

BAR joins in AANI's 3rd Pinoy Aquatic Fair

Food production and resource conservation can go together for the sustainable development of Philippine agriculture. This is the basic tenet of the Agri Aqua Network International, Inc. (AANI).

On 10 September 2010, the Bureau of Agricultural Research joined the officers and members of AANI, along with the Bureau of Fisheries and Aquatic Resources (BFAR), Philippine Council for Aquatic and Marine Research and Development (PCAMRD) and Department of Environment and Natural Resources (DENR), and the private sector as represented by the *Pambansang Alyansa ng mga Mangangisda at Pamunuan ng Organisasyon (PAMPANO)*, Greenpeace, Worldwide Fund for Nature, and the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) in a ceremonial signing for sustainable fish farming held at the AANI Herbal Garden and Livelihood Center in Quezon Memorial Circle, Quezon City during the AANI's 3rd Pinoy Aquatic Fair held on 10-12 September 2010.

Gracing the occasion was Assistant Secretary Salvador Salacup of the DA who pledged the support of the Department on the meaningful objective of AANI. Asec. Salacup pointed out that "it is highly fortuitous that the Department has a new Secretary who is a close supporter and disciple of organic agriculture and sustainable development." He praised AANI for leading the private sector in making agriculture a progressive endeavor.

Representatives of the other organizations and agencies also

declared their support to AANI and its vision of "A Sustainable Fish-Farming Philippines", the theme of the 3rd Pinoy Aquatic Fair. The Bureau of Agricultural Research was represented by the OIC of its Applied Communication Division, Mr. Victoriano Guiam, who said, "the Bureau stands with the organization on its concern for the sustainability of fisheries and aquaculture and the sector's ability to contribute to the national economic well-being. With your dedication, this message shall go far and wide."

The opening program culminated with the signing of a huge tarpaulin-mounted manifesto for a sustainable fish-farming in the Philippines. The signatories pledged to carry out the following objectives:

- Enhance productivity and efficiency in fish-farming communities by practicing integrated coastal management and marine protected areas in the Philippines;
- Propagation of breeders from the wild using eco-friendly technologies;
- Initiation of organic aquaculture standards in the country; and
- Adopt an ecosystem-based management in sustainable fisheries, aquaculture, and industrial fisheries for the sustainability of our freshwater ecosystems.

As part of its participation, BAR set up a tarpaulin exhibit of three technologies, developed through BAR-supported projects that have that have

high potential for commercialization. These include blue crab fishing with the use of gillnets (CPAR project of the Regional Fisheries Research & Development Center in Region 3), culture techniques (captive breeding, hatchery and field grow-out methods, and use of brown seaweed for feeding) for sea cucumbers (project of the UP Marine Science Institute in Pangasinan and Zambales), and commercialization of various processed food products from seaweeds (National Seaweed Technology and Development Center of BFAR project in Sorsogon).

Also part of the 3rd Pinoy Aquatic Fair was the radio interview of BAR's Dr. Carmencita Kagaoan and Ms. Ligaya Santos over AM station DWWW on September 12, 2010. They discussed with the hosts of the radio program, *Kaunlaran sa Agrikultura* recent developments in fisheries R&D and mariculture. The hosts were none other than noted farm columnist, Mr. Zac Sarian, and agricultural consultant, Mr. Tony Rola.

After the opening program, AANI hosted a series of free seminars on eco-friendly aquaculture technologies. Various exhibits were also set up by BFAR, BAR, non-government organizations, and the private business enterprises. ###
(Victoriano B. Guiam)

The work of AANI does not stop here but continues its advocacy through knowledge seminars, newspaper columns, radio programs, weekend markets of organic produce, and networking. Their website is www.aaniphil.net.



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Philippines and Brazil forge ties for coffee germplasm exchange

As a follow-through activity to the signed Memorandum of Understanding (MOU) for a collaborative undertaking in agriculture in 2009 between the Philippine's Department of Agriculture (DA) and Brazil, representatives from the DA-High Value Commercial Crops (HVCC) Program, Bureau of Agricultural Research (BAR), Philippine Coffee Board Inc., and Cavite State University undertook a Coffee Study Tour for Germplasm Exchange in Brazil.

The MOU covers the exchange of genetic materials for high value crops like coffee and exchange visits of coffee experts/scientists of the two countries to observe the other's coffee production industry.

Coordinated by the Office of DA Undersecretary for Special Concerns, Ms. Bernadette Romulo-Puyat, in coordination with the Embassy of Brazil, the study tour included visits to the *Instituto Agronomico de Campinas* (IAC) in Sao Paulo, Brazil, different coffee farms owned by big companies (government-owned and private sector), cooperatives and farmers involved in coffee production, as well as consultation meetings and presentations of the respective Coffee R & D programs of individual institutions. This activity was conducted to explore possible areas of future collaboration with IAC in the areas of coffee production and processing, and the exchange of genetic materials for coffee.

"The DA, through the High Value Commercial Crops Program, has identified coffee as one of its priority program crops. Since the Department would like to revive the country's coffee industry, and develop and enhance the country's coffee production, the DA is taking advantage of international agreements to acquire new genetic



PHOTO: RDELACRUZ

materials of other countries like Brazil in order to develop a broader genetic-base for the Philippines' coffee farms that will result to a stable and high yielding coffee industry," Digna Sandoval, Technology Commercialization Unit (TCU) coordinator for crops at the Bureau of Agricultural Research (BAR), said.

The DA, through the HVCC Program, is now undertaking interventions on coffee which include the provision of planting materials and organic fertilizers, conduct of trainings, and distribution of IEC materials. Together with the Philippine Coffee Board Inc., a program was launched, titled "*Pilipinas, Gising at Magkape* Program", that seeks to rehabilitate coffee farms and encourage their expansion in the country.

The DA has also tied-up with Nestle Philippines for the latter to provide trainings on the production of planting materials and on quality processing. In addition, the corporation has worked with DA on mass production of quality coffee seedlings through somatic

embryogenesis.

Brazil has made significant advances in coffee production and has the most complex and modern infrastructure from production to marketing worldwide. Some coffee companies and coffee farms in Brazil have gained awards and distinctions in the world market and recognition as among the best coffee production companies and consideration as world class coffee solution providers.

