

Sweet sorghum and pigeonpea nutri-based products showcased



The Vulauan ta Barangay, (VTB-Moldero) based in Barangay Moldero, Tumauni, Isabela, is one successful women organization that can prove that there is money in processing sweet sorghum and pigeon pea.

Funded by the Bureau of Agricultural Research (BAR), under its National Technology Commercialization Program (NTCP), VTB-Moldero is now engaged in processing food products from sweet sorghum and pigeonpea. This was made possible through the project, "Development Utilization and Commercialization of Sweet Sorghum and Pigeon pea Nutri-based Products" which is being assisted by the Isabela State University (ISU) in collaboration with the local government unit of Tumauni. The project aims to promote sustainable production of sweet sorghum and develop viable food and by-products from sweet sorghum to increase livelihood opportunities and farm income

in the rural areas.

"Grains were produced and utilized as flour to supplement cookies/bread making while the extracted juice serves as based material for vinegar and *basi* wine. Special buko pie and cassava cakes are produced using sorghum syrup as sweetener, said Prof. Raul Palaje of ISU.

Barely a year since its implementation, the VTB was able to pay back their loan amounting to P20, 000 used as startup capital. They generated an income of more than P13,000 during the first five months of operation. To date, the organization invested in fruit wine-making sweetened with sorghum juice.

"The project generates small employment for the members who provided labors in the production of baked products and by-products. Other members who participated in selling the products also received 10 percent

incentives of the total profit," shared Prof. Palaje.

The woman organization, with 15 members, produces their raw materials for food products. "The members with available land were required to plant sorghum on a 5-7 rows 25 meters long integrated in their corn plantation equivalent to about 200 sq. m area per member," Prof. Palaje added.

The VTB Moldero serves as model for other municipalities in the dissemination and promotion of sorghum technology particularly to the women sector in nearby towns and barangays.

Technical staff members from the BAR-Technology Commercialization Division (TCD), composed of Ma. Elena M. Garces, Jennilyn Castañeto, and Ethcel Princess H. Patulot visited the site during a conducted Project Monitoring and Evaluation activity on 5-10 September 2011 in Region 2 to assess and document the implementation of the projects including activities and problems encountered.

The group also monitored the DA-BAR-ISU project, "Technology Up-Scaling Program for Selected Crops: Sweet Sorghum and Pigeon Pea," in ISU, Cabagan, Isabela.

Fourteen-hectare land served as the new plantation area for sweet sorghum planted with SPV 422 variety. The proponent added ICP 88039 variety of pigeonpea in June 2011 has been intercropped with corn while in a 2.5 hectare separate area, ICP 7035 variety was intercropped with cacao. To date, studies on the effect of ratooning on yield are being conducted. ### (Ma. Eloisa H. Aquino)

BAR spearheads workshop on Organic Agriculture R&D



Participants of the "Workshop on Planning & Project Proposal Preparation on Organic Agriculture R&D 2011-2016" held in Tagaytay City. Leading the group are: (L-R) Edicio dela Torre of the Secretary's Technical Assistance Group (STAG), Dr. Nicomedes P. Eleazar, BAR director; Dr. Teodoro S. Solsoloy, asst. BAR director; and Dr. Enrico P. Supangco, UPLB vice chancellor for research and extension. PHOTO: NDELROSARIO III

In support to the implementation of RA10068 known as the "Organic Agriculture Act of 2010", the Bureau of Agricultural Research, as the focal agency for organic agriculture research and development (R&D), spearheaded the conduct of the "Workshop on Planning and Project Proposal Preparation on Organic Agriculture R&D 2011-2016" on 21-23 September 2011 at Lake Hotel, Tagaytay City.

The activity aimed to support the conduct of R&D in promoting and developing organic agriculture towards sustainable agriculture in the country. Expected outputs include a finetuned Organic Agriculture R&D Action Agenda and concept notes or capsule proposals on organic agriculture from participating institutions.

BAR Assistant Director Teodoro S. Solsoloy gave the welcome message highlighting the bureau's commitment in

continuously intensifying campaign in identifying, prioritizing, and implementing high impact R&D projects and activities related to organic agriculture. He encouraged participants to actively converse their ideas regarding the prospects, challenges, R&D agenda to fill in the gaps and address concerns on organic agriculture and national development in the country.

Series of presentations followed. Mr. Gilberto F. Layese, BAR Technical Advisory Group (TAG), presented the "Philippine Organic Agriculture Roadmap 2011-2016: Towards Sustainable Food Security (R&D Component)". He mentioned that by 2016, Philippines is envisioned to have a total of 250,000 hectares devoted to organic agriculture and targets/aims to achieve a \$100 million export earning.

Jude Ray Laguna of BAR-Planning and Program Development Division (PPDD) discussed the updates on Organic Agriculture Research. He noted that a total of 718 researches (completed and on-going) on organic

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BAR spearheads...from page 1



Participants are divided according to commodity sector. Group outputs for the Organic Agriculture R&D Agenda and Program include problems, researchable areas/programs, expected outputs, support to R&D and other programs and the possible implementing agencies. In the photo: Dr. Carmencita Kagaoan facilitating the Fisheries Sector.

PHOTO: NDELROSARIO III

agriculture were collected. Joell H. Lales, OIC of BAR-PPDD presented "DA-BAR's Organic Agriculture Research and Development Plans and Program 2011-2016," citing researchable areas on organic agriculture RDE. This was followed by a presentation of Dr. Carmencita V. Kagaoan, head of the BAR-Institutional Development Division (IDD) on the bureau's Institutional Development Grant (IDG). PDDD technical staff members, Cynthia Remedios de Guia and Marinelle Espino presented the "RDE Grant System and Implementing Guidelines" and the particulars on preparing "Detailed Proposal", respectively.

For the workshop proper, Maylen D. Villareal of PPDD and BAR Focal Person on Organic Agriculture activities presented the workshop mechanics.

Participants were divided according to commodity sector (crops, livestock and poultry, and fisheries). Group outputs for the Organic Agriculture R&D Agenda and Program

were presented including problems, researchable areas/programs, expected outputs, support to R&D and other programs and the possible implementing agencies.

The last day of the activity was opened with a message from BAR Director Nicomedes P. Eleazar. He mentioned that DA has allocated P165 M for BAR in support to coordination and implementation of research and development projects and related activities for organic agriculture this 2011. He encouraged participants to submit proposals and said that BAR staff is very much willing to assist in packaging proposals.

Edicio dela Torre of the OSEC-STAG gave an inspirational message. According to him Agri Pinoy is a "set of principles and practices that will popularize Philippine resources to meet Philippine goals in agriculture and fisheries." He encouraged everyone to produce publications on organic agriculture to propely disseminate practices.

Dr. Jose G. Balaoing of Benguet State University for the Crops Sector, Dr. Bernado Umaguig and Dr. Orland Espiritu of Nueva Viscaya State University for the Livestock Sector and Poultry, and Mr. Rene Geraldo Ledesma of National Fisheries Research Development Institute (NFRDI) for the Fisheries Sector presented their respective group's output.

Dr. Oscar Zamora, dean of the UPLB Graduate School and one of the panelists during the workshop, proposed a national program to document the soil changes, agronomic and economic performance of organic rice and vegetable production systems under varying climatic conditions in the country. Other members of the panel were Dr. Blesilda M. Calub and Dr. Enrico P. Supangco of UPLB.

In attendance were 111 participants from Regional Field Units (RFUs), Bureau of Fisheries and Aquatic Resources (RFRDCs), state universities and colleges (SUCs), attached agencies and staff bureaus of DA.

BAR's technical advisers and technical staff were also present to guide and assist during the workshop. ###
(Ma. Eloisa H. Aquino)

Elements of success..from page 18

also be a useful tool in conducting applied research such as the formulation of special coffee blends with high beneficial effects on health.

Earnest efforts

With these career and research milestones, Dr. Mojica is now actively participating in various scientific exhibits, research symposiums, and technology forums as resource speaker and research leader. An awardee of the "Natatanging Indangeño sa Larangan ng Imbensyon" during the Araw ng Indang, Cavite, in 2005, his research competence have also earned him several recognitions from different research institutions in the country.

As the current OIC at NCRDEC, one of the R&D institutions which is also being supported by BAR, he said that his vision by 2016 is the Philippine coffee that is known in the international market just like in the 1980s when the Philippines was among the top coffee producers in the world.

"The success factors in realizing this vision includes strong R&D capability, linkages with R&D and funding institutions such as BAR, and awareness of the real situation of the coffee industry," he asserted.

Going back to where his passion started to emerge, he said that small-scale coffee growers who are in dire need of immediate income could be empowered to alleviate their situation through awareness of their options including appropriate and affordable technologies as well as equipping them with the right farming

skills and tie-up with credit facilities.

At present, BAR has also approved more research grants to CvSU under his research initiatives particularly on the commercialization of the small-scale coffee roaster and strengthening the R&D capability and competency of NCRDEC.

Conquering challenges

Asked about facing challenges and pressing forward, Dr. Mojica said that with the current capability of CvSU and NCRDEC, and through the support of R&D institutions such as BAR, thankfully, funding source is now one less thing to worry about. He said that what is crucial now is how the right

outputs would be delivered on the right time in order to make a real impact in the conduct of research.

Furthermore, with the string of achievements under his belt at a young age, he said that his loyalty remains with the country and his beloved institution, CvSU. He also has something to say about achievements and success and what to do with it:

"Relationships are important. Be careful how you treat and regard all the people you will meet. Do not brag and stay humble," he said.

