Cont...

Empowering rainfed agriculture...from page 9

Advocacy starts with people empowerment

As in any advocacy, project activities are carried out by skilled, dedicated, and passionate people. Capacity building, for many years, has been the center of goal-development of any organization or group. It is through this process that change can be brought upon the organization.

Contributing to the advancement of Philippine rainfed agriculture research and development is a joint effort of ICRISAT and BAR by harnessing the capabilities of scientists and researchers from different institutions. A project which was funded by the bureau was organized and implemented to provide additional trainings on rainfed and dryland systems to accommodate more research managers and middle-level managers, and to conduct on-station training in ICRISAT and its satellite facilities with special emphasis on innovations and achievements in the light of prevailing needs and circumstances.

Part of the project is a scientific visit by Philippine researchers to ICRISAT that focused on production management and postharvest technologies, watershed management, seed production and safe seed storage practices, and adaptation innovation and technologies. BAR's focal persons for rainfed agriculture Mr. Gian Carlo Espiritu from the Technology Commercialization Division, Ms. Kris Thea Marie Hernandez from the Project Monitoring and Evaluation Division, and Ms. Maureen Mangaring from the Planning and Project Development Division, participated in the activity.

Impact for the RDE manpower

ICRISAT stands by its mission of reducing poverty, hunger, malnutrition, and environmental degradation in the dryland tropics through partnership-based international agricultural research for development. Complementing BAR's R&D thrusts, this collaboration will surely make a great impact on research, development, and extension of Philippine agriculture as a whole.

The visit was a worthy exposure of the participants to the different technologies that ICRISAT has been successful with in terms of rainfed agriculture, which can also be applied in the Philippine setting such as the technology that ICRISAT developed for the sufficiency of water. The said technology improves watershed management systems that are currently very helpful in somehow relieving climate change effects especially in drylands.

More than the trips and scientific visits to ICRISAT's various technological advancements in the field of agriculture is the inspiration that the participants draw from the exposure to continue the RD&E battles for the continuous improvement of Philippine agriculture. ###

BAR-supported NOMIARC...from page 6

agricultural development, and ensures that new site-specific technologies will be featured. These include new varieties of different commodities such as adlai, corn, upland and lowland rice, legumes, vegetables, and coffee, among others. During field days, visitors are offered diverse activities like guided tours, product exhibition and demonstration, and technology forums to further enhance their appreciation and knowledge on such commodities.

NOMIARC also featured their first ever "Agri-Museum" which serves as a miniature of the 68-ha demonstration plots where the technologies can be viewed in just a 600 sq. m. piece of land. It aims to showcase integrated farming systems on crops, livestock, poultry, and fish to encourage the farmers to do the same in their own farms. ###
(Anne Camille B. Brion)

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Batch 2 of DA-BAR-UPLB Undergrad Scholarship Grant Program awarded

Twelve undergraduate students from the University of the Philippines Los Baños (UPLB) were awarded with scholarship grants by DA-BAR in collaboration with UPLB. Present during the awarding are College of Agriculture Dean Domingo Angeles (top row, 2nd from left), Vice Chancellor for Academic Affairs Oscar Zamora (4th from left), BAR-Institutional Development Division OIC-head Digna Sandoval (5th from left), UPLB Foundation, Inc. Executive Director Cecilio Arboleda (6th from left), and UPLB Chancellor Rex Victor Cruz (7th from left). PHOTO:MVALDEABELLA

The Bureau of Agricultural Research (BAR), in collaboration with the University of the Philippines Los Baños (UPLB), formally awarded 12 UPLB students with Undergraduate Scholarship Grants on 3 September 2013 at the Operations Room, 2/F A.G. Samonte Hall, UPLB, College, Laguna.

The second batch of this year's scholars include eight BS Agriculture and four BS Agricultural Biotechnology students who were found to have excellent school standing despite their financial struggles.

Thoroughly assessed by the DA-BAR-UPLB Screening Committee headed by Dr. Oscar Zamora, UPLB vice chancellor for Academic Affairs, the 12 scholars were encouraged to major in the fields of entomology, soil science, weed science, and plant pathology due to the serious decline in students who choose to major in these fields.

Present during the awarding ceremonies was Dr. Rex Victor O. Cruz, UPLB chancellor. In his welcome address, Chancellor Cruz expressed his utmost gratitude to DA-BAR for being the university's "close partner in ensuring that those who are able to get into UP stay in UP until they finish their degree." He encouraged the awardees to take pride in being a scholar and to use wisely the grant that they will receive. He mentioned that the contribution of DA-BAR to the academe will open opportunities to some of the country's brightest students to finish their program without having to worry on their financial conditions. He also commended BAR for being an active

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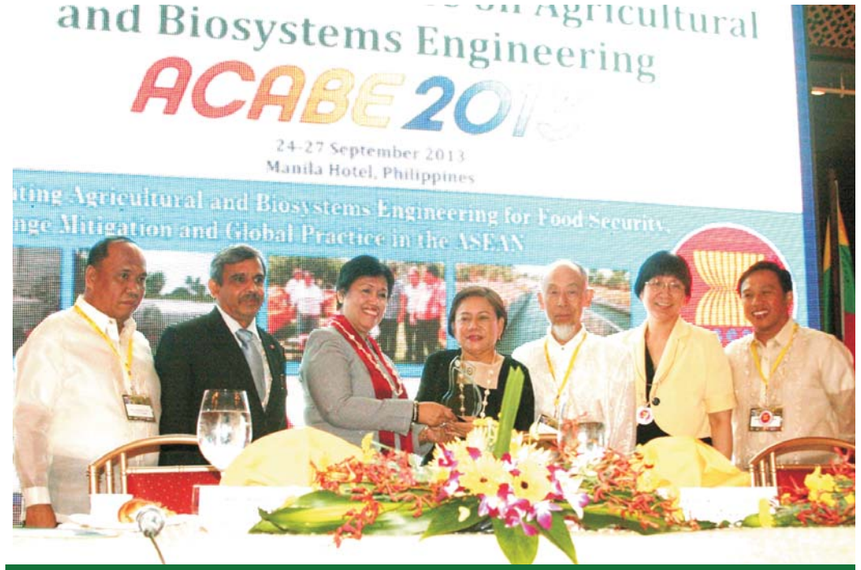
IN THIS ISSUE...