Brazil's vast collection of coffee genetic materials has a wide range of Arabica species and a

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PHILIPPINES

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BAR aligns strategies with DA

Director Nicomedes P. Eleazar of the Bureau of Agricultural Research (BAR) convened his working force and presented the additional roles and responsibilities of BAR in support to the priority programs of the Department of Agriculture (DA) Secretary Proceso J. Alcala.

Dir. Eleazar enumerated issues and policy directions laid down by the department under the Aquino administration. Rice and its rice program is still one of the top priority programs of and among the key interventions pointed out include: expand areas planted with high yielding variety seeds coupled with location-specific intervention; generate new, rehabilitate and restore existing irrigation areas and provide postharvest facilities.

DA has already identified and mapped out specific measures to enhance support investments and interventions in the area of irrigation, rural road, fish ports, trading center, postharvest facilities, technology research and development, extension, and high quality genetic materials.

BAR comes in at the technology research and development, which is one of the interventions mentioned. According to Dir. Eleazar, BAR's marching order is to speed up agriculture and fishery development through R&D.

"We need to align our given mandates to run in parallel with the R&D agenda and programs of DA, in particular, our compliance with Republic Act 10068 or the Organic Agriculture Act of 2010 and strengthening our position on the mitigating and adaptation strategies on Climate Change RDE as one of our priority areas."

Specifically on Organic Agriculture, BAR is tasked to lead and coordinate the formulation and implementation of unified and integrated organic agriculture research and development and extension (RDE) plans and programs from the national down to the field level. As the focal agency for Organic Agriculture RDE, BAR's assigned tasks under RA 10068 must be in harmony with its mandate and commitment to consolidate, strengthen, and develop the agriculture and fishery R&D system for the purpose of improving its effectiveness and efficiency.

On the issue of climate change, BAR has recently drafted the RDE

Program on Climate Change which is included in the Research and Development and Extension Agenda and Program for 2011-2015. Conduct of researches will focus on mitigating climate change and improving the adoptive capacity of farmers and fisherfolk. The RDE program on climate change includes both the short and long term adaptation and mitigation strategies with specific R&D activities and interventions on agriculture and fisheries.

The bureau chief also emphasized that BAR is already implementing such interventions through its Community-based Participatory Action Research (CPAR), one of its flagship programs. Currently, BAR has 117 CPAR projects being implemented nationwide creating impact at the farming and fishing communities. From the 117 projects, 110 are devoted to agricultural production while seven are on fisheries development. Dir. Eleazar added that in attempt to empower the fishing

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Philippines...from page 1

representative range of Robusta. They are now looking into future sustainability and increasing the competitiveness of the Brazilian coffee industry.

Coffee Center Research Program of the IAC Center

Brazil's IAC center was created to provide agronomic support to the Brazilian coffee sector, generate and transfer scientific knowledge to agriculture, aims to optimize plant production systems and foster sustainable socio-economic development.

The germplasm bank has a representative range of Robusta coffee and a wide range of Arabica species. It also maintains in the field 15 of the approximately 100 species of *Coffea* genus, constituting a natural reserve of genes resistant to pests and diseases. The reserves generated 62 cultivars of Arabica coffee duly registered in the National Cultivar Protection Service and which are being adapted to a wide range of growing conditions in Brazil.

The IAC Center is very much willing to provide the Philippines with the coffee cultivars suited to Philippine conditions as long as the Philippine Delegation will take charge of the requirements for importation of seeds/planting materials and the application of their recommended production technology.

"For R&D, one important aspect to look at was genetic improvement to generate cultivars resistant to pests and diseases (leaf miner and nematodes) and



cultivars with naturally low levels of caffeine," Ms. Sandoval said. Another important product of improvement on *C. canephora* generated was the *Apoata* cultivar suitable for use as a rootstock which is resistant to nematodes and found to be compatible with all *Arabica* coffee cultivars. The development of hybrids of Arabica and Robusta coffee, called "Arabustas", are characterized by good yields, strength, and resistance to coffee leaf rust and cup quality superior to that of the *Robustas* and may constitute an option for cultivation in warmer regions.

The Center supports a program on small-scale growers to promote their social and economic inclusion and identify the

technological demands in the State of Sao Paulo. The program also is into the establishment of an inter-regional input-output model relating the coffee production and industrialization sectors.

The study group also visited private coffee companies and coffee farms. These included the Monte Alegre Farm, Ipanema Coffees, Fazenda Santa (Areado, Minas Gerais), and COCAPEC (Franca, Sao Paulo).

The different coffee farms visited were all mechanized and well-equipped from production to post harvest up to marketing. The companies market their coffee product locally and internationally. ### (Digna L. Sandoval and Ma. Eloisa H. Aquino)

BAR aligns...from page 2

communities, there is now a shift from "fish hunting to fish farming" which also gives importance to sustainable production.

Meanwhile, the National Technology Commercialization Program (NTCP), another flagship program of BAR, calls to ensure that transformation of agriculture and fisheries from resource-based to technology-based industries. It highlights R&D breakthroughs and mature technologies generated and developed by R&D institutions. As a testimony of support and confidence, newly-appointed Director Leandro Gazmin of the Agribusiness and Marketing Assistance Service (AMAS) recently visited BAR particularly its R&D Technology Commercialization Center and was presented with some of the technologies already developed. ### (Patrick R.A. Lesaca)



heat until it reaches to a brix of 74-76%. The cooked syrup is cooled off immediately to prevent burnt taste and dark brown color. Lastly, it is bottled and labeled, and it's ready to market. A liter of it is sold for 160 pesos, more expensive because only 20-25% syrup is recovered from the raw juice.

Unlike vinegar and syrup, the processed sweet sorghum juice is a lot easier to make, only involving juice extraction, filtration, and pasteurization—and yes, it's ready for packaging! Name coined from the source, “2S” juice comes with a variance of flavors—banana, *pandan*, and apple—to refresh and quench the thirst of curious drinkers.

The cooperative is also working on perfecting the production of sweet sorghum jam, which Arcangel referred as “discovered by accident,” resulting after vegetable oil was unintentionally added to the syrup they were making.

Fueling food products commercialization

According to Engr. Arcangel, the product line is making its way to the market while waiting for the approval from the Bureau of Food and Drugs (BFAD). Aside from vinegar, syrup, and juice, they were also making cookies, pops, and flour.

Currently, they're working on penetrating deeper to the local market by improving the packaging—the “silent salesman”—of these products to increase their appeal and acceptability considering that sweet sorghum is almost unfamiliar to the Filipino taste buds.