Indeed, Dr. Mojica started with simple dreams, and all his hard work did not make him lose sight of what seemed to be simple rules to success. ###

BAR, SEARCA...from page 13

Marine Science Institute of UP Diliman. They taught the participants on how to conduct variability assessments.

"Economic Valuation of Climate Risks in Agriculture" was led by Dr. Arvin Vista of the College of Economics and Management (CEM), UPLB. He taught the participants on how to effectively analyze risks through monetary values.

As part of the output, participants were divided and grouped into three based on their respective regions to develop a capsule research proposal using their newly acquired knowledge on climate change adaptation and mitigation in agriculture.

Proposals developed were presented and evaluated by a team of experts led by Dr. Oscar Zamora, dean of the UPLB Graduate School and Dr. Rogelio Concepcion, adjunct professor at the UPLB School of Environmental Science and Management (SESAM). Experts gave their insights and recommendations on each proposal.

BAR-Project Monitoring and Evaluation Division (PMED) Head Ms. Salvacion Ritual also partook in the evaluation of the capsule proposals. She emphasized the importance of feasibility, pragmatism, and relevance of projects proposed to BAR for funding and support. ###
(Leila Denisse E. Padilla)

Garlic...from page 17

etc.). Dr. Castañeda also shared that unlike Taiwan garlic that has lesser to no aroma or flavor at all, when she sautéed two cloves alone, neighbors were quick to detect the smell of her cooking. She also added in pride that no preservatives are included in their list of ingredients.

In this manner, garlic is being promoted and marketed beyond its usual fare, such that even starting out a small business at home is viable by means of this small demo. In fact, part of the project stemmed from the idea of being able to provide additional income as well as introducing a different kind of utilization for garlic outside the aforementioned province. Made up of four major components, the commercialization project ranges from planting and raising garlic, to marketing said crop and its other number

of value-added products: 1) pilot-testing and enhancement; 2) technology promotion and knowledge management; 3) capability building and development; and 4) enterprise development and management.

During the question-and-answer portion of the seminar, after demonstrating how to create noodles, it was found that the recipe is in fact no newfound discovery, nor is it a novelty. In fact, it has long been a popular snack for most in Ilocos Norte, including small eateries.

With projects such as these that aim to promote and further the production and commercialization of what appears to be a simple crop, but in reality, holds far more weight in potential not only for increasing incomes but also

for furthering the lives of our farmers and their families. An additional benefit: garlic grown in our own backyard may be just about able to knock off what the rest of the world has to offer. ###

Sources:

1. Rahman, M.H. *et al.* (2006). Effects of gibberellic acid (GA3) on Breaking Dormancy in Garlic (*Allium sativum* L.). *International Journal of Agriculture & Biology* 8 (1). Retrieved from: http://www.fsublishers.org/ijab/past-issues/IJABVOL_8_NO_1/15.pdf
2. Biosynth (2006). *Plant hormones and growth regulators*. Retrieved from: http://www.biosynth.com/index.asp?topic_id=139&g=19&m=182
3. Ilocos Agriculture and Resources Research and Development Consortium (2011) *Technology transfer and commercialization of GA3 on garlic and other high value commercial crops*. Retrieved from: <http://ilarddec.mmsu.edu.ph/content/view/335/31>



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Dr. Ruel M. Mojica

Elements of success for a young scientist

Miko Jazmine J. Mojica

Know your interest and do not depend on getting opportunities from the institution where you belong. Such was the piece of advice from this dedicated researcher from Cavite State University (CvSU).

Dr. Ruel M. Mojica has accomplished a lot in his young life, from working and teaching in his alma mater after graduating in college to obtaining his PhD degree and post-doctoral fellowship from the University of the Philippines (UP).

Self-starter

Only in his mid-thirties, Dr. Mojica has his hands full from his current responsibilities at CvSU as assistant professor and OIC Director of the National Coffee Research, Development, and Extension Center (NCRDEC), apart from his dedication in conducting researches on coffee.

Dr. Mojica's journey and perseverance in quenching his thirst for knowledge has led many doors to open both for his personal and career growth.

After graduating *cum laude* from his B.S. degree in agricultural engineering from CvSU in 1997, he became a college instructor at the university's Department of Agricultural and Food Engineering (DAFE) and became a licensed agricultural engineer. In 2005, he earned his M.S. in agricultural engineering and a few years after, his Ph.D. in the same field, both from the University of the Philippines Los Baños (UPLB). He was able to build this impressive educational background through winning scholarships from various R&D institutions while his loyalty remained at CvSU.

Not one to get lax from looking for more opportunities to expand his knowledge and expertise, Dr. Mojica found himself looking for a new path to take his passion for continuing education further.

"My graduate thesis adviser encouraged me to continue on expanding my horizon in the area of research. While I was looking for information posted by R&D institutions on the web, I chanced upon the announcement on a call for research proposal under a research fellowship," he recounted.

Nurturing interests

The research fellowship found by Dr. Mojica is under the program of the Bureau of Agricultural Research (BAR) in collaboration with the Natural Sciences Research Institute (NSRI) of the University of the Philippines (UP) Diliman in Quezon City.

The research proposal he submitted initially was an applied research on the development of a batch-type coffee roaster for smallscale roasting which he started to work on during his graduate school years. It is interesting to note how Dr. Mojica developed his interest in coffee and farming which was rooted in his childhood while growing up in a farming community in their hometown in Indang, Cavite.

"Indang is one of the biggest coffee-growing towns in Cavite, and, as a child, I was exposed to the plight of smallhold farmers who are into this supposedly lucrative commodity. The real situation in the farm was they would only earn a meager amount from selling coffee beans, which, if only it is roasted, could command a much higher price in the market. Carrying these thoughts in mind, I was motivated to develop the batch-type coffee roaster during my graduate studies," he explained.

Research breakthrough

This small project would later make a significant potential to increase the income of small farmers without investing too much money on commercial coffee roasters. This heightened Dr. Mojica's interest to develop the technology and make it available to the public. However, his application for

BAR-UP NSRI Research Fellowship would take another interesting turn both for his career path and expertise.

"Since basic research is the priority when I applied for the post-doctoral fellowship, my host scientist at UP-NSRI helped me to develop a new area of research on coffee. This led me to study the influence of roasting on the total phenolic content and antioxidant activity of Philippine coffee," he said.

He pursued this research in 2009 at the UP-NSRI under the postdoctoral research fellowship grant from BAR. A surprising fact was that, according to him, no prior basic research was made locally on Philippine coffee. He said that most of the studies conducted were about the chemical composition of coffee and no literature was available on the total phenolic content and antioxidant activity of local coffee blends. Thus, his study included the locally available varieties, namely, Arabica, Excelsa, Liberica, and Robusta.

After recently completing his research fellowship, he presented the results of his study together with the full support of UP-NSRI and BAR in a public seminar on his research at BAR's Monthly Seminar Series.

"The results of my study under the supervision of my host scientist at UP-NSRI showed that lightly roasted coffee produce the highest amount of antioxidants. The degree of roasting strongly affected both the total phenolic content and antioxidant activity of Philippine coffee. Light roast coffee contains the highest phenols at all tested varieties," said Dr. Mojica.

According to him, this study can

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2011 PhilFIN highlights role of R&D and entrepreneurship in fisheries

Fishing has always been a way of life in the Philippines. With a per capita fish consumption of 32 kilograms of fish a year, fish has been considered to be a staple food for Filipinos. And as demands on fish rapidly grew due to the growing population, widespread technological advances in the fishing industry were generated to increase the ability to fish and make fish more accessible and commercially available for everyone. And as multitude of stakeholders depend on fisheries, including municipal and commercial fishers, canneries, fish markets, and various industries, it is not surprising that fisheries have been developed into a major economic sector. However, as more industries and technologies were created, major fisheries have been deeply exploited, leading to the depletion of the fisheries.

This, then, results to the need for the different stakeholders to come together and be equipped with the recent information on the trends in research and development in the field of fisheries and to combat the challenges and demands being posed to the Philippine fisheries industry.

With the theme, "Research and Entrepreneurship in Fisheries," Philippine Fisheries Institutions Network (PhilFIN) organized "2011 PhilFIN Fisheries Research Forum" in cooperation with the University of the Philippines Visayas (UPV), Central Luzon State University (CLSU), and Bureau of Agricultural Research (BAR) on 22-23 September 2011 at CLSU, Science City of Muñoz, Nueva Ecija.

The two-day forum featured four technical sessions and six plenary paper presentations, sought to address and respond to the current problems faced by the Philippine fishing industry.

Dr. Minda J. Formacion, current president of PhilFIN and chancellor of the University of the Philippines Visayas (UPV), in her welcome remarks, shared to the guests, visitors, and participants the institution's preparations for the annual forum as well as the institution's beginnings. "As an organization, PhilFIN has been, in the past several years, at the forefront in addressing the multi-faceted



issues and concerns in Philippine Fisheries development," she said. Also present in forum was Dr. Ruben Sevilleja, president of CLSU, delivering his message of support.

BAR Director Nicomedes P. Eleazar served as the forum's keynote speaker. In his message he emphasized the role of focused R&D and innovation in addressing the manifold challenges being faced by the fisheries industry. He also mentioned the bureau's role in "identifying workable and effective strategies and technologies that will address the impacts and damages being posed by the changing environment coinciding the growing demand for fish."