BAR joins 1st ASEAN conference on agri'l and biosystems engineering

The National Agricultural and Fishery Council (NAFC), in collaboration with the Board of Agricultural Engineering (BAE) and Philippine Society of Agricultural Engineers (PSAE), organized the first ASEAN Conference on Agricultural and Biosystems Engineering (ACABE) held on 24-27 September 2013 at Manila Hotel, Philippines.

The international event aims to support the ASEAN Agricultural and Biosystems Engineering Framework for cooperation and complementary action in support to ASEAN food security and climate change adaptation and mitigation. Further, its objectives are to: 1) develop more efficient and safe technologies and facilities that will ensure food security and reduce the adverse impact of climate change; 2) establish a competitive ASEAN Agricultural and Biosystems Engineering education; and 3) institute a competitive ASEAN Agricultural and Biosystems Engineering (ABE) workforce.



Senator Cynthia Villar (4th from left) receives a plaque of appreciation from Hon. Teresita Mananzala (3rd from left). Also in this photo are Board of Agricultural Engineers (BOAE) Chairman Ariodear Rico (1st from left), Director Subash Bose Pillai (2nd from left) from ASEAN Economic Community (AEC) Department, past president of Asian Association of Agricultural Engineers Dr. Makoto Hoki (3rd from right), Hon. Ma. Teresita Daza (2nd from left) from the Department of Foreign Affairs (DFA); and National Agricultural and Fishery Council (NAFC) Executive Director Ariel Cayanan. PHOTO:DA-NAFC

Engr. Ariel Cayanan, executive director of NAFC, gave the opening remarks and emphasized the role of ABE in facilitating sustainability of food sufficiency and global competitiveness. Further, he said that there is a need to strengthen the sector as the region pursues the enhancement of intra-and extra-ASEAN trade and long-term competitiveness of ASEAN's food, agriculture and forestry products.

Prominent guest speakers were also invited during the

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This publication provides regular updates on DA-BAR's activities as the country's national coordinator for agriculture and fisheries R&D. It also highlights features and news articles concerning NaRDSAF-member institutions.

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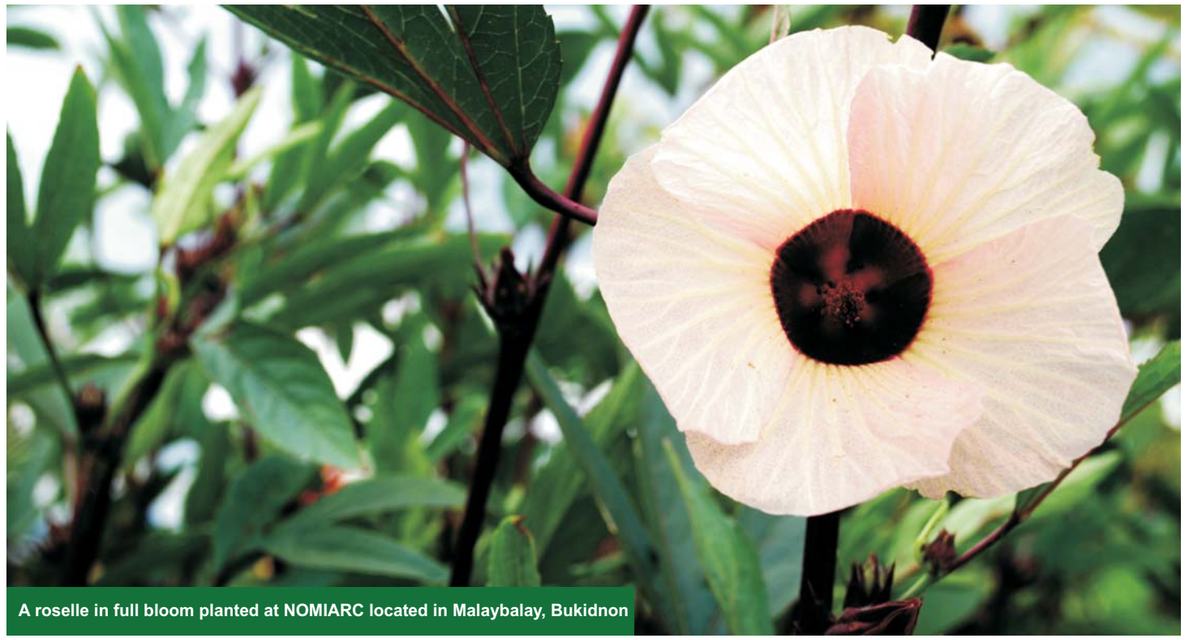

A roselle in full bloom planted at NOMIARC located in Malaybalay, Bukidnon

potential sources of vegetable oils.

Many of its parts are also believed to be of medicinal value. In Guinea, its leaves are used as a diuretic and sedative, while the Angolans found it as a useful remedy for coughs. Its seeds are used for debility in Myanmar and as diuretic and laxative in Taiwan. In the Philippines, its bitter root is used as aperitif and tonic. Additionally, the flavonoids contained in roselle can be used to naturally color foods such as yoghurt and rums.

Various studies in many parts of the world have also been conducted which are aimed at studying the plant's biological activities. Results have showed promising outcomes such that roselle can provide protection from atherosclerosis, and are regarded to possess anticarcinogenic and high antioxidant properties.

NOMIARC, as a research station that believes in the potentials of the plant, is conducting research initiatives to further explore and promote the plant. As of the moment, the station is subjecting their roselle wine for further analysis before making it available to the public. It is also now in the process of submitting a proposal to the Bureau of Agricultural Research (BAR) for product utilization and processing of roselle into products such as tea, jam, and candies. NOMIARC also provides seeds to interested farmers and individuals. ###

For more information, you may contact Ms. Fe Abragan of NOMIARC through nierves_2001@yahoo.com.ph or (088) 230 3147.