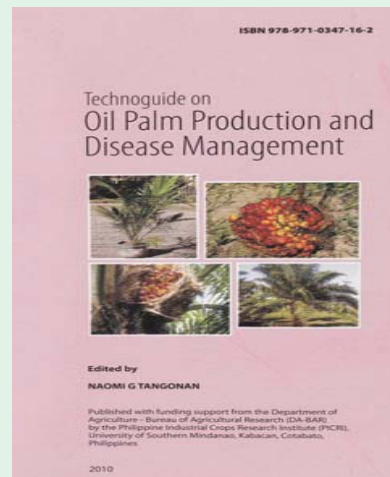
The list of different food products from sweet sorghum is getting longer. And since the crop thrives well in some areas in the country, this is seen to be a key in opening opportunities for agro-industrial development in the country, posing as well the potential to commercialize such products to both



local and foreign markets.

Having its name carved clearer as a “no-waste” crop, who would still say it's just the fuel that matters? ###

BAR funds technoguide on oil palm production



According to USM, oil palm is trading high in the world and domestic markets, and is now reputed as the university's highest agribusiness commodity earner. The techno guide contains compiled information about oil palm production and management, climate and soil requirements, diseases of oil palm and their management, and control of diseases of oil palm, among others.

Oil palm is a high value industrial crop in Mindanao. It grows

best in the provinces of Sultan Kudarat, Basilan, and Agusan. The technoguide cited the most common occurrence of diseases in oil palm-producing municipalities of Sultan Kudarat include curvularia leaf spot, anthracnose, pestalotia leaf spot, and leaf blight. Moreover, majority of the farmer-respondents in Sultan Kudarat planted the Tenera hybrid due to its high yield, resistance to pest and diseases, and high economic return compared to the native one.

Some pointers in oil palm production and management found in the handbook includes the following:

- Oil palm is not grown in altitudes above 600 meters above sea level (2,000 ft)
- Success of oil palm plantations and high performance of the palms are closely linked to the use of high-quality planting material, good nursery management, proper field planting techniques, correct management of the young planting, and the selection of the best soils and environmental conditions to grow the crop.
- Plantations can be started with 4-6 month-old seedlings as long as the seedlings are well grown. Ten to twelve-month seedlings are the usual planting materials used. These are sturdy and easily survive field conditions.
- Fertilizers are to be spread immediately surrounding the base of the palm to ensure fertilizers are available to the roots of the palm then covered lightly with soil.
- Empty fruit bunches are good source of organic fertilizers such as potassium, nitrogen, phosphorus, magnesium, and calcium.
- Pruning some parts of the plant aims at improving structural integrity, influence flowering, and fruiting. The only pruning that most palms need is occasional removal of dead and unnecessary fronds. ### (Miko Jazmine J. Mojica)

For more information about the technoguide, you may contact Dr. Tangonan through her email address ngtangonan@gmail.com.

Interest of farmers and potential investors increasingly heighten as oil palm production is considered as a sunshine industry in Southern Philippines.

The “Technoguide on Oil Palm Production and Disease Management”, published by the Philippine Industrial Crops Research Institute (PICRI) in University of Southern Mindanao (USM) edited by Dr. Naomi G. Tangonan and through the funding support from the Bureau of Agricultural Research (BAR), was launched during BAR's National Technology Forum and Exhibition held last August 2010 at SM Mega Trade Hall, SM Megamall, Mandaluyong City.

Plant nutrition increases farmers' productivity and sustainability- experts



PHOTO: MMOJICA

With the continued increase in world population and environmental damage, providing the needed food and fuel becomes a more critical concern which, according to agricultural scientists, can be aided by efficient plant nutrition or nutrient management, a process used by farmers to manage the amount, form, placement, and timing of the application of nutrients which can be found in fertilizers.

Officials from the International Plant Nutrition Institute (IPNI), a not-for-profit, science-based organization with a focus on agronomic education and research support, recently visited the Bureau of Agricultural Research (BAR), the R&D arm of the Department of Agriculture (DA), to promote R&D on responsible management of plant nutrition for the benefit of farmers.

Dr. Thomas Oberthur, Director, Southeast Asia Program based in Penang, Malaysia, and Dr. Adrian M. Johnston, Vice President and Asia Group Coordinator, based in Saskatoon, Canada represented IPNI to commend the progress of the Site-Specific Nutrient Management (SSNM) for corn program, a collaborative program of IPNI and the Department of Agriculture (DA) thru DA-BAR and explore other areas where the DA and IPNI can work together.

“We actively disseminate information on best management practices (BMPs) for fertilizer use. We encourage the concept of applying the

right product, at the right rate, right time, and right place. The two main crops we are focusing right now are palm oil and maize. We take pride in our available publications such as books and manuals on these,” Oberthur said.

“We are only a small organization but we have 30 scientists worldwide with doctoral degrees. Our mandate is to conduct R&D on plant nutrition for farmer's profitability and sustainability. Our goal is to practice ecological intensification of cropping systems,” Johnston said.

According to the International Federation of Organic Agriculture Movements (IFOAM), ecological intensification optimizes the performance of ecosystem services such as pest and disease regulation, soil fertility, and nutrient cycling, among others.

However, IPNI admitted that

they have yet to focus on organic agriculture as they work on nutrients regardless if the source is organic or not.

BAR Director Eleazar and Dr. Gina Nilo of the Bureau of Soils and Water Management (BSWM), part of the TWG on SSNM, on the other hand, emphasized the importance of integrating organic agriculture in nutrient management since this is one of the priority programs of the government.

In the country, the programs on SSNM both for rice and corn has been supported and implemented nationwide to enable farmers to adjust fertilizer use to fill the deficit between the nutrient needs of a high-yielding crop and the nutrient supply from naturally-occurring indigenous sources, including soil, crop residues, manures, and irrigation water. ###

(Miko Jazmine J. Mojica)

“We actively disseminate information on best management practices (BMPs) for fertilizer use. We encourage the concept of applying the right product, at the right rate, right time, and right place. The two main crops we are focusing right now are palm oil and maize. We take pride in our available publications such as books and manuals on these. ~ Oberthur

Experts conduct impact evaluation of BAR's R&D projects under DFIMDP

Commissioned experts from the Institute of Strategic Planning and Policy Studies (ISPPS) of the University of the Philippines Los Baños-College of Public Affairs (UPLB-CPAf) led by Dr. Agnes Rola, conducted a seminar to the officers and technical staff of the Bureau of Agricultural Research (BAR) on the results of the impact and evaluation of R&D projects supported under the Diversified Farm Income and Market Development Project (DFIMDP). The group of Dr. Rola also presented the assessment of funded projects to the DFIMDP's objectives of strengthening the market competitiveness of agriculture and fisheries in the Philippines.

