

## Adlay program to focus on commercialization



PHOTO: RDELACRUZ

**BAR Dir. Nicomedes P. Eleazar delivers his welcome remarks and message to the participants.**

With the Adlay R&D Program now with 27 projects completed and 28 that are on-going, it is high time that “we look into the value chain of adlay and focus on its commercialization specifically in the areas of expansion, seed production and conservation, and development of products,” said Dr. Nicomedes P. Eleazar, director

of the Bureau of Agricultural Research (BAR), in his welcome message during the conduct of the “2018 National Adlay Review and Planning Meeting” on 17-20 July 2018 in Tagaytay City.

Dr. Eleazar mentioned that since 2010 when the Adlay R&D Program was initiated by BAR, the production area for adlay has reached 910 hectares with a total production of 851,000 kilograms coming from major adlay-producing regions such as 2, 4B, 9, 10, 11, and 12.

The review and planning meeting, which aimed to review and revisit the direction of the program in relation to the priorities and thrusts of the Department of Agriculture (DA), and contribute towards achieving food security as an important staple food crop, was attended by members of the Adlay Technical Working Group (TWG), project implementers from the DA-Regional Field Offices (RFOs), adlay focal persons, and other adlay research-implementing agencies.

To fully appreciate its healthful benefits, Dr. Wilma Hurtada of the University of the Philippines (UPLB) and member of the Adlay TWG, presented the nutritive and non-nutritive components of different varieties of adlay based on a study that they have conducted. The study of Dr. Hurtada looked into the proximate composition of four varieties of milled adlay, namely: *Kiboa*, *Gulian*, *Tapol* and *Ginampay* (raw and cooked) and found that adlay is generally higher in protein and resistant starch (amylose). Resistant starch is a type of starch that isn't fully broken down and absorbed, but rather turned into short-chain fatty acids by intestinal bacteria. Having such starch can regulate body weight. It was also mentioned in her presentation that, adlay has relatively intermediate glycemic index and because it is high in amylose, particularly the non-waxy adlay, one tends to feel less hungry. Also, it was mentioned that children

*turn to page 4*

### IN THIS ISSUE...

Adlay program to focus.....	1
Eleazar attends Global Farm.....	2
2018 AFACI Program Workshop.....	3
BAR strengthens GAP.....	4
Organic agriculture R&D projects.....	5
BAR reviews the initial.....	6
CPAR projects' progress reviewed.....	6
7 fisheries R&D projects.....	7
Indonesia's KEIN officials visit.....	8
BAR holds Gawad Saka.....	9
BAR attends 6 <sup>th</sup> National.....	10
Seminar boosts promotion.....	10
Tilapia production and recipe.....	12
BAR supports initial research.....	13
Feature: Coco water.....	14
BAR conducts midyear review.....	16

PHOTO: RDELACRUZ



Attending the meeting are members of the Adlay Technical Working Group, project implementers from the DA-Regional Field Offices, adlay focal persons, and other adlay-implementing research agencies.

# Eleazar attends Global Farm Tourism Summit

**D**r. Nicomedes P. Eleazar, director of the Bureau of Agricultural Research, attended the Global Farm Tourism Summit (GFTS 2018) on 17 July 2018 at the Summit Ridge Hotel, Tagaytay City. Joining him was Ms. Evelyn H. Juanillo, administration head of the bureau.

Hosted by the Philippines, the three-day summit was themed “Managing Climate Risks through Sustainable Farm Tourism,” that featured the merging of smart farming and tourism, which is seen as a solution to climate change.

The first two days included lecture-discussions and panel sessions attended by experts to share new trends, techniques, and experiences on establishing and developing marketing tools, adaptation and resiliency plan, farm guides, and strategic plan. The last day was devoted to farm visit.

Dr. Vivencio Mamaril, OIC-director of the Bureau of Agriculture and Fisheries Standards presented the topic, “Discussion on Local Organic Farming Standards and Accreditation, and Internationally Accepted Processes”.

Dr. Mina T. Gabor, president of the International School of Sustainable Tourism (ISST)

officially opened the event. In her message, she was pleased “to bring timely topics and insights on how to ride the wave of the future and contribute to the country’s quest for food security and sustainable tourism.”

In response, Secretary Bernadette Romulo-Puyat of the Department of Tourism (DOT) said, “I fully commit to strengthen convergence efforts among the DOT, Department of Agriculture (DA), Department of Trade and Industry (DTI) and other agencies to boost agri tourism as an important niche tour product that our country should have comparative advantage in.”

The GFTS 2018 is a first-of-its-kind event organized by ISST in cooperation with DOT, Southeast Asian Regional Graduate Study for Research and Agriculture (SEARCA) and

supported by the Department of Interior and Local Government (DILG), DA, Provincial Government of Cavite and Philippine Airlines.

BAR serves as one of the key agencies of the Farm Tourism Development Board chaired by DOT. Together with the DA-Agricultural Training Institute, BAR provides recommendations on various technology interventions with respect to the full implementation of the Farm Tourism Act. ### (Ma. Eloisa H. Aquino)



**Dr. Nicomedes Eleazar, BAR director, together with Ms. Evelyn Juanillo, information officer attend the Global Farm Tourism Summit.**

**PHOTO: MEAQUINO**



**BAR CHRONICLE** is published monthly by the Applied Communication Division of the Department of Agriculture - Bureau of Agricultural Research, RDMIC Building, Visayas Avenue, cor. Elliptical Road, Diliman, Quezon City 1104 Philippines.

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.

## PRODUCTION TEAM

**Editor:**  
**Consulting Editor:**  
**Managing Editor/Layout:**  
**Writers:**

**Contributor:**  
**Reproduction:**  
**Circulation:**  
**ACD Head:**  
**Adviser:**

Rita T. dela Cruz  
Julia A. Lapitan  
Rena S. Hermoso  
Ma. Eloisa H. Aquino, Daryl Lou A. Battad, Rita T. dela Cruz,  
Leoveliza C. Fontanil, Ephraim John J. Gestupa,  
Rena S. Hermoso, and Patrick Raymund A. Lesaca  
Dr. Artemio M. Salazar  
Ricardo G. Bernardo  
Lyn D. Pardilla and Lino Norman D. Reyes  
Julia A. Lapitan  
Dr. Nicomedes P. Eleazar, CESO IV and Digna L. Sandoval

ISSN 1655-3942

Copyright. Bureau of Agricultural Research, Department of Agriculture 2018.