He cited some of the projects and research activities being pursued by the bureau to maximize the potential of the country's natural fish resources as well as to provide income to smallscale fishers and their families including two BAR-funded projects under the National Technology Commercialization Program (NTCP), namely: "Herb-Enhanced Smoked Tamban" and "Dilis-Fortified Malunggay Powder".

Dr. Eleazar also talked about the recent pronouncement of the Department of Agriculture (DA) Secretary Proceso Alcala on the use of

"organic agriculture as the best strategy to address some of the pressing problems being faced by the Philippine Aquaculture Industry."

The secretary's pronouncement is in line with the recommended use of organic fish feeds instead of fish meals and the promotion of "mariculture park concept as an integrated and sustainable approach towards a more environment friendly aquaculture."

Highlighting the two-day research forum was the presence of two professors from the College of Life Science of National Taiwan University who discussed two salient topics on fisheries, Dr. Huay-Jen Tsai of the Institute of Molecular and Cellular Biology, who discussed "Transgenic Fish for Biomedical Research and Aquaculture Applications" and Dr. Yen-Ling Song, from the Institute of Zoology, who talked about "Shrimp Innate Immune System."

Also in attendance were heads and staff members of the Regional Fisheries Research and Development Centers (RFRDCs), state universities and colleges (SUCs), Southeast Asian Fisheries Development Center (SEAFDEC), and other DA attached agencies and staff bureaus. ### (Mara Shyn M. Valdeabella)

BAR orients 40 SUCs on R&D thrusts and major programs

To ensure that all agricultural research is coordinated and undertaken for its maximum use to benefit the farmers and fisherfolk, the Bureau of Agricultural Research (BAR) held a two-day “Briefing/Orientation on BAR’s Strategic R&D Thrusts and Major R&D Programs for State Colleges and Universities (SUCs)” on 5-6 September 2011 at the 4/F BAR Conference Hall, RDMIC Bldg., Visayas Ave., Diliman, Quezon City.

The briefing/orientation was attended by 61 participants representing 40 SUCs from all over the country.

Dr. Nicomedes P. Eleazar, director of BAR, delivered the welcome remarks acknowledging the SUC representatives in attendance. In his speech, he mentioned some of the current initiatives and policy directions in terms of prioritizing R&D in agriculture and fisheries and went on by emphasizing the rationale of the briefing/orientation.

According to him, BAR, as the lead coordinating agency for agriculture and fisheries R&D, works hand-in-hand with its key R&D partner-institutions including the SUCs. They have the technical expertise and thus, are capable to implement R&D programs/projects to generate, verify and disseminate appropriate agricultural and fisheries technologies both national and regional.

“SUCs must be informed and be updated on the recent initiatives and directions of DA and BAR for them to be guided accordingly particularly in aligning and packaging project proposals that must be based on the Competitive Research Grant Guidelines set by the bureau. This will also avoid duplication of researches, given that BAR has already crafted the Research and Development



Representatives from 40 SUCs who participated during the briefing/orientation on BAR's R&D thrusts and major programs. PHOTO: RDELACRZ

and Extension Agenda and Programs (RDEAP) — the basis for funding R&D programs/projects,” Dr. Eleazar emphasized.

A series of presentations were conducted to provide the strategic directions, framework, approach, and major programs for R&D. These were: 1) BAR Corporate Plan for 2011-2016, 2) Research, Development and Extension Agenda and Programs for 2011-2016, 3) R&D Grant System and Implementing Guidelines, and 4) Process Flow of Proposal Screening/Review and Monitoring and Evaluation. These presentations provided the SUCs the overall directions and strategies of BAR in harmony with the thrusts and priorities of the Department of Agriculture under the helm of Sec. Proceso J. Alcala.

Also present during the orientation/briefing were BAR key officials who presented the major R&D programs of the bureau, namely: 1) Mr. Anthony Obligado, head of the Technology Commercialization

Division presenting the “National Technology Commercialization Program or NTC,” 2) Dr. Carmencita Kagaoan, head of the Institutional Development Division presenting the Human Resource Development Program and the Research and Development Facilities Development Program, 3) Ms. Julia Lapitan, head of the Applied Communication Division presenting the Scientific Publication Grant or SPG, and 4) Ms. Salvacion Ritual presenting the Evaluation and Monitoring of BAR-funded Projects.

Aside from capacitating the SUCs in proposal preparation, it is also expected that after this two-day activity, they are able to generate and package proposals in line with the BAR priorities and guidelines. To assist them, a series of presentations on project proposal packaging were presented to the SUCs including how to prepare capsule and detailed proposal, budget summary, workplan schedule, logical framework, and project summary.

During the second day, participants were grouped into three: Luzon, Visayas and Mindanao wherein BAR technical staff members were assigned for each group to assist them in the packaging of their proposals and to address immediate inquiries. Selected SUC representatives from Luzon, Visayas, and Mindanao presented their packaged proposals for comments and suggestions. ### (Rita T. dela Cruz)

SUCs must be informed and be updated on the recent initiatives and directions of DA and BAR for them to be guided accordingly particularly in aligning and packaging project proposals that must be based on the Competitive Research Grant Guidelines set by the bureau. ~ Dr. Eleazar

Garlic:

Expanding what we know and what we should

Maria Anna M. Gumapac



Garlic (*Allium sativum*) is a species of the onion genus, *Allium*. It is native to central Asia, is a longstanding staple in the Mediterranean region, and a frequent seasoning in Asia, Africa, and Europe. Its history notes uses that cover both culinary and medicinal purposes. It is the second most widely used cultivated *Allium* after onion.

However, in spite garlic's beneficial effects on storing and human consumption of the cloves, garlic dormancy tends to create problems in physiological and biotechnological experiments. In addition, it has also been reported that dormancy causes cloves of garlic not to grow immediately after harvesting. Now, dormancy can be controlled by a balance between growth inhibitors and growth regulators, particularly Gibberellic Acid (GA3).

GA3 and Garlic

It was found that in onion, both growth inhibitors and gibberellins activities decreased before sprouting, but there was an increase in gibberellins and auxins as soon as sprouting had begun (Rahman, M.H. *et al.* 2006). There are five major classes of plant hormones: auxins, cytokinins, gibberellins, abscisic acid, and ethylene. Gibberellins are derivatives of GA3. There are about 100 different gibberellins but GA3 is the most commonly used form. Seeds that are found difficult to germinate are often treated with GA3 solutions (Biosynth, 2006). According to an article previously published by Castañeda *et al.*, their results concluded that the use of GA3 delayed plant maturity, producing in turn a bigger stem diameter, more leaves, and taller plants as compared with the usual farmers' practice. Also, application of GA3 produced higher yields and net profit due to increased size of products (garlic, onion, watermelon, and squash) (ILARRDEC, 2011).

Garlic in the Philippines

The Ilocos Region is considered the major producer of garlic in the Philippines,

accounting for 65 percent of the country's average total production (14,695.29 metric tons), and has the best comparative advantage of producing garlic due to its: agro-climatic suitability; being the largest producer, with 79 percent of the total hectareage planted to garlic in the country located in Region I; and that Ilocos garlic is favored more by the Filipino consumers compared with imported varieties found in the local market because of its more pungent aroma.

Having signed an agreement with the General Agreement on Tariffs and Trade–World Trade Organization, the Philippines has to produce competitive crops to be able to compete at the forefront of the international market. Thus, the Department of Agriculture (Ilocos Integrated Agricultural Research Center [ILIARC]–Satellite Station II, Batac City) developed a package of technology on garlic in which the produce is comparative with that of the Taiwan variety in terms of size, with similar aroma and pungency as that of the original Ilocos garlic. The aforementioned project had an overall objective aimed at enhancing and sustaining the garlic industry through improved package of production and processing technologies. More specifically, to be able to speed up the commercialization of improved garlic technologies, in order to increase productivity and income of farmers. Said technology included the application of combined organic and inorganic fertilizers, application of bio fertilizers to reduce the use of inorganic fertilizers, and spraying of GA3 and foliar fertilizers with micro elements.

This project's purposes also include being able to sustain garlic production in terms of areas planted, increased yield, enhanced farmers' participation, establishing a garlic processing laboratory to be able to sustain post-production/processing of garlic products, as well as establishing a

firmer structure in terms of marketing and networking for garlic and garlic products. Even more so, to be able to strengthen the link between research, development and extension programs of the government.

Results of this project were apparent when it was noted that the technology increased production and income by 37 percent as compared with the existing practice of farmers.

Garlic beyond its usual fare

Most people in the city may be aware of garlic as a simple ingredient often used for sautéing—in other cases, even used for therapeutic, healing, or medicinal purposes.

But on 13 August 2011, during the 7th Agriculture and Fisheries Technology Forum and Product Exhibit hosted by the Department of Agriculture–Bureau of Agricultural Research (BAR), one of the seminars included a demo on making garlic-enriched *miki* noodles, indicating a potential new trend for the aforementioned crop. Said seminar was held by Dr. Wilhelmina Castañeda, the same proponent who authored the proposal for the project mentioned earlier.

In the seminar, Dr. Castañeda demonstrated how to create garlic-enriched *miki* noodles, along with Dr. Luciana Cruz whom the former introduced as having cooked the ready-to-serve sample. She also shared that the project was made possible by means of the Garlic Technology Commercialization supported and funded by BAR.

