Android-based Road Quality Assessment Tool from PSHS-Main by Gabriel Borja; Goat’s Foot Creeper and Coconut Leaf Pulp for Cardboard Production from PSHS Ilocos Region; the Ferntastic, Ferntabulous, Fernilicious Fern called Barangbang for its antimicrobial properties and Cat Claw pesticide from PSHS Cagayan Valley Region; Wireless Programmable Relay Switches from PSHS Central Visayas Region; Mahogany Seed as Biodiesel Fuel Substitute from PSHS Easter Visayas Region; the Larvicidal Properties of Sweet Basil Against *Aedes aegypti* (dengue virus) from PSHS Bicol Region; and the Solmech Charger for Cellular Phones from PSHS Central Mindanao Region.

What attracted the visitors composed mostly of elementary and high school students from Metro Manila and nearby provinces was the ROBOlusyong Atletika, an exhibit and demonstration of robotics



Students from the Philippine Science High School (PSHS)-Southern Mindanao Campus show off their crawling robot that can be used for games and as an interactive toy. This is just one of the many exhibits by PSHS students nationwide using robotics technology during the Expo Science 2013 of the Department of Science and Technology (DOST) last July 23-27, 2013 at the SMX Convention Center, SM Mall of Asia, Pasay City. (Rodolfo P. de Guzman, S&T Media Service, DOST-STII)

technology applied on interactive games, robots that perform simple tasks of moving and carrying things, voice activated robots, and radio controlled vehicles. Other exhibits featured amazing tricks and mind boggling experiments like the math magic Tricks using colored toothpicks and the Growing Crystals using chemistry.

The Pisay exhibits were opened by no less than DOST Undersecretary Fortunato T. de la Peña, PSHS System Director Josette T. Biyo and heads of the PSHS regional campuses. "I am very happy to see so many students today despite being a Saturday and I commend also the teachers who accompanied them. We welcome all to view our exhibits were they will learn a lot about science and technology and how they are used in agriculture, industry, information technology and many more," said Usec. De la Peña.

After his brief message, Usec. De la Peña also enjoined the visitors to explore the exhibit areas and display panels where they can see the other technologies developed and innovated on by DOST like the AGT; the electric hybrid road train; metrology laboratory; VISSER and LEAP programs for education; artificial insemination for goats and carabaos; superior planting materials for coconut, rice and abaca; the SETUP booth of regional products and services; Project NOAH and DREAM-LiDAR for disaster risk reduction; MOSES tablet; cupola furnace; and many more.

This year's event dubbed Expo Science 2013 carried the theme "Science, Technology and Innovation: The Road to a Smarter Philippines" featuring DOST technologies and innovations in the fields of agriculture (certified seed production), aquaculture (LAMP technology for shrimps), industry (plasma cutter), electronics testing (ADMATEL), health (OL Trap and eHealth Tablet), transportation (Automated Guideway Transit), information and communications technology, education (LEAP program), and climate change (Project NOAH and MOSES tablet).

For added information and highlights of the science expo please log on to www.nstw.dost.gov.ph/nstw2013/.

RODOLFO P. DE GUZMAN



DOST urges SMEs, new grads to be "ITpreneurs"

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

MAKE THE Web work for you, or go to work over the Web. This, in essence is what the Department of Science and Technology - Information and Communications Technology Office (DOST-ICTO) is saying, as it urges new graduates and other interested individuals to become "ITpreneurs" or digital entrepreneurs.

"ITpreneurship", or going into online business presence or ICT-related entrepreneurship, is one of the areas that DOST is looking at to open job and career opportunities for more people.

On July 25, 2013 at the SMX Convention Center in Pasay City, DOST-ICTO held forums that aim to inspire participants on the opportunities offered by e-Commerce and ITpreneurship.

"Biz on the Web" was a forum that aimed to encourage local businesses to go online and maximize opportunities over the Web. Featured speakers were owners of the biggest online companies in the country who talked about online product marketing and shared tips for success in the online world. These included RJ David of Sulit.com.ph, Sheila Lina of Air21 and Shopinas.com, Janette Toral of Digital Filipino.com, Anton Diaz of Our Awesome Planet, Austin Andaya of Islandrose.net and Abe Olondres of Yugatech.com.

"We are urging local SMEs to put their business on web so that they can expand their market, even globally," said ICTO Deputy Executive Director Monchito Ibrahim.

"By making all of these local products accessible online, entrepreneurs will be

able to penetrate other markets, even those who live in other places or abroad," Ibrahim added. "They (customers from other places) can avail of those products online."

Meanwhile, the "Start-up Forum" is designed to guide aspiring ITpreneurs on how to sell their ideas to industry investors to get financial support.

The forum aimed to mentor college and university students on how to put up and start their own ICT business through ICT-enabled products. It presented to them other options aside from working in different companies after they graduate.

One of DOST-ICTO's thrusts is to provide more career opportunities to Filipinos by bringing more Information Technology Business Process Management companies into the country. ICTO likewise initiates moves to boost the productivity and income of local small and medium entrepreneurs and aspiring ITpreneurs and push for countryside development and industry competitiveness.

"Biz on the Web" was among the highlights of National Science and Technology Week 2013 held last July 23-27 at the SMX Convention Center, SM Mall of Asia in Pasay City. Dubbed "Philippine Expo Science 2013", this year's celebration carried the theme "Science and Technology Innovation: The Road to Smarter Philippines."

Organized annually by DOST, NSTW showcases the different DOST-developed top-flight technologies and projects that provide solutions to pressing national issues. This year, NSTW features DOST's programs that address climate change and disaster preparedness, food security and agricultural productivity, industry competitiveness, and government services, all attuned to fight poverty in the country.

Lean Startup method shortens startup biz way to success

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

“BUILD YOUR own business empire and change the world,” Arup Maity, director of information and research at the Philippine Software Industry Association (PSIA), exhorted the audience in his presentation on the Lean Startup Methodology during the “Startup Forum” held recently in one of the track sessions staged for the Department of Science and Technology’s (DOST) Expo Science 2013 at SMX Convention Center in Pasay City.

The Lean Startup Methodology is different from traditional business startup plans as it seeks to increase value producing practices during product development phase and shun wasteful ones such as sourcing for outside funding and developing elaborate business plans. Through this methodology, startups can shorten their product development cycles and achieve greater success.

This new methodology is one of the most anticipated business methodologies in Silicon Valley. It was also one of the most transformative topics discussed during the forum which gave an overview of starting a business via online media.

HOW DOES IT WORK?

The methodology requires customer feedback during product development which is integral to

the lean startup process. This step ensures that the business owner does not invest time designing features or services that consumers do not want.

Likewise, it pushes web-based or tech-related startups away from the ideology of their dot-com era predecessors in order to achieve cost-effective production by building a minimal product and gauging customer feedback.

For example, a startup owner should not engage in a six-month marketing campaign on Facebook and Twitter. Instead, it should dedicate a small budget to two-week experiments in which he will pick possible branding images and develop different ads using these images. Within two weeks, experiment results should be looked into in order to determine which ads send the most traffic to the site and which result to actual sales. Once a technopreneur gathers this information, he can move into the third lean-startup stage, which is agile development or the process of gradually improving a product or service in response to customer feedback.

In this stage, the technopreneur will undertake re-testing involving the branding images used in the ads with positive outcomes.

By doing this, he can adjust, refocus and find the marketing channels and messages that work best for their brand.

The Lean Startup Methodology was originally developed in 2008 by Eric Ries with high-tech companies in mind. It has since been expanded to apply to any individual, team, or company looking to introduce new products or services into the market. Ries’ bestselling book, “The Lean Startup: How Today’s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses” played a large part in the popularity of the lean start-up concept in Silicon Valley.

“Startup Forum” was part of the activities for Expo Science 2013 or the National Science and Technology Week organized by the Information and Communication Technology Office of DOST.

ALLAN ACE W. ACLAN



Nanocoated glass lets in sun, keeps out heat and UV rays - DLSU study

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

NANO-COATED GLASS lets the sunshine in and keeps the heat and UV rays out.

This was the finding of a study titled “Fabrication of Nanomaterials for Anti-heat and Anti-microbial Applications” done by a team of researchers from the De La Salle University in Manila composed of Dr. Gil Nonato Santos, Edward Tibayan, and Gwen Castillon.

Dr. Santos presented their paper during the “Scientific Forum on Emerging Technology” – a track session of last July’s Expo Science 2013 held at the SMX Convention Center, Mall of Asia Complex in Pasay City.

Nanotechnology, an emerging science, involves the manipulation or engineering of atoms and molecules at a very minute level

for products to be used in medicine, electronics, energy production, biomaterials and others.

According to Dr. Santos, one of the objectives of the research was to test the UV blocking and anti-bacterial capabilities of tin oxide silver composite nanomaterial on glass material.

It was found that a 1:4 ratio of tin oxide and silver showed the strongest antimicrobial effect among the other ratios used.

For the UVA blocking test, different glass materials were applied with various solutions, including nanomaterial. Results showed that glass coated with nanomaterial, in comparison with tinted glass, carried greater UV protection. In general, glass with nanocoating was shown to absorb and then reflect light from the sun, thus controlling the flow of heat and UV rays

into a room. In fact, test results yielded a huge difference between nano-coated glass and tinted glass.

These conditions will lessen people’s tendency to experience fatigue and dehydration, feel irritated, and have skin dryness.

Abrasion and hardness tests were also conducted. Glass with nanomaterial exhibited more abrasive resistance than tinted glass and proved to be harder as well. For the hardness test, force was applied on the samples, after which scratches from the force were more visible on tinted glass.

Dr. Santos revealed that industrial engineering students from the University of the Philippines are currently doing a market study of nanocoating for public utility vehicles.

TAPI's DATBED program to help youth start tech-based biz

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

STUDENTS, YOUNG professionals, and out-of-school youths planning to put up technology-based enterprises may avail of assistance from the Department of Science and Technology's Technology Application and Promotion Institute (DOST-TAPI) through their schools or non-government organizations (NGOs).

TAPI, under the helm of its Director, Engr. Edgar I. Garcia, has its DOST Academe Technology-Based Enterprise Development (DATBED) Program for this initiative. In a technical forum held last July 31 during the 2013 Regional Invention Contest and Exhibits for the National Capital Region (NCR) at the Technological Institute of the Philippines in Quezon City, Engr. Arman Bionat, assistant regional director for DOST-NCR's technical operations division, disclosed that DATBED will help get them started in their business ventures.

A project under DOST's Small Enterprise Technology Upgrading Program (SET-UP), DATBED provides assistance through funding, training initiatives, and access to facilities and the latest technologies. At the same time, DATBED also develops income-generating projects for the school or the NGO with which the aspiring technopreneur is connected.

Engr. Bionat revealed that one of DATBED's objectives is to "stimulate the development of an entrepreneurial curriculum and technology business incubation (TBI) among participating schools/ organizations" in its mission to produce more employers among the Filipino youth. TBI is a concept that refers to support programs for the successful establishment and growth of technology-based businesses.

To become a DATBED beneficiary, the school must have science and technology courses and entrepreneurship development programs in its curriculum, as well as a student-faculty ratio of 25:1 at the most in these courses, among other qualifications. On the other hand, an NGO should be registered with the Securities and Exchange Commission or the Cooperative

Development Authority and should have existing or completed some youth development programs or activities, among others. The school or NGO will perform the screening and selection of their student recipients for DATBED.

The first stage under the DATBED program covers a period of three years during which training in enterprise development is provided, as well as financial assistance and technology transfer. In the second stage, financial assistance is extended for the full commercialization of the enterprise. Financial assistance will cover both operating expenses of the startup enterprise and capability upgrading cost for expansion projects. The DOST-NCR official added that different financing schemes are available.

Some of TAPI's successful DATBED-assisted projects are those involving broiler production using lagundi as a source of antibiotics, hydroponics, 3-in-1 instant cacao beverage, enterprise development and market testing of pili-based coffee, production and marketing of pili chocolait, vegetarian bakeshop, fish sausage, and White Tang Fish Tapa production.

According to Engr. Bionat, they receive around 20-30 student applicants for DATBED assistance every schoolyear. "There may be four or five students in a project. Sometimes too, a single school will approach us for assistance for more than one project – sometimes for more than four projects," he said.

The DOST-NCR official also mentioned that technopreneurship involves high technology and low technology businesses. He cited ICT, electronics, biotechnology, e-learning, and cloud computing among the high technology ventures while organic farming, organic production of livestock and new food recipes among the low technology ventures.

For more information on DATBED, please call TAPI's Technology Commercialization Division at 837-2071 to 82 loc. 2158/2165 or (632) 837-6186 or visit the DOST Regional Office.