For subscription and inquiries, please contact us at: Tel. Nos. +63 (2) 461-2800 or 461-2900 local nos. 1136, 1143, 1132, 1138 Fax No. +63 (2) 927-5691 Email: [acd@bar.gov.ph](mailto:acd@bar.gov.ph)

Articles are also available online, visit our official website: <http://www.bar.gov.ph/barchronicle>

Follow and like us on: [f](#) [i](#) [t](#) [v](#) [t](#) @DABAROfficial

# 2018 AFACI Program Workshop concluded; Phil ATIN PI gets award



**Ms. Julia A. Lapitan, principal investigator of Philippine ATIN project receives the 2017 Most Outstanding Principal Investigator for AFACI ATIN project.**

**Participants during the 2018 AFACI Program Workshop on ATIN and Seed-Extension**

PHOTOS: MEAQUINO

**F**ourteen member-countries convened for the 2018 Asian Food and Agriculture Cooperation Initiative (AFACI) Program Workshop for Agricultural Technology Information Network in Asia (ATIN) and Seed-Extension on 17-21 July 2018 in Chiang Mai, Thailand.

The Department of Agriculture (DA), through the Bureau of Agricultural Research (BAR), was represented by Ms. Julia A. Lapitan, national contact person of AFACI in the Philippines and principal investigator (PI) of ATIN project. Joining her was Ms. Ma. Eloisa H. Aquino of the BAR-Office of the Director.

In the Philippines, the AFACI projects are managed by DA, through BAR. The bureau has been coordinating all AFACI projects since 2010, through the implementation of the AFACI- ATIN. Dr. Nicomedes P. Eleazar, director of BAR is the designated National Representative of the AFACI to the Philippines and the head of the AFACI-ATIN project.

One of the highlights during the opening ceremony was the awarding and presentation of Plaque of Appreciation to the 2017 Most Outstanding Principal Investigators (PIs) and 2017 Outstanding PIs. Ms. Lapitan was hailed as 2017 Most Outstanding PI for ATIN. This is the first time that the project was recognized and bestowed with the award during the eight year-duration that the project has been implemented.

Ms. Lapitan served as a moderator during the country presentations of 13-member institutions namely: Bangladesh, Bhutan, Cambodia, Lao PDR, Indonesia, Kyrgyzstan, Mongolia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, and Vietnam.

She presented the country report of the Philippines wherein she mentioned the valuable contributions of the AFACI projects, particularly ATIN, in the development of the agricultural sector through sharing of relevant technologies and significant innovations that help the farming community to improve both their productivity and profitability.

Philippine representatives

brought various IEC materials produced and packaged under the DA-AFACI ATIN Project. These included crop calendars, planting guide or manuals, brochures, flyers, and other related publications.

The AFACI-ATIN project focuses on establishing a network connecting the Internet domains of government or institutional agricultural information available in member states; strengthening the exchange of technology and agricultural information; and publishing of information and technology, among others.

The implementation of AFACI-funded projects in the Philippines has strengthened the international cooperation between DA of the Philippines and the Rural Development Administration of the Republic of Korea.

AFACI is an inter-governmental and multi-lateral cooperation body based in Korea that aims to improve food production, realize sustainable agriculture and enhance extension service of Asian countries by sharing knowledge and information on agricultural technology. ### (Ma. Eloisa H. Aquino)

# BAR strengthens GAP



Ms. Julia Lapitan, BAR-Applied Communication Division head, provides the rationale of the meeting.

PHOTO: PRLESACA

The Bureau of Agricultural Research (BAR), through the Applied Communication Division (ACD), spearheaded a collaboration meeting with the Bureau of Agriculture and Fisheries Standard (BAFS) and Department of Agriculture-Information and Communications Technology Service (DA-ICTS) on 31 July 2018.

The meeting was called to discuss how the bureau, in coordination with BAFS, can strengthen its funded projects on Good Agricultural Practices (GAP); and to establish an information tool, in the context of (food) traceability embodied under Republic Act 10611 (also known as the Food Safety Act of 2013) of which, GAP and traceability are

essential components.

As take-off points, Dr. Edralina P. Serrano, adjunct professor from the University of the Philippines Los Baños (UPLB) and Ms. Mary Grace R. Mandigma, OIC, BAFS-Technical Services Division, who were invited as possible collaborators, presented the “Capacity Building of Stakeholders on the Use of a Traceability Tool for GAP-based Supply Chain Management” and “Development of Locally Appropriate GAP Programs and Agricultural Produce Safety Information System in the Philippines,” respectively. The former project was funded by the bureau while the latter was funded by the Asian Food and Agriculture Collaboration Initiative.

Dr. Serrano shared the information that her team is going around the country to train selected regional field personnel and would-be GAP-certified farmers on proper farm management and detailed recording of information relative to farm operations. On the other hand, Ms. Mandigma presented a traceability tool developed by BAFS. The tools, developed by the team of Dr. Serrano uses a “bar-code,” while BAFS uses an application called “QR” or quick response code.

The merit of GAP initiatives and the systems in place were both acknowledged by all the attendees including Mr. Napoleon Pulido, who represented DA-ICTS OIC-Director Xerxees R. Remorozo; Mr. Vincent Tecson of BAFS; Ms. Ma. Eloisa Aquino of the BAR-Office of the Director; Maria Elena Garces of BAR-Technology Commercialization Division; Ms. Melissa Resma and Mr. Alex Arrizabal of BAR-Information Management Unit, and Mr. Victoriano Guiam of ACD.

ACD Head Julia Lapitan gave the rationale of the meeting while Mr. Patrick Lesaca of ACD facilitated the discussion.