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Roselle seeds (above photo) and roselle wines (below photo) showcased during NOMIARC's 20th Farmers' Field Days and Technology Forum

Getting to know the ROSELLE

Story and photos by Anne Camille B. Brion

Products from a certain plant that looks a lot like the gumamela have been constantly featured in different agricultural trade shows and activities. However, many people may still be unaware of what it is, what it looks like, and what benefits it can give to us.

What is roselle?

One of the highlights during the 20th Farmers' Field Days and Technology Forum of the Northern Mindanao Agricultural Research Center (NOMIARC) held at Malaybalay City, Bukidnon was value-adding technologies for different commodities–one of which is wine production technology from the roselle plant. According to Ms. Fe Abragan, a senior agriculturist in NOMIARC, when Department of Agriculture (DA) Secretary Proceso Alcala graced a field day back in 2012, he urged the station to promote roselle. This is in line with the DA's thrust of promoting indigenous plants for health and wellness and recognizing the need to explore the untapped potentials of such plants for them to be fully utilized, promoted, and more importantly to be developed as foods and sources of materials in the nutraceutical, pharmaceutical, and cosmeceutical industries.

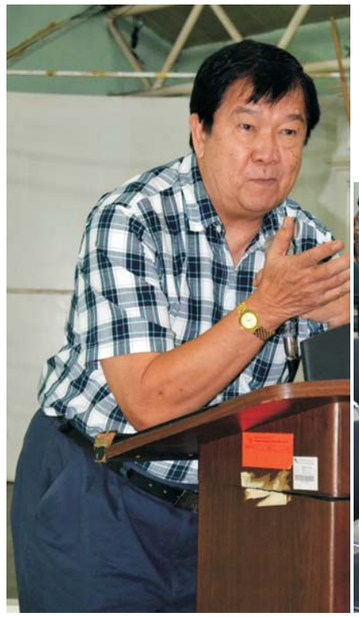
Roselle is included in the book of Dr. Roberto Coronel titled "Important and Underutilized Edible Fruits of the Philippines". In the book, roselle (*Hibiscus sabdariffa*) is described as an erect, branched, herbaceous plant that grows to about one meter high. It bears yellowish or pinkish large flowers and its fruits are enclosed in its large and red fleshy calyx. Roselle was first introduced in the Philippines during the 1900s where it has been cultivated in some home gardens and has adapted well in the country's humid tropical climate.

Regarded as a low input and low maintenance crop, roselle requires less management but is very productive. Maintenance is only through pruning as it easily matures. Reproductive stage occurs in about 4-6 months. It is believed to be beneficial in an intercropping system, especially with legumes. The plant is considered to be an underutilized species that has economic importance and potentials for fruit processing which can provide farmers with alternative sources of food and income.

How useful is roselle?

Many countries in the world have been cultivating roselle for many purposes such as food, fuel, fiber, lipids, and decoration, among many others. It is popularly used in making cooling beverages and wines, and in making delicious desserts such as jams, jellies, puddings, cakes, pies and others. When dried, it is processed into a nutritious tea. Its tender leaves and stalks can also be eaten as a vegetable in salads, or as seasoning for various delicacies. In the country, it was found to be used as a souring agent in dishes such as *sinigang.* The stems are seen as potential raw materials for charcoal making and as sources of bast jute-like fibers. Meanwhile, its seeds are rich in linoleic acid, a fatty acid essential for nutrition, and can be

Cocobless, one of the exhibitors during the 9th Agriculture and Fisheries Technology Commercialization Forum & Product Exhibition organized by BAR, featured roselle products such as red tea. PHOTO:ZREYNOSO



Dr. Rogelio N. Concepcion challenges the R&D sector to come up with researches and technologies that will help stakeholders in adapting to the effects of climate change.

Mr. Joell Lales (right), head of the Planning and Project Development Division, Ms. Cynthia Remedios de Guia, BAR's focal person for climate change (left), and the rest of the BAR staff during the climate change seminar

PHOTOS:DDELEON

BAR staff briefed on climate change & beyond

Mainstreaming climate change is not only about including it in the research and development (R&D) agenda and implementing projects and programs to support it, rather, it also means integrating climate change into the consciousness of the stakeholders.

Given the fact that people in the agriculture and fisheries sector will likely be the most affected by this phenomenon, being equipped with the necessary information to help adapt to its impacts is important.

With this, the Bureau of Agricultural Research (BAR) of the Department of Agriculture (DA) conducted a seminar on climate change for its staff members from the various divisions and units on 17 September 2013.

Led and organized by the Planning and Project Development Division (PPDD), the seminar basically touched on the know-how and updates on climate change, especially its effects and impacts on the agriculture and fishery sector. Keeping both eyes open on the realities of climate change and how it will be used in further beefing up the complementation of climate change-related activities to BAR's R&D programs and projects were the main objectives of the seminar.

"Each of us has to know about climate change" said BAR Assistant Director Teodoro S. Solsoloy in his welcome message. "The key is to communicate effectively to the stakeholders the manifestations of climate change in their lives and how R&D can help them in bearing its repercussions." He added that, "this is seen important as those who will be negatively affected belongs to the agriculture and fishery sectors."

Dr. Rogelio N. Concepcion, climate change expert, served as the invited speaker. In his talk, he emphasized that when discussing about climate change, it is important to focus R&D interventions on adaptation measures rather than to mitigate especially in agriculture and fishery sector. "Climate change is attacking the very integrity of farming systems," Dr. Concepcion said, "in which the whole food value chain will be compromised, and thus, will consequently radiate to global food production, changing the balance between supply and demand." He underscored that in the long run, the traditional knowledge and local practices of the farmers and fisherfolk will no longer be as effective as before due to climate change. If this will happen, R&D will play a critical role in generating new and more effective ways of food production.