As compared with the typical fare of adding garlic into the recipe in order to enrich its flavor and aroma by sautéing, garlic was integrated into the noodles itself. This was done by mixing garlic powder with the flour that is used to create the noodles. It should be noted that garlic powder is but one of the numerous garlic products that also comes from the same region (e.g., garlic pickles, flakes, chips, *polvoron*, *pastillas*, banana-garlic chips,

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More than 100 participants attend seminar on biotech



Dr. Wayne Parrott, a professor at the Department of Crop and Soil Sciences, University of Georgia in Athens, presents a paper titled, "Biotechnology: A Potent Tool for Climate Change and Adaptation and Food Security," at BAR. PHOTOS: RBERNARDO



For the first time in nine months, the in-house seminar of the Bureau of Agricultural Research (BAR) was full to the brim. The convention hall of BAR, where seminars are being conducted, housed more than 100 participants coming mostly from the Department of Agriculture (DA) family, State Universities and Colleges (SUCs) and interested individuals.

Since the start of the year, BAR had lined-up series of talks and presentations given by recognized Filipino scientists as well as experts on their particular fields and discipline. The first semester delved on subjects like organic agriculture, climate change and Geographic Information System (GIS), among others. The primary objective of hosting these seminars is for the research institutions, scientific communities and the academe including line agencies DA to be abreast on the current issues and concerns pertaining to agriculture and fisheries R&D.

For this month and the ninth of its series was a presentation on biotechnology with Dr. Wayne Parrott as resource speaker. Dr. Parrott, a professor at the Department of Crop and Soil Sciences, University of Georgia in Athens, presented his paper titled, "Biotechnology: A Potent Tool for Climate Change and Adaptation and Food Security."

This international collaboration was made possible through Environment, Science and Technology, Health and Energy Specialist Ma.

Theresa N. Villa of the Embassy of the United States of America.

BAR Assistant Director Teodoro S. Solsoloy, in behalf of Director Nicomedes P. Eleazar, welcomed the US Embassy delegation led by Philip A. Shull, agricultural counselor of the United States Department of Agriculture (USDA), Dr. Dovas A. Saulsys of the US Embassy, and the participants in seminar.

Dr. Solsoloy oriented the participants on the BAR 2011-2016 Corporate Plan and the bureau's major R&D thrusts and programs. He emphasized that the national government acknowledges the beneficial impact of safe and responsible use of biotechnology and took the opportunity to acknowledge the efforts of Ms. Villa in making the seminar possible.

Dr. Wayne Parrott, in his presentation, provided a short introduction and background information on the management and type of crop leading to genetic modification. The visiting scientist and plant breeder zeroed-in on genetic engineering and discussed briefly the role of biotechnology, transgenic and GMO in the wide spectrum of food safety and safer environmental platform.

Dr. Parrott concluded and stressed the point that the use of GM crops must not damage the environment. After the presentation, questions and clarifications from the audience were raised and dealt accordingly by Dr. Parrott himself.

The visit of Dr. Parrott in

Manila, Philippines, was part of the United States Department of State's Biotechnology Outreach Program (BPO). This year, the BOP partnered with the Philippines' Biotechnology Coalitions of the Philippines (BCP), the International Services for the Acquisition of Agri-Biotech Application (ISAAA), and League of Municipalities of the Philippines. The BOP recognizes the country's leadership and aims to reinforce the strategic role that the country plays in the region.

Mr. Abraham J. Manalo, executive secretary of BCP, served as the master of ceremony and moderator for the activity.

The BAR in-house seminar is a monthly activity of BAR which is being spearheaded by the Applied Communication Division. The seminar is free and open to the public. ###

(Patrick Raymund A. Lesaca)

The visiting scientist and plant breeder zeroed-in on genetic engineering and discussed briefly the role of biotechnology, transgenic and GMO in the wide spectrum of food safety and safer environmental platform.

Eleazar attends Vitafoods Asia 2011

Director Nicomedes P. Eleazar of the Bureau of Agricultural Research (BAR) attended the Vitafoods Asia 2011 held in Asia World-Expo, Hong Kong on 6-10 September 2011. Joining him was Mr. Anthony B. Obligado, head of the BAR-Technology Commercialization Division (TCD). According to Chris Lee, event director, highlights of the event included: 1) Vita Trend providing market and trends forecast, 2) New Product Zone showcasing over 70 new ingredients and raw materials to help on product development, and 3) EAS Advisory sessions showing free 1-2-1 advice clinics.

The Philippine Association of Food Technologists (PAFT) supported the event as well as other key associations and organizations in the region including the ASEAN Alliance of Health Supplement Associations (AAHSA), Asian Food Regulation Information Service, and Herbs Export Promotion Association of India.

The event debuted in Asia through the AsiaWorld-Expo. Hong Kong served as this year's venue in response to the growing demand for nutraceuticals, functional foods, functional drinks, dietary supplements and nutricosmetics in the Asia Pacific Region. Mr. Lee added that the Asia Pacific is the second biggest global market for functional foods.

"The international set-up of exhibitors attracted Asian visitors with the majority of the audience looking for new products, services and innovations, partners and distributors," Dir. Eleazar said.

Mr. Obligado also shared that the event stakeholders included: manufacturers, distributors, wholesalers, importers and exporters, research and development specialists, retailers, scientists, marketing professionals, purchasers, and product developers.

Participation to this activity coincides with the Department of



BAR Director Nicomedes P. Eleazar (right) and BAR-TCD Head Anthony B. Obligado attend the Vitafoods Asia 2011 in Asia World Expo, Hongkong.



Agriculture's (DA) initiatives to promote indigenous plants for health and wellness. DA, through BAR, launched the Indigenous Plants for Health and Wellness Program (IPHW) in 2007 with the aim promoting indigenous plants for various purposes such as functional food, herbal medicine, and as raw materials for pharmaceutical and cosmeceutical products. The program in an initiative of BAR in collaboration with the Bureau of Plant Industry (BPI) and the University of the Philippines Los Baños (UPLB). The IPHW Roadmap for 2010-2015 was crafted as an output.

Attendance to the event is part

of the project titled, "Capability Building and Comparative Study on Technology Management in Southeast Asia" which aims to strengthen the capacity of DA personnel from the national, regional, and field units on managing technology transfer and commercialization projects. This is in support to DA's National Technology Commercialization Program (NTCP) that highlights research and development (R&D) breakthroughs and mature technologies and serves as a vital tool for the development of enterprises and the improvement of agriculture and fisheries-related industries.### (Ma. Eloisa H. Aquino)

Rimas as staple food crop explored

Known as *rimas* (*Artocarpus altilis*), breadfruit is the common name for this crop – a term adapted from the observation that when cooked, the fruit exhibits a potato-like flavor as that of a freshly baked bread. It belongs to the family of mulberry (Moraceae) including *langka* and *marang*.

Studies on *rimas* revealed that the fruit is high in carbohydrate and energy content, making this crop a possible staple commodity alternative to rice as a staple food, and to wheat, flour, and feed. However, very little data is available on *rimas* in the Philippines. Cultural practices in cultivation and propagation of the crop, even the general knowledge on the possible byproducts of *rimas* is almost nonexistent.

Hence, the hub of the discussion of the “Consultation Meeting/Workshop for the Crafting of Rimas (Breadfruit) Development Program/Roadmap” organized by the Bureau of Agricultural Research (BAR) on 26 September 2011 at the 4/F BAR Conference Hall, Visayas Ave., Diliman, Quezon City.

The workshop aimed at looking into the full potential of *rimas* (breadfruit) as a possible crop that can bring the Philippines to rice sufficiency by the year 2013. One of the outputs of the workshop is the crafting of the “Rimas Development Program/Roadmap” providing blueprint for prioritizing R&D areas on the crop.



Breadfruit

Breadfruit (*Artocarpus altilis*)

“This must be one of the additional crops that we are going to work with. If we only depend on rice as basis for us to become food secure in our country, maybe we will not be able to attain such goals,” expressed Dr. Solsoloy in his opening remarks.

Attending the workshop were participants from the Philippine Center for Postharvest Development and Mechanization (PhilMech), Bureau of Plant Industry (BPI), Marinduque State College, DA-Regional Field Units (DA-RFU), Regional Integrated Agricultural Research Centers (RIARCs) 2, 4A, 5, 6, 7, 8, and 11 as well as the High Value Crops Development Program (HVCDP) regional coordinators.

Invited participants shared their knowledge and experience in propagating *rimas* in their regions. Although most regional representatives did confirm that *rimas* was available in their provinces, uses and propagation differed from province to province. Region 6 for instance, expressed that they have tried different propagation techniques to grow *rimas* and are still not able to produce with consistency. Region 8 on the other hand, shared that they use *rimas* as swine feed.

Identifying problems such as the lack of information on the basic data of *rimas*, available planting materials, propagation techniques, location of existing *rimas* around the country, and cultural practices propelled the use of a problem-based approach in creating the roadmap.

Other components of the approach raised during the workshop were identifying researchable areas, components for R&D, essential support services, and possible implementing agency. The group also suggested a benchmarking project to pioneer the promotion of *rimas* in provinces. Database establishment on available varieties in the Philippines, soil type, climate conditions survivable by the varieties, crop requirements, propagation techniques, and product development were suggested as part of this benchmarking endeavor.