Evaluation of R&D projects was done in three phases. The first phase involved analysing the scope of funds used in terms of project types funded, status of implementation, and geographic locations and cost of projects. In the second phase, 33 projects, from the 200 provided by BAR were chosen to assess the implementation procedures adopted and to understand the significant contribution of said projects in



PHOTOS: RDELACRUZ

Dr. Agnes Rola (right) addresses inquiries from BAR staff after the presentation of the results of their impact evaluation. PHOTO: RDELACRUZ

strengthening the market competitiveness of the Philippine agriculture. Projects were chosen based on their market orientation, representing crops, livestock and poultry, and the fisheries. The third and last phase was the formal evaluation of the seven projects which the experts deemed as ready for commercialization and were completed at the time of assessment.

The projects sampled or chosen showed strong contributions to the objectives of enhancing the market competitiveness of the agriculture and fishery sectors. Evidences of significant contribution were in terms of increased farm incomes, increased in business opportunities for investors and increased in non-farm jobs. Secondary effects were also shown to be beneficial to the environment and human health.

The evaluation team, on the other hand, proposed to disseminate the Competitive Research Grant Manual (CRGM) to researchers and other stakeholders in what ever form or medium available and further recommended to utilize modern methods such as the *ex ante* analysis of projects in the research prioritization; sustained nurturing of the scientists doing basic research, but with the aim of bringing the science product to the market; support for researchers doing commercialization activities such as assistance in their compliance to the regulations in the food and fertilizer sectors; more policy research of commercialization especially on public- private sector partnership; and enhancing the interdisciplinary and trans-disciplinary approaches to the project implementation.

The Diversified Farm Income
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The seven projects were:

- Enhancing the Availability of Quality Planting Materials for Promising Local Purple Yam (*Discorea alata*) Entries of Benguet State University (BSU).
- Polyculture of Milkfish (*Chanos chanos*) and Rabbitfish (*Siganus guttatus*) in Sea Cage of DA-BFAR Region 11.
- Coir Dust-based Bio-organic Fertilizer Comprehensive Technology Development and Product Commercialization of Philippine Coconut Authority (PCA) Region 11.
- Promotion and Commercialization of High Value Vegetable Crops in Ormoc of LGU- Ormoc.
- Promotion and Commercialization of Carabao-based Dairy Products Towards Village-based Enterprise Development of Philippine Carabao Center (PCC).
- Community-based Development of a Production and Marketing System for the Philippine Native Chicken in Western Visayas of DA-RFU 6.
- IPM Strategies in Mango Growing Areas of Western Visayas of DA-RFU 6.

SWEET SORGHUM: It's NOT just the fuel

Story by:
ANGELITO A. PAGUIO, JR.
Photos by:
NICANOR B. DEL ROSARIO III

The coin has been flipped, revealing the other side. "It's not just the fuel," it says there. Like a coin, every matter has two or more sides of its own, but because of the emerging concern for renewable sources of energy, sweet sorghum has been more popularly branded for being an excellent source of biofuel. Even so, it is also a source of food, feed, and fertilizer. That's why it is dubbed as "F4 crop."

Fuel production, however, calls for thousands of hectares of sweet sorghum plantation. Moreover, putting up a distillation plant costs millions and requires continuous supply of water. It can therefore be hinted that bio-ethanol and bio-diesel production from the crop is not yet so soon to be achieved.

While the realization of extensive biofuel production is still premature, farmers are trying to make the most out of the acreage of sweet sorghum they planted.



Products from sweet sorghum: vinegar, syrup, and juice

Recognizing the said fact, a group of investors from Batang, Pangasinan, and Mindanao (BAPAMIN Farmer's Cooperative) headed by Engineer Antonio S. Arcangel started utilizing a technology on processing local foods such as vinegar, juice, and syrup from sweet sorghum.

"Our ultimate goal is to put up our own distillery," Arcangel said, "but since the capital is too high and vast sweet sorghum production is needed, we think of starting with the food products."



Engr. Antonio Arcangel of BAPAMIN shows vinegar products from sweet sorghum.

Definitely not just the fuel

Most of the BAPAMIN's sweet sorghum-based food products are processed in their warehouse in Batang, a bulk of which is vinegar. To produce vinegar, the sweet sorghum stalks are first passed through a mobile cane milling machine, extracting 200 liters of juice per hour collected into a container. The juice collected is filtered to remove pulp and other solid particles. Next, it is pasteurized to kill harmful microorganisms. The pasteurized juice is stored in earthen jars and mixed with dried *samak* leaves to give color and odor, which Ilocanos prefer.

It is then fermented in an acetator tank wherein it is mixed with the alcoholic liquor and the mother vinegar (unpasteurized sweet sorghum juice). The harvested vinegar after fermentation goes under a second level of pasteurization and then stored in plastic tanks. To aid filtration and clarification, rocking is done in several tanks, usually up to ten rocks. Finally, the vinegar is ready for bottling and labeling.

Five liters of sweet sorghum vinegar is sold for 150 pesos or 45 pesos per liter. It is also available in smaller bottles for 12 pesos.

Like vinegar production, making of syrup starts with juice extraction. It is then filtrated to the settling tank. From the tank, the juice is cooked in an evaporation pan with uniform and slow



FISHLINK 2010

underscores aquaculture as livelihood opportunities

The theme: “Making small-scale aquaculture viable” underscores the importance of harnessing the potential of aquaculture to create alternative livelihoods, alleviate poverty and give birth to a new breed of entrepreneurs, especially in rural areas, where resources are few and livelihood opportunities are limited.” Thus, stressed by Bureau of Fisheries and Aquatic Resources (BFAR) Asst. Director for Technical Services Gil Adora in behalf of Director Malcolm Sarmiento during the opening ceremonies of the Fishlink 2010 at Iloilo Grand Hotel, Iloilo City.

Organized by the University of the Philippines (UP) Aquaculture Society, Inc., the event was also made possible through support from BFAR, Bureau of Agricultural Research (BAR), Southeast Asian Fisheries Development Center (SEAFDEC) Aquaculture Department, and B-Meg Aquatic Feeds.