Rosemarie Garcia, senior science research specialist from DOST-FNRI, clarifies the common misconceptions about brown rice in last July's Expo Science 2013 "Smarter Living Advocacy" at the SMX Convention Center, SM Mall of Asia, Pasay City. (Text by Luisa S. Lumioan / Photo by Henry A. de Leon, S&T Media Service, DOST-STII)

Brown rice comes as next star of the dining table Expert nixes rumors via scientific facts

By RODOLFO P. DE GUZMAN AND MARIA LUISA S. LUMIOAN
S&T Media Service, DOST-STII

THE DEPARTMENT of Science and Technology's (DOST) Expo Science 2013 which celebrated the National Science and Technology Week from July 23-27, 2013 at the SMX Convention Center, batted for brown rice as a healthier option for smarter living.

Aptly titled "Science, Technology and Innovation: The Road to a Smarter Philippines," Expo Science 2013 through the cooperation of DOST's Food and Nutrition Research Institute (FNRI) featured brown rice as a more nutritious substitute to polished white rice which we are used to eating.

The term brown rice refers to any variety of rice that has undergone minimal processing by just removing the rice hull or outer covering and retaining the reddish-brown grain coating called bran. In contrast, white rice undergoes a second milling process which removes this bran layer. This means that even purple or black rice that has its bran layer intact can be considered as brown rice, as clarified by FNRI's

food science and technology expert Rosemarie Garcia during the "Smarter Living Advocacy" event also held during Expo Science 2013. It is in this bran layer where vitamins and minerals are concentrated.

Brown rice is also rich in dietary fiber, making it useful in preventing constipation instead of causing digestion problems.

In addition, as compared to white rice, brown rice contains more phytates which are anti-oxidant compounds found in whole grains and nuts. Garcia also debunked the myth that brown rice can hamper the absorption of minerals because of its higher concentration of phytates. According to the food expert, the amount is not significant enough to affect absorption of minerals, particularly zinc, in the body.

Aside from its nutritive value, brown rice production requires less energy for polishing yet provides higher milling recovery. This

means more savings and profits for both farmers and millers.

In line with this, DOST-FNRI is embarking on research and development on brown rice. Recent research initiatives include extending its shelf life to up to six to nine months and developing recipes for brown rice.

A brown rice recipe book was actually launched by FNRI during Expo Science 2013. It includes instructions on how to prepare and cook brown rice since it entails a longer preparation time.

After the launch, a cooking demonstration was held where a celebrity chef tried some of the recipes in the book while the audience was treated to a taste test.

The recipe book will eventually be made available to the public. For announcements and advisories, please log on to their website at www.fnri.dost.gov.ph.

Smart farming uses nuclear techniques for efficient rice and corn production

By HANS JOSHUA V. DANTES
S&T Media Service, DOST-PNRI

SCIENTISTS FROM the Philippine Nuclear Research Institute – Department of Science and Technology (PNRI-DOST) are developing smart-farming alternatives by using nuclear-based precision technologies in assessing various fertilizer and irrigation techniques.

According to Roland Rallos of the DOST-PNRI Agriculture Research Section, their ongoing study uses isotopes of elements common to soil, crop and fertilizer alike to identify and refine farming methods that waste away water and nutrients from the soil.

Rallos discussed the study in the forum entitled Matalinong Juan, Aasenso sa Agrikultura at Pangisdaan hosted by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) during the National Science and Technology Week at the SMX Convention Center in Pasay City.

The project, which the forum taglined “Smart Farming Para sa JuantaSTic na Palay at Mais”, ultimately seeks to update obsolete farming methods and avoid large-scale waste of resources.

“People thought that applying more fertilizer on the ground will necessarily result in richer soil, but that is not the case,” said Rallos who currently heads the smart-farming project funded by DOST for improving staple food crops such as rice and corn.

Studies of Rallos’ team show that crops can only absorb so much from fertilizers. Excessive amounts are not only inefficient but also cause economic losses, as around 50 percent of the extra fertilizer are wasted. The same goes to excessive amount of irrigation water.

The outdated practices are exacerbated by the lack of accurate measures in finding just the right amount of fertilizer and water that the soil and crops can efficiently absorb – and this is where nuclear analyses techniques come in, said Rallos.

The researchers used stable isotopes with the same composition as the common nutrients in fertilizers but distinct enough to be accurately detected, giving them direct quantitative measurements of the nutrients uptake.



DOST Secretary Mario G. Montejo (2nd from right) discusses the possibility of incorporating the latest weather forecasting technology with the Smart Farming-based program for rice and corn production following the presentation of the Smart Farming project of PNRI-DOST at the “Smart Farming Para sa JuantaSTic na Palay at Mais” forum. Discussing with Sec. Montejo are (from left): Director Rodolfo Ilao of Agricultural Resource Management Research Division; Roland Rallos, project leader of PNRI’s Smart Farming project; Dr. Patricio Faylon, executive director of DOST-PCAARRD; and Dr. Armando Espino Jr., director of Water Resources Management Center.

Nitrogen, one of the most commonly used elements in fertilizers, has proven to be more “mobile” in the soil than phosphorous and potassium, and is very easily absorbed by the crops. The project uses the nitrogen-15 isotope to “label” the fertilizers to make it detectable even when absorbed by the plant. It differentiates the percentage of nitrogen derived from fertilizer from the soil’s indigenous nitrogen-14, showing how efficiently the fertilizer was absorbed.

The same tracer concept was used with the oxygen isotope 18O to find how much irrigation water is lost to evaporation. Relying on neutron-thermalization by the hydrogen nuclei from soil water, the Soil Moisture Neutron Probe proved very useful in assessing soil water dynamics because it is as effective as other standard methods yet non-destructive. Its potential for repeated measurements of different soil types won for Rallos’ research team the third place in a poster paper competition in the 16th Philippine Society of Soil Science and Technology conference held last summer in Subic, Zambales.

While research on the efficiency of fertilizers is ongoing, the project team has completed a

quantitative technique to assess furrow irrigation efficiency for corn crops. In fact, the team will develop a procedural manual for farmers with detailed measurements on length/depth of furrows and irrigation time.

Overall, the smart-farming project intends to reduce water and nutrient waste by 25 percent to increase yield and quality of crops or to produce the same yield for much less resources, depending on the demands of productivity, according to Rallos.

“Many say that our GDP has grown by 7.8 percent. For this progress to be relevant, our agriculture must also progress,” said DOST Secretary Mario G. Montejo.

HANS JOSHUA V. DANTES



DOST to strengthen weather forecasting to benefit farmers

By JOY M. LAZCANO

S&T Media Service, DOST-STII

PLANTING AND harvesting will soon be easier for local farmers, even in the face of climate change, with the advent of more reliable and technologically advanced weather forecasting methods.

These high-impact solutions come in the form of the Department of Science and Technology's (DOST) newly acquired supercomputer complemented with the latest weather modeling software.

This development was revealed by DOST Secretary Mario G. Montejo during the recent Kapihan sa Diamond Hotel in Roxas Boulevard, Manila.

"The first significant development is that we already have a supercomputer which will be operational this fourth quarter of this year. With this type of facility, we will be able to use advanced weather modeling software that will not only enhance weather predictions from three days to six days, but it could also be more accurate, it could be area specific, and

what we are working on is to have a seasonal weather outlook on specific areas for three to six months to help our farmers," said Secretary Montejo.

The three- to six-month weather projections, to be issued by DOST's Philippine Atmospheric, Geophysical, and Astronomical Service Administration (DOST-PAGASA), will be on top of its weekly weather forecasts. This will provide farmers with information on the amount of rainfall on specific areas within the next three to six months.

Also, these top-flight technologies will enable PAGASA weather scientists to come up with integrated weather pattern information specifically to guide farmers on the best time to plant and harvest crops, thus greatly aiding them with their farming-related decisions and activities.

These groundbreaking developments, said Sec. Montejo, will take off by 2014 with the supercomputer's initial operation on the fourth quarter of 2013.

AGRICULTURAL LOSSES CAUSED BY CLIMATE CHANGE

Erratic weather conditions, an after-effect of global climate change, have affected many farmers resulting in billions worth of damaged agricultural products annually.

In 2012 alone, an estimated total of Php30 billion worth of agricultural products were lost in the aftermath of Typhoon Bopha (Pablo). The Department of Agriculture reported that an estimated Php197 million worth of rice crops were damaged due to the typhoon.

Rice, a staple food in the country, is normally grown for three to six months depending on the rice variety, and requires an average of 2,000 liters of water per kilo of rice for its growth.

The Philippines ranks 8th among the world's rice producers. In 2007, the country produced an average of 3.8 tons per hectare of rice, more than what Thailand produces.



Science and Agriculture at the Kapihan at the Diamond Hotel. Department of Science and Technology Secretary (DOST) Mario G. Montejo (middle) describes to veteran columnist Neal Cruz (right) how DOST can help farmers mitigate agricultural losses during monsoon season at the recent Kapihan sa Diamond Hotel in Roxas Boulevard, Manila. Sec. Montejo explained that DOST-PAGASA is continuously enhancing its weather forecasting capabilities by providing a three- to six-month coverage period for weather projection and weather pattern information dissemination on specific areas of the country. Also in photo is DOST-PAGASA Officer-In-Charge Vicente Malano. (Photo by Joy M. Lazcano, S&T Media Service, STII)

Basilan's first DOST scholar

A young girl dreams big for her future and that of her hometown in Basilan. In the end, her dream is not as farfetched, thanks to her DOST scholarship. **Marco D. Melgar** gives us a glimpse of this would-be doctor's life and shows us how she made history in Tipo Tipo, Basilan.

By MARCO D. MELGAR
S&T Media Service, DOST-SEI



"I have simple ambitions - that is, to serve the people of Tipo-Tipo."

MOHAIMA "MAY" ALAUDDIN, not so long ago, dreamt of becoming a doctor just like any normal kid. She went to school early everyday, her dream tucked inside her heart just like her "baon" slipped neatly in her bag. When she went home, she played a bit first before helping out in the farm, just like the other kids in their small town. Her life looked like normal, but in reality, it was not.

May and her family happened to live in a place that was known as war-stricken and underdeveloped, a hot spot for rebel movements and military activity. Often underserved and unreached by external help, the people in her hometown in the Municipality of Tipo-Tipo, Basilan, including May, have a long-running revolution for freedom and progress which they hope to see in their lifetime.

What was then improbable is now at an arm's reach. May is on her way to help turn things around for Tipo-Tipo.

Just how, one may ask. The 16-year-old daughter of farmer Mosber and wife Mariam happened to make a historic mark for the people of Basilan for being the first ever qualifier to the Department of Science and Technology-Science Education Institute's (DOST-SEI) Republic Act 7687 Scholarship Program. As a DOST scholar, she enrolled in the program Bachelor of Science in Biology at the Mindanao State University – Iligan Institute of Technology (MSU-IIT) in Lanao del Norte where she can enjoy a number of benefits, such as free tuition fee, book and uniform

allowances, monthly stipend, and a limitless supply of opportunities.

For people such as May who live in problematic areas, passing the DOST scholarship exam is considered as an extraordinary achievement. Records show that to date, there are 1,326 out of the 1,655 towns in the country with recorded qualifiers in the scholarship examinations. This means that there are still some towns who still have to avail of the DOST scholarship.

"The current DOST administration is determined to have at least one scholar in every town by the year 2016, as prescribed in Section 10 of the Republic Act No. 7687," said DOST-SEI Director Dr. Filma Brawner. "By expanding DOST's support to science education through a larger coverage of the Scholarship Programs, we will be able to give more talented and deserving students a chance to fulfill their dreams of taking up careers in S&T."

May is grateful that DOST gave her the opportunity of fulfilling her dream of becoming a doctor. This is the reason why she took BS Biology at MSU-IIT.

"Kung papalarin, nais ko pong mag-proceed sa medicine" (If ever, I want to proceed to medicine.), says May.

Just like many of the bright yet underprivileged scholars of DOST-SEI, May plans

to give part of her monthly stipend to her parents to help provide for the school needs of her siblings.

Deeming her feat as life-changing, May says, "It is very inspiring because you have to maintain your high grades and at the same time, you have to give it your 100 percent best effort and sacrifice because there are people who depend on you." May has five siblings and she plans to help all of them complete their studies.

"I don't want to stay poor for the rest of my life," she adds.

May's dreams are noble though, as she plans not only to lift her family's state, but to serve as a doctor in her hometown.

"I have simple ambitions - that is, to serve the people of Tipo-Tipo," says May.

Indeed, a bright future is ahead of May. And because of her noble dream, the same bright future can be hoped for Basilan.

MARCO D. MELGAR



Beyond technology is a heart for the afflicted

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

JBM Food Products is not yet among the 2013 SETUP Best Technology Adoptor regional winners but we are featuring the company in this issue to inspire other SETUP-assisted companies to put a heart in their businesses to have a more meaningful reason for being. **Maria Judith L. Sablan** tells us the story of the heart behind JBM's pursuit to success.