To date, HVCDP's staple food crops and legumes include only banana (saba), root crops, adlai, and soybeans. With the foundations of R&D on breadfruit already put in place through the successful workshop and the dedication of the participants and their respective agencies, *rimas* would soon be part of our arsenal of crops in combatting staple food scarcity in our country, providing an alternative source of possible low-cost carbohydrate for dryland communities throughout the Philippines.### (Zuellen B. Reynoso)

References:

1. Mary Charlotte O. Fresco. 2002. Growing the Fruit of Life. *BAR Chronicle* 3(14). Retrieved October 3, 2011, from http://www.bar.gov.ph/barchronicle/2002/aug02_1-31_growing.asp
2. Purdue University. 2011. Breadfruit. Retrieved October 3, 2011 from <http://www.hort.purdue.edu/newcrop/morton/breadfruit.html>

PHOTO: www.phytomania.com

BAR attends TWG on mango



PHOTO: RDELACRZ

The Bureau of Agricultural Research (BAR) represented by Gian Carlo Espiritu and Wilbert Newton Pollisco attended the Technical Working Group (TWG) meeting on “Mango Inputs and Production Technology” of the National Mango Action Team (NMAT) on 25 September 2011 at the Bureau of Plant Industry (BPI), Manila.

The NMAT is one of the committees under the Committee on Food Crops which is being coordinated by the National Agricultural and Fishery Council (NAFC) with other government agencies and the private sector. The committee was created to address the specific concerns and needs of the food industry in general and in this case the concerns of the mango producers and growers including the farmer-led mango associations.

The TWG meeting chaired by Mr. Antonio Rola was also considered one of the most attended meetings in terms of government representation including BPI Director Clarito Barron, University of the Philippines Los Banos (UPLB) Chancellor Luis Rey Velasco, Dr. Celina Medina also of UPLB, and Regional Executive Director Cipriano Santiago of DA-RFU-4B. Other government agencies including the Philippine Center for Postharvest Development and Mechanization (PhilMech), Department of Science and Technology-Philippine Atmospheric Geophysical and Astronomical Services Administration (DOST-PAGASA), Bureau of Agricultural Statistics (BAS), Fertilizer and Pesticide Authority (FPA), Bureau of Agriculture and Fisheries Product Standards (BAFPS), and DA-RFU4A, were also represented in the meeting.

On the part of the mango growers and processors, the following associations attended as follows, Ricardo Tolentino, president of the Federation of Mango Growers Association of Region 1, Evelyn Garces, president of Mango Growers

Association of Zambales, Bart Duff, executive vice president of the Palawan Chamber of Commerce, and Ramon Mitra III, president of the Mango Growers Association of Palawan. Also present in the TWG meeting were representatives from the United States Department of Agriculture (USDA) and from the pest control firms.

Mr. Tony Chiu of AgriNurture and Mr. Roberto Amores, vice president of the Philippine Chamber of Commerce and Industry were also invited to share their respective and individual experiences being mango growers themselves.

Among the long list in the agenda include the discussions on the “training of trainers” relative to the on-going workshop on mango classifiers being conducted by BAFPS. According to BAFPS, there are already 48 prospective mango classifiers coming from the provinces of Batangas, Oriental and Occidental Mindoro, and Davao City.

The concerns and updates on the pesticide residue monitoring specifically for *chlorpyrifos*, *cypermethrin*, and *profenofos* were reported by BPI-National Pesticide Analytical Laboratory (NPAL), while the BPI- National Mango Research & Development Center (NMRDC) updated the team on their HVCDP funded studies with UPLB on the Philippine Carabao mango.

The FPA, on the other hand, presented the current registration of priority products in mango and the corresponding additional pests needing registration used in controlling pests in agricultural crops. At present, according to FPA, there is no legal registered chemical for control of the mango pulp weevil (MPW).

The updates on mango R&D was reported by Gian Carlo Espiritu. According to Mr. Espiritu, the projects on “Good Agricultural Practices (GAP) for Mango in major producing areas in Luzon” and the “Modification of extended hot water dip protocol as quarantine treatment for mango fruits (UPLB)” were approved. The chair requested to keep the committee updated

on the developments of the projects.

Mr. Amores and Mr. Chiu, both big players in the mango industry, aired their concerns over the low production of mangoes in the country—having an uneven distribution per season of production. The gentlemen cited the fact that Palawan had been reported having roughly 248,000 mature mango trees and the projected harvested mangoes from these trees could possibly supply their local demands and perhaps their export requirements. They both appealed for continuous dialogue between the government and the private sector in ensuring steady supply of mangoes.

Director Barron mentioned the strict implementation of Hongkong government on the quarantine ban for MPW and cautioned the group to prevent repercussion affected countries in the South East Asian regions will be considered for evaluation and is for approval by the appropriate body from the government. Dir. Barron stressed the importance sanitary and phytosanitary as the necessary protocol measures.

Mr. Bart Duff of the Palawan Chamber of Commerce presented the effects of the MPW in the province of Palawan through a yield gap analysis of mangoes from 1990 to 2009 upon the implementation of the quarantine ban. He cited there has been a significant loss in the yield leading to substantial losses in the whole mango industry of Palawan.

Chancellor Velasco and Dr. Medina of UPLB shared the information that for more than ten years now they have been working on the use of x-ray as a non-destructive method of MPW detection protocol. He said that x-ray photographs have shown the levels of damages by the insect—which is the easiest way to evaluate. In addition, not only the damage is detected but also, maturity and fruit fly infestation which depends on the machine's calibration. The calibration depends on the area of study concerned. The machine is housed in Palawan on a detection center from which the budget came from DA through the HVCDP. ### (Patrick Raymund A. Lesaca)

BAR, ATI represent Phil at AFACI Workshop

To capacitate its member countries on sustainable rural development, organizers of the Asian Food and Agriculture Cooperation Initiative (AFACI) convened 20 high-level officials from 11 member countries for the “AFACI Workshop on Rural Development for High-Level Officials” on 22-26 August 2011 in Suwon City, Korea.

Member countries represented included: Korea, Thailand, Nepal, Sri Lanka, Cambodia, Lao PDR, Vietnam, Mongolia, Bangladesh, Indonesia, and Philippines.

Each country was represented by two participants, one from research and another from extension. Representing the Philippine Department of Agriculture (DA) were Dr. Evelyn Aro-Esquejo, assistant director of the Agricultural Training Institute (ATI) and Mr. Joell H. Lales, head of Program and Planning Development Division of the Bureau of Agricultural Research (BAR).

The five-day training workshop was aimed to enable officials from AFACI member countries to be equipped on sustainable rural development through enhanced knowledge creation, sharing, and transfer as well as taking advantage of the strategic partnerships and network development for regional and domestic rural and community development.

AFACI is a multilateral cooperation initiative for Asian countries aimed to foster strategic partnerships across member countries and enhance information and knowledge exchange in support to collectively addressing the need to improve agriculture and food production following the principles of sustainable rural development.

One of the highlights of the activity was a meeting of the Temporary Committee in which Korea and Philippines served as chair and co-chair, respectively. The Committee was specifically created to address the need for an Executive Council which constituency will be formed and

determined. It was agreed that five countries, namely Korea, Philippines, Vietnam, Mongolia, and Nepal, will be represented as members of the Executive Council.

Aside from the lectures and presentations, the participating countries were also toured in various agricultural research institutions at the Rural Development Administration (RDA) and nearby rural villages in Suwon City that exemplify how the practice of Seamaul Undong created impact in the lives of the villagers and in developing the entire communities.

“Most of the rural villagers houses and ways of lives were tremendously transformed in terms of modernized residential design boasting of advanced equipment and even energy saving facilities i.e. use of solar panels to store the sun's energy into alternate source of heat and electricity. The communities were also notable heavily mechanized with modern tractors, advanced greenhouses with internal climate regulating equipment enabling the optimal growing conditions for crops. This facilitates growing of major crops all year round and ensuring steady supply even during winter time,” recalled Mr. Lales.

When asked on his insights and learnings on the activity, Mr. Lales said that, as a whole, “rural development entails the firm and collective commitment among all stakeholders in the agriculture and fisheries sectors. There can be no sustainable national development without ensuring that the very engines and building blocks of

growth which are at the grassroots level are supported and modernized.”

He added that following the Saemaul Undong principles, reform is imperative and thus, and requires mental paradigm shifts. “The present advocacy of the present administration to foster public-private partnership can only be made possible if the institutional roles and commitments are firmed up and clearly defined. This will require strategic partnerships at all developmental levels and most especially at the rural sector. There has to be a robust mechanism that will integrate national efforts anchored on strong political will to steer and provide the much needed stimulus for rural communities to be awakened and mobilized. In such an ideal case, communities should have the strong desire and drive to lead in their own ways the developmental path that they have to trek,” he concluded. ### (Rita T. dela Cruz)



Dr. Evelyn Aro-Esquejo of ATI and Mr. Joell H. Lales of BAR represent the Philippines during the AFACI Workshop on Rural Development. PHOTO: AFACI

BAR equips propagators on emerging production techniques in rubber

As one of the priority crops under the High Value Crops Development Program (HVCDP) of the Department of Agriculture (DA) and considered as one of the most profitable commodity industries, rubber (*Hevea brasiliensis*) is precedence to various research and development (R&D) interventions and capacity-building efforts of the government.

To further equip the propagators and potential growers with knowledge and awareness on the emerging techniques and information in rubber propagation and production, the Bureau of Agricultural Research (BAR) through the Project Monitoring and Evaluation Division (PMED) organized a two-day seminar on “Rubber Seedlings Nursery Establishment and Management in Non-traditional Areas” on 15-16 September 2011 at 4/F BAR Conference Hall, Visayas Ave., Diliman, Quezon City.