Also delivering a message was UP Visayas Chancellor Minda Formacion. “Aquaculture with all its noble intentions has limitations and I would encourage everyone to also consider the environmental and social aspects of the sector so that efforts to support competitiveness and improve long-term sustainability of the industry will be the most convincing arguments to influence even the local communities to engage into this,” said Chancellor Formacion.

The three-day event showcased various seminars on aquaculture technologies, practices, packaging and product marketing, and even the support services provided to the aquaculture sector. Highlighted aquaculture commodities include milkfish, tilapia, pompano, seaweed, abalone, shrimp, mudcrab, giant clam, sea cucumber, oyster, and mussel.



PHOTO: FISHLINK

This was actively participated by leaders, farmers, and fisherfolks from the private sector, research and academe, government and non-government organizations. Fisheries experts from BAR Ligaya Santos and Ellen Garces attended the activities. “This is an important activity for individuals to be abreast of current technology development, issues and concerns of the fisheries sector as well as the industry,” Ms. Santos said.

Culminating the event was a trip for the participants to the SEAFDEC Aquaculture Department and the Center's Museum. The participants visited some facilities as well as projects being undertaken by the Center researchers in collaboration

with some R&D institutions. Projects visited were on abalone and sandfish. The latter is being implemented by U.P. Visayas in collaboration with SEAFDEC-AQD.

AQUASOC is a non-stock, non profit (professional) organization of the UP alumni in fisheries and allied sciences. The society aims to 1) promote the development and application of sound and sustainable technologies; 2) foster interaction and cooperation among the academe, research extension and production sectors by sharing technologies and experiences; and 3) assist the University in its effort to promote and upgrade aquaculture education. ### (Ma. Eloisa H. Aquino)



PHOTO: FISHLINK

BAR-supported book on protected vegetable cultivation wins 2010 NAST Book Award

The book titled, “*Protected Vegetable Cultivation, Management Options and Economic Potentials*” authored by Drs. Clarita P. Aganon and Teotimo M. Aganon of the Central Luzon State University (CLSU), was one of the four recipients of the 2010 Outstanding Books conferred by the National Academy of Science and Technology (NAST). The award was given during the NAST 32nd Annual Scientific Meeting held at the Manila Hotel.

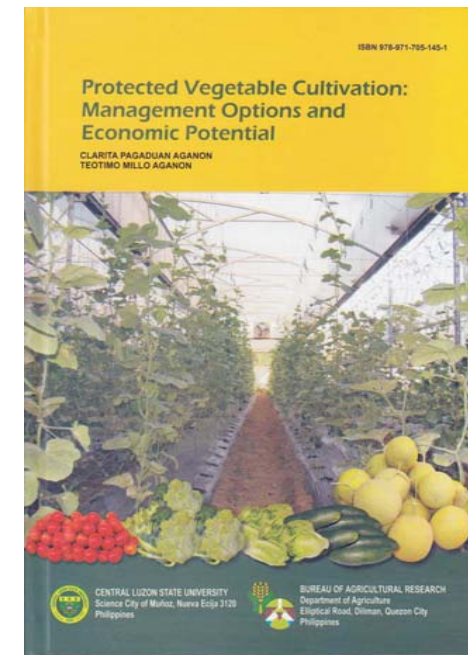
The publication was published by the Bureau of Agricultural Research (BAR) through its Scientific Publication Grant (SPG). Launched in October 2009 during the 22nd National Research Symposium, the book contains information and technical knowledge on the protected vegetable cultivation technology – the most effective approach in handling the harsh effects of biotic and abiotic factors that cause major failures in vegetable production in the Philippines.

Protected vegetable cultivation, an emerging technology in the Philippines, the publication is meant to assist vegetable farmers improve their

production thereby increasing their income. This technology of growing vegetables under covering materials/structures protects the crops from adverse weather (too much heat and rain) or pests' attacks. With this technology, farmers can plan and overcome seasonality, water scarcity and severe infestation that are common in open field cultivation. Eventually, farmers can grow high-value crops all year round with better protection against unfavorable weather conditions as well as infestation by pests and diseases. This technology also helps address the problem of sporadic supply of vegetables characterized by market – gluts but scarce and disappearing during off-season.

“The book came at a fitting time when the agriculture sector in the country is pushing for modernization,” said BAR Director Nicomedes P. Eleazar, who regards the publication as an important reference material on the protected vegetable cultivation technology.

The three other 2010 Outstanding Books named by NAST



were: 1) “Animal Breeding Principles and Practices in the Philippine Context” by Orville L. Bondoc, 2) “Philippine Fermented Foods: Principles and Technology” by Priscilla C. Sanchez, and 3) “Atlas of Pediatric and Adolescent Gynecology” by Corazon Y. Almirante. ### (Rita T. dela Cruz)

Experts...from page 5



Co-study leaders of Dr. Agnes Rola: (L-R) Dr. Agnes R. Chupungco and Dr. Elvira E. Dumayas discuss the outputs with BAR Dir. Nicomedes P. Eleazar. PHOTO: RDELACRUZ

and Market Development Project is a cash assistance loan package from the World Bank (WB). Projects under the said scheme aim to assist government, particularly the Department of Agriculture (DA) in strengthening

DA's capacity for the provision of market-oriented services, thus increase agricultural competitiveness, and rural incomes. Further support shall strengthen the core functions of DA and other government agencies concerning

agricultural statistics, information technology for agriculture and fisheries, and agricultural training.

The importance of a market-linked technology development and dissemination is designed to leverage a change, by modifying and strengthening the implementation of DA's competitive research grants scheme.

Dr. Rola is currently the Dean of College of Public Affairs and professor at the ISPPS in UPLB. She obtained her PhD degree in Agricultural Economics from the University of Wisconsin-Madison, USA. She was assisted by Dr. Agnes R. Chupungco and Dr. Elvira E. Dumayas as her co-study leaders for the project. ### (Patrick R.A. Lesaca)

BAR supports packaging of BFAR's value-added products from tilapia



Recognizing the importance of packaging in marketing products from research and development (R&D), the Bureau of Agricultural Research (BAR) funded a project of the Department of Agriculture-Bureau of Fisheries and Aquatic Resources in Region 2 (DA-BFAR 2) titled, "Commercialization of Value-Added Products from Tilapia through Improved Packaging".