Somewhere in Isabela province in the northern part of the country, there exists a company that does not only produce nutritious ready-to-drink healthy juice drinks, but is also involved in helping cancer patients and sick children. This company, owned by Mr. Jose and Dr. Lydia Morante, calls itself the JBM Food Products.

HUMBLE BEGINNINGS

Morante's original business was trading and operating rice and corn mill. His wife was then focused in her practice as a doctor, and so he busied himself in making their business grow. He heard of DOST's services and got interested in participating in DOST-II's food fermentation and food processing trainings in 2006. Soon he started his small-scale business of coco vinegar and soy sauce after acquiring an acetator in 2007. It was then when JBM Food Products was born.



Mr. Jose Morante and wife Lydia with their three kids.



Mighty Green health drink, one of the products of JBM Food Products.

Realizing the potential of his neighboring town that has around 20 to 25 hectares of calamansi plantation in Aurora, Isabela, Mr. Morante again sought the assistance of DOST to learn calamansi juice production. He availed of the SETUP assistance in 2008 to purchase a pouch machine and take advantage of DOST's services including product formulation, product analysis, shelf-life testing, product labelling, and packaging. At first, he produced pure calamansi juice but later, after perfecting the technology of bottling calamansi, he expanded with variants using local fruits such as green tamarind, *guyabano* (soursop), bignay, wild passion fruit, and moringa-pandan concentrates. Gaining enough confidence in producing other product

lines, he later developed his own virgin coconut oil, nata de coco, coco jam, coconut vinegar, and food supplement product lines.

DOST SETUP ASSISTANCE

Under the DOST SETUP, JBM was able to acquire a production equipment with a total cost of P984,900.00 payable within three years at zero interest. Because of the benefits brought by DOST SETUP assistance to their business and after having paid the initial loan, JBM again applied for a second SETUP loan for an amount of P2 million pesos to acquire an automatic bottle filling machine and accessories. The shift from stand-up pouch to polyethylene or PET bottle packaging came after he learned that



Daughter Janna-Lou.

the aluminium pouch was not appropriate for calamansi because the pouch has chemical reaction with the citrus fruit. However, the pouch machine can still be used in packaging other products.

FAMILY TRIAL

Amid the hustle and bustle of their growing family business and his wife's flourishing medical career, their daughter Janna-Lou, then six years old was diagnosed with stage 4 cancer. As their child went through medication for her acute lymphoblastic leukemia in December 2006, the Morante couple also tried experimenting on various concoctions and formulations of locally available fruits and plants with hope that they may find possible cure or ease Janna-Lou's pain.

It was then that they developed a 7-in-1 herbal juice made up of plant concentrates such as *malunggay* (moringa), spinach, *saluyot* (jute), sili (pepper) leaves, *camote* (sweet potato) tops, turmeric, and pandan. They found out that Janna-Lou's condition somehow improved while

she was on the 7-in-1 herbal juice regimen. She regained strength and lived healthy just like any normal child.

POWER DRINK IN MEMORY OF JANNA-LOU

The cancer, however, recurred in 2011 and Janna-Lou succumbed in April 2012. The Morante couple thought of making the juice available commercially. The 7-in-1 juice was named Mighty Green as it was rich in natural vitamins, anti-oxidants, and micronutrients derived from its

natural ingredients. The herbal juice is also free from food coloring or synthetic chemical.

Mr. Morante said, "A child or even an adult does not typically get these natural vitamins and micronutrients from their usual diet. Drinking Mighty Green will help strengthen their immune system." Mighty Green is duly registered with the Philippine's Food and Drug Administration or FDA, formerly known as Bureau of Food and Drugs.

JBM'S SOCIAL RESPONSIBILITY

Understanding fully the pain and financial burden felt by families of cancer patients, the Morante couple also put up the Little Angel Foundation that provides financial assistance and moral support to families of cancer patients.

For every bottle of Mighty Green sold, JBM Food Products give 50 centavos to pediatric cancer patients at the Philippine Children's Medical Center (PCMC). This was the Morante couple's commitment when their beloved daughter passed away.

Their assistance in fact was not only limited to PCMC. The couple had also committed to lend help to people whenever they can. One lucky recipient of the couple's help was Lydia Turingan of Tuguegarao City, an employee of DOST-II, who was diagnosed with stage 2 breast cancer. After getting help from the couple for her chemotherapy, Turingan said, "Cancer is really a burden for anyone afflicted with such disease. My family and I are very grateful for the financial help provided by Little Angel Foundation for my chemotherapy."

DREADED DISEASE

Data shows that cancer is the third leading cause of morbidity and mortality in the Philippines next to communicable diseases and cardiovascular diseases. About 3 percent of cancer in the country occurs at age 14 years and below and according to the World Child Cancer website, the most common childhood cancer is acute lymphoblastic leukemia (ALL). In a study of 80 to 150 cases per million children, 2,655 to 2,975 cases of childhood cancer is expected every year.

THERE IS HOPE

Morante couple is happy with the big growth of JBM Food Products, as they are able to help more children benefit from the Little Angel Foundation from their donation to PCMC. Aside from that, the company is also able to help others in various ways. In creating employment, for example, the company that began with five employees has now grown to more than 20 staff because of DOST SETUP. From a capital of less than P200,000, JBM now enjoys an income of about P1 million per year, which means more income too for the community out of the taxes paid.

Despite the loss of their daughter, the Morante couple is happy that the company is able to share and help other cancer patients and their families. For those who would like to share a bit of what they have to this cause through their product purchases, they can buy Mighty Green not only in Isabela and nearby provinces of Region II but also in Metro Manila and other key cities. Because for every purchase of this delightful drink, you are helping a person fight cancer.

Photo by DOST-PHIVOLCS



Gem job Geology rocks!

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

In February 2013, a study by the Bureau of Local Employment reported that from 2008-2012, geologists have been among the highest paid professionals in the Philippines, ranking second only to art directors. *Espie Angelica A. de Leon* interviews five geologists from PHIVOLCS who share the ups and downs of the profession.

Just one look at a rock and some feel, and they already have an idea where it came from and how old it must be. They are called geologists, and, yes, they rock. They can go to the deepest trench of the earth, and they can climb the highest mountains, all for the love of the job.

Aside from the mining and oil sectors, there are a host of other industries and areas where the skills and knowledge of geologists are needed, both in government and private sectors.

Aside from the Department of Science and Technology's Phivolcs (Philippine Institute of Volcanology and Seismology) and PAGASA (Philippine Atmospheric, Geological and Astronomical Services Administration), geologists who want to go into public service can also find stable and sturdy careers in other agencies such as the Mines and Geosciences Bureau, Department of Public Works and Highways, and Department of Energy, among others.

They could go into hydrology, energy, in engineering companies for geotechnical or geologic assessment, consulting companies, environmental geology where they will monitor water quality, soil contamination, landfills or design landfills. They can be seismologists or volcanologists. Graduates may also go

into public service and specialize in disaster risk management or policy research and development. They may also join a non-government organization, teach in the academe, or do laboratory research.

And these are only the opportunities available locally. Overseas, career possibilities may even be richer, with several companies hiring Filipino geologists for exploration and mining projects.

According to one of the authors of Impact of Filipino Geoscientists in the Minerals Industry, 2007, "At least 69 Filipino geoscientists have contributed in 40 copper-gold discoveries worldwide since 1980." These 40 discoveries reportedly comprise a total value of \$469 billion—truly evident of the Filipino geologist's capability to contribute to big-ticket global projects.

REMUNERATION

Last February, a study by the Bureau of Local Employment reported that from 2008-2012, geologists have been among the highest paid professionals in the Philippines, ranking second only to art directors.

Ma. Mylene M. Villegas, a geologist-Chief Science Research Specialist (SRS) at the Philippine Institute of Volcanology and Seismology

(PHIVOLCS) shared that starting at the institute range from P20,000 - P22,000. These figures may even double in the private sector, according to her.

Combine these news with the flurry of activities in the mining and oil sectors employing Filipino geologists for exploration and projects all over the archipelago, and what you have is a scenario worth noting: Enrollment in local universities offering geology as a course has increased significantly.

Villegas' colleague at PHIVOLCS, Ma. Antonia V. Bornas, also a Chief SRS, recalled, "When I was an undergraduate taking up geology in the early '90s, there were less than 20 of us in the class. Now, they number to around 100 to 200 per batch."

Meanwhile, Villegas' batch in 1990 had only five geology graduates, including her. Ma. Lynn P. Melosantos, Senior SRS, added that during her time, only a fifth of the class were women.

Currently, DOST encourages more Filipino youth to build their careers in the field of geology.

THE HARD-EDGED GEOLOGIST

However, not everyone is suited for the job. Aside from the basics such as mapping skills, expertise in geographic information systems, know-how in

Photo by DOST-PHIVOLCS



Teresito Bacolcol during a GPS survey in Matalam, Cotabato to assess the post-seismic deformation associated with the June 2013 Ms 5.7 earthquake in Cotabato.

reading and producing maps, an appreciation and understanding of earth science, patience, and a sense of curiosity, a would-be geologist should also have corporate-savvy, according to Bornas.

“He should know how to deal with different kinds of people – including investors and those in management if he is in the private sector,” she elucidated.

No less than PHIVOLCS Director Dr. Renato U. Solidum Jr. emphasized that a geologist should know how to explain things during a lecture or an interview with media.

Besides, he said, science is now more multi-disciplinarian. Solidum explained, “In PHIVOLCS, we deal a lot with civil engineers. We understand what will happen on the ground, how the ground shakes, and how it amplifies the shaking from below to the surface. These

information are needed by engineers. We also deal with insurance people. So there’s synergy. We network with other sciences.”

Plus, the person should also be tough and physically fit to be able to go on field work. “He or she should be able to walk long distances, traverse raging waters and lahar, trek volcanoes,” Charmaine V. Villamil, another PHIVOLCS geologist, summed it best.

And, there’s more. Considering the nature of their work, Villamil added that aspiring geologists should have no qualms about unconventional ways of eating and sleeping whenever the occasion calls for it. These include eating without the benefit of spoons and forks, and sleeping anywhere – whether inside a vehicle, the camp site, or anywhere during impromptu billets.

But on top of these, the wannabe geologist should have an innate sense of unconditional public service.

THE PASSION ERUPTS

This is actually where the heart of their passion seems to lie – that natural desire to serve the country.

Villegas earned her MS at the Arizona State University but she had set her mind to go back home after her studies and use in her own country what she learned in the United States.

For Solidum, the words of the late Raymundo Punongbayan, who was propelled to the limelight for his significant role during the 1990 earthquake and the 1991 Pinatubo eruption, come rushing back into memory when he speaks about serving the country. He related that the former PHIVOLCS director once told him, “You have an opportunity to serve your country. If you want to have a sense of fulfillment and

happiness, when you do your work and you see people appreciate your work by making sure they follow your advice and taking part in the activities that you do with them so they can be safer, that’s fulfillment.”

AN AVALANCHE OF GREAT EXPERIENCES

Of course, the perks of being a geologist are endless.

According to Bornas who also specializes in volcanology and geomorphology among others, “Geology is the unbeaten path. You travel a lot, you go to places other people don’t normally go to, you meet a lot of people – some from the upper echelons of government and some, the simple folks.” She proceeded to describe how, with just one look at a rock, a geologist instantly knows what transpired in that place many years ago and what will transpire in the future. Bornas’ own fascination with her line of work is almost tangible.

Another perk, especially in the government sector, is the opportunity to take higher studies or join training programs, even overseas. “For a very specialized work like ours, it’s better for our staff to have advanced degrees so we can better understand and have a better grasp of things,” Solidum explained.

The PHIVOLCS geologists then related their most memorable experiences: their numerous travels to do geohazard mapping and conduct information and education campaigns and training, seeing nature at work during a volcanic eruption, sleeping together like packed sardines in a room in Legazpi during a Mayon Volcano eruption, getting stranded in an island in Samar and eating nothing else but rootcrops, among others.

“We were bonding with each other at the same time. If you go through this kind of

Photos by GERRY G. PALAD



Charmaine Villamil



Ma. Antonia V. Bornas



Ma. Lynn P. Melosantos



Ma. Mylene M. Villegas

FAST FACTS:

- Out of around 300 volcanoes in the Philippines, 23 are active. Of these, 8 are most active, and these are being monitored by PHIVOLCS
- Universities offering geology courses in the Philippines: UP Diliman, Mapua, Adamson University, Negros Oriental State University in Dumaguete City, University of St. Louis in Tuguegarao City, University of Southeastern Philippines in Davao City, and Partido State University in Camarines Sur

war, after that, you're like a family. So here in PHIVOLCS, we're like a family," shared Bornas.

THE ROUGH EDGES

Of course, there are challenges attached to these perks.