His discussion centered on six points: 1) context of climate change and adaptation; 2) some community-oriented research frameworks; 3) science-based tools for understanding and localization of climate change; 4) analysis of temporal and spatial impacts of extreme climate events: on gainers and losers; 5) vulnerability, climate change adaptation and disaster risk reduction: on frameworks, principles, strategies; and 6) traditional knowledge and practices.

Dr. Concepcion is an adjunct professor at the School of Environmental Science and Management (SESAM) at the University of the Philippines Los Baños (UPLB). He is also a climate change technical adviser of BAR. ###

(Diana Rose A. de Leon)

IDG-supported facilities inaugurated during PAC's 39th Foundation Day

Mr. Anthony Obligado (1st photo, 6th from left), OIC head of BAR-Technology Commercialization Division, represents BAR Director Nicomedes Eleazar during the event. He is joined in by Dr. Honorio M. Soriano, Jr. (5th from left), president of PAC, and other faculties of the university in the ribbon-cutting ceremony, and a tour inside the facility led by Dr. Evelyn V. Totaan, chair of the Natural Science Department. PHOTOS:MEAQUINO

With the theme, "Rising Above the Challenges of Universityhood through Agro-Ecological Development," the Pampanga Agricultural College (PAC) celebrated its 39th Foundation Day on 9 September 2013. In line with the celebration was the blessing and inauguration of a newly upgraded/renovated building and other facilities. One of which is the Micro-Biotechnology Laboratory situated at the Institute of Arts and Sciences. The Bureau of Agricultural Research (BAR) supported the acquisition of various equipment under its Institutional Development Grant (IDG) Program.

In a statement, Dr. Nicomedes P. Eleazar, director of BAR, said "we are convinced that enhancing these facilities will encourage more students to get involved in agriculture, and we hope that the said laboratory will help in increasing the competence of students with cutting-edge micro- and biotechnological researches."

Mr. Anthony B. Obligado, head of the Technology Commercialization Division of BAR, and Dr. Honorio M. Soriano, Jr., president of PAC, led the ribbon-cutting ceremony followed by a tour inside the facility headed by Dr. Evelyn V. Totaan, chair of the Natural Science Department, Institute of Arts and Sciences.

The IDG program is facilitated by the BAR-Institutional Development Division headed by Ms. Digna L. Sandoval. PAC and the Commission on Higher Education (CHED) also provided counterparting support.

Other facilities inaugurated and blessed were the Animal Science Building, Jose S. Lapid Gymnasium, Crops Science Building, and Men's Dormitory.

Dr. Emelita C. Kempis, vice president for Research, Extension and Training, officially opened the program at the Bren Z. Guiao Multi-Purpose Center, PAC after which Dr. Soriano shared his message for the occasion.

Meanwhile, Dr. Virginia D. Akiate, director, CHED Regional Office III, served as the keynote speaker in behalf of Hon. Julito D. Vitriolo. She enumerated points in order to realize the full potential of the agribusiness sector in the Philippines. She also encouraged setting up of a coordination mechanism among stakeholders and continuous communication among keyplayers and even with small farmers. "For the medium term, there is a need to dramatically raise investment in research, development and extension system," she said.

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New facilities at the Micro-Biotechnology Laboratory are blessed and inaugurated during the 39th Foundation Day of PAC. PHOTO:MEAQUINO

27.6 metric tons that the Philippines will send to the US this year, which was bought from 272 farmers from the three mountain provinces. The remaining 12.6 metric tons is currently undergoing organic fumigation at the Philippine Rice Research Institute (PhilRice) laboratory in Nueva Ecija. This procedure is in compliance with the strict US sanitary and phytosanitary requisites for importation.

To date, shipments of various heirloom rice varieties to the US has totaled to 97 tons, including the 24.4 tons valued at P1.3 million in 2012. Among the heirloom varieties exported were: *Mountain Violet* of Mountain Province, *unoy* or *jekot* and "ulikan" red grains of Kalinga, and *tinawon, fancy rice* and *diket* of Ifugao.

To assist the upland farmers in sustaining its production, the DA has embarked on various initiatives to preserve organic farming practices in northern Philippine regions and expand overseas markets for indigenous rice varieties. Part of this initiative is the funding and supporting of various research and development undertakings on organic farming in the Cordillera region through the Community-based Participatory Action Research (CPAR) program.

Sustaining heirloom rice with CPAR

Heirloom rice is a special kind of indigenous rice that has been planted by the ancestors of Ifugao and other upland tribes. It is colored glutinous rice that possesses outstanding quality, aroma, texture, color (red, purple or violet), taste, and nutritional value. Most importantly, the heirloom rice varieties in the Rice Terraces are organically-grown. These qualities make the harvest very appealing not only to local consumers but also to foreign buyers.

One of the most popular among these varieties is *tinawon* (local name which literally means "once a year"). True to its name, tinawon is the first rice variety of rice that was widely grown in the Rice Terraces and is grown only once a year.

To sustain this indigenous gem that is thriving in the Cordillera region, the Bureau of Agricultural Research (BAR) supported tinawon production through a CPAR project. Initiated in 2011, it aims to increase the production of tinawon to supplement the export volume of heirloom rice in the US and to sustain the needs of the farmers. Through the CPAR project, farmers were introduced to various R&D interventions on organic production without compensating the increase in yields. They were taught on the use of bio-organic and foliar fertilizers, early transplanting, and proper distancing.