The two-day seminar was attended by plant propagators and project implementers from the DA-Regional Integrated Agricultural Research Centers (RIARCs), state universities and colleges (SUCs), local government units (LGUs), Bureau of Plant Industry (BPI), and farmers from Luzon and Visayas areas.

Dir. Romulo L. Cena of Philippine Industrial Crops Research Institute (PICRI) and Prof. Rogelio C. Testado of the University of Southern Mindanao (USM) served as the resource speakers of the seminar.

Mr. Rodolfo L. Galang, BAR coordinator for rubber, presented a report on current activities on rubber research and development (R&D) in the Philippines. In his presentation, he stipulated that there are still a lot of prospects in Philippine rubber industry. Growing domestic and global demand for natural rubber, and increasing price of rubber in the world market are some of the identified prospects that the potential rubber investors can capitalize on.

BAR is tasked to lead the R&D component of the DA's National Rubber Development Program (NDRP) and give support to its extension activities. There are already 3 completed, 4 in pipeline, and 19 on-going BAR-funded projects on rubber R&D.

Another turning point for the

Philippine rubber industry is the creation of Philippine Rubber Research Institute (PRRI) in 2010 which is mandated “to initiate and administer the research and development (R&D) programs to improve quality and increase productivity of rubber especially for the benefit of smallholder rubber producers and processors.”

Meanwhile, one of the pressing issues discussed during the seminar is the lack of planting materials for propagation. The demand for planting materials is increasing and yet there are limited numbers of rubber nurseries and most of these nurseries are concentrated in Mindanao. Those who wanted to engage in rubber planting in non-traditional areas such as Luzon and Visayas are having difficulty in starting due to these impediments.

One of the seen solutions is creating more rubber seedlings nursery. Establishing a personal rubber nursery not only ensure a continuous source of planting materials but also can be a potential source of income. Having a nursery “offers the advantage of producing large number of good and healthy planting materials at the earliest time possible with less expense,” rubber experts concluded.

According to Prof. Testado, there are two types of rubber nurseries: 1) ground nursery – wherein the seedling stocks are sustained from the time the germinated seeds are transplanted from germination bed at which required planting distances to grow for later budding; and 2) polybag nursery – wherein germinated seeds are transplanted into the polybags and allowed to grow for later budding. He advised that it is better to arrange the polybags in single rows to facilitate better growth.

Having a nursery is not simply preparation of the area and planting the seeds, Prof Testado added. Hence, there are factors needed to be considered first before establishing a rubber nursery.



BAR Asst. Dir. Teodoro S. Solsoloy (2nd from right) looks at the participant demonstrating on how to do a proper rubber budding. PHOTO: MGADONG

These are: 1) availability of stable water source, 2) the area must be flat or undulating terrain and must be well drained, 3) for ground nursery – loam soil is ideal with pH of 4.5-6.5, 4) for polybag nursery – loam soil is preferred as soil medium, 5) the area must be open (not shaded) and with fence if possible, 6) the area must be accessible and passable, 7) nursery site, if possible, should be near the area to be developed or planted; and 8) availability of source bush for scions.

It was also shared during the seminar that, in seed selection, it is important to keep in mind that the selected seeds are fresh and shiny. If ever the seeds selected for germination are stale and dull, it is crucial to soak them overnight to improve germination. Seeds that start to germinate or with holes should be discarded. In one square meter germination bed, approximately 2000 seeds can be accommodated.

Aside from the discussion on nursery establishment and management, Prof. Testado lectured on latex harvesting management in rubber and natural rubber processing. He facilitated the demonstration on bud-grafting wherein the participants got a hands-on experience.

Dir. Cena discussed on botany, and physiology of recommended clones in the Philippines, and budwood garden establishment, rubber plantation establishment, and rubber and rubber-based farming system. To further encourage and promote rubber planting to the participants, Dir. Cena parting statement is, “rubber tree is a bank, every drop is money.” ### (Diana Rose A. de Leon)



RFU 7 leads peanut, pigeonpea farmers' field day in Siquijor

Daisy Cartagenas, senior agriculturist and focal person on legumes, DA-CENVIARC, educates farmers and participants about the on-farm trial and the existing legume varieties planted in the area. PHOTO: MMOJICA

Committed to provide farmers the latest results from research and development (R&D), the Department of Agriculture- Central Visayas Integrated Agricultural Research Center (DA-CENVIARC), Regional Field Unit (RFU) 7, led the "Peanut and Pigeon Pea Grand Field Day" in Siquijor Province on 14 September 2011.

The field day is part of the project, "Field Testing of Legume Varieties and Technologies in Selected Regions" implemented in Regions 1, 5, 6, 7, 8, 9, and 10 and funded by the Bureau of Agricultural Research (BAR) in partnership with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The project aims to promote and transfer suitable peanut, pigeon pea, and chickpea varieties and technologies to diversify food production in the country.

Attending the activity were *Siquijodnon* farmers and representatives from various local government units (LGUs) and other partner agencies.

Daisy Cartagenas, senior agriculturist and focal person on legumes, DA-CENVIARC, led the farmers and participants during tour at the on-farm trial lecturing on the existing legume varieties planted in the area.

On-farm trials for various peanut lines in seven regions have been ongoing throughout the country to enable for the sufficient supply of peanut and its by-products. The increasing national demand for the crop propelled the launching of

the projects that would not only increase the supply, but also were aimed to address issues in food security, poverty, and sustainable growth in the Philippines. Other peanut varieties that have undergone adaptability trials and are now proven suitable in the Philippine condition include *Asha*, *Namnama* varieties (UPL Pn 10, NSIC Pn 11, and Pn 14), and *Ilocos Pink* (NSIC Pn 12).

To showcase what Region 7 has so far achieved vis-à-vis the project objectives, Siquijor played host to the grand field day as agreed during the "2nd Semi-Annual Review of the ICRISAT Legume Projects in the Philippines" held in June 2011 in Tagaytay City.

An agricultural province, Siquijor was once one of the highest peanut-producing provinces in the country. An eight-month drought occurring between 1997 and 1998 however discouraged farmers to grow the peanut crop and switched to planting corn instead, resulting to a slight downfall of the peanut industry in the province.

To date, with full support from government agencies including this initiative, the province is again fighting to bring back the thriving peanut industry in Siquijor — making the term "island of healing" more apropos than ever before.

With an available 18,514 ha of agricultural production land, *Siquijodnons* utilize 42 percent of this

area to produce corn and 58 percent divided among fruitcrops, rootcrops, rice, and other crops. Only a few farmers venture into planting peanut for various reasons: some are not well aware of the proper production practices used to effectively plant and harvest the crop; some plant only the farmer's variety, where net income is shown to be very limited; and others though willing, do not have access to planting materials.

"*Mahal ang mani, Php 80/kilo. Sa Cebu, Php 65/kilo lang*," ("Peanut is expensive, Php 80.00 per kilo. In Cebu, it is only Php 65.00 per kilo") said farmer/peanut processor, Mr. Renato Magsayo during his testimony.

Ms. Daisy Cartagenas mentioned, "*Sa farmer's variety, maliit lang ang net income*" ("Farmer's variety generates minimal income").

These are just some of the issues raised during the forum and the field day. Most (if not all) were addressed by the speakers and by the results of the on-farm trial on peanut and pigeon pea, in Simaculong, Lazi, Siquijor.

During the forum, expert plant breeders Rose Mary G. Aquino of the Cagayan Valley Integrated Agricultural Research Center (CVIARC), DA-RFU 2 and Elmer B. Enicola of the Institute of Plant Breeding, University of the Philippines Los Baños (IPB-UPLB) shared with the participants the proper

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BAR, SEARCA hold 3rd batch of climate change training

Severe drought, then incessant rainfall—the cycle goes and it gets worse each year. Given the pertinent impacts of climate change, the Bureau of Agricultural Research (BAR), looks at climate change as one of its priorities in research and development (R&D).

In accordance to the goal of advocating ways on how to adapt and mitigate climate change impacts through agricultural R&D, BAR collaborated with the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) to conduct a series of training to capacitate researchers of the Department of Agriculture and other partner agencies.

The third batch of the "Training on Responding to Climate Change through Research and Development in Agriculture" under the BAR-SEARCA project "Capacity Building on Responding to Climate Change through Research and Development in Agriculture" was held on 6-9 September 2011 in SEARCA, College, Los Banos, Laguna.

Specifically, the training sought to: 1) provide participants with core climate science concepts for them to have a clearer understanding of the climate change phenomenon and its impact on agriculture, forestry, and fisheries; 2) guide participants in identifying areas vulnerable to climate change; 3) provide

tools to measure the extent of risks these areas are exposed to; 4) discuss the concepts, methods, and procedures in responding, primarily adapting to climate change; 5) identify mitigation or adaptation measures to overcome climate change impacts; and 6) provide guidance in consolidating the identified measures into appropriate action plans for implementation.

SEARCA Director Dr. Gil Saguiguit, Jr. opened the activity highlighting on the importance of the training in developing and implementing adaptation and mitigation strategies and schemes against the effects of climate change.

Eighteen participants, 13 from DA-Regional Field Units (RFUs) and five from BAR, attended the training.

The four-day training held six colloquiums that presented concepts and methods that can aid in climate change adaptation and mitigation. BAR and SEARCA invited seven experts from the government and the academe to head these seminars.