One of the highlights of the meeting was the possibility of converging both projects and come up with a unified proposal on GAP and Traceability Tool. The group, in coordination with BAFS and ICTS, will meet again to discuss further proposal details. ###  
(Patrick Raymund A. Lesaca)

## Adlay program...from page 1

fed with adlay showed higher weight gain and increase in height than those fed with rice.

Part of the activity was the presentations of accomplishments of 11 adlay projects: 2 completed, 6 on-going, and 3 new. These were subjected to review and assessment by a panel of evaluators composed of: Ms. Rose Mary Aquino, regional

technical director of DA-RFO 2; Ms. Juanita Salvani, research chief of DA-RFO 10 and chair of Adlay TWG; Mr. Elmer Enicola of UPLB; Mr. Roberto Villa of CELPA, Inc.; and Ms. Salvacion Ritual, chief of BAR-Program Monitoring and Evaluation Division (PMED). The DA-RFOs, together with the panel of evaluators, also identified some of the adlay food products that are now ready for commercialization and adlay technologies to be

promoted following the CPAR approach.

Finally, to provide an inventory of seed production and target the expansion plans for each region, a workshop was facilitated focusing on issues and concerns which became the bases for expansion as well as other identified researchable areas and will serve as guide in crafting the 2018-2022 Adlay Roadmap. ###  
(Rita T. dela Cruz)

## Organic agriculture R&D projects reviewed; to focus on upscaling results



Participants during BAR's Review of new, on-going, and completed projects funded under the National Organic Agriculture Program

PHOTO: EJGESTUPA

The Bureau of Agricultural Research (BAR), through its Program Evaluation and Monitoring Division (PMED), conducted a three-day evaluation of 29 new, on-going, and completed projects funded under the National Organic Agriculture Program (NOAP) of the Department of Agriculture (DA).

BAR is the lead coordinating agency overseeing the research and development (R&D) activities that are geared towards the promotion of Organic Agriculture (OA) across the country. It has been more than eight years since the passing of Republic Act no. 10068, otherwise known as the Organic Agriculture Act of 2010 and BAR, that through the leadership of Director Nicomedes P. Eleazar, NOAP's R&D component has achieved significant gains in promoting organic agriculture.

As per NOAP's Mid-Year Assessment conducted earlier this year, the bureau was recognized as the second best performing agency offering technical and funding support for OA. Based on the tabulations of the National Organic Agriculture Program – National Program Coordinating Office (NOAP-NPCO) during the Fiscal Year 2018 1st Semester Physical

and Financial Assessment held in Iloilo City, BAR garnered 101.61 points, ranking second among agencies. Overall rankings on the agencies' performance were based on fund utilization and physical accomplishments.

Since 2010, BAR in partnership with NOAP has been funding R&D facilities and activities on organic production and post-production technologies.

The review was attended by Director Eleazar, PMED Head Salvacion Ritual, and project proponents from state universities and colleges (SUCs), DA-Regional Field Offices, and other partner institutions.

Evaluating the 29 projects were members and representatives from National Organic Agriculture Board (NOAB) and NOAP, organic agriculture pool of experts from the University of the Philippines Los Baños, and Bureau of Animal Industry. The projects that were evaluated focused on organic livestock, soil fertility, pest management, and institutional development.

In his welcome remarks, Director Eleazar reiterated the bureau's current efforts to upscale its accomplishments towards technology

commercialization. "Much still remains to be done particularly in making OA a mainstream farming activity and an attractive agribusiness venture, now that we already have the technologies let us focus our efforts on how we can commercialize them," added Director Eleazar.

From the nine completed projects presented during the review, BAR's Technology Commercialization Division has initially identified projects to have potentials for an offshoot technology commercialization project. These projects were studies conducted by SUCs on bio-control agents, organic vegetable production, and commercial production of native chicken.

During the evaluation of the establishment of Regional Research and Development Centers for Organic Agriculture, Dr. Luis Rey Velasco, one of the evaluators during the review, encouraged representatives from the regional field offices to orient their R&D centers in attracting and nurturing potential partnerships with players from the private sector who can further sustain OA technologies and upscale R&D outputs towards technology commercialization. ###  
(Ephraim John J. Gestupa)

# BAR reviews initial results of garlic R&D projects

In compliance to the instruction of Agriculture Secretary Emmanuel Piñol to increase the country's sufficiency in garlic production, the Bureau of Agricultural Research (BAR) supported four R&D projects on garlic. These projects aim to identify other possible growing areas in the country through adaptability trials and develop packages of technology for the identified regions. The initial results of these ongoing projects were reviewed on 30-31 July 2018 at BAR.

The project, "Selection, Purification and Multiplication of Garlic Cultivars for Multi-location Trials" is being implemented in various areas of the country by DA-Regional Field Office I (DA-RFO 1), Mariano Marcos State University (MMSU), University of the Philippines Los Baños (UPLB), and Bureau of Plant Industry-Los Baños National Crop Research, Development, and Production Support

Center (BPI-LBNCRDPSC).

Each agency was assigned respective study areas: DA-RFO 1 for region 1, MMSU for Cordillera Administrative Region (CAR) and region 2; UPLB for region 4a and 4b; and BPI-LBNCRDPSC for region 3, 5 and 6.

Presenting the accomplishments of the projects were: Dr. Dionisio Bucao of MMSU; Ms. Sylvia Igarta of DA-RFO I; Mr. Jiamy Jae Apacionado of UPLB; and Ms. Lorna Tepper of BPI-LBNCRDPSC.

The specific objectives of these projects are: 1) collect garlic cultivars/strains from the selected region in the country; 2) evaluate the purity of selected garlic cultivars through agronomic and multiplex microsatellite analysis; and 3) multiply garlic planting materials for the multi-location trials in identified possible areas of expansion.

Initial findings revealed that the conventional planting materials are



highly-infected by viruses such as *Onion yellow dwarf virus*, a garlic strain (OYDV-G), *Leek yellow stripe virus* (LYSV), *Garlic latent virus* (GLV) and *Garlic common latent virus* (GCLV). These garlic viruses often occur in complex infections due to environmental and climatic factors. Through the projects, continuous indexing and micropropagation through tissue culture technology was done essentially producing clean, good quality planting materials for garlic.