While Teresito Bacolcol, Ph.D, an associate scientist at PHIVOLCS, tells young geology graduates to prepare themselves for extensive travel, he also reminds them to prepare for episodes of separation from their families.

Villegas recalled how, in the early '90s when she was still single, she would suddenly pack her things because there was work to do in the light of the Pinatubo-lahar events from '91-'94 and the Mayon eruption of '93. Her parents would ask when she'll be back, but she cannot give a definite answer considering the nature of volcano emergencies. Now a mother, she has to explain to the kids that "mommy has to work." She believes this helps them become independent. Her husband Jason, also a geologist, understands his wife's profession and therefore handles the situation well.

It is similar in the case of Bacolcol, who specializes in active faults. During emergencies, he tells his four-year-old daughter Tricia that "Tatay is going away but Tatay will be coming back." His wife Anne, a doctor, understands the situation as well.

THEIR OWN "GEOLOGIC PATH"

In Melosantos' family, the inclination toward science is very strong. "When we were kids, we had to entertain ourselves. We looked for ways," she related. "Our playground was huge. We would go out and look for specific kinds of rocks."

For Bacolcol, the mountain was his playground. "I grew up in a logging town in Zamboanga del Norte. My father used to work in a logging

company so he would bring me to the mountain. That started my love for nature and for the outdoors," he revealed.

DO WE HAVE A STEADY FLOW OF PROFESSIONALS?

According to Bornas, there is still a dearth of geologists in the country, especially in the area of disaster risk reduction. "When you go to Japan, 1 in 10 people you will meet is in earth science. They have a lot of volcanologists, earthquake scientists, geophysicists, tsunami scientists, professionals who study the rain, meteorologist, etc. It's not like that in our country," lamented Bornas who earned her post-graduate degree in earth and planetary sciences from Hokkaido University in Japan.

For Villegas, the aftermath of the 1990 earthquake and the 1991 Mount Pinatubo eruption increased the number of geologists in the country. But though grown in number, there is still a need for more geologists due to things that constantly happen, such as natural hazards, disaster risk reduction, energy and mineral demands, and of course, climate change adaptation.

In August 2012, only 78 out of the 141 geologists passed the PRC Licensure Examination. The DOST's efforts to pump up the number of geologists in the country include scholarships in college, graduate, and postgraduate levels.

Universities offering geology courses in the country include UP Diliman, Mapua, Adamson University, Negros Oriental State University in Dumaguete City, University of St. Louis in Tuguegarao City, University of Southeastern Philippines in Davao City, and Partido State University in Camarines Sur.

Bacolcol reminds those who are considering to mount careers in geology: You should not go into science just because you want to earn a lot of money. If that is your motivation, you will not stay in this job for long.

And there is more to being a geologist than its handsome rewards, Villegas quipped. "I think it's better that if you want to serve, then serve your country right here."

"There are around 300 volcanoes in the Philippines," she said. "so there are a lot of things still to be learned and to work on."



By MARIA VICTORIA I. DADO
S&T Media Service, DOST-XI

HAVE YOU flown like a super hero or made your head pop-out of a platter of fruits? Can you even leave your shadow behind or get inside a big bubble?

Experience head-popping and bubble-bursting science fun in this traveling exhibit organized by the Mindanao Science and Technology Centrum Foundation, Inc. in collaboration with the Department of Science and Technology (DOST) and the Philippine Foundation for Science and Technology (PFST). Dubbed "Science Sparks!", the science exhibit will be held November 5-20, 2013 at the Science Centrum in Bago Oshiro, Tugbok, Davao City.

Science Sparks! is the first interactive science center-museum in the country. Through a selection of interactive hands-on exhibits, Science Sparks! promotes among school children a better grasp of science and technology concepts taught in the classrooms. Scientific concepts are presented in a very dynamic and fun way to attract the attention of kids.

DOST then invites schools, families, students, and other science enthusiasts to visit and join the 1 ½ hours of exciting science tour of the galleries. For reservations, please contact Daisy Beltran at telephone nos. 293-0673 or 221-5058.

MARIA VICTORIA I. DADO



You English Me!

Filipino developed software to scale up Pinoys' English skills

This is so ferpect. Pinally, a sofwer to help us imfrove our English so that we vecome the berry vest.

Now we can leap for joy, as **Framelia V. Anonas** voices in this article, because there is finally a Filipino-developed software that will help Pinoys improve the way we speak and use the English language.

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

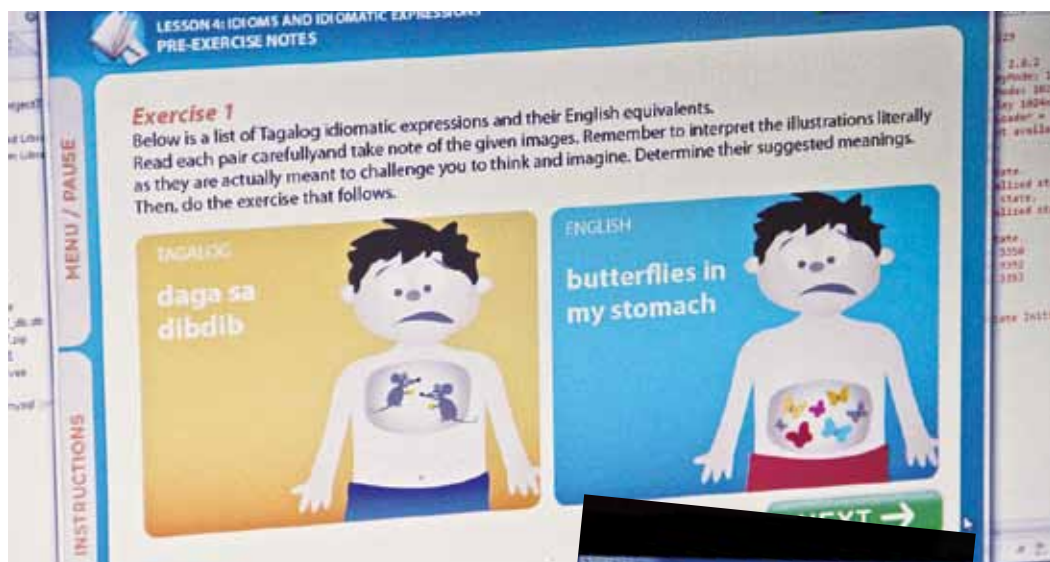
They are quite ubiquitous. Sounding the “f” to “p”, the “v” to “b”, the “oil” to “owel.” The tenses get mixed like chop suey, and the subjects and verbs have fatal disagreements. Yes, we Pinoys are widely known to speak good English beyond the conversation category. And, yes, we also have lapses and who else would know how to fix these lapses but also Pinoys?

These tiny lapses may have sprung from regional background, weak English instruction in schools, or even from speech organ dysfunctions. The lapses spread so fast like air-borne virus such that we become so used to them and no longer bother to correct them.

Finally, there is a reason for editors, call center offices, and concerned people to leap for joy. Responding to the need to correct our English lapses and improve the way we use the language is the LEAP, or the Learning English Application for Pinoys. LEAP is a language software developed by a team of experts from the University of the Philippines and funded by the Department of Science and Technology.

“We created LEAP to sharpen skills in diction, proper pronunciation, articulation, and other aspects,” explained Dr. Cristina Guevarra, director of the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development. “The modules also include exercises in improving the Filipinos’ accent in speaking English. LEAP will equip Pinoys the appropriate English skills needed in interviews and other corporate-related activities.”

Leveling up the skills of Filipino workers, especially those in the contact and call centers, will strengthen the competitiveness of the business process outsourcing (BPO) sector, added Dr. Guevara.



IMPROVING THE WAY WE USE AND SPEAK ENGLISH

The LEAP software consists of language program in 20 modules designed to improve vocabulary, grammar, reading comprehension, use of tenses, and other aspects that Filipinos generally have a hard time.

Its speech training component focuses on vowel sounds, diphthongs, consonants, and commonly mispronounced words. Its grammar and vocabulary component, meanwhile, focuses on pronouns, preposition basics, idioms, review of selected tenses, subject-verb agreement, sentence, vocabulary building, and reading comprehension. There are also actual conversations that engage the users, optimizing their listening and speaking skills as they make use of the basics they learned from the module.

LEAP is developed by a multidisciplinary team from the College of Arts and Letters - University of the Philippines Diliman, speech therapy teachers, researchers, computer experts, software engineers and graphics



artists. It is multi-platform, and requires only 1 GB RAM and 1GB disk space.

One more thing special about the LEAP is that some of its creators are DOST scholars themselves. “Even the researchers and programmers who developed the LEAP are graduates of DOST’s Engineering Research and Development for Technology or ERDT,” informed Dr. Guevara. “The LEAP also showcases the fact that our graduates are at par with world standards.”

next page

NAST PHL spearheads biotech IEC forum in Cagayan Valley

By DEXTER L.A. BAUTISTA
S&T Media Service, DOST-NAST

The National Academy of Science and Technology, Philippines (NAST PHL) led the information, education and communication campaign for local government units and key personnel of the Department of Science and Technology (DOST) of Cagayan Valley Region as a component activity of the Science Seminar Series for Region II from July 29-30, 2013 at the Hotel Roma in Tuguegarao City, Cagayan.

The event was spearheaded by Academician Evelyn Mae Tecson-Mendoza, project leader of the NAST PHL Biotech IEC Project, in collaboration with the Philippine Science Heritage Center and DOST Region II.



Academician Evelyn Mae Tecson-Mendoza (seated, center), project leader of the NAST PHL Biotech IEC and professor emeritus of University of the Philippines Los Baños, is flanked by Dr. Helen Ramos (seated, left) of Isabela State University, Dr. Prima Fe Franco (seated, right) of Mariano Marcos State University and participants of the Biotech IEC Forum for Region II.

Academician Tecson-Mendoza also discussed the issues related to biotechnology, especially the socially-related matters. Other speakers include Dr. Prima Fe R. Franco, professor at the Mariano Marcos State University in Batac, Ilocos Norte and Biotechnology Focal Person (BFP) for Region I and Dr. Helen C. Ramos, professor at the Isabela State University in Echague, Isabela and BFP for Region II. Ms. Victoria Mabborang, DOST Region II BFP, served as moderator and emcee. The DOST Region II office headed by Dr. Urduja Tejada served as the local coordinator in charge of inviting participants from the LGUs and Provincial

Science Centers in Region III, including high school science teachers and students.

Topics discussed include “An Introduction to Modern Biotechnology,” “Application and Products of Modern Biotechnology,” and “Agribiotech Products in the Pipeline for Development.”

The event is part of NAST PHL’s nationwide project on creating awareness of and providing science-based information about biotechnology for LGUs and DOST personnel in the country.

YOU ENGLISH...from page 57

LEAP FOR PINOYS

Dr. Guevara revealed that the main reason behind the creation of the LEAP is the slow decline of the Pinoy’s English language abilities. This fact is quite evident in the high mortality hiring rate in the BPO and call center industries where nine out of 10 fail the pre-employment assessment. On the average, Pinoy call center applicants get 65 percent rating in computer ability, 45 percent in perceptual speed, and 40 percent in learning ability.

“Pinoy applicants get marginal performance ratings that are way below, and the lowest is English proficiency,” disclosed Dr. Guevara. “They get only 30 percent.”

To respond to this urgent need, and level up the BPO industry at the same time, UP and DOST created LEAP. The software’s 10-module trial version was launched in November last year and was tested in various areas like the Bulacan State University (Year 1), Negros State University, Bohol International College, Cebu Institute of Technology (2012), and the DOST-Philippine Science High School (Ilocos Norte) (2013).

In 2014, LEAP will go through large scale beta-testing and deployment in Pampanga, Pangasinan, and Bicol Region.

According to UP Diliman’s Susan Festin, project leader, LEAP will be given for free to universities and colleges in the first six months, then, afterwards, it will be available to the public. Festin is associate professor at the Department of Computer Science at the UP Diliman’s College of Engineering whose research interests are on computer security and software engineering.

LEAP’s intended users include high school to early college students. “It is not intended to replace English teachers,” Festin said. “We hope teachers will use LEAP to augment language learning.”

Festin also shared that users need to achieve 60 percent passing rate to proceed to the next lesson.