"Philippine Climate Change Scenario" was lectured by Dr. Flaviana Hilario of the DOST-Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA). She presented the historical climate condition of the Philippines up to the present, stressing the increasing temperature observed through the years.

"Climate Change Vulnerability Assessment: Concepts, Methods, and Tools" was discussed by Dr. Florencia Pulhin of the College of Forestry and Natural Resources (CFNR), University of the Philippines Los Baños (UPLB). She stressed the importance of identifying the areas that are vulnerable to climate change and the appropriate adaptation and mitigation techniques that should be implemented to minimize the impending harmful effects.

"Managing Risks in Livestock due to Climate Variability" was led by Dr. Severino Capitan of the Animal and Dairy Science Cluster of the College of Agriculture (CA), UPLB. He highlighted the contributions of livestock sector in climate change and he discussed various adaptation and mitigation methodologies like grazing management and livestock management system.

"Managing Risks in Crops due to Climate Variability" was lectured by Dr. Rogelio Concepcion of the School of Environmental Science and Management (SESAM), UPLB. He discussed the impacts of climate change on crop production and pointed loss of organic matter due to increasing temperature as one of the primary impacts.

"Assessing the Risks in Fisheries due to Climate Variability" was discussed hand-in-hand by Dr. Laura David and Prof. Maricar Samson both from the

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Amavel Velasco (2nd from left), BAR coordinator for Region IVA monitors the CPAR project on corn. With her are: (L-R): Marissa Sanchez of the Calamba City Municipal Agriculturist Office; Lucina Africa, study leader, STIARC; and Avelita Rosales, project leader, STIARC. PHOTO: DDELEON

To evaluate the progression of community-based participatory action research (CPAR) projects and its impacts to the farmer-cooperators' socio-economic status, the Bureau of Agricultural Research (BAR) through the Project Monitoring and Evaluation Division (PMED) held a regional monitoring on three CPAR projects in Region 4A (CALABARZON). The projects are being implemented by the Department of Agriculture-Southern Tagalog Integrated Agricultural Research Center (DA-STIARC).

Led by STIARC manager, Digna P. Narvacan and BAR-PMED technical staff, Amavel A. Velasco, three CPAR project sites in Laguna, Batangas, and Cavite were visited. The farmer-cooperators were also interviewed to discern and assess the impacts of CPAR project in their welfare since its commencement to their areas.

The three CPAR projects visited were: 1) CPAR on green corn-yellow corn + cassava + cattle Integrated Farming Systems in Upland Areas in Calamba, Laguna; 2) CPAR on citrus-based farming system (pummelo + vegetables + native chicken) in Rosario, Batangas; and 3) CPAR on organic farming technology for coffee-based farming system (coffee + blackpepper + banana + papaya + native chicken) in Alfonso, Cavite.

The new integrated farming system introduced to the farmer-cooperators of Calamba, Laguna proved to be a profitable investment. Through

CPAR, intercropping yellow corn-green corn with other vegetables such as pechay and amplaya and legumes generated higher profit. Aside from provision of fertilizers, seeds, and pesticides, the project included soil sampling and analysis of farms, hence, bringing forth the importance of soil analysis to the farmer-cooperators. One of the farmer-cooperators narrated that because of doing soil analysis, (which he did not know prior the project) he now used lesser amount of fertilizers in his farm compared before.

Banking on citrus alone, especially pummelo, as cash crop of Rosario, Batangas paved way to the implementation of CPAR. With large market potential, farmers are encouraged to monocrop pummelo. However, there is a long waiting period due to it takes 4-5 years before it bears fruit, hence, no income during these years. Intercropping is one of solutions came up to solve the problem on 'idle period'.

According to Virgilia D. Arellano of STIARC, the CPAR in Rosario does not aim to totally change their farming system but to introduce new crops that will concur to their current farming practices. With this, the farmer-cooperators are intercropping pummelo with squash, eggplant, and hot pepper. Also, raising native chickens is part of the promoted farming system. Aside from that it is not cumbersome to rear native chicken; it can provide additional income to the farmer-

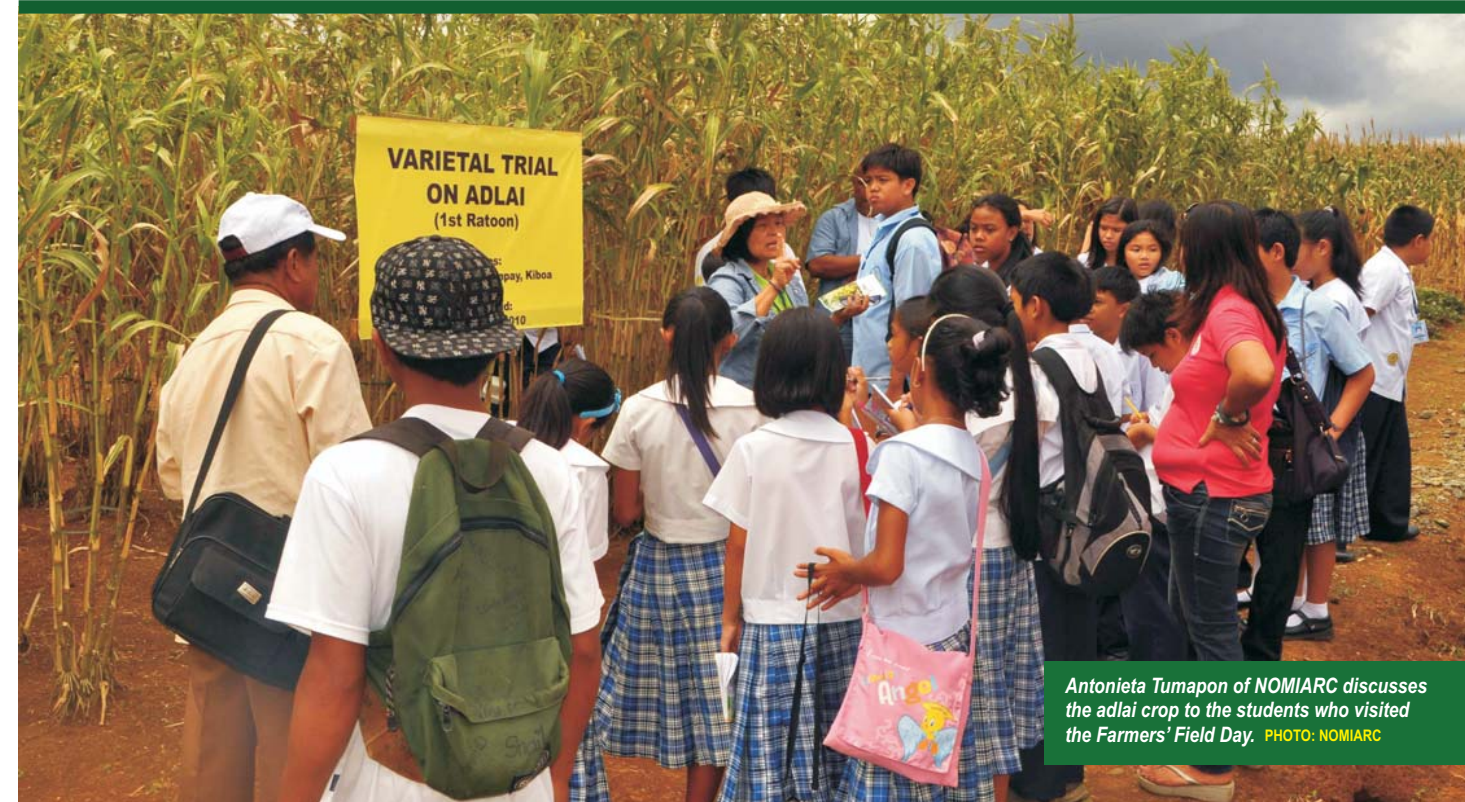
cooperators.

Organic farming is what the farmer-cooperators of CPAR in Alonso, Cavite are proud of. Aside from the improvement of their farming system, CPAR introduced to the farmer-cooperators the concept of vermicomposting. Through their own established vermicompost production area, they are able to supply their own farm with adequate organic fertilizer. One of farmer-cooperators recounted that though organic fertilizer is newly introduced to their farms, promising results are beginning to be visible. One concrete example is the quick bearing of new peppercorn right after it was harvested. They locally called it, 'pahabol'.

Different farming systems, different project sites, different beneficiaries but one thing bound them together, that through CPAR another avenue has opened to lift up their status in life.

CPAR is one of the banner programs of BAR which deals on developing and implementing innovative approach to research and development extension (RDE). This location-specific type of project not only encourages and elicits the community's active participation but also teaches the farmers new ways, techniques and technologies to improve their farming systems.

To date, there are already six on-going CPAR projects implemented by STIARC. ### (Diana Rose A. de Leon)



NOMIARC holds Farmers' Field Day; BAR-supported projects showcased

Thousands of participants consisting of farmers, representatives from government agencies, state universities and colleges, local government units, and private organizations attended the "18th Farmers Field Day and Technology Forum" organized by the Northern Mindanao Agricultural Research Centre (NOMIARC) on 20-22 September 2011 at their 36-ha experimental station in Dalwangan, Malababay City, Bukidnon.

First-hand farm technologies and research results, including research results funded by the Bureau of Agricultural Research (BAR), were showcased in the activity which included guided field tours, technology demonstrations, forums and seminars which allowed the farmers and visitors to learn available technologies that would be best adopted in their farmlands.