The UPLB is currently producing true-to-type and certified virus-free

*turn to page 9*

## CPAR projects' progress reviewed; 6 proposals in the pipeline

Nine projects under the Community-based Participatory Action Research (CPAR) program of the Bureau of Agricultural Research (BAR) were subjected to progress and inception review and evaluation on 12 July 2018 at BAR Conference, Diliman, Quezon City.

Of the nine projects, three are on-going and six are proposed for funding approval. The three on-going projects focus on goat production and rice-based farming systems implemented by regions 1 and 12, respectively. Meanwhile, the 6 CPAR proposals came from regions 6 and 7.

These new projects are set to launch and validate various farming systems on rice, mungbean, and native chicken. Further, as per



Participants consisted of project proponents and implementers from regions 1, 6, 7, and 12; CPAR technical working group members; BAR-CPAR focal persons and regional coordinators; and BAR technical staff.

results of the Participatory Rural Appraisal (PRA) in Capiz and Aklan, interventions including the Site-Specific Nutrient Management (SSNM) for corn and Rice Crop Manager (RCM) will be introduced

using the CPAR modality.

CPAR, one of the banner programs of the bureau is being intensified because of the effectiveness of its approach

*turn to next page*

# 7 fisheries R&D projects reviewed



The participants during the review of BAR-funded projects under its Fisheries program.

PHOTO: DLBATTAD

The Bureau of Agricultural Research (BAR), through its Program Monitoring and Evaluation Division (PMED), facilitated a review and evaluation of seven on-going and completed BAR-funded fisheries projects on 25 July 2018 at BAR.

Various lines of study including breeding, hatchery management, broodstock development, harvest technologies, conservation of natural stocks, seed production and grow-out culture, and resource assessment of different fishery commodities like *Pigeke*, *Sargassum*, seaweeds, *Ayungin*, and *Biyang Puti* were presented during the review.

Two completed projects, “*Sargassum* (Phaeophyceae) as Antibacterial Agent and as Natural Immunostimulant for Aquaculture” and “Development of Seed Production and Grow-out Culture Techniques for *Ayungin* (*Leipothepon plumbeus*) and *Biyang Puti* (*Glossogobius giuris*)” implemented by Isabela State University (ISU) and University of the Philippines Los Baños, respectively, showed promising results ready for dissemination.

Implemented by ISU, through the leadership of Dr. Francis Baleta, the project on *Sargassum* as immunostimulant for aquaculture

made it to the International Journal of Current Microbiology and Applied Sciences (IJCMAS). The project, which proved that the ethanolic extracts of *Sargassum polycystum* has better antimicrobial activity that can be used by the industry for the treatment of microbial diseases and improvement of the health status of commercially important aquaculture species.

Another completed project presented by Dr. Ma. Vivian Camacho of UPLB led to the refinement of the newly-developed breeding and spawning techniques on *Ayungin* and *Biyang Puti*. Developed hatchery techniques on both species were standardized, ensuring high survival rates and production in ponds. Optimum stocking density in floating cages in either ponds or in open lake waters, as well as nutrition and feeding regimens, were determined as necessary for optimum production.

Serving as evaluators were Dr. Nelson Lopez of the Bureau of Fisheries and Aquatic Resources (BFAR); Dr. Maria Lourdes Aralar of the Southeast Asian Fisheries Development Center (SEAFDEC); Dr. Andrea Agillon and Marnelie Gadong-Subong of BAR.

Periodic review and evaluation activities were conducted by BAR to ensure the smooth and effective implementation of its funded projects. ### (Daryl Lou A. Battad)

## On-going CPAR...from page 6

as participatory research in the grassroots. The CPAR on goat production implemented by the Department of Agriculture-Regional Field Office (DA-RFO) 1 – one of the projects presented during the review – resulted to an increase in the production of bigger and healthier goats through improved technologies introduced by CPAR. Dr. Mary Jane Alcedo of DA-RFO 1 mentioned that the region is currently accelerating the production of breeder goats to

contribute to the goat industry of the country, which is still considered a *sunrise* industry.

BAR also encourages the CPAR project leaders to come up with a CPAR technology guide book that will feature validated CPAR Package of Technologies (POTs) as part of technology dissemination.

Serving as technical evaluators were Ms. Salvacion Ritual, Program Monitoring and Evaluation Division (PMED) chief; Ms. Amavel Velasco, PMED assistant head and CPAR focal person; Engr. Roberto Villa of

the CPAR-Technical Working Group (CPAR-TWG); Dr. Andrea Agillon of BAR-Technology Commercialization Division (TCD); Ms. Maylen Cunanan, CPAR focal person from BAR-Program Development Division; and regional coordinators Ms. Marnelie Subong, Mr. Jay Bermas, and Mr. Danielle Joseph Sisican.

The one-day review was coordinated and facilitated by PMED, as part of the bureau’s core functions in R&D program management. ### (Daryl Lou A. Battad)

# Indonesia's KEIN officials visit BAR



L-R: Mr. Arjay Barcelona and Ms. Ma. Eloisa Aquino from BAR, Dr. Benny Pasaribu from KEIN, Ms. Cynthia Remedios De Guia from BAR, Mr. Mohammad Fadhil Hasan, Mr. Aries Muftie, Ms. Henri Saporini from KEIN, Atty. Roberto B. Mabalot, Jr. from DTI

PHOTO: RHERMOSO

Five officials from the Komite Ekonomi dan Industri Nasional (KEIN), Republic of Indonesia visited the Bureau of Agricultural Research (BAR) on 24 July 2018 to learn about the country's policies and strategies on agriculture and fisheries research and development (R&D).

The five officials of KEIN were: Dr. Benny Pasaribu, Agriculture and Agroindustry Development working group head; Ms. Hendri Saporini, Macroeconomics, Trade and Investment working group head; Mr. Mohamad Fadhil Hasan, Labour Force and Employment working group head; Mr. Aries Muftie, Rural Economic Development working group head; and, Mr. Fachru Nofrian, member of the working group on Macroeconomics, Trade and Investment. They were accompanied by Atty. Roberto B. Mabalot, Jr., foreign trade service officer at Foreign Trade Service Corps of the Department of Trade and Industry (DTI).