Dr. Catherine Buenaventura, supervising agriculturist of Ifugao's Provincial Agriculture Environment and Natural Resources Office (PAENRO) and CPAR project leader, said that these interventions led to a five percent increase in the production of tinawon rice during the first cycle alone. ###

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CPAR project site on tinawon located in Banaue, Ifugao PHOTOS:ABRION

Present during the ceremonial send-off of organic heirloom rice are (L-R) Pipo Araullo, manager, Expeditors Ocean Freight; Ramon Rivera, warehouse manager; Lamen Gonnay, chairman, Rice Terraces Farmers of Cordillera Cooperative-Kalinga; Jimmy Lingayo, chairman, RTFCC Ifugao; Donald Alubia, chairman, RTFCC Mt. Province; Vicky Garcia of Rice, Inc. (an NGO assisting the coop to be entrepreneurs); Mary Hensly of Eighth Wonder, Inc. (buyer of heirloom rice who assist farmers in marketing heirloom rice to US); and Marilyn Sta. Catalina, director, DA-Regional Field Unit-Cordillera Autonomous Region (CAR). PHOTO:KRESURRECCION/DA-AFIS

CORDILLERA'S HEIRLOOM RICE:
A bright spot in the export market

by Rita T. dela Cruz

PHOTO:RDELACRUZ

Mina-angan, hungduan, ulikan, jekot, diket, and *tinawon*—they can be mistaken as names of people but they're not. They are actually varieties of heirloom rice from the Cordillera region which are now making a niche in the export market and are heading their way to the United States (US) through the efforts of the Department of Agriculture (DA).

According to reports, the US-bound heirloom rice is considered "a milestone in the government's effort to expand markets for premium varieties and promote the rich cultural heritage attached to it." Exporting Cordillera's premium rice will not only provide a bright spot in the world market, but will also help sustain the status of rice terraces as part of the UNESCO World Heritage site.

Preserving a taste, protecting a heritage–this is how the rice growers in Cordillera want the heirloom rice production to be recognized in the world. According to Marilyn Sta. Catalina, director of the DA-Regional Field Unit in the Cordillera Autonomous Region (CAR), who represented Agriculture Secretary Proceso J. Alcala during the ceremonial send-off on 20 September 2013 at the Manila International Container Terminal, "more than profit, we are promoting the rich Cordilleran cultural heritage through this export." She added that the grains represent the best in the Cordilleras, notably the industry and ingenuity of its people, as they are organically grown, and manually harvested and pounded to perfection.

Fifteen metric tons of organic heirloom rice, worth P870 thousand, were sent to the US. These were composed of three varieties: 10 tons of "mina-angan" from Banaue and "hungduan" from Ifugao, and 5 tons of "ulikan" from Pasil and Lubuagan in Kalinga. The volume of premium rice was consolidated by the Rice Terraces Farmers Cooperative (RTFC), in cooperation with Eighth Wonder, Inc., a non-government organization based in the US that helps market products from the Cordillera's rice terraces. DA has been facilitating RTFC's export to the US through Eighth Wonder, Inc. since 2005.

The 15 metric tons premium rice is part of the

In behalf of BAR Director Nicomedes Eleazar, Mr. Obligado receives a Plaque of Appreciation from PAC. PHOTO:MEAQUINO

Former Pampanga Governor Mark T. Lapid shared a message with the crowd. He now serves as the chief operating officer for the Tourism Infrastructure and Enterprise Zone Activity.

Mr. Obligado conveyed the message of Dr. Eleazar. He acknowledged PAC's efforts and initiatives of going beyond the challenges of universityhood. "PAC is anchored on sustainable agro-ecological development including R&D as strong foundations to become a progressive agricultural and academic institution," he mentioned.

PAC officials awarded the Plaque of Appreciation to Dr. Eleazar which was received by Mr. Obligado. PAC acknowledges the significant contribution of BAR to the growth and development of PAC by helping uplift the status and standards of research and extension of the university through the provision of technical and financial support.

Under Republic Act 10605, the PAC was converted into Pampanga Agricultural State University on 17 June 2013. Signed by His Excellency Pres. Benigno S. Aquino III, PAC becomes the first specialized agricultural university in Central Luzon. The university has 4,455 undergraduate students and 522 graduate students for school year 2013-2014.

BAR has been actively working with PAC on various commodity projects. As an R&D coordinating agency, BAR is committed to uplifting the agri-fisheries sector through relevant and responsive technologies generated by its partners. BAR and PAC involved target technology end-users and industry players in carrying-out sweet sorghum-related activities such as the promotion and commercialization of sweet sorghum for food, feed, and bioethanol, in addition to the commercialization of sweet tamarind, moringa, and organically-grown vegetables in the region.

PAC has also led R&D initiatives in developing and commercializing the "Aglibut Sweet Tamarind", the first sweet tamarind registered under the Bureau of Plant Industry–National Seed Industry Council (NSIC). Other BAR-PAC projects are on lotus, adlai, improved ICRISAT-bred pigeonpea, and beekeeping. ### ***(Ma. Eloisa H. Aquino)***

BAR joins 1st ASEAN Conference...from page 2

conference like Dr. Makoto Hoki, former president of the Asian Association of Agricultural Engineers, and Senator Cynthia Villar, chairperson of the Senate Committee on Agriculture and Food.

The Bureau of Agricultural Research (BAR) of the Department of Agriculture (DA) participated in the event by sending delegates from the agency namely: Engr. Ethcel Princess Patulot from the Technology Commercialization Division (TCD) and Engr. Rodolfo Fernandez from the Institutional Development Division (IDD).

BAR also joined in the booth exhibit showcasing its major R&D commodity programs. Information Education Communication (IEC) materials including flyers, brochures, and BAR publications were also distributed to the visitors.

There were 190 participants who visited the BAR's booth area during the four-day event, mostly agricultural engineers from government and private sectors. Some of them were from various state universities and colleges (SUCs), local government units (LGUs), DA, Bureau of Fisheries and Aquatic Resources (BFAR), National Irrigation Administration (NIA), Department of Agrarian Reform (DAR), and Regional Field Units (RFUs).

Other activities in the event included a series of plenary workshops that are relevant to agricultural engineering. ### ***(Liza Angelica D. Barral)***

PAC acknowledges the significant contribution of BAR to the growth and development of PAC by uplifting the status and standards of research and extension of the university through the provision of technical and financial support.