Though it will be widely available in the future, only Filipinos will make full use of it as it addresses only the lapses common to

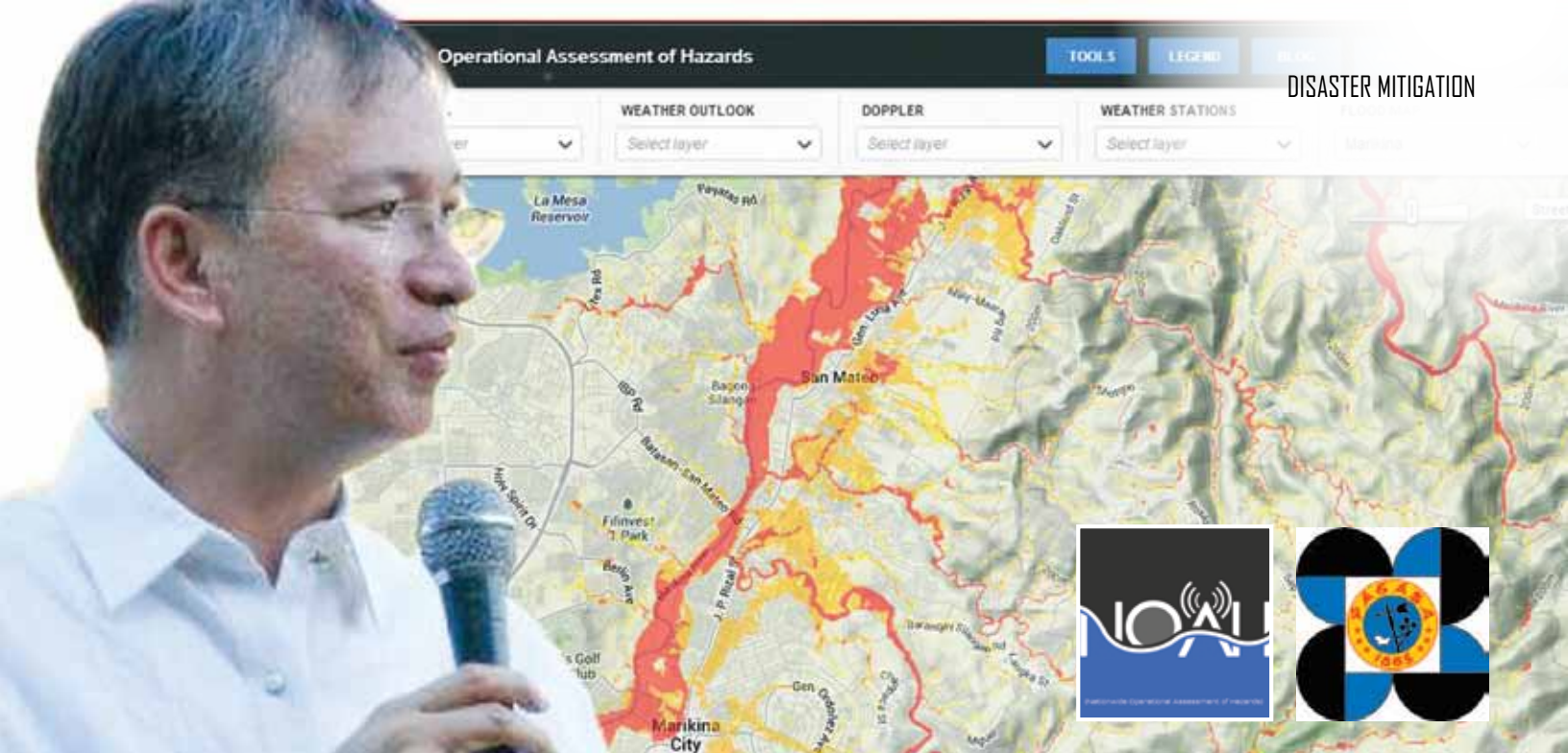
Filipinos. “LEAP is a Filipino technology for Filipinos,” pitched Dr. Guevara. “Users from other countries may use other aspects of the software but they may not be able to relate to the speech part, as well as to the common Filipino errors.”

PARADIGM SHIFT IN LEARNING

“LEAP is a paradigm- shift in skills enhancement. We use other technology disciplines to come up with alternative way of learning,” declared DOST Secretary Mario G. Montejo. “This is just the start of DOST’s initiatives for alternative mode of training for skills improvement.”

“We are enthusiastic about this project,” he added. “We harness science and technology to find better ways of doing things, in line with DOST’s move towards smarter Philippines.”

Dr Patricia Licuanan of the Commission on Higher Education (CHED) said that there is no job-industry mismatch in the BPO sector but of a “quality mismatch – we do not meet the competences and qualities needed in the industry.”



Marikina leaders laud Project NOAH and PAGASA for zero casualty in the city

By MONIQUE VALDES
A release by the Office of Rep. Miro Quimbo

LEADERS OF MARIKINA City, Mayor Del De Guzman and Congressman Miro Quimbo praised Project Noah and PAGASA for the zero fatality and efficient rescue and relief operations in the city in the midst of Typhoon Maring.

Mayor De Guzman and Congressman Quimbo attributed the timely, accurate, and effective response of the local government unit to the onslaught of Typhoon Maring to the precise warnings, substantial information, and ample lead time provided by Project NOAH/PAGASA to Marikina City.

Project Nationwide Operational Assessment of Hazards (NOAH) is a program of the national government as response to the strict orders of President Benigno Aquino to put in place a responsive program for disaster prevention and mitigation that will provide lead time warning to vulnerable communities against impending floods.

“Marikina receives the brunt of rains and floodwaters from San Mateo, Antipolo, and Montalban, which inundates us in such a speed that often result to fatalities and massive economic losses. In times of typhoons, the

people and local officials essentially operate blindly in the absence of information as to the amount of rainfall and estimated time of impact. We are either caught off guard, which results to deaths and destruction of property like what happened with Ondoy; or we overreact and conduct massive evacuation, which unnecessarily depletes the city’s resources and economically dislocates people,” Congressman Quimbo said.

But the Marikina solon said this changed when the national government provided the local government units with a potent tool to adjust and cope with typhoons through Project NOAH/PAGASA. Through Project NOAH, relocation of families in flood-prone areas has also become more efficient and systematic. Project NOAH gives the officials and residents between 3-6 hour lead time which allow them to carry out an orderly evacuation.

Mayor De Guzman said, “There are no recorded casualties as of now in Marikina. We are not yet claiming victory, but we are hopeful that with this new tool given by the national government through PAGASA, we will survive this calamity without casualties.”

With the help of Project NOAH last year, the City was able to accomplish its target of zero casualty in the face of Habagat last August 2012.

The Marikina leaders also highlighted the benefits of a dynamic synergy between the national government and LGUs. Mayor Del and Congressman Quimbo said the National Government and LGUs had a shared vision of disaster prevention and mitigation and this was realized when the President gave the local officials a potent tool through project NOAH.

“Disaster risk reduction management will only be effective if you have the proper tools and programs like the Project NOAH. Projects like these are worthy investments, as it gives us the information that is required in order to properly address the immediate needs of people during the typhoon. In effect, the government can act more efficiently,” stressed Congressman Quimbo.

Project NOAH was personally launched by the President and the DOST-PAGASA last year in Balubad, Nangka - the most vulnerable area in Marikina.

DOST-IX director gets GAWAD CES Presidential award

By **THELMA EMATA DIEGO**
S&T Media Service, *DOST-IX*

BRENDA NAZARETH-MANZANO, regional director of the Department of Science and Technology Regional Office No. IX received the 2012 GAWAD CES Presidential Award last July 31, 2013 at the Heroes Hall, Malacañang Palace, Manila.

Dir. Brenda or Brenz to her friends and colleagues joined DOST-IX as Regional Director in 1992. As a leader, she takes the initiative in crafting the brand vision for DOST-IX, including the three provincial offices in Ipil, Dipolog City, and Pagadian City, by setting herself as an example of honesty, discipline, fortitude, openness and commitment to quality work.

The CESB recognized the excellent performance of Dir. Brenz based on the following accomplishments during her leadership in DOST-IX:

Dir. Brenz propelled DOST-IX to embark on the journey of organizational transformation in improving government standards by using international benchmarks. She led DOST-IX on the attainment of the Philippine Quality Award, implementation of Quality Management System (QMS) that turned the DOST-IX to ISO 9001:2008 in 2010, and the ISO/IEC 17025:2000 accreditation of the Regional Standards and Testing Laboratories.

To strengthen technology promotion and commercialization program in the region, Dir. Brenz encouraged more micro, small and medium enterprises (MSMEs) to avail of the Small Enterprise Technology Upgrading Program (SETUP), DOST's nationwide strategy that encourages and assists MSMEs to adopt technology innovations. SETUP's intervention improves the MSMEs' operations, boosting their productivity and competitiveness. Of the 355 MSMEs successfully assisted, the success rate

registered upward trend – from 70 percent in 2008 to 98 percent in 2011.

She also pushed for the development and implementation of various cost-efficient IT based systems that expanded DOST-IX's operations to a very time efficient borderless office. Said systems that include mechanisms in saving time, energy, and costs helped in the austerity measures implemented by the office. Should the office manage paperless transactions, this can be translated to a 95 percent savings on paper and ink expenditures.

Dir. Brenda received a plaque of recognition from President Benigno S. Aquino III and a cash prize of PhP100,000.00.

Other GAWAD CES awardees include Undersecretary Alicia D. Bala of the Department of Social Welfare and Development; Provincial Director Grace F. Baluyan of the Department of Trade and Industry-Kalinga; Regional Director Arnel B. Garcia of the Department of Social Welfare and Development-Region II; and OIC Schools Division Superintendent Ramir B. Uytico of the Department of Education - Division of Dumaguete City.

Conferred by the Career Executive Board (CESB), the 2012 Search for GAWAD CES included a two-tiered rigorous evaluation screening. A Screening Committee composed of previous GAWAD CES winners initially short-

listed the nominees into eleven finalists whose accomplishments and performance were field validated.

The Committee on Awards, chaired by Presidential Communications Operations Office's (PCOO) Secretary Hon. Herminio B. Coloma, Jr, did the final selection. This year's panel of judges include Ateneo de Manila University's School of Government Associate Dean Mario C. Villaverde, People Management Association of the Philippines' Immediate President Arthur Luis P. Florentin, Manila Bulletin Publishing Company's Assistant Editor-in-Chief Vicente Edgardo C. Bartilad, CESB Board Members Antonio D. Kalaw Jr., David Cabanag and Charito Elegir.

A Presidential Award given annually, GAWAD CES was established by virtue of Executive Order No. 715 on March 28, 2008. The award recognizes members in the Career Executive Service for exemplary performance and significant contributions, particularly in the areas of innovation, information and communication technology, social services, administrative reforms and public policy.



Dir. Brenda L. Nazareth-Manzano
Regional Director, DOST IX

THELMA EMATA DIEGO



Dr. Ernesto O. Domingo: Rated A for excellent

DOST salutes National Scientist Dr. Ernesto O. Domingo. Accepted to NAST in 1992, Dr. Domingo is now a Ramon Magsaysay awardee because of his selfless dedication and achievements in the medical field. *Espie Angelica A. de Leon* traces the man's extraordinary career that is simply defined as excellent.

THE NATIONAL Academy of Science and Technology (NAST) celebrates and recognizes excellence in the field of science and technology.

Particularly in the field of medicine, excellence has always been associated with the name Dr. Ernesto O. Domingo, professor emeritus at the University of the Philippines College of Medicine and staunch advocate of universal healthcare. It seems excellence has always been on his side early on. Dr. Domingo ranked eighth in his class of 100 when he obtained his medical degree from the University of the Philippines Manila (UPM) in 1961. Afterwards, he placed 3rd in the Board Exams, posting a score of 98 percent in internal medicine.

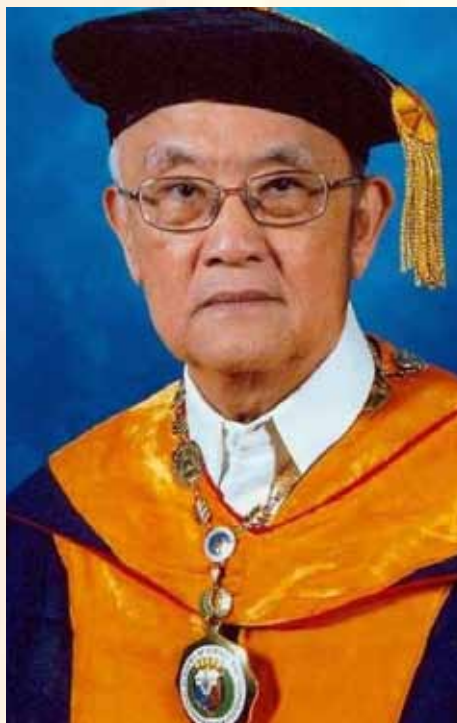
Thus, Dr. Domingo kickstarted a distinguished career, specializing in internal medicine at the Philippine General Hospital (PGH) with a subspecialty in gastroenterology hepatology at the Case Western Reserve University in Cleveland, Ohio. In 1967, he joined the faculty of UPM.

NAST elected Dr. Domingo to the Academy in 1992, earning him the title Academician.

His level of excellence propelled him further as NAST approved his endorsement to President Gloria M. Arroyo in 2009 for the prestigious Order of National Scientist, the highest honor bestowed by the President of the Republic of the Philippines on a Filipino scientist. The following year, Acad. Domingo was given the honor, earning for him the title National Scientist.

