

Newly-elected ABARE-BOT takes oath



BAR Director Nicomedes P. Eleazar presiding the oath-taking of the newly elected set of officers of ABARE. PHOTO: EJGESTUPA

A set of newly-elected officers of the Association of Bureau of Agricultural Research Employees (ABARE) was inducted to office and took their oath in a simple ceremony on 19 February 2018 at BAR. Presiding the oath-taking was BAR Director Nicomedes P. Eleazar.

ABARE, with its 53 regular members and 33 affiliate members, is a duly-registered association and a sole representative of the rank-and-file employees of BAR. The Association is recognized by the Department of Labor and Employment-Civil Service Commission under Certificate of Registration No. 2128.

Ms. Kris Thea Marie Hernandez of the Project Monitoring and Evaluation Division (PMED) was elected as the new ABARE President. Meanwhile, Ms. Ma. Eloisa Aquino of the Office of the Director and Ms. Marjorie Mosende of the Institutional Development Division, serve as Vice President for

Internal Affairs and Vice President for External Affairs, respectively.

Other members of the Board of Trustees (BOT) are: Mr. Wilson Vilorio II of PMED as Secretary; Ms. Cynthia Remedios de Guia of the Program Development Division (PDD) as Asst. Secretary/Marshal; Ms. Amavel Velasco of PMED as Treasurer; Mr. Joell Lales of PDD as Business Manager; Mr. Jude Ray Laguna of PDD as Auditor; and Ms. Rita dela Cruz of the Applied Communication Division as Press Relations Officer.

In a brief message, Dr. Eleazar encourage the new set of officers to continue representing the welfare of the employees of the bureau contributing to the management's effort in working harmoniously and efficiently with other partner-institutions and bringing significant results to the sector.

The newly-elected officers will serve for two years from 2018 to 2020. ### (Rita T. dela Cruz)

Increasing corn...from page 12

higher tolerance to sea water than that of corn. The application of fertilizers such as chicken manure was found to have a positive effect on corn's tolerance to sea water.

As for the effect of sea water on the physical and chemical properties of soil, it was observed that sea water increases the concentrations of nitrogen and exchangeable potassium within the soil. Phosphorus levels within the soil exhibited an opposite reaction with that of nitrogen, decreasing as sea water concentration increases. Still, the researchers noted the varied reactions of peanut and corn growth to these changes in the soil.

The study also included a cost and return analysis of the integration of sea water in farm irrigation. Aside from serving as an alternative, saline water, even at just 12.5% concentration, can add more nutrients to peanut and corn compared to just using freshwater.

With climate change increasing the frequency of drought in the country, UPLB hopes to further build on this study by also testing the salt tolerance of other high-value crops such as banana, pineapple, coconut and vegetables. ###

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BAR conducts 1st RM Meeting



Held on 27 February 2018, the First Quarter Research Management Meeting was attended by regional technical directors for research, and research managers from different research divisions of DA-Regional Field Offices and DA-Bureau of Fisheries and Aquatic Resources regional offices. PHOTO: RDELACRUZ

To ensure the smooth operations of research and development (R&D) projects in the regions, and that activities are being complemented in line with the thrusts and priorities of the Department of Agriculture (DA), the Bureau of Agricultural Research (BAR), as the lead coordinating agency for agriculture and fisheries R&D, conducted the "First Quarter Research Management Meeting" on 27 February 2018 in Clark, Pampanga.

BAR Director Nicomedes P. Eleazar provided a brief rundown of some of the important activities of the bureau that transpired during the previous year. He reiterated some important points: 1) aligning of all project proposals and activities according to the Research, Development, Extension and Agenda (RDEAP) 2016-2022; 2) regular and on-time submission

of audited financial reports and technical reports of research projects in the regions; and 3) continuous submission of proposals from the regions given the three batches of trainings extended by BAR to junior research staff on research proposal preparation and technical writing.

Dr. Eleazar encouraged everyone to optimize the complementation of resources that can be taken from partnership among agencies in and outside the government given that the focus now is on convergence and synergy. "This kind of set-up ensures sustainability of the project which goes beyond the completion of the projects and BAR funding support," he said.

Attending the meeting were Regional Technical Directors (RTDs) for research, and research managers from the different

Research Divisions of DA-Regional Field Offices (RFOs) and DA-Bureau of Fisheries and Aquatic Resources (BFAR) Regional Offices.

The RM Meeting is a quarterly event conducted and organized by BAR through its Program Monitoring and Evaluation Division. ### (Rita T. dela Cruz)

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DA Asec. Garzon briefed on livestock R&D initiatives

Dr. Enrico P. Garzon, Jr., assistant secretary for Livestock of the Department of Agriculture, visited the Bureau of Agricultural Research (BAR) on 2 February 2018. Welcoming him was BAR Director Nicomedes P. Eleazar, together with Mr. Anthony B. Obligado, head of BAR-Technology Commercialization Division (TCD); Ms. Eloisa Aquino of the Office of the Director; and Ms. Bernalin Cadayong and Ms. Glacelle Alyne Malinao, staff of BAR-TCD.

Director Eleazar gave an overview of the bureau's mandate and the programs/activities being coordinated with respect to livestock research and development (R&D), and mentioned some of the livestock projects funded by the bureau.