In behalf of BAR Director Nicomedes P. Eleazar, Ms. Cynthia

Remedios V. De Guia, assistant division head of BAR-Program Development Division and Ms. Ma. Eloisa H. Aquino, executive assistant for communication to the director, welcomed the visitors.

The KEIN officials visited BAR as part of their three-day working visit to the Philippines to conduct a research to better understand the country's economic development strategy. Aside from visiting BAR, they also visited DTI, National Economic and Development Authority, Board of Investment, and Philippine Chamber of Commerce and Industry to gain better insight on what these agencies do in relation to the economic and trade industry planning. They also wanted to learn and understand some of the economic and development policies in the Philippines.

Ms. De Guia explained the role of BAR as the national coordinating arm of the Department of Agriculture's agriculture and fisheries R&D to the visiting officials. She also

gave a brief overview on the two banner programs of the bureau: Community Participatory Action Research and National Technology Commercialization Program.

After the meeting, the KEIN officials also visited the R&D Technology Commercialization Center where they were able to see some of the products and innovations developed through research under BAR's two banner programs.

KEIN is a committee tasked to provide research-based information and policy recommendations to the president of Indonesia that would address the country's industrial and development issues. "The committee is the adviser to the president. This is a top institution and we will work for five years; we started in January 2016. Our responsibility is to give some input and also recommendations to the president directly. The president will select which one is the priority and try to discuss [it] to the ministry," explained Ms. Saporini. ### (*Rena S. Hermoso*)

# BAR holds Gawad Saka Desk Evaluation for OAR, OAS nominees



PHOTO: EJGESTUPA

Members of the National Technical Committee for this year's Gawad Saka Search for Outstanding Agricultural Researcher and Outstanding Agricultural Scientist convened to review the criteria for judging.

The Bureau of Agricultural Research's (BAR), through the Institutional Development Division (IDD), facilitated the desk evaluation of this year's Gawad Saka Search for Outstanding Agricultural Researcher (OAR) and Outstanding Agricultural Scientist (OAS) on 9 July 2018 at the University of the Philippines Los Baños (UPLB) in Laguna.

BAR was tasked by the Department of Agriculture to chair the National Technical Committee (NTC) for the screening, evaluation, and field validation of eight nominees for the OAR and OAS categories.

Leading the desk evaluation was BAR's OIC-Assistant Director and Vice Chair of the Gawad Saka NTC Digna L. Sandoval.

Attending members of the NTC were Dr. Jose H. Hernandez of UPLB; Dr. Elda B. Esguerra of UPLB; Dr. Enrico P. Supangco of UPLB; Dr. Edralina P. Serrano of UPLB; and Dr. Josephine F. Cruz of the Central Bicol State University of Agriculture (CBSUA).

In the meeting, the criteria on which the scores of the nominees will be based were reviewed and finalized. The technical committee was also briefed on this year's batch

of OAR and OAS nominees coming from DA-partner institutions in Central Luzon, CALABARZON, Zamboanga Peninsula, Davao Region, and Eastern Visayas.

The Gawad Saka is an annual activity that recognizes the outstanding work done by farmers, fisherfolk, institutions, scientists, and researchers in the agriculture and fisheries sector. BAR serves as the coordinator and secretariat for the OAR and OAS categories, with BAR Director Nicomedes P. Eleazar serving as the committee's chairperson. ### (Ephraim John J. Gestupa)

## BAR reviews the...from page 6

garlic from the 26 different garlic accessions they collected. A total of 1,895 cultures are being maintained in the UPLB-IPB laboratory, 361 of which are in the bulbing stage. Meanwhile, the DA-RFO I collected three garlic cultivars/strains namely: *Sarang*, *Native* and *Batanes White* and produced 424 kg of six NSIC garlic varieties. The BPI collected nine local and introduced garlic cultivars that were subjected to further purification

trials while MMSU collected 17 garlic varieties/accession producing total of 422 kg of the six NSIC garlic varieties.

Other highlights of the activity included the crafting of the garlic R&D Phase 2 projects titled "Multi-Location Adaptability Trial of Registered Garlic Varieties and Other Cultivars from the Regions" which aims to identify expansion areas for garlic production and develop a package of technology (POT) for each identified area using the traditional garlic varieties.

Serving as technical evaluators during the activity were: Dr. Andrea Agillon of BAR- Technology Commercialization Division; Mr. Gamezar Dean and Ms Rechelle Colico of the Office of the Secretary for High Value Crops and Rural Credit; and selected BAR focal persons for high value crops.

The Program Monitoring and Evaluation Division (PMED) and Program Development Division (PDD) of BAR facilitated the two-day activity. ### Leoveliza C. Fontanil

# BAR attends 6<sup>th</sup> National Congress and 2018 Phil Agriculturists' Summit

Officials and staff of the Bureau of Agricultural Research (BAR) attended the 6<sup>th</sup> National Congress and 2018 Philippine Agriculturists' Summit on 22-26 July 2018 at Waterfront Hotel, Lahug, Cebu City.

Ms. Digna L. Sandoval, OIC-assistant director with key officials Mr. Joell H. Lales, Ms. Salvacion M. Ritual, Ms. Evelyn H. Juanillo, and Ms. Rosalia G. Maranan; and technical staff participated in the four-day summit organized by the Philippine Association of Agriculturists, Inc.

The convention was joined in by more than 2,500 delegates composed of licensed agriculturists and agricultural practitioners from national and regional government agencies, local government units, state universities and colleges, people's organizations, private individuals, and the private sector.

With the theme, "Climate Change Adaptation and Disaster Risk Reduction: Role of Philippine Agriculturists", the summit provided a venue to discuss issues and updates on the agriculture profession as well as crosscutting technologies on climate change adaptation and disaster risk reduction.

Agriculture Secretary Emmanuel F. Piñol in his message underscored the basic obligation of the department in providing available and affordable



BAR OIC-Assistant Director Digna L. Sandoval (center) and key officials and technical staff attend the convention.