BAR-supported NOMIARC Tech Com Center inaugurated

(inset photo) Leading the inauguration of the Tech Com Center are (L-R) Dr. Maria Luisa Soliven (Central Mindanao University President), Mr. Carmelito Lapoot (NOMIARC Asst. Manager), Ms. Juanita Salvani (NOMIARC Manager), and Mr. Roberto Quing, Jr. (BAR-OIC-Head, Finance Unit).

Taking pride in holding one of the biggest field days among the research stations of the Department of Agriculture (DA), the Northern Mindanao Integrated Agricultural Research Center (NOMIARC) once again led its annual Farmers' Field Days and Technology Forum on 24-26 September 2013 in Malaybalay City, Bukidnon.

This year's theme, *NOMIARC@20: Celebrating Excellence in Research and Development Technology Transfer Strategies,* emphasizes on the value-adding technologies of various agricultural commodities. With this, NOMIARC inaugurated its Technology Commercialization Center funded through the Institutional Development Grant Program of the Bureau of Agricultural Research (BAR). Patterned after BAR's Tech Com Center. "It is an avenue where we can show to the farmers that we can add value to each commodity through processing and utilization which can open more opportunities for farmers to increase their income," said Ms. Juanita B. Salvani, NOMIARC manager.

In behalf of BAR Director Nicomedes P. Eleazar, Mr. Roberto S. Quing, Jr., OIC-head of Finance Unit, delivered the keynote address during the second day of the event. Dr. Eleazar's speech focused on the fruitful and active partnership between BAR and NOMIARC with the collaborative R&D projects being implemented under the two institutions. "As the department's research arm, BAR takes pride in having NOMIARC as one of its active partners in pursuing and taking agriculture and fisheries R&D into a higher level of excellence. Along with other implementing institutions and partner agencies of the bureau, NOMIARC has been very supportive in the conduct of projects and researches under the bureau's banner programs—the National Technology Commercialization Program (NTCP) and the Community-based Participatory Action Research (CPAR)," he said.

For the past two decades, it has been one of the highly anticipated events in the region by farmers, local government units, cooperatives, investors, students, and individuals who are interested to know about the recent developments and latest technologies in the field of agriculture and fishery. "Over the years, we have showcased several technologies about various commodities to share to the farmers the information that we have generated from our researches," said Salvani.

Every year, the station exhibits research results and technology options towards

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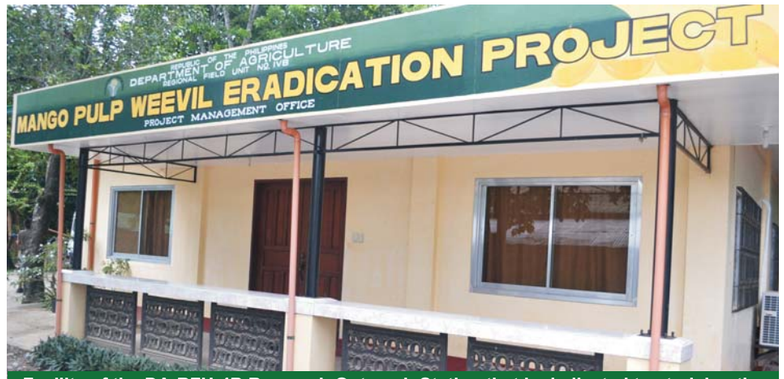
for MPW. It was further recommended that mangoes for export should receive an irradiation treatment. *Gy* is the unit of radiation dose expressed in terms of absorbed energy per unit mass of tissue.

The study of Lorenzana's group won the best AFMA R&D Paper–Applied Research Category during the 23rd National Research Symposium (NRS) conducted by the Bureau of Agricultural Research (BAR) on 2011 October 10-11.

To instigate the effects of MPW in the province of Palawan, a group of researchers based at the Palawan Agricultural Experiment Station (PAES) led by Dr. Lorenzana in collaboration with the Bureau of Plant Industry (BPI), have identified the life patterns of MPW and came up with suggested control measures as follows: 1) sanitation, 2) open center pruning of mango trees at least 25 percent canopy, 3) burning of infested fruits, and 4) use of recommended insecticides to kill the weevils. Dr. Lorenzana said that such measures are still enforced to help purge MPW incidence in the province.

To substantiate the study on MPW, BAR recently funded a research study titled, "Development of Alternative Strategies in Controlling MPW to Enhance Establishment of Pest Free Zone."

A farmer readies to prune a mango tree as part of biological control.



Facility of the DA-RFU-4B Research Outreach Station that is dedicated to studying the physiological characteristics of the mango pulp weevil, as well as biological controls.

The project, which is now on its implementation and experimental stage, is led by Dr. Celina Medina of the Crop Protection Cluster, University of the Philippines Los Baños (UPLB).

Dr. Medina, being the project leader, articulated in her study that the incidence of MPW is a serious problem because of substantial economic losses from its damage, and the barrier it imposes on the local and international market. Research and development (R&D) programs that were done to address this problem so far produced pest management recommendations for the control of MPW and an MPW Detection Center, a screening center facility in Palawan to improve local marketing of mango. However, in spite of such measures, economic losses worsened because control options to manage the pest population at the farm level had variable results consequently discouraging mango growers from producing fruits and using the screening facility.

The project aims to: 1) update the insecticide application protocol for control of MPW; 2) determine the effect of subtle temperature and juvenile hormone active compounds on the reproductive performance of MPW; 3) evaluate the effect of post-harvest treatment and transport practices of mango on physiology of MPW; and 4) investigate the oviposition, survival, and development of MPW in matured fruits of mango.

Moreover, the project was proposed to further improve the present methods of eradicating the pest and to build up on the understanding of its life cycle particularly in late stages of fruit development. Its R&D output then would augment the system in place as these reduce the plague during and after the field production stages of mango.