The accolades have not stopped coming with the latest laurel to crown his achievements. Last August 31, 2013, National Scientist Dr. Ernesto O. Domingo stood among other Asian luminaries as recipients of the 2013 Ramon Magsaysay Awards during ceremonies held at the Cultural Center of the Philippines.

Considered as Asia's version of the Nobel Prize, the Ramon Magsaysay Awards pursues its mission of "honoring greatness of spirit in selfless service to the people of Asia." Simply put, the distinction is given to Asia's heroes of



National Scientist Dr. Ernesto O. Domingo
2013 Ramon Magsaysay Awardee

change, or individuals and organizations whose service to the public is rated A.

In particular, NS Domingo was honored by the Ramon Magsaysay Award Foundation (RMAF) for "his exemplary embrace of the social mission of medical science and his profession, his steadfast leadership in pursuing 'health for all' as a shared moral responsibility of all sectors, and his groundbreaking and successful advocacy for neonatal hepatitis vaccination, thereby saving millions of lives in the Philippines."

The other honorees were Lahpai Seng Raw from Myanmar, Habiba Sarabi from Afghanistan, Komisi Pemberantasan Korupsi (Corruption Eradication Commission) from Indonesia, and Shakti Samuha ("Power Group") from Nepal.

The country's latest Ramon Magsaysay awardee organized and led UPM's Liver Study Group in undertaking major studies on viral hepatitis including hepatitis A, B, C, D, E and G, and liver disease. Aside from establishing the

link between chronic hepatitis B and liver cancer, these studies also discovered the importance of neonatal immunization to the prevention of hepatitis and liver cancer.

According to the research, immunization within 24 hours after birth could lessen the risk of hepatitis by as much as 95 percent. NS Domingo likewise fought for mandatory vaccination against hepatitis for everyone and successfully lobbied for a law that will ensure budgetary allocation for neonatal hepatitis immunization every year.

"From ground-breaking scientific discovery to policy advocacy and securing implementation resources, he has painstakingly demonstrated how medical science can truly protect and promote the quality of life of everyone, especially the poor," the Ramon Magsaysay Award Foundation stated.

These research findings, which saw print in a total of 120 original research papers published locally and abroad, became important material for the formulation and implementation of policies and programs by both the private sector and Department of Health, and for hepatitis B immunization and routine hepatitis B and C screening of blood for transfusion.

Domingo was also instrumental in the creation and implementation of the clinical fellowship program of PGH's clinical departments and the formation of the Clinical Epidemiology Unit. As Chancellor, he also played a major role in the reorganization of UPM in the late 1980s which eventually paved the way for the creation of the Institutes of Socio-Biomedical Research which later became the National Institutes of Health.

Although he is now retired, NS Domingo nevertheless continues to tread the path of advocacy work by co-founding the Universal Health Care Study Group and by contributing to the formulation of the government's Kalusugang Pangkalahatan (Universal Health Care) Program.

By maintaining this commitment, NS Dr. Ernesto O. Domingo is proving to all and sundry that his brand of service to the Filipino public is truly rated A. (*Espie Angelica A. de Leon, S&T Media Service*)



Dr. Carlos C. Tomboc

He wears his advocacy

He can't be missed. The man sticks out in the crowd during flag ceremonies with his indigenous fiber blended, naturally-dyed Barong Tagalog. He walks around and talks to everyone - from the utility personnel to those in authority. *Joy Camille A. Baldo* writes about this man and shows us another side of him which can't be missed either - his passion for textile technology.

By JOY CAMILLE A. BALDO
S&T Media Service, DOST-PTRI

"PUBLIC SERVICE... is not just a way of life, it is a way to live fully" Dr. Carlos C. Tomboc is one of those select few who have chosen to invest themselves fully in the service of the people as a way to lead a fulfilled life. Fondly called "Caloy" by his dearest friends, he has been in public service for more than four decades, 28 years of which were spent at the Department of Environment and Natural Resources (DENR) and the last 13 years as Director of the Philippine Textile Research Institute of the Department of Science and Technology (PTRI-DOST).

A forester true and through, Dr. Tomboc earned his baccalaureate, graduate and post-graduate degrees in the field of Forestry, notably Forest Resources Management at the University of the Philippines Los Baños (UPLB). He decided to pursue a career in this field and hone his technical, leadership, and management skills with the DENR where he assumed executive posts as Executive Director of the Presidential Task Force on Water

Resources and Development, General Manager of the Laguna Lake Development Authority, Director of the Environmental Management Bureau in Quezon City, Regional Executive Director of the DENR's National Capital Region and Director of the Ecosystems Research and Development Bureau in Los Baños, Laguna. These were then preceded by 18 years of assignment in Eastern Mindanao and in Region 7 in the Visayas.

But it was his position as the General Manager of LLDA that he established a name as one of the best public officials in the country. Dr. Tomboc supervised the turnaround performance of the LLDA from an office threatened with bankruptcy to one that pioneered on various environmental approaches on integrated area development and management. Among his initiatives was the establishment of the Environmental User's Fee system, an effective tool in both regulating and guiding all parties concerned to ensure compliance to environmental laws and

regulations as well as enjoin both the industry and the general public to rally the cause of responsible and proactive environmental stewardship. For these achievements, he was bestowed in 1998 with the Presidential Lingkod Bayan Award, the highest award given by the Civil Service Commission for the exemplary performance of a public official. He was also accorded the Hall of Fame Award during the 100th Foundation Day of the UPLB College of Forestry and Natural Resources and was cited as the PRC Outstanding Professional in the field of forestry in 2007.

Designated as the Director of PTRI in 2000, Dr. Tomboc had his fair share of critics, but he was not one to shy away from challenges and opportunities to reinvent himself. He led the Institute with as much vigor and passion as he had loved the field of Forest Resource Management. Under his sound leadership, he turned PTRI as a catalyst to aid the country's textile industry maintain its relevance in the face of globalization. Part of his legacies with

PTRI is world class provision of testing and technical services, the judicious use of natural dyes and indigenous fibers, more known as the Philippine Tropical Fabrics (PTF). It was also under his leadership that the Republic Act 9242 or the PTF Law of 2004 was enacted. In his last few years with PTRI, he supervised the S&T breakthroughs on the use of saluyot and water hyacinth as sources of fibers for the manufacture of fabrics.

It is difficult not to see him during the DOST flag ceremony every Monday morning, he would be the one standing out in the crowd with his indigenous fiber blended and naturally-dyed barong which he wears proudly and in good fashion. There was no bigger endorser for the naturally-dyed PTF other than Dr. Tomboc himself. He would proudly wear his advocacy every meeting, senate and congressional hearings, interviews, and gatherings. He would grab any chance he gets to explain about PTF and its benefits, fabrics made from indigenous fibers such as from pineapple, banana, abaca, saluyot and water hyacinth and the more than 75 natural dye sources. His voice usually emanates authority and commands attention, when he starts to speak, people listen.

He was the staunch advocate of PTRI technologies and



defender of its existence. In 2008, when the DOST Rationalization Plan was approved and implemented, the Institute's existence was put at risk and he fought valiantly to prevent it from happening. He opened the eyes of everyone to PTRI's importance and to what PTRI can still offer for the textile and allied industries.

Former DOST Secretary Estrella F. Alabastro recalled "I can still remember [his] very passionate defense of its (referring to PTRI) continued existence before the Congress, during budget hearings, and before the committee of DOST and I agree with [Dr. Tomboc] that PTRI still has a lot of good services to offer, especially to the small players of the Industry." Alabastro further noted about Dr. Tomboc's close ties with the DOST regions, "I have very good memories of the times we went to the regions to visit the DOST projects.

They benefited a lot from Dr. Tomboc's insights on their projects even if they were not PTRI-related."

Dr. Tomboc is a man of strong ideals and passions who sought to share his expertise as much as he can, he extended his help not only to PTRI but to the entire DOST including the Regional Offices many of his colleagues in could attest to that. Usec. dela Peña



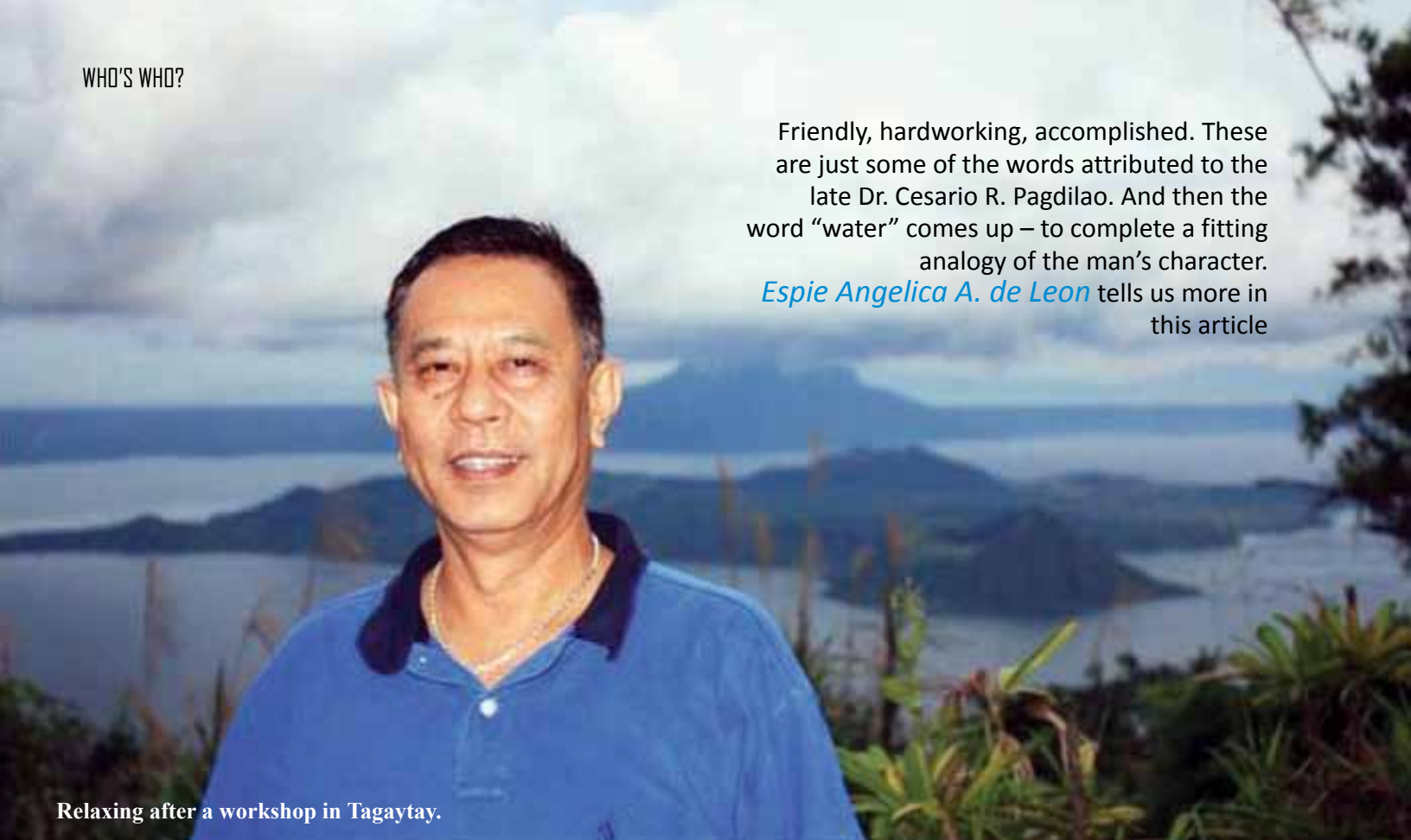
commented that with Dr. Tomboc present during meetings you can be assured that it will proceed smoothly. "He comes in at the right time, very level-headed ang dating nya and he speaks his mind and sticks to his beliefs," he shared.

More than just a Director, he was a father, a mentor, and an inspiration to the PTRI employees. He usually walked around to take a break from his work and talk to the drivers, utility people, security guards, etc. or even joined them for coffee or quick lunch. In his own little ways, he showed how important they are to him and to the Institute. Witnessing his dedication and passion at work motivated everyone to always give their best. It's his easy interaction and personal rapport with everyone from the rank and file employees to the big wigs that endears Caloy to friends and colleagues. He will always be remembered as a leader whose strong ideals and passion inspired change and sparked earnest desire to serve our people.

JOY CAMILLE A. BALDO



Friendly, hardworking, accomplished. These are just some of the words attributed to the late Dr. Cesario R. Pagdilao. And then the word “water” comes up – to complete a fitting analogy of the man’s character. *Espie Angelica A. de Leon* tells us more in this article



Relaxing after a workshop in Tagaytay.