PHOTO: MEAQUINO

food for the Filipinos in which the 10 key strategies of the DA under President Rodrigo Duterte's Administration are anchored on. These are: 1) National Color-Coded Agricultural Guide Map; 2) National Food Consumption Quantification Study/Survey; 3) Institutional restructuring and paradigm resetting for the Department of Agriculture and its officials and employees; 4) Intensive technology updating and sharing, modernization and mechanization program; 5) Easy access financing program for farmers, fishermen and agriculture and fisheries stakeholders; 6) Strategic and effective post-harvest, storage and processing facility; 7)

Government-initiated and supported aggressive marketing campaign especially for high-value crops; 8) National Livestock, Dairy and Poultry Program; 9) Relentless campaign for the enforcement of agricultural and fisheries laws, especially on land conversion and illegal fishing; and 10) Re-introduction of basic agriculture in the primary and elementary grades of the Philippine schools system.

BAR was one of the co-sponsors of the event. PAA envisioned itself as the leading advocate for rural development and a major driving force in the campaign for sustainable Philippine agriculture. ### (Ma. Eloisa H. Aquino)

## Seminar boosts promotion and utilization of soybean

The Bureau of Agricultural Research (BAR), through its Technology Commercialization Division (TCD), sponsored the conduct of "Seminar on Soybean Production and its Processing" on 27 July 2018 at BAR. The activity was

conducted specifically as an information, education, and communication strategy in establishing a strong partnership with the private sector in the processing and marketing of soy-based products in the country.

Serving as the resource

speakers were: Mr. Elmer Enicola, soybean technical expert of the University of the Philippines Los Baños; Engr. Cesar Neric of the Philippine Center for Postharvest Development and Mechanization (PhilMech); and Ms. Ceferina Dela

turn to next page

*Soybean seminar to...from page 10*

Cruz, manager of Golden Beans and Grains Cooperative in Region 3.

Mr. Enicola presented the Philippine's annual whole soybean utilization and the actual projection for local soybean production. Meanwhile, Engr. Neric discussed the proper postharvest processing systems and the development of easy-to-prepare soyfood products. Actual procedures on making primary products of soybean such as soymilk, *taho* and *tokwa* were demonstrated by Ms. Dela Cruz.

The activity was attended by interested individuals from Rizal, Cavite, Quezon, Bulacan, Pangasinan, and Nueva Ecija. Other attendees were: Mr. Ralf Rivera, owner of *Soyabar Quickbites and Beverage Shop*

in Manila; Mr. Charles Ferrer, owner of *Mr. Taho*; and Ms. Editha Dacuycuy, owner of the biggest dragonfruit farm in Ilocos province that is now interested in making soya milk as additional product line for her business.

BAR OIC- Assistant Director Digna L. Sandoval welcomed the participants during the event. In her message, she emphasized the importance of the activity to encourage more farmers and agri-entrepreneurs in engaging in the production and utilization of soybean as foods and feeds.

Seeing the growing interest of the private sector and others who want to venture into soybean, the Department of Agriculture-High Value Crops and Development Program (DA-HVCDP), together with BAR, is continuously doing research and strategies in promoting soybean. These include

developing local-based soyfood enterprises and fostering awareness among the public of the health-promoting properties of soybean consumption.

With its implementation in 2011, the program created awareness on the importance of soybean for human, livestock, soil health, and nutrition. This was done through the promotion of soybean production and its use as business enterprise for the subsistence of farming communities.

To further enhance soybean utilization, various activities were conducted including cooking contest, forums, field days and series of seminars in different parts of the country. Integrated production- processing modules, cost and return of soy production, seed system were also included. ### (Leoveliza C. Fontanil)



Various food products from soybeans such as soybean noodles, soybean coffee, soy bagoong, soy chips, soya powder developed by different regions.

PHOTO: LFONTANIL

# Tilapia production and recipe highlight BAR seminar

Two topics on tilapia took center stage during the monthly seminar series of the Bureau of Agricultural Research (BAR) held on 26 July 2018 at BAR.

The first topic, “Tilapia Hatchery Management and Fingerling Production,” was presented by Dr. Evelyn H. Zafra of the National Freshwater Fisheries Technology Center (NFRDI) of the Bureau of Fisheries and Aquatic Resources (BFAR). The second topic on “Instant Fish Cream Soup: A Functional Food Formulation” was discussed by Dr. Perlita C. Tiburcio of the Nueva Vizcaya State University (NVSU).

The resource speakers articulated on the importance of fish as part of the nutritional requirement of the Filipinos and consumers in general. The nutritional properties of fish, in processed form and raw, were individually tackled by the experts.

Dr. Zafra said tilapia, (*Oreochromis niloticus*) also known as Saint Peter’s Fish, is an African freshwater fish that has been widely introduced to many areas for food and extensively farmed throughout Asia. Tilapia also grows fast and is easy to breed. The propagation and culture is not too expensive and hatcheries can readily supply the seedstock requirement of grow-out operators.

For those interested to grow tilapia, Dr. Zafra explained briefly the environmental requirement, types and methods of hatchery, and management procedures in open and pond hatcheries.

The hatchery management expert recommended points to consider in establishing a tilapia hatchery pond. She said, one has to secure healthy breeders since these will produce healthy offsprings; the preparation of breeding pond is important, and, if necessary, they should allow fishponds to be completely drained; and hatchery operators and workers must have the skills in selecting female breeders that are ready to spawn and male breeders that are ready to mate. The average weight of breeders to be stocked in the breeding pond is about 250g to 500g and the recommended stocking density of breeders is two-square meter per breeder. The breeding pond is prepared in such a way that the pond bottom is soft and level for ease of the male breeders in building their nest, among others.