Whatever the recommended control measures are and efforts to possibly eradicate the said pest completely, the government led by DA in collaboration with other government agencies like the DOST and the local and municipal government not only of Palawan must still ensure and enforce strict eradication and quarantine protocols to avert further damage caused by MPW.

The contribution of the mango industry in terms of full cooperation in this process is vital to ascertain once again the dominant position of Philippine mangoes in the global trade. This dreadful disease can cripple the industry and, if not given proper attention, might be detrimental to the economy as a whole. ###

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Eliminating the menace MANGO PULP WEEVIL

Story and photos by Patrick Raymund A. Lesaca

The Philippine mango ranks as the third most important fruit crop next to banana and pineapple. According to the Bureau of Agricultural Statistics, total mango production in 2011 reached 788,100 metric tons with an estimated value of P18.6 million. The production primarily served the domestic markets, but there were also exports of fresh and processed products including dried fruits, puree, juice, and concentrate. The country is also the main supplier of fresh mangoes to Hongkong and Japan, while various processed products land in the United States, Canada, Japan, Hongkong, and Singapore.

In terms of production, five regions captured nearly 70 percent of the total output in 2010. The biggest producer was the Ilocos Region with about 35 percent output share during that year. It was followed by Zamboanga Peninsula at 10 percent, Central Visayas with 9 percent, while Central Luzon and Cagayan Valley made up the two remaining top regions.

The importance of mango to the economy is its contribution to international trade and commerce. In 2009 for instance, the country exported fresh processed mango products valued at roughly $38 million. The rest consisted of dried puree, juice, and other processed mango products. The leading market volume was Hongkong followed by Japan. (Rolando Dy, et al, 2011)

A mango that is infested with the mango pulp weevil.

Problems besetting the mango industry

In spite of good production, the mango industry faces various problems such as low yield, changing climatic conditions, incidence of pests and diseases, and immature trees, among other factors, thus affecting both local and foreign markets.

One threat that continues to beset the full potential of mango production in the country is the incidence of Mango Pulp Weevil (MPW), scientifically known as *Sternochetus frigidus*.

MPW was first reported in the Philippines sometime in 1987 in the southern-most city of Bataraza in the province of Palawan. It is a major pest of mango and is known to occur in Northeast India, Bangladesh, Myanmar, Malaysia, Singapore, Philippines, and Indonesia (Basio, et al, 1994). This two-century old infestation is practically crippling mango farmers particularly in the southern part of the province and can hamper export potential undertakings.

To develop possible eradication protocols, a research study titled, "Irradiation as a Quarantine Treatment for Mango Pulp Weevil in the Philippine Super Mango," was conducted by Dr. Louella Rowena de Jesus-Lorenzana of the Department of Agriculture Regional Field Unit 4B (DA-RFU-4B), and Glenda B. Obra and Sotero S. Resilva of the Philippine Nuclear Research Institute-Department of Science and Technology (PNRI-DOST).

The study explored the irradiation method of postharvest control for *S. frigidus*. The authors concluded that irradiation treatment with a minimum absorbent dose of 165 *Gy* provides quarantine security

Soybean R&D results featured in AGRI TEKNO DEMO FORUM

In its continuous effort to support initiatives to tap modern technologies produced by various agricultural sectors, the Bureau of Agricultural Research (BAR) participated in the 2nd Year Anniversary celebration of the Agri Tekno Demo Forum (ATDF) on 21 September 2013 at the Philippine Information Agency (PIA) Building, Visayas Avenue, Quezon City.

Gracing the event as honored guest was Agriculture Secretary Proceso J. Alcala who interacted with the farmers during the occasion.

As one of its major R&D commodity programs, BAR featured various initiatives on soybean and its by-products including noodles, coffee, and cookies in the booth exhibit. Information Education Communication (IEC) materials that include brochures and production guides, were distributed to the participants for information dissemination purposes.

BAR also distributed soybean seeds particularly the *PsbSy 2* or *Tiwala 6* variety to the farmers. The Golden Beans Grain Producers Cooperative (GBGPC) showcased their different soybean by-products like taho, milk, and chic-pork soy *longganisa*.

There were 102 participants, mostly farmers and farm enthusiasts, who visited the booth, and 67 farmers received soybean seeds.

According to Ms. Jennilyn Castañeto, BAR's focal person for Soybean Program, their group will monitor the beneficiaries by requiring them to return the same amount of soybean seeds during their harvest. Through this strategy, more soybean seeds will be produced and more farmers will benefit from planting soybean seeds. ###

(Liza Angelica D. Barral)

Ms. Jennilyn Castañeto, BAR's focal person for Soybean Program, facilitates the distribution of soybean seeds to the farmers.
PHOTOS:ACD

Batch 2 of BAR-UPLB Undergrad...from page 1

partner in providing assistance to bright and deserving students of UPLB.

Ms. Digna Sandoval, OIC Head-Institutional Development Division (IDD), representing BAR Director Nicomedes P. Eleazar, gave an overview of the DA-BAR Degree Scholarship Program, which supports not only undergraduate students, but also R&D employees who wish to pursue graduate studies (MS or PhD).

Meanwhile, Mr. Ian Jomari C. Panaga, BS Agricultural Biotechnology student, representing the first batch (2012) of DA-BAR undergraduate scholars, shared how being a scholar has changed his life as a student. *"Ginalingan ko ng sobra kasi pera ng taong-bayan ang ginagamit ko, kailangan suklian natin yun. Last year, ginalingan ko talaga kaya pinalad akong maging University Scholar,"* Panaga said.

Ms. Cris Ann M. Lim, BS Agricultural Biotechnology and one of the 2013 DA-BAR scholars expressed her gratitude to UPLB and BAR for giving them the privilege to be part of the program. She challenged her fellow scholars not to "waste the blessing and make it a tool toward success."