"It is a vital strategy for every research center to effectively bring the results of R&D at the grassroot level and one way of effectively doing that is to showcase these technologies and innovations on improved farming practices in the field so that not only they would know but they will learn how to adopt them in their farms," said NOMIARC Manager Juanita Salvani.

Since 1994, NOMIARC has been

annually conducting the "Farmers' Field Day and Technology Forum" to showcase basket of technologies that farmers and stakeholders could benefit from.

This year, NOMIARC featured 53 technologies on rice, corn, vegetables, rootcrops, white potato, coffee, organically grown crops, alternative biofuel plant sources, livestock, among others which are primarily aimed to showcase technologies that would increase productivity and farmers' incomes.

BAR has been closely working with NOMIARC in generating productivity-enhancing and cost-reducing technologies for farmers particularly in Mindanao. Hence, also featured in the farmers' field day are BAR-funded projects including adlai, sweet sorghum, legumes, integrated farming system, and value-adding technologies.

Following the pronouncement of Agriculture Secretary Proceso J. Alcala on promoting alternative staple food crops aside from rice, NOMIARC's farmers' field day adopted the theme: "Staple Food Substitutes: Key to Food Security".

On this end, NOMIARC has

taken on various initiatives to reduce dependency and imports on rice through the introduction and promotion of *adlai* particularly on production management. NOMIARC has an on-going BAR-funded project on the adaptability yield trial of four adlai varieties, namely: *guliaan*, *tapol*, *ginampay*, and *kiboa*. Aside from the production technologies, the Center has also been developing various food products from adlai including wine, cooked/steam, arroz caldo, kutsinta, vinegar, and chowfan.

Adlai (*Coix lacryma-jobi* L.) is a freely branching upright herb that can grow as tall as three feet and propagates through seeds. It comes from the family *Poaceae* or the grasses, the same family that wheat, corn, and rice belonged and is said to have originated in Southeast Asia. The crop is harvested from four to five months after planting.

Attending the opening of the farmers' field day was Agriculture Undersecretary for Field Operations, Joel S. Rudinas, reading a message from Secretary Alcala. In line with the theme of the activity, Alcala emphasized DA's thrust in attaining rice self-sufficiency in 2013. He also promoted on eating alternative staple food crops like sweet potato, cassava, and adlai. ### (Rita T. dela Cruz)

4 CPAR projects in Ifugao monitored

Research and development ventures do not end at implementation. With the goal to supervise and evaluate the performance of its location-specific projects, the Bureau of Agricultural Research-Project Monitoring and Evaluation Division (BAR-PMED) monitored four Community-based Participatory Action Research (CPAR) projects in Ifugao, including Lagawe, Hungduan, Banaue, and Lamut, on 20-23 September 2011.

The BAR team, led by PMED OIC-Head Salvacion M. Ritual and technical staff members, convened with Catherine Buenaventura of the Ifugao Provincial Agriculture Environment and Natural Resources Office (PAENRO) to brief the monitoring schedule and activities.

In Hungduan, a pre-implementation meeting on the CPAR project on rice and *dojo* (small eel-like freshwater fish native to Asia) was held. The group discussed and answered issues raised by the municipal agricultural officers (MAOs) and the member farmers.

According to Ritual, the project was well-planned and in her brief message, stressed the importance of a precisely formed and conducted project in the realization of their goals. Meanwhile, Buenaventura discussed the mechanics of implementing a CPAR

project and suggested for the group to cooperate well with each other to meet success.

Afterwards, the group together with the Hungduan local government unit (LGU) Agricultural Technologist Daisy B. Yogyog visited the Hungduan *dojo* hatchery facility and the rice fields. According to Hungduan MAO, rice production in the area is generally utilized for household consumption since farm-to-market transportation takes long hours. Due to the same reason, only small quantities of rice are delivered and sold to the main market.

In Banaue, Tinawon Farmers Cooperative (TFC) Head Jimmy Lingayo discussed concerns in the CPAR project on organic rice production. The project will start this year and a pre-implementation meeting was recently set.

The provincial local government unit (PLGU) of Ifugao has



Mr. Beda Pasay-an, municipal agriculturist of Lamut (right) assists the BAR team during the visit in one of the tilapia fishpond sites. PHOTO: LPADILLA



The BAR Monitoring Team, led by PMED OIC-Head Ms. Salvacion Ritual (left), holds a brief discussion of schedule and project updates with Catherine Buenaventura (2nd from right), PAENRO project leader. PHOTO: LPADILLA

been very supportive of the project that they provided the milling facility for tinawon rice production. The group visited the rice mill facility. Tinawon rice has a high export demand hence necessitated the CPAR project in boosting its productivity.

In Lamut, the CPAR project on fishpond tilapia production and processing, which started in 2009, was monitored together with Lamut MAO. Afterwards, fishponds of farmer cooperators within the area were visited.

It was found that the fish ponds of CPAR farmer cooperators were not affected by the fish kill that occurred in the past year. This is because of the fish farming technologies that were introduced and implemented through the assistance of BAR. These technologies have been providing aid in fish farming procedures such as fingerling stocking, feeding, and harvesting. It is then hoped that this accomplishment becomes stabilized and disseminated so that more fish farmers will prosper in their industry. ### (Leila Denisse E.

BAR-UP NSRI7...from page 4

Full scholarship or research fellowship for post-doctoral and senior scientists in the field of agriculture and fisheries, a first-of-its-kind in the country, is being offered by the Bureau of Agricultural Research (BAR) in collaboration with the Natural Sciences Research Institute (NSRI), University of the Philippines (UP) in Diliman, Quezon City.

In line with the mandate of the Agriculture and Fisheries Modernization Act (AFMA), and the need to increase the capability of agricultural researchers and scientists in science and technology (S&T) through the conduct of basic research, BAR has collaborated with the UP-

NSRI, which implements this pioneering scholarship grant.

As the research arm of the Department of Agriculture (DA) for all agriculture and fisheries programs, BAR has opened the scholarship grant to deserving researchers and scientists from state universities and colleges (SUCs) and R&D institutions under the National Research and Development System for Agriculture and Fisheries (NaRDSAF).

The grant offers an innovative solution, which answers many of the dilemmas besetting agricultural research and S&T capability of the country, such as:

10 NTCP projects in Region 3 monitored

The Monitoring and Evaluation Team (MET) of the Bureau of Agricultural Research (BAR) composed of technical consultant and staff from the Technology Commercialization Division (TCD) visited 10 projects in Region 3 funded under the bureau's National Technology Commercialization Program (NTCP) for monitoring and review on 19-23 September 2011.

The 10 NTCP-funded projects reviewed were: 1) Establishment of a 100-Doe Level Goat Breeding Farm, 2) Promotion of Protective Cultivation Technology for Organic High Value Vegetable Production, 3) Technology Piloting and Commercialization of Hydroponics for Vegetable Production, 4) Promotion and Commercialization of Carabao-based Dairy Products Toward Village-based Enterprise Development, 5) Propagation of Genetically Superior Water Buffaloes Through Embryo In-Vitro Production (IVP) and Embryo Transfer (ET) Techniques, 6) Production Development and Commercialization of Lowland Mushroom, 7) Commercialization of Moringa: An Industry Investment and Development Program,

8) Initiative to Promote the Production of Sweet Sorghum and its Utilization as Human Food, Animal Feed and Bio-Ethanol, 9) Intensifying the Commercialization of the First Philippine Sweet Tamarind, and 10) Meeh Kita! Goat Upgrading and Production in the Villages.

The MET composed of Virginia Agcopra, Evelyn Juanillo, and Mark Lester Fernando of TCD, the division in charged of coordinating projects under NTCP, ensured that the projects are meeting the objectives in accordance with the approved logical framework, workplan of activities, and budget summary and made recommendations to finetune the project implementation.

The MET also visited the farmer cooperators and the cooperatives involved in the projects. Monitoring was done last on each of the project sites. The proponents gave a presentation on the background/

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cultural management practices and postharvest handling of peanut, respectively.

For the purpose of peanut production training, guest speakers motivated the farmers to continue (if not begin) planting peanuts as other varieties apart from the farmer variety is available (and beneficial) to them. Peanut variety ICGV 99046 for instance, provided the highest possible net income of up to Php 49,000.00 for farmers, as per the result

presented by Daisy Cartagenas of Region 7. The lowest, which is the farmer's variety, showed only Php 4,000.00 for net income.

"Sa aming karanasan, mas maganda [ang proyektong ito] kumpara sa dati naming pamamaraan," ("in our experience, this is better compared with the previous process we used") declared Romer and Lourdes Sumili, farmer cooperators of the "On-Farm Trial on Peanut and Pigeon Pea in Simaculung, Lazi,

Siquijor" during an interview.

"Kung hindi dahil sa mani, wala ako ngayon. Wala akong ibang trabaho" ("Because of peanut, I am here. I would not have any other job"), expressed Magsayo. An experienced peanut farmer, Magsayo shared the story of his blessings made possible by peanut planting. He is one success story that hopefully was able to encourage more farmers to pursue peanut planting, and make better the Philippine peanut industry. ### (Zuellen B. Reynoso)



BAR Monitoring Team, led by Evelyn Juanillo (4th from left) and Mark Lester Fernando (6th from left), during their visit at PAC in Pampanga. With them are Dr. Norman G. de Jesus, PAC director for R&D, and staff. PHOTO: TCD