"In product marketing, packaging is important because it serves as the container of the product," said Ritchie Rivera, officer-in-charge of the Inland Fisheries Processing Laboratory, BFAR 2. "Good packaging says a lot about the quality of the products being marketed. The better the presentation, the more consumers it will attract. Also with processed products, you can avoid contamination," he added.

Back in 2002, DA-BFAR 2 had implemented a project, "Value-added products from Tilapia", which aimed to make use of appropriate processing technology and develop value-added products from tilapia to increase the economic returns from its production. The results came out in 2004 with four products from tilapia developed: longganisa, nuggets (breaded tilapia), tocino, and rolls.

To increase the profit from its production, tilapia fisherfolk may engage

in the processing of fresh tilapia into value added products which can be sold at more competitive prices. "If you sell tilapia in fresh form, you can only earn about 10-20 pesos per kilo. Whereas if you process the fish through value-adding, and given a good packaging, the products can command higher price," explained Rivera.

The packaging development for tilapia products was funded and supported by BAR in 2007 (Phase 1) and was further improved on for better consumerism. In the new packaging of tilapia products (Phase 2), nutrition facts were included in the label, which is important information for consumers.

Other components of the latest project were the production of brochures for marketing, conduct of a consumer adaptability test, and holding of trainings and technology demonstrations. "The consumer adaptability test was conducted in 2009 with almost 90 percent rating the four products from tilapia as "extremely liked". "We have also trained a lot of people on tilapia processing, especially women's organizations, the Rural Improvement Clubs (RIC). Many more people are interested that we are still getting requests for trainings until now," Rivera reported.

Beniflor Guittap, president of BB Centro RIC in Sta. Cagayan, one of

the beneficiaries of the training-seminars conducted by BFAR 2 on tilapia processing, said "Now we profit more from selling processed tilapia products than selling them fresh."

Currently, the four products from tilapia are being sold and marketed in supermarkets in Tuguegarao, Cagayan and selected outlets in Metro Manila. "We are also exhibiting our products during technology fora and product exhibits like BAR's Agri & Fishery Techforum and Agrilink," said Rivera. He added that these products are easy to market because consumers nowadays are health-conscious.

When asked about their plans for the future, Rivera said that they eventually hope to enter the export market. "But before that, we need to undergo certifications and various laboratory analyses to pass the standards of EU, US, Japan and to eventually penetrate the world market," he concluded. ### (Rita T. dela Cruz)

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sitao, kangkong, upo) for intercrops, fertilizers, insecticides, herbicides, farm supplies and equipment (rubber boots, hoe, sprayer), and information and communication materials (brochures and flyers).

"We also provided them with free training activities and seminars to technically equip them on the know-how of improved abaca production and disease management, vegetable production, integrated farming system, and livelihood training," said Dr. Lomerio. She added that "since the GAGC women members are interested on livelihood activities, such as making bags from dried leaf sheaths of abaca, while the MAPA women are interested in handicraft making, we trained them on product development and provided them with some livelihood equipment such as twining device, handloom, and sewing machines."

Manuel Feolino, chairman of GAGC, explained how the project assisted their Coop particularly in their livelihood activities from abaca. "We are now earning a lot from the handbags that we produce here. In fact some members of my family are already involved fulltime in this livelihood activity. I am mainly into abaca stripping while my daughter makes and designs the handbags which our Coop sells."

The project also assisted the two Coops in marketing their products from abaca including cordage (ropes, twines, marine cordage, binders, and cord);



Dr. Editha Lomerio (center) teaches one of the members of the Coop how to further improve the quality of their handbags. PHOTOS: RDELACRUZ



fibercraft (handbags, mats, purses, and wallets) and handwoven fabrics (sinamay, pinukpok, and tinalak). According to Feolino, they now have a wider market for the handbags that they produce, even selling them outside Sorsogon.

With the *Abakayamanan* project, production of abaca fibers in Sorsogon and Alabay has increased. "Many of our farmers have gone back to abaca production following some interventions on improved production and disease management taught to us by FIDA. Also with our trainings on product development from abaca fibers, Coop members are profiting from the additional income from the

making of handicrafts and handbags," revealed Feolino of GAGC.

According to Dr. Lomerio, there is now a total of 43,591 hectares of abaca farms in Bicol being cultivated by 24,493 abaca farmers. A FIDA report shows that production of abaca fibers during the first quarter of 2010 has increased by almost five percent which is 29,562.6 metric tons (mt) from last year's 28,154.6 mt.

Abaca plant is indigenous to the Philippines. Its fiber, which is called "Manila hemp" in the world cordage market, is considered the strongest among natural fibers and its products are champion exports of the country. ### (Rita T. dela Cruz)



2 Agri coops in Bicol benefit from *Abakayamanan* program



Two cooperatives in Bicol are benefiting from a project titled, “Enhancing the Productivity of Abaca Farms in the Bicol Region through Integrated Farming System: The *Abakayamanan* Program”, being implemented by the Department of Agriculture-Fiber Industry Development (DA-FIDA) in Region 5. It is funded by the Bureau of Agricultural Research (BAR) and the National Agriculture and Fisheries Council (NAFC) through the Japan Official Development Assistance's (ODA) - KR2 Program Grant Assistance for Underprivileged Farmers.

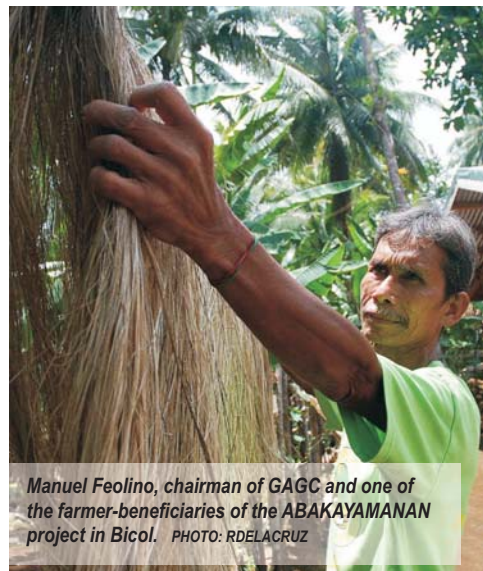
The Gubat Abaca Growers Cooperative (GAGC) in Brgy. Bentuco, Gubat, Sorsogon and the Malilipot Abaca Planters Association (MAPA) in Brgy. San Roque, Malilipot, Albay are the two coop-beneficiaries of the project. These sought to increase the productivity of abaca (*Musa textiles*) and improve the socio-economic condition of the smallscale abaca farmers through diversified and integrated abaca-based farming systems and through value-adding activities.