In response, Dr. Domingo E. Angeles, dean of the UPLB-College of Agriculture (UPLB-CA), elaborated the CA's commitment in helping the students complete their program and finish their degree. He also shared how the lack of finances, among other factors, has hindered students from graduating on time. With this, he challenged the scholars to graduate on time and even with honors given the scholarship grant that they have. Dr. Zamora, chair of the DA-BAR-UPLB Undergraduate Scholarship Screening Committee,

Ms. Digna Sandoval gives a brief overview about the scholarship grant. PHOTO:MVALDEABELLA

Makapuno: the good muta

by Leila Denisse E. Padilla


PHOTO:ZREYNOSO

Who would know that mutation can result into something good and beneficial?

Makapuno proves this to be true as it is a mutant coconut with valuable potentials to improve income and competitiveness.

Cognizant of its importance, the Bureau of Agricultural Research (BAR) featured *makapuno* meat products in its seminar series held on 19 September 2013 at BAR. Invited as resource speaker was Ms. Lani Averion, an agriculturist from the Department of Agriculture-Quezon Agricultural Experiment Station (DA-QAES) who discussed the nature and benefits of *makapuno*, its industry status, and its various meat products.

In attendance were representatives from the DA family including the Agricultural Training Institute (ATI), Agriculture and Fisheries Information Services (AFIS), Regional Field Units (RFUs), Bureau of Fisheries and Aquatic Resources (BFAR), and state universities and colleges including the Camarines Norte State College (CNSC), Mindoro State College of Agriculture and Technology (MinSCAT), Palawan State University (PSU), Aurora State College of Technology (ASCOT), and Southern Luzon State University (SLSU).


Ms. Lani Averion of DA-QAES talks about the potentials of *makapuno* meat products and the *makapuno* industry during the BAR September seminar series. PHOTO:LPADILLA

Benefits from the mutant coconut

Makapuno has a genetic aberration which causes its endosperm to be soft unlike the normal coconut. "*Makapuno* is a high-value commercial crop in the Philippines. The price of nuts is 10 times higher than the normal coconut due to its relative rarity," explained Ms. Averion.

As the name implies, *makapuno* means "almost full" describing its filled, white, gelatinous, soft, and translucent endosperm. Given this aberration, *makapuno* does not germinate or grow normally.

"The only way to mass produce [*makapuno*] is through embryo culture…Normal embryos from *makapuno* nuts are rescued for culture in the laboratory using Y3 medium protocol developed by the Philippine Coconut Authority (PCA) and the University of the Philippines Los Baños (UPLB)," the resource speaker discussed.

In the 1960s, Dr. Emerita de Guzman of UPLB developed the first *makapuno* embryo culture, which is now a mature technology that is successfully utilized by several laboratories benefiting coconut farming communities in the Philippines.

Considered a "very lucrative business", *makapuno* farming offers a monthly net income of at least P18,000 to P20,000 per hectare after six to seven years from planting when the full-bearing phase is reached. Despite the costly planting materials, the high income has encouraged more and more farmers and investors to venture in the *makapuno* business.

"There is a high demand of *makapuno* in both the local and foreign markets," Ms. Averion said as she talked about huge ice cream and pastry companies such as Selecta, Magnolia, Jollibee Corporation, and Goldilocks which contribute to the high demand for *makapuno.*

***Makapuno* industry: What lies ahead**

The Department of Science and Technology (DOST) Region IV-A crafted the Makapuno Roadmap in 2010 with the goal that "by 2016, a total of 800 hectares have been planted with *makapuno* to ensure stable supply and to fill the gap of raw materials".

Over 4.2 million kilograms is the demand for *makapuno* each year. And with the current supply of just over 200,000 kilograms per year, only ½ of the demand is covered. Over seven million *makapuno* nuts should be planted in order to fill the supply-demand gap of over 3.9 million kilograms per year. This gap is being filled through productivity improvement projects, and research and development endeavors to attain the goal in 2016.

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Empowering rainfed agriculture RDE workers

by Daryl Lou A. Battad


Staff members from BAR, Gian Carlo Espiritu (1st from left), Kris Thea Marie Hernandez (2nd from left), and Maureen Mangaring (3rd from left), joined by the other participants, during a photo opportunity with ICRISAT scientists in one of their field visits PHOTO COURTESY OF THERNANDEZ

Creating a link between scientific study and practical experience in the community is the driving force for every organization in carrying out capability building activities.

This is true in particular with the India-based International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in the implementation of a collaborative project with the Bureau of Agricultural Research (BAR) that aims to enhance the capabilities of agricultural researchers and scientists towards the development of systems and approaches that would contribute to the advancement of rainfed agriculture in the Philippines.

Rainfed agriculture in the Philippines

According to statistics, three-fourths of the country's 10 million hectares of agricultural lands rely on rainfed agriculture. These are also considered as the most vulnerable among cultivated areas as it goes without irrigation, using only 'rain water.'

For many years, rainfed agriculture has been underdeveloped causing a great deal of effort for the agricultural sector to invest more in the maximum utilization of rainfed areas across the country. Programs have now been implemented to make sure that the potentials of rainfed agriculture in terms of production, efficiency, viability, and sustainability are realized. Researchers are confident that with the right advocacy, coupled with the right implementation, Philippine rainfed agriculture will surely be an impetus to alleviating poverty and hunger most especially in rural areas. Thus, transforming the country's vast rainfed area is called for by the government.

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Various *makapuno* meat products including tarts, macaroons, muffins, macapuno strings and balls, pie, candy, and soap PHOTO:LPADILLA

The versatile *makapuno*

In partnership with BAR, QAES conducted a product development project to create various products made out of the delicious *makapuno* meat. Food products developed include *makapuno* candy, balls, strings, pie, muffin, tart, and macaroons, while the non-food product is *makapuno* soap.

Samples of the food products were given by Ms. Averion to the participants for taste-test. Feedback from the participants was generally positive in terms of appearance and taste. The processing of these products was also discussed in detail.

"Technologies that can be transferred to the communities which will create additional income-earning opportunities must be developed…In the development of such technologies, the interest of the *makapuno* growers and coconut farmers should be considered foremost," concluded Ms. Averion. ###