Curtains close on Dir. Cesario R. Pagdilao, PCAARRD’s deputy executive director

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

JUST LIKE the sea and other bodies of water around which his passion is centered, Philippine Council for Agriculture Aquatic and Natural Resources Research and Development (PCAARRD) Deputy Executive Director for Aquatic Resources Cesario R. Pagdilao is deep, but nonetheless inviting.

He was one of DOST’s highest and most competent officials. Yet, he was not at all intimidating. Instead, he was down to earth, approachable, and a perennial joker. His busy schedule was never an obstacle for anyone or anything that needed his assistance or involvement. He always found time to get himself involved. Even new acquaintances found it fairly easy to deal with him.

Truly, Dir. Pagdilao is one of the DOST community’s most esteemed members; he is also one of its most well-loved – capable of having fun when the occasion calls for it, but seriously dips himself at work when it’s time to work.



Dir. Pagdilao addresses participants of the ASEAN-COST Meeting in Tagaytay City in May this year.

Last August 29, 2013 however, the jokes stopped coming and the laughter died down. Dir. Pagdilao passed away at the age of 60 due to cardiac arrest.

He may have moved on to the great beyond, but his memory and example live on.

His passions – marine biology, fisheries biology, and coastal resources management – are traced back to his early years. After graduating from the Far Eastern University in 1973 with a Bachelor of Science degree in Zoology, Dir. Pagdilao went on to obtain his Master of Science in Marine Biology from the University of the Philippines (UP) Diliman after which he earned 27 units for a degree in Doctor of Philosophy in Marine Science, also from UP.

At PCAARRD, Dir. Pagdilao received several awards: Loyalty Award in 1985, Outstanding Employee Award in 1986, the 1988 Outstanding Technical Employee Award of the Philippine Council for Aquatic and Marine

Research and Development (PCAMRD) for which he served as division chief of the Marine Resources Division from 1989 to 1996, and the Lingkod Kagawaran Award in 2008.

From 1998 up to the time of his death, Dir. Pagdilao was country representative to the Association of Southeast Asian Nations

Committee on Science and Technology (ASEAN-COST) Subcommittee on Marine Science and since 1999, had been a member of the Professional Regulation Commission Board of Examiners for fisheries. He also served as the Philippines' Focal Person for the Carl Duisberg Gesellschaft – funded Coastal Management Project for Southeast Asia, Latin America and Africa.

He lectured on integrated coastal resources management, research and development management, and penned a number of important papers. Among these were the “Institutional Frameworks for Community-Based Coastal Resources Management and Marine Conservation in the Eastern Visayas Region published by the CRC-University of Rhode Island, USA and PCAMRD in 2002; “Proceedings: Philippine-Indonesia Workshop Marine Sanctuaries, Cebu, Philippines and Manado, Indonesia,” also published by CRC-University of Rhode Island, USA and PCAMRD in 2000; “Community-Based Marine Sanctuaries in the Philippines: A Report on Focus Group Discussion” published in 2000; “Training Manual on Sustainable Fisheries Management In the Context of the Code of Conduct for Responsible Fisheries” in 2005; and “Fisheries Management, Module 5d (Training Manual on Integrated Coastal Management: Philippines)” in 1998.

As a marine scientist, Dir. Pagdilao championed food security through technologies from plant growth promoting rhizobacteria such as biofertilizers and biopesticides. He believed in the potential of the local seaweed industry and reported about the possible extinction of sea cucumbers, a top fishery export in the country, due to heavy human consumption.

He took up these issues, among many other concerns in the agricultural and aquacultural fronts, in his commitment to upgrade marine science and technology in the Philippines and improve the lives of our farmers, fishermen, and the entire population which rely heavily on our marine products for both livelihood and subsistence.

With his commitment to his work and the way he deals with his colleagues, Dr. Cesario R. Pagdilao is indeed very much like water – deep yet inviting, and certainly an important resource to people within and beyond the DOST community.

The laughter may have been turned off, the curtains in the movie theater may have closed down, but his legacy to the country continues to unreel, like water that unceasingly flows.



With Mrs. Mariz Montejo during the 2013 NSTW Gala Night.



Having fun inside the photo booth during the 2013 National Science & Technology Week (NSTW).

DOST's Forester Ella named one of UPAA's distinguished alumni

By APPLE JEAN C. MARTIN
S&T Media Service, DOST-FPRDI



For. Ella poses with Senator Loren Legarda, Distinguished Alumna for Environmental Protection and Climate Change Adaptation. Other prominent UPAA awardees include Dr. Nora Cruz- Quebral and Atty. Estelito P. Mendoza.



For. Ella (in colored barong) receives his award from (from left) UP President Alfredo E. Pascual, UPAA President Ponciano E. Rivera Jr. and Vice-President Atty. Renato B. Valdecantos.

THE UNIVERSITY of the Philippines Alumni Association (UPAA) recently conferred the Distinguished Alumnus Award for Environmental Conservation and Sustainable Development to Forester Arsenio B. Ella, Scientist III at the Forest Products Research and Development Institute (FPRDI). With the theme "Bagong Siglo, Bagong Sigla", the awarding was held during UPAA's Centennial Celebration on 22 June 2013 at the UP Theater, UP Diliman.

Ella was recognized for his contributions to sustainable methods of tapping the resin of various forest tree species including almaciga (*Agathis philippinensis* Warb.), pili (*Canarium ovatum* Engl., [*Canarium luzonicum* (Blume)

Gray], and *Canarium asperum* Benth), apitong (*Dipterocarpus spp.*), palosapis (*Anisoptera thurifera* (Blanco) *Blume ssp. thurifera*), and Benguet pine (*Pinus kesiya* Royle ex Gordon). These methods have "prolonged the life of trees, sustained and maximized resin production and contributed to poverty reduction among our indigenous communities." Ella has gone all over the country, teaching the proper way of resin tapping to indigenous groups in Mindoro, Palawan, Sierra Madre and the Davao and Cordillera regions.

Ella finished his BS in Forestry in 1973 and his MS in Forestry in 1983, at the University of the Philippines Los Banos. A recipient of various awards, he was given the UPLB-CFNR

Institutional Service Award in 2003 and the National Research Council of the Philippines' Research Achievement Award also in 2003. Last year, he was recognized by the UPLB Alumni Association as the 2012 Outstanding Alumnus for Natural Resources Technology Development and was also one of the recipients of UPLB College of Forestry and Natural Resources' Most Outstanding Alumnus Award (Mancono Award).

Ella has published several books and research materials, and has won in various technical paper competitions both local and international. He joined the FPRDI in 1974 and was conferred the rank of Scientist III in the DOST Scientific Career System in 2001.

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The low passing percentage in passing BPO screening is a signal to work on quality. "I urge all Higher Education Institutes to access this package because it is useful to students in all areas," Licuanan said of the LEAP. "I hope that with LEAP we will make a significant lead in the employability of Filipino graduates."

"Speaking good English is a skill needed in all industries," added Festin.

DOST looks at LEAP as its current contribution towards a more productive BPO sector in which the Philippines rankstop worldwide.

Meanwhile, Asst. Sec. Josephine Romero of the Department of Trade and Industry told that DTI is quite excited with the LEAP project. "We should keep looking for opportunities like this, and find ways to expand our reach in the

global market," she said. "The success of LEAP is about embracing change, the revolutionary way of doing things."

Aside from the CHED and DTI, LEAP is also supported by the Department of Education and the Business Process Association of the Philippines.

Safe drinking water for more Pinoys through DOST's ceramic filters

By VIOLY BALAOING CONOZA
S&T Media Service, DOST-ITDI

RESPONDING TO the urgent need for potable water in several areas in the country, Secretary Mario G. Montejo instructed all DOST regional offices and the ITDI or Industrial Technology Development Institute to join hands and roll out nationwide the DOST-developed ceramic water filter.

The ITDI-developed ceramic-based water filter can remove contaminants in drinking water, making them perfect for home use. Three models were developed, two pot-type ceramic water filters of 6.5 and 1.5 L capacity; and the latest edition, the candle type water filter.

"The filter is made from red clay, and we added nano (very, very small or minutest) antimicrobial agent that can eliminate water-borne microorganisms," said Supervising Science Research Specialist and lead researcher Josefina Celorico.

The ceramic filter is lodged in a plastic container with a faucet at the bottom for collection of the filtered water. The ceramic filters are easy to install and maintain, and reasonably priced. According to Celorico, production cost per piece for the candle type water filter is P80.00, and while the pot type amounts to around P190.00. "At this point, we had established the ceramic filters' flow rate at 2-3 L/hour," she added.

Both types of water filter can purify tap water, deep well water, and raw water (from ponds and spring). Through the filters, safe, potable drinking water is readily available and accessible even in remote areas.

The filtered water passed the Philippine National Standard or PNS for drinking water in both tests/counts for *Coliform* and *Escherichia coli*, the most common water borne disease-causing microorganisms.

Moreover, the ceramic water filters have also undergone field testing at National Housing



Pot type, 1.5 L



Candle type

Authority households in Muntinlupa City and Cagayan de Oro City. Feedback from user are positive: "nagagamit sa pagluluto," "masarap ang lasa ng tubig," "nakatipid sa pagbili ng mineral water," "maayos," "walang problema," "kailangan maingat sa paglinis" (it can be used in cooking, the water from the filter tastes good, we saved from buying mineral water, it is orderly, we did not encounter problems, need to be careful in cleaning).

To speed up the rolling-out of the technology, ITDI produced 10,000 pieces of candle type ceramic water filters. "We sought the cooperation of the LGUs, NGOs, and pottery owners who are now our partners in implementing this project," ITDI Director Nuna Almanzor said. The filters were forwarded to communities with less access to potable drinking water. The project is spearheaded by DOST Region 1 and the ITDI with the support of all DOST regional offices.

Current statistics show that 20 percent of the Philippine population have no access to potable water, 432 municipalities have less than 50% service coverage (waterless municipalities), and about 6,000 premature deaths a year are caused by water-borne diseases. This is despite the fact that the earth is made up of over 70 percent water.

As of press time, roll-out activities are going on in the regions. Further, ITDI is testing clay samples from all regions to find the best suitable material for the water filters. Consultative meetings and assessment are conducted with interested groups or possible adopters. Clay materials have to pass the physical property tests, including water absorption, porosity, shrinkage, bulk density, temperature and flow rate for ceramic water filters. Clay from Regions 1 (Ilocos Sur), III (Tarlac and Aurora), V (Camarines Sur and Sorsogon), VIII (Leyte, Aklan), X (Cagayan de Oro), and XII (South Cotabato) passed said tests and considered as potential materials. Testing is still ongoing in other regions.

The project aims to significantly contribute in attaining the Philippine Millennium Development Goal (MDG) of increasing the country's accessibility rate to potable water of 82.9% in 2007 to 86.6% in 2016.

For those who are interested, please contact Dr. Nuna E. Almazor, Director, Industrial Technology Development Institute (ITDI), DOST Cmpd., Gen. Santos Ave., Bicutan, Taguig City at tel. no. 837-2071 to 82 local 2215, telefax 837-3167, or email-nealmanzor@dost.gov.ph. You may also contact Ms. Elsa Chan, Director, DOST Regional Office No. 1, DMMSU, CET Campus, San Fernando, La Union at telefax no. (072) 700-2372 or email elrechan@dost.gov.ph. You may also visit the nearest DOST regional/provincial office. (With reports from JCelorico, DGotis, & CCandelaria)

VIOLY BALAOING CONOZA





Engr. Bernabe M. Archeta bags the grand prize for the Utility Model Category for his invention titled “A Granulator.” With him are DOST-NCR Regional Director Teresita C. Fortuna (left) and DOST-TAPI Director Edgar I. Garcia (right). (Photo by Henry A. de Leon, S&T Media Service, DOST-STII)



Denver O. Chicano and Acel Pauline B. Ampong-Chicano emerge victorious in the LIKHA Creative Research Category for their work titled “The Process of Producing an All Natural and Hypo-Allergenic Nata de Coco Wound Care Product in an Industrial Scale.” (Photo by Henry A. de Leon, S&T Media Service, DOST-STII)



Christian Oliver Chua wins the Tuklas Category for his “Electroluminescent Panels used for Advertising Promotional Signs.” Chua is the president and chief executive officer of Animated Signs, the only producer of Electroluminescent (EL) in the Philippines. An EL panel is a flexible, paper-thin vinyl material where phosphor crystals with colored dyes are placed between conductors. When electrical current passes through, the crystals start to emit light, thus lighting up the whole panel and creating an illusion of motion. The material is low-cost, energy efficient and environment friendly. (Photo by Henry A. de Leon, S&T Media Service, DOST-STII)

DOST names NCR's best inventors

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

THE DEPARTMENT of Science and Technology - National Capital Region (DOST-NCR) has announced the winners of the 2013 Regional Invention Contest and Exhibits (RICE) for NCR during the awarding ceremony last August 2 at the Technological Institute of the Philippines Gymnasium in Quezon City.