“This project on abaca is a big help for us here in San Roque because abaca farming is our major source of income. Unfortunately, due to the occurrence of viral disease infection in abaca and the lack of technical know-how on disease management and prevention, the productivity of our abaca

farms declined. Given abaca's low productivity and income, many of us were forced to shift to short-season crops,” revealed Reynaldo Bertillo, chairman of MAPA and one of the farmer-beneficiaries of the project.

Dr. Editha O. Lomerio, project leader and OIC-regional director of FIDA-5, concurred and mentioned how the decline in productivity of abaca farms and the periodic harvesting of abaca fibers have affected the overall production of abaca in the Bicol region. “There was a time when Bicol ranked below Eastern Visayas in terms of area and production due to production loss. But now, we are steadily regaining with this project on *Abakayamanan*,” Dr. Lomerio said.

The *Abakayamanan* project promotes diversified and integrated farming system (IFS) as an effective means to increase farm productivity through optimal use of land area and resources. Integrating suitable farming systems components, in this case cash crops such as vegetables have provided



income for the abaca farmers while waiting for the harvest of abaca fibers.

An important component of the project was the establishment of two *Abakayamanan* Model Farms, each of which consisted of a newly-established abaca area to showcase the IFS (abaca + vegetables) technology, and an existing abaca plantation to demonstrate proper virus disease management and to serve as an immediate source of abaca fiber. The model farms are located in Gubat in Sorsogon and Mililipot in Albay with the farmer-members of GAGC and MAPA as beneficiaries. According to Dr. Lomerio, both organizations were selected because “both consisted of members active and willing to be trained and to be involved in the project.”

Through the project, the farmer-beneficiaries were provided with agricultural inputs that included abaca planting materials (seed pieces and hardened tissue-cultured), vegetable seeds (okra, eggplant, bush

The Abakayamanan project promotes diversified and integrated farming system (IFS) as an effective means to increase farm productivity through optimal use of land area and resources.

DA-Biotech spearheads seminar on biotechnology

As a build-up activity in celebration of the 2010 National Biotechnology Week, the Department of Agriculture-Biotechnology Project Implementation Unit (PIU) spearheaded a seminar, “Securing Food and Increasing Income through Biotechnology”, gathering a hundred individuals in attendance on 29 September 2010 at the Eurotel, EDSA, Quezon City.

The seminar aimed to enhance the public's knowledge and appreciation for agricultural biotechnology as an added option for farmers, fisherfolk, and the whole agriculture sector. Dr. Candida B. Adalla, head of the DA-Biotechnology Program Implementing Unit, read Agriculture Secretary Proceso J. Alcala's message during the opening program.

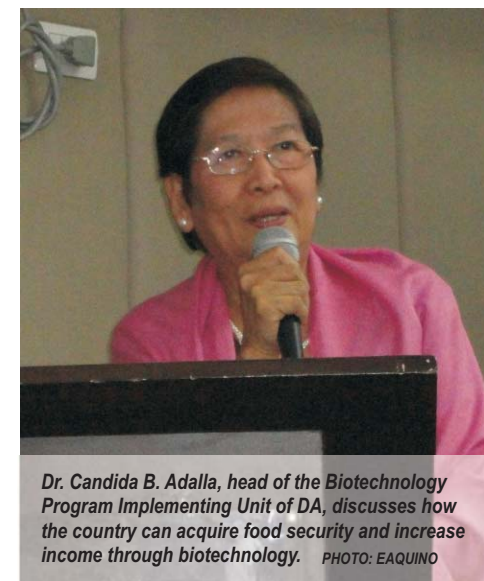
As the author of the National Organic Agriculture Act, Secretary Alcala sees no conflict between organic and conventional farming and biotechnology. “I certainly agree that biotechnology is a tool that can help us achieve food security. In particular, it is a potent vehicle to enhance crop varieties, fish strains, and livestock breeds towards increasing the productivity and incomes of small farmers, fishers, and their families,” he stressed in his message.

He wants biotech to complement natural farming. “I am also optimistic that the Pinoy Biotech community will

continue to spearhead the development and promotion of biotech products that are morally and socially acceptable – one that ensures the safety of humans, animals and the environment,” he added.

Experts from the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), National Committee on Biosafety of the Philippines (NCBP), Philippine Rice Research Institute (PhilRice), Philippine Carabao Center (PCC), National Fisheries Research and Development Institute (NFRDI), Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), and the DA's Biotechnology Advisory Team served as resource persons for the seminar. Topics lined-up included biosafety regulations in the Philippines, developing biotechnology on crops, livestock, and fisheries, and the comparative analysis of GMOs and organic agriculture, which showed that both are niche market commodities that can be offered as options for the farmers to choose from.

Based on the discussions, biotechnology can be harnessed to improve plants by increasing yield and resistance to biotic and abiotic stresses, develop vaccines and medicines to fight human diseases and ailments, and



develop high value products from traditional sources for better human nutrition, health care and cleaner environment.

Dr. Adalla also presented the DA Biotech Program titled, “*Pinoy Biotech: Dagdag Ani, Dagdag Kita, Dagdag Pagkakakitaan*”. “Since its creation in 2000, the DA Biotech Program has been helping orchestrate policy and infrastructure support to judiciously utilize biotechnology to enhance and fuel agricultural biotechnology,” she explained. To date, the program implements R&D projects on the improvement of rice, cotton, papaya, abaca, coconut (including *makapuno*), eggplant, and carabaos through biotechnology tools and processes.

The National Biotechnology Week will be held on 22-28 November 2010 at the Nido Fortified Science Discovery of the SM Mall of Asia IMAX Center in Pasay City. It bears the theme, “*Biotechnolohiya para sa Kalikasan, Kalusugan, Kagandahan, Kabuhayan, at Kaunlaran*”. ### (Ma. Eloisa H. Aquino)

The seminar aimed to enhance the public's knowledge and appreciation for agricultural biotechnology as an added option for farmers, fisherfolk, and the whole agriculture sector.