From the BAR-funded project of the NVSU, Dr. Tiburcio demonstrated the procedure they developed on making an “instant fish cream soup” from tilapia. The cream soup serves as a functional food, said

Tiburcio. The primary objective of the project is to develop a functional fish-based soup formulation that could alleviate lifestyle diseases and nutrient deficiency-related illnesses. In her presentation, the fish-based soup formulation included rice bran, soybean and milk casein combined with tilapia flakes which was found to have therapeutic properties. According to Dr. Tiburcio, a zero-waste process in the preparation of the fish components was achieved. *“Dahil sa proyektong ito, walang nasasayang sa isda, dahil pati tinik ng isda nagagamit.”*

The instant fish cream soup, once commercialized, may be maximized and prescribed by health professionals as a safer and cheaper option in solving malnutrition among children. The product may be made as an essential component of the Department of Social Welfare and Development’s food packs.

The BAR-NVSU project is now being studied further to verify and strengthen the claims on its therapeutic benefits particularly on degenerative ailments as well as nutrient-related chronic diseases.

The BAR monthly seminar is being spearheaded by the Applied Communication Division. ###  
(Patrick Raymund A. Lesaca)



INSET: Dr. Perlita C. Tiburcio demonstrates how to make instant fish cream soup

Dr. Evelyn H. Zafra presents her topic, “Tilapia Hatchery Management and Fingerling Production”, and provides “tips” to those who are willing to engage in tilapia hatchery.

PHOTOS: RHERMOSO

# BAR supports initial research on improving white corn as viable healthy staple



**Dr. Artemio M. Salazar, project leader and University of the Philippines Los Baños professor, shows the rice-corn blend developed by the university. PHOTOS: RDELACRUZ**

“The project, ‘Enhancing Nutritional and Grain Qualities of White Corn for Food,’ conducted by the University of the Philippines Los Baños-Institute of Plant Breeding (UPLB-IPB) and funded by the Bureau of Agricultural Research (BAR), provided the confirmatory critical technical information and improved seeds of quality protein maize (QPM) in the government’s effort to promote corn as viable healthy staple supplementing rice,” explained Dr. Artemio M. Salazar, project leader and UPLB research professor.

Corn, in general, is known as a relatively cheap and nutritious alternative if not supplementary staple food for rice. In 2000, after learning that QPM improved the nutritional status and health of poor Africans, Dr. Salazar and his team bred and developed QPM Var 6 (also known as High Lysine and Tryptophan Corn). According to the researchers, the QPM Var 6 contains 66.2 percent more lysine than the regular white corn. It also contains more tryptophan and

protein, dietary fiber, minerals, and antioxidants than rice alone.

Eleven years later, Dr. Salazar and his team conducted the said project to enhance the development of better quality, genetically stable, and highly nutritious corn varieties through utilization of advanced equipment and facilities. The said project aimed to continue developing white corn open-pollinated varieties which are high yielding and have highly acceptable nutritional and eating qualities.

After ensuring that they have the genetic materials (in improved IPB Var6 developed through the project), they carried out a feeding program to the malnourished children in a nearby school. These children are mostly from the informal settlers at the foot of Mount Makiling. “It was shown that providing these malnourished children daily lunch for three months with 50 percent Var6 grits: 50 percent rice gave them higher weight gain than with pure rice,” according to Dr. Salazar. The feeding program was expanded

through the efforts of UPLB-Office of the Vice Chancellor for Research and Extension to three more schools in Los Baños.

Simultaneously, the same improved variety was used by IPB in promoting corn grits for adults especially those suffering from diabetes. In fact, Dr. Salazar shared that the grits from the variety was adopted by a diabetes clinic in the biggest hospital in town. He also added that “the grits from the same improved variety

were also used by the Department of Agriculture in promoting corn grits as staple.” “The said corn grits were used in launching a rice-corn blend by Agriculture Secretary Emmanuel Piñol in the recent Philippine Corn Congress held at the Philippine International Convention Center last November,” continued Dr. Salazar. This was later endorsed by President Rodrigo Duterte in Davao later in the year.

“The rice-corn blend has gone a long way. And we are running out of supply. Although not that recognized, it was that project supported by BAR which provided the critical technical confidence and genetic material to pursue the course. Newer and better genetic materials are in the offing (hybrids included) thru the support from BAR. There is no other public R&D institution supporting this. The support of BAR in this initiative cannot be overestimated,” ended Dr. Salazar. **### (Rena S. Hermoso and Dr. Artemio M. Salazar)**



For a tropical country, such as the Philippines, coconut is a common sight. During summer, coconut water is one cool drink that not only naturally hydrates but also comes with great benefits for the body. But due to its much desired light sweetness, it is often the coconut water tapped from young green coconuts that is being consumed and not from the mature ones.

But did you know that coconut water from mature coconut is more healthful?

According to Dr. Ofero Capariño, chief of the Bioprocessing Engineering from the Philippine Center for Postharvest Development and Mechanization (PhilMech), although young coconut water is relatively sweeter (5.5-6.5 °Brix), in terms of health benefits, there's more to get from mature coconut water including electrolytes that human body needs such as potassium, sodium, magnesium, calcium and phosphorus. Mature coco water has more of them compared to coco water from young coconut," Dr. Capariño revealed.

FAOSTAT (2016) reported that

the Philippines ranks second among the coconut producing countries in the world with a total production of 13.83 billion nuts. During processing of copra and virgin coconut oil (VCO), coconut water is left unutilized.

Dr. Capariño mentioned the potential volume of coconut water from mature coconut that can be recovered is estimated at 2.4 billion liters per year. This became a motivation for him and his research team to look into the potential of mature coconut water. Their research attempted to process the unutilized coconut water into 100 percent pure without any additives and preservatives, nutritious, and safe bottled coconut water with the ultimate goal to help empower the small coconut farmers and increase their income.

From 2013 to 2015, through the project, "Development and Performance Evaluation of a Village Level Coconut Water Processing System," the group was able to develop a village level coconut water processing system that is capable of processing 2,000 nuts, approximately 2,000 bottles (350 mL) coconut water

per day. The generated technology was granted patent (Utility Model) on November 11, 2015.

One of the challenges that the research team had to address was the shelf life of coconut water because according to Dr. Capariño, when exposed to air, coconut water can accelerate quality degradation in terms of rancidity, cloudiness and discoloration caused by enzymes present in it.