The grand prize winners and NCR representatives to NICE 2014 are: Christian Oliver Chua for the Tuklas Category for “Electroluminescent Panels used for Advertising Promotional Signs”; Engr. Bernabe M. Archeta for the Utility Model Category for “A Granulator”; Denver O. Chicano and Acel Pauline B. Ampong-Chicano under the LIKHA Creative Research Category for “The Process of Producing an All Natural and Hypo-Allergenic Nata de Coco Wound Care Product in an Industrial Scale”;

Louise T. Baquiran, Arnel Calzada, Loida Guzman, Kyle Jerome Jimena, Mark Anthony Susbilla of TIP-QC for the SIBOL Creative Research-College Category for the

research “Utilization of Magnetic Field and Electrofishing in the Development of a Device for Exterminating Knife Fish and Addling Its Eggs”; and Kathleen Ann V. Valad-on, Christine Joy B. Collado, and Kathrina Leigh M. Sepagan of Batasan Hills National High School for the SIBOL Creative Research-High School Category for “Difunctional Shoe”.

The winners will again compete with other RICE winners nationwide to the 2014 National Invention Contest and Exhibits (NICE).

With the theme “Inventions and Innovations for a Smarter Philippines,” the contest cum exhibit is a collaboration between DOST’s Technology Application and Promotion Institute and DOST-NCR. The event serves as a show window for Filipino ingenuity and world-class talent. It is also DOST’s way of recognizing the efforts of professional and student inventors and researchers all over the country.

“Local technology works. We do not have to rely on foreign technology,” remarked Prof.

Fortunato T. dela Peña, DOST undersecretary for S & T services, during the opening ceremony on July 31 as he cited the contribution of Filipino ingenuity to the effectiveness of locally developed technology.

“If we do not lean more toward S&T, we will be left behind,” said Dr. Teresita C. Fortuna, DOST-NCR regional director, during the awarding ceremony. Earlier in her opening remarks, Dr. Fortuna reminded the inventors of their responsibility. “Research is good. But focus on market potential. So develop something that will be of economic significance to the country,” she said.

Usec. dela Peña also expressed his elation over positive developments within the academic community and the government. “I am glad that more and more educational institutions are now getting interested in innovations and inventions. I am also happy to know that some government institutions have adopted policies that are invention-friendly,” he stated.



Host university Technological Institute of the Philippines –Quezon City emerges as the big winner in the SIBOL Creative Research-College Category as its students Louise T. Baquiran, Loida Guzman, Kyle Jerome Jimena, Arnel Calzada, and Mark Anthony Susbilla were named regional champions for their research, “Utilization of Magnetic Field and Electrofishing in the Development of a Device for Exterminating Knife Fish and Addling Its Eggs.” (Photo by Henry A. de Leon, S&T Media Service, DOST-STII)

A total of 143 entries were showcased in the RICE NCR leg this year, posting the highest total among all 16 regions of the Philippines.

Technical fora, games and a press conference were also held during the three-day event at the TIP which attracted a huge crowd composed of students, members of the academe, the press, scientists, researchers, and S&T buffs, among others.

Aside from the grand prize winners, the other winners are:

Utility Model Category - Mardinio P. Azores, Mary Lou C. Azores, Edwin Daluyo, Benjamin F.

Mendoza, Joel Miguel, and Nilo Jerusalem (“MosquitoTrap”, 1st runner-up); Ray G. Ferrera (“Y-Type Tapping Fitting”, 2nd runner-up).

LIKHA Creative Research Category - Christopher M. Coballes (“RoBook Scanner”, 1st runner-up); Maria Patricia V. Azanza and Ma. Elisa V. Obille (“Moderately Fine Shelf-Stable Dried Rice Bran”, 2nd runner-up).

SIBOL Creative Research-College Category—Hazel Anne Gallos of Mapua Institute of Technology (“Fluorescence-Based Detection of HFABP using HFABP- Sensitive hydrogel in vitro study, 1st runner-up); Joyce Marquel M. Bangasan, Michelle Joy A. Bella, Jacky Ortega, Jordan N. Cariño, Laramarie Tara S. Ragadio, Ruben B. Sanchez III, and Christian Kevin Villanueva of Technological University of the Philippines-Manila (“Solar Powered Weather Monitoring System Via Zigbee Technology for TUP Manila Community Using GSM,” 2nd

runner-up); Neil Patrick T. de Villa, Albert Roy Rosario, Lois Anne B. Escapalao, Carmelita G. Esclanda, Calyn Ryan P. Nadua, and Nikko R. Padilla also of Technological University of the Philippines-Manila (“Electronic Circuit Breaker with GSM Application,” 3rd runner-up); Leodegario Sotto, Leonard Pamintahon, Mark Lester Chico, Rex Fuentes, Nestor Balatar, and Jake Vincent Paala of Jose Rizal University (“Development of Solar Powered Cost Efficient Ice Making Machine,” 4th runner-up).

SIBOL Creative Research-High School Category - Ranzel Ricko S. Barcel, Francis Rumen D. Parungao, William Austin C. Gaspi, John Rikk M. Mendoza and Erick Christian Ocampo of Manila Science High School (“Shells of *Perna Viridis* or Asian Green Mussel as Vehicle Exhaust Filter,” 1st runner-up);

Destin Kit C. Manuel, John Christopher M. Ramo, Mharckin Laye F. Rulona of Ramon Magsaysay High School-Manila (“Ballistic Tested Reinforced Abaca Scrunch Lined with Recycled Polyethylene and Plastic Acrylic Sheets as Kevlar Vest;” 2nd runner-up); Jaimar Pol P. Espino, Nathaniel S. Logarta and Richard D. Lumokso also of Ramon Magsaysay High School-Manila (“Designing a Gas and Smoke Sensing Module via Integrated Customized Cellphone as a Pre-Emptive Communication Relay to Reduce Fire Breakouts,” 3rd runner-up) Vanessa G. Jayawon, Jan Carla Z. Corpuz, Christine M. Potenciano, Wynchester E. Palisoc, Ezekiel T. Flores and Joanna Carmela A. Aguila of Manila Science High School (“Cost-Effective Block Detector Device for the Blind,” 4th runner-up).

No winner was declared for the Industrial Design Category.



Top: Kathleen Ann V. Valad-on, Kathrina Leigh M. Sepagan, and Christine Joy B. Collado of Batasan Hills National High School make their school proud by grabbing the top prize in the SIBOL Creative Research-High School Category for their invention called “Difunctional Shoe” (right). This aims to solve children’s health problems associated with flooding. The Difunctional Shoe is an ordinary looking footwear for school, but has an additional protective feature against rains and floods. It has two soles made of rubber and in between is a protective jacket made of polyphenol. This jacket is locked in by a zipper. When used, the jacket can almost cover the entire leg part, thus providing ample protection. These materials are durable and the jacket is also water resistant. (Photo by Henry A. de Leon, S&T Media Service, DOST-STII)

DOST awards best technopreneurs in MIMAROPA



Carmelita Rejano-Reyes, owner of Rejano's Bakery in Marinduque, expresses her deep gratitude to DOST IV-B, during the awarding ceremony for 2013 Best Technopreneur last August 27 at Traders Hotel Pasay City.

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

Rejano's Bakery, a family business that manufactures traditional arrowroot cookies since 1949, was named as 2013 Best Technopreneur by the Department of Science and Technology MIMAROPA Region (DOST IV-B) for the core category in a ceremony held last August 27 at the Traders Hotel.

The award was conferred in recognition of technopreneurs who, through science and technology, improved their business productivity, profitability, employment and overall contribution to the regional economy.

Located in Sta. Cruz Marinduque, Rejano's Bakery, is owned and managed by Carmelita "Mita" Rejano-Reyes. Desiring to solve the problem of inconsistent supply of arrowroot flour, the main ingredient of the cookies, Mita first sought the help of the DOST IV through the Provincial S&T Center in Marinduque. The DOST grant enabled her to acquire processing equipment that made the processing of arrowroot flour easier.

Encouraged by the improvements brought about by innovations through DOST, she again



Carmelita Rejano-Reyes (3rd from left) receives the 2013 Best Technopreneur from DOST IV-B Regional Director Josefina P. Abilay (left) during the awarding ceremonies held at Traders Hotel. With them are Provincial Science and Technology Director Bernardo T. Caringal (right) and entrepreneur and radio personality Dr. Carl E. Balita. *(Photos by Ceajay N. Valerio, S&T Media Service)*

asked the agency for assistance, this time under the Small Enterprise Technology Upgrading Program (SETUP) in 2006. SETUP is DOST's strategy to encourage and assist SMEs to adopt technological innovations to improve their operations and thus boost their productivity and competitiveness.

Under the program, the enterprise went through current Good Manufacturing Practice Training and Audit, and adopted cleaner production technologies which resulted to significantly reducing the LPG consumption by 20 percent, and improving flour production by a whopping 200 percent at the least.

In 2009, the business received another assistance from SETUP to improve packaging and extend product shelf life which increased the product's marketability. The improved packaging enabled Rejano's arrowroot cookies to penetrate the Metro Manila market and boost its sales by 15 percent.

Aside from being a successful enterprise, Rejanos Bakery was also able to provide livelihood to the farmers that supply raw materials for its products.

Meanwhile, the Sama-sama sa Ikaunlad ng Kinabukasan ng ating Pamumuhay (SIKAP), a community organization in Bicas-Bicas, Buenavista, Marinduque, received the 2013 Best Technopreneur for the non-core category. The award is given to the exceptional community based organization in MIMAROPA that were recipients of upgrading support from DOST.

As its livelihood program, SIKAP is into the production of coco sap sugar, which is touted as a better alternative to sugar because of its lower glycemic index.

SIKAP received its training on coconut sugar production from DOST-ITDI. Likewise, the members underwent cGMP Food Safety Management Training. SIKAP was also able to establish a GMP-compliant coconut sugar processing facility and enhanced the product quality through appropriate packaging and labeling materials provided by DOST.

The DOST interventions, paved the way for more livelihood opportunities for the community members. SIKAP provides indirect employment to Tuba gatherers, while housewives in the community were the sugar processors. SIKAP generates an average monthly income of P34,966.



Science department launches MOSES tablet. Dr. Mahar A. Lagmay (right), executive director of Project NOAH (Nationwide Operational Assessment of Hazards), formally introduces the Mobile Operational System for Emergency Services or MOSES tablet during the 2013 National Science and Technology Week. MOSES is a portable computing device that contains online and communication applications vital for disaster risk reduction and management operations. The launch was held during the Metro Manila Disaster Summit in July 23 that gathered local government officials nationwide for the five-day celebration of the National Science and Technology Week 2013. With Dr. Lagmay is Renato Brion, director of the National Capitol Region Office of the Department of the Interior and Local Government. According to Dr. Lagmay, 150 units of MOSES will be distributed to barangays in the National Capitol Region for pilot testing. **(S&T Media Service)**



My Name is ERNA. Developers John Tayag and Karen Tomas of the Emergency Rescue Navigation Application (ERNA) clinch the first prize for the Department of Science and Technology Mobile Application Competition held recently as part of the celebration of the South Luzon Cluster S&T Fair in Tagaytay City. The competition aims to recognize mobile applications that enhance the delivery system in disaster risk reduction and management, climate change adaptation, environment conservation, public health and safety, agricultural production, or even office procedures. By using ERNA, people can notify proper authorities for quick rescue dispatch in case of emergencies. ERNA is also programmed to identify the reported location, an important feature for authorities to be able to verify the area for immediate rescue. DOST Bicol Director Tomas Briñas (left) and DOST Calabarzon Director Alexander Madrigal (2nd from right) award the certificate of recognition and a check amounting to P30,000 for the first prize winners.



DOST Asst. Secretary Raymund E. Liboro with wife Dr. Yasmin Jahala P. Dalugdug-Liboro and their children (from left) Juan Xanti, Sofia Ysabelle, and Zoie Clarisse, with Pres. Benigno Simeon C. Aquino after his oath taking at Malacañang Palace last August 5, 2013.



DOST CHIEF ACTIVATES PROJECT NOAH SENSORS. Some 609 sensors have been installed in various parts of the country, as displayed in the foreground map during the ceremonial switching of sensors for Project NOAH or Nationwide Operational Assessment of Hazards by Science Secretary Mario G. Montejo on July 24, 2013. Before the year ends, the Department of Science and Technology will install at least 1,000 sensors nationwide to boost the disaster preparedness program of the country. Sensors refer to automated rain gauges, automated stream gauges and automated weather stations that beef up the government's disaster forecasting tools. The ceremonial switching of sensors served as one of the highlights of DOST's Expo Science 2013 that ran from July 23-27 at the SMX Convention Center, SM Mall of Asia in Pasay City. **(S&T Media Service)**

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