BAR leads training on **Adlai** production in Bukidnon



Mr. Dante Delima of Earthkeepers, one of the NGO-partners of the project, discusses the potentials of Adlai production to the participants. PHOTO: AVELASCO

The Bureau of Agricultural Research (BAR), in collaboration with two non-government organizations (NGOs): Earthkeepers and MASIPAG, held a five-day "Training cum Planning Workshop on Adlai Production" in Maluko, Manolo Fortich, Bukidnon on 13-17 September 2010.

The training served as a venue for the multi-sector collaborations among the Department of Agriculture (DA), BAR, DA-Regional Field Units (RFUs), State Universities and Colleges (SUCs), NGOs, researchers, and farmers. This was one of the rare instances that these agencies worked together toward a common agenda of helping the Filipino farmers in attaining food security in the country. The training also aimed to bridge the gap between NGOs and government agencies since, in the past, collaborations between them were often non-existent. More important, the activity explored the use of indigenous knowledge on *Adlai* for it seems that it is only the indigenous people (IP) are the ones cultivating and maintaining the plant at the moment.

Adlai, a new staple

In parts of Asia, *Adlai* is used as a cereal and is used in the same way as rice. Grains may also be used in soups and broths (see related article on *Adlai*, BAR Chronicle Vol. 11 No. 7, July 2010 issue). In fact, in southern Vietnam, *sam bo luong*,

a sweet and cold soup has adlai as its main ingredient.

Beers and wines may be made from fermented grains. Aged vinegar is also made out of it in Japan. *Yulmu cha*, or Job's tears tea, is a thick drink in Korea made from powdered adlai. Another liquor, which is made from adlai together with rice in Korea, is called *okroju*.

Its advantages continue on into herbal medicine as *Adlai* is said to be a folk remedy for a wide range of ailments.

The *Adlai* partnership

Earthkeepers' headquarters is located in Tiaong, Quezon. It is owned and managed by Ms. Teresa Perez-Saniano together with husband, Arman, and started out as a commercial garden that sold plants and landscaping materials. It also used to be a restaurant that serves foods that are organically grown. Now, it's the office of an NGO that is an advocate as well as a practitioner of organic farming. Earthkeepers was represented by Mr. Dante Delima.

MASIPAG, on the other hand, is composed of organizations and networks of POs (People's Organization), scientists, farmers and breeders as well as trainers. It started in 1986 with the main goal of empowering resource-poor farmers and improving their quality of life through participatory planning and development

to enable farmers to effectively and efficiently utilize locally available resource, and to access and control the resources of production. The MASIPAG group is headed by Dr. Chito P. Medina as the National Coordinator of MASIPAG.

Four DA Regional Field Units (RFUs) sent representatives to the training cum planning workshop. These representatives including RIARC managers and *Adlai* focal persons, namely: Mr. Orlando Lorenzana, manager of the Cagayan Valley Integrated Agricultural Research Center (CVIARC) with Mr. Roynic Aquino of Region 2; Ms. Digna Narvacan, manager of the Southern Tagalog Integrated Agricultural Research Center (STIARC) with Mr. Rolly Cuasay of the Quezon



Adlai plant can grow to more 7 feet taller as shown in this picture. PHOTO: AVELASCO



Participants learn how to plant Adlai grains during actual demonstrations. PHOTO: AVELASCO

Agricultural Experiment Station (QAES) of Region 4A; Dr. Elena de los Santos, manager of the Bicol Integrated Agricultural Research Center (BIARC) with Ms. Ailyn Adante of Region 5; and Ms. Juanita Salvani, manager of the Northern Mindanao Agricultural Research Center (NOMIARC) with Mr. Carmelito Lapoot and Ms. Antonieta Tumapon of Region 10.

Selected representatives from SUCs in Regions 2, 4A, 5, and 10 also attended in the workshop. They were: Mr. Edwin Macaballug of Isabela State University (ISU), Mr. Jesus Duma of Southern Luzon State University (SLSU), Mr. Cesar Pondalis of Camarines Norte State College (CSC), Mr. Joel Batanes of Central Bicol State University of Agriculture (CBSUA) and Dr. Agripina

Aradilla of Central Mindanao University (CMU).

The training was attended by farmers who had been planting *Adlai* for years.

Why the need to explore the potential of *Adlai*?

According to Ms. Raquel Oclarit-Salingay, Research and Extension (R&E) coordinator of MASIPAG Mindanao, there are two species of *Adlai*: *Coix lacryma-jobi* var. *lacryma-jobi* and *Coix lacryma-jobi* var. *ma-yuen*.

The variety *lacryma-jobi* is the one being utilized as beads and is usually found in swampy areas. The variety *ma-yuen*, on the other hand, is the one harvested as a cereal food.

Bobby Misa Pagusara, regional coordinator of MASIPAG Mindanao gave the following points on the importance and potentials of *Adlai*:

- It is more nutritious than rice and corn, for it is high in protein and also contains calcium, phosphorus, iron, Vitamin A, thiamine, riboflavin and niacin
- It helps enhance/increase food biodiversity
- It is tolerant to pest and diseases
- Minimal cost of production as it can ratoon. It only requires a single land preparation and planting but you can harvest 3-5 times, and there is no need for irrigation. It is resilient to drought and flood. One round of weeding is enough and does not require chemical synthetic fertilizer application
- Farmers will be empowered with the introduction of a new low input-requiring crop. Pioneering farmers would have technologies and seeds are in their control since, as of now, there are only a few farmers who cultivate this plant.

Dr. Medina further explained the need to explore the potential of other lesser-known species such as *Adlai*. He said that there are 30,000 edible plant species and another 50,000 that have potential edible parts but only 7,000 of these species are being cultivated for food.

"We should not depend only on rice and corn. We need alternative crops for rice so that the rice crisis of 2008 will not recur. Rice and corn may be infested and attacked by diseases, and these may not adapt well to the changing climate thus leading to another cereal crisis. Now, we have adlai to turn to", he added. "We should not be forever dependent on importing rice from other countries," Dr. Medina said.

A cooking demo was also done during the training. The participants agreed that *Adlai* will not have a difficulty gaining the public's approval for it does taste just like rice.

The participants learned about the characteristics of *Adlai*, how they are cultivated based on the research results of MASIPAG and farmer partners. The group also experienced planting the plant themselves in the MBC farm. After the planning workshop, the group discussed on how to further explore the potential of *adlai* and other researchable areas as well as other activities that need to be done.

(Amavel A. Velasco)



Eating Adlai just like your regular rice. PHOTO: AVELASCO