"Coco water freshly extracted from mature coconut can last for 24 hours in ambient condition (room temperature). Three to four hours after you open the nut, it will start to ferment. After six hours, the sweetness will start to degrade making it sour. But when chilled, it can last up to three days. But what we want is to prolong it more by undergoing pasteurization below boiling point of water for 1 minute. By doing so, the pasteurized coco water can last 21 days stored under chilled condition," Dr. Capariño explained.

According to Dr. Capariño, if the mature coco water undergoes pasteurization, it destroys disease

*turn to next page*

*Coco water: Nature's...from page 14*

causing microorganisms (pathogens) and inactivate spoilage enzymes that may be present in coconut water thereby extending the shelf life of the product. We can sterilize the coconut water by exposing it to very high temperature ranging from 132-149°C and kill all the pathogenic bacteria and even highly resistant spores such as *Clostridium botulinum*, but then the sensorial properties and nutritional quality of the product will be significantly affected," he further explained.

With its promised potential in adding value to unutilized coconut water and increasing the income of farmers, the study won a Gold Award (Applied Research-TA/TV-Agriculture Category) during the 2016 National Research Symposium, organized by the Bureau of Agricultural Research (BAR).

Being a technology generator, Dr. Capariño ensured that what he developed will be used by the intended users. From 2015 to 2016, a village level coconut water processing technology incubation facility at the Department of Agriculture-Regional Field Office 5 was established with the support of the DA-Philippine Rural Development Project — a World Bank-funded project. The idea is to showcase the developed technology to potential investors and function as a technology incubator for coconut farmers.

In 2016, the group of Dr. Capariño, together with the project leader, Dr. Gigi Calica, senior science research specialist from PhilMech,

implemented the project, "Pilot Testing of Coconut Water Processing Enterprise in Selected Areas of the Philippines," funded by BAR through its National Technology Commercialization Program.

"There is an international demand for coconut water as more people are getting health conscious. Drinking coconut water benefits our health by strengthening our body, reducing fatigue and taking care of our normal heart function," explained Dr. Calica.

She further said that, the objective of the project is to pilot test the PhilMech developed village level coconut water processing system integrated to a VCO processing level of operations. PhilMech has developed a village level coconut water processing system that is capable of producing 100 percent natural bottled coconut water beverage without any additives or preservatives. "Specifically, what we wanted to determine was the potential market of coco water product derived from village level processing system enterprise".

"Out of the by-product of coconut, which is coco water, being thrown away when processing copra or VCO, we found its use. To prolong its shelf-life, it can be concentrated, sterilized, but our focus is to have a technology that is feasible, doable in any community area," said Dr. Capariño.

"Being an R&D institution under DA, we, at PhilMech are looking at developing this technology that really benefits the farmers. We balanced technology by making it affordable and gender-sensitive such as this

village-level coconut water processing system," he added.

He further said that, the pilot-testing aimed to empower the coconut farmers and to engage them in a community level business

enterprise wherein they will do the operation from harvesting to finish product. They will also sell it. In the end, the farmers themselves will benefit.

To make the enterprise more viable, the project was tied up with a cooperative-beneficiary, COCOLIFE Multi-purpose Cooperative located in Pantukan, Compostela Valley. COCOLIFE is a coconut farmers' cooperative that is into Virgin Coconut Oil (VCO) production. The reason for this move is because in processing coconut into VCO, coco water turns into waste.

According to Mr. Rudy Ang, chair of COCOLIFE Multi-purpose Cooperative, Although they are still on pilot-testing, they have already started going to schools nearby one is Ateneo, to promote the product so that students will be aware of it and they can patronizing it.

Although the two-year project has developed the technology already, there are still activities to be done. Part of the project is to introduce the coco water to schools as an alternative to softdrink.

"We are targeting the students because it showed that they prefer drinking softdrink. We can lower the price so that it can compete with the price of softdrink. But the challenge really is to formulate a healthy drink that will suit their taste, and coco water is the best healthy alternative," said Dr. Capariño.

At the moment, the Cooperative is selling a 350 ml bottle of coco water for 15 pesos. They are planning to lower the price once they have introduced the product to schools nearby. ###

For more information, please contact:

**Dr. Ofero Capariño**

Chief Science Research Specialist/  
Technology Developer  
PhilMech Science City of Muñoz  
Nueva Ecija

☎ ofero1058@yahoo.com

or

**Dr. Gigi Calica**

Senior Science Research Specialist/  
Project Leader  
PhilMech Science City of Muñoz  
Nueva Ecija

☎ gigi\_calica@yahoo.com



## BAR conducts midyear review and planning workshop



To assess the performance for the first half of 2018 and plan programs and activities for the next half of the year, following the directives and priorities of the Department of Agriculture, the Bureau of Agricultural Research (BAR) conducted its midyear review and planning workshop on 3-6 July 2018 in Tayabas, Quezon.

BAR Director Nicomedes P. Eleazar addressed the participants, consisting of the members of the Executive Committee and selected staff of the bureau, highlighting on the accomplishments and activities for the first semester. He also laid

down his marching orders focusing on the importance of efficient budget use, prioritizing projects entrusted to the bureau by the Secretary, and project packaging strategies to facilitate approval and funding of R&D, among others. The bureau chief likewise encouraged the staff to “provide their best efforts and contribute to the big picture,” leading them to work together towards a common vision.

Highlighting the activity were plenary presentations in line with the Research and Development Program Results Framework as well as the presentations of salient

accomplishments of the different divisions/units in the first semester and plans for the second semester of 2018.

Officially closing the event was OIC-Assistant Director Digna L. Sandoval who commended everyone for putting extra effort in their presentations. She likewise encouraged all the staff to keep on supporting BAR. In her words, she said, “Awards and recognitions are good. But as a strong and effective institution, I believe that an efficient system is still the best foundation in ensuring that we can deliver the outputs.” ### (Rita T. dela Cruz)



RDMIC Bldg., Visayas Ave., cor. Elliptical Rd.  
Diliman, Quezon City 1104  
PHILIPPINES

---

---

---

---