To date, BAR has supported the development of production and management technologies on native pig, native and free-range chicken, native cattle, and goat; and product development of native pig and chevon. These projects were implemented in partnership with DA-Bureau of Animal Industry (BAI)-Animal Products and Development Center, BAI-National Swine and Poultry Research Development Center, DA-



DA ASec. Enrico Garzon, Jr. suggests that DA bureaus and agencies should review their respective mandates for possible complementation of activities. PHOTO: MEAQUINO

Regional Field Office 1, University of the Philippines Los Baños, Tarlac Agricultural University, Isabela State University, and Batangas State University.

During the meeting, Director Eleazar discussed the Research and Development, Extension Agenda and Programs (RDEAP) 2016-2022, a time-bound and feasible R&D master plan for medium term. RDEAP is a product of a series of multi-stakeholder's consultation workshops responsive to the current environmental, market and global challenges, and other issues/

concerns facing the agriculture and fisheries industries.

The bureau chief also provided copies of the Techno Digest featuring research-generated technologies on native pig and native chicken; as well as IEC materials produced and packaged by BAR through its Applied Communication Division.

In response, Asec. Garzon, Jr. suggested for all DA bureaus and agencies to review their respective mandates for possible complementation of activities. ###
(Ma. Eloisa H. Aquino)

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

Goat raising made...from page 14



A frozen semen (per straw) is sold for Php 300. PHOTO: ISU-CSVRRC

technology commercialization and institutionalization activities.

Increased availability of frozen semen

In AI, frozen semen from a buck is thawed and then inserted or deposited into the cervix of a doe in heat. If the necessary equipment is available, the use of frozen semen is much less expensive than paying a breeding fee.

For this project, the ISU-AI Goat Semen Processing Laboratory was tapped for semen processing. Part of the project activities was the purchase of breeder bucks of pure breed to increase the production of processed frozen semen.

As part of the commercialization initiative, the laboratory at ISU is selling frozen semen of Boer, Anglo-Nubian and Toggenburg breeds to private raisers and commercial farms. Much of these genetic materials have already reached parts of Northern Luzon and even Central Visayas.

More trained inseminators

Important components of the project are capacity-building activities for AI service providers in the form of trainings and implementation of a technology orientation program. They were

also provided with start-up kits for insemination. A total of 67 AI service providers in Cagayan Valley underwent the training on AI and conducted 1,211 inseminations.

Today, the technicians are continuously providing insemination services to qualified does. Provision of AI services has become an additional source of income for them. It also provides the means to sustain the upgrading of stocks for the production of quality slaughter goats in the region.

With this development, increase in goat population can be attained through AI provided that the goat raisers' management also includes following protocols and standards on proper feeding and health management.

Support to commercialization

The stored frozen semen is sold to raisers and technicians outside the region who are conducting AI. Each semen straw is sold at Php 300.

With this commercialization project, different business portfolios have been developed. These portfolios serve as guides for animal technicians in making this service provision into a livelihood. Different services offered range from provision of insemination services to large or small ruminants, to administration of biologics, and even semen processing.

At present, more than 240 backyard raisers in 21 municipalities of Cagayan Valley have already benefitted from this project in terms of improved stocks without even purchasing a breeder buck.

Establishment of AI laboratory

Prior to this project, BAR funded an Institutional Development Project in 2002 at ISU specifically for the establishment of an AI Laboratory. The establishment of this facility paved the way for many basic researches to be conducted improving further the semen processing and application of AI the region. ###

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CPAR on SSNM...from page 13



CPAR farmer Elmer Evangelista happily shows his corn produce through SSNM. PHOTO: DLBATTAD

Sablayan, a fertilizer requirement of 140-40-40 entails 9 bags of inorganic fertilizers, 10 bags of organic fertilizers, and 6 packs of Bio-N.

As of project visit, positive results were already evident by the look of the corn crops in all of the farmers' fields. Mr. Elmer Evangelista, one of the farmer-cooperators, proudly showed his crops which are set to be harvested in June. "*Mas dumami ang kaalaman ko sa CPAR, gumanda rin ang tanim ko*," he shared.

Marasigan, confident with the results of the SSNM intervention so far, said that if the farmers will continue to adhere to the SSNM approach, they will surely benefit from an increased produce, thus, income. ###

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Goat raising made more profitable through AI

by Rita T. dela Cruz



The collected semen from a buck is placed in a straw which will then be frozen for distribution.

PHOTO: MAG-AGRI TAYO

Goat raising is a practical livestock-based enterprise that requires minimal investment but guarantees a return of investment in a short period of time. However, the lack of quality breeder stock and the high cost of breeding activities are some of the constraints that cause the low rate of local goat production.

The price of goat is mainly determined by its genetic size and weight. When it reaches its marketable age, usually at eight months, a native goat, which can weigh 16 kilos, can fetch a price of Php1,600. Meanwhile, an upgraded goat or a goat of good breed, usually weighing 30 kilos, can be sold at double the price.

If a farmer wants to improve the genes of his goats, he needs guaranteed goat breeders. Unfortunately, bucks frequently cost a lot more and are hard to find. Now, with the use of Artificial

Insemination (AI), the same benefit is within reach of entrepreneurs.

AI is one of the best technologies being used today as an alternative to natural breeding. It is used to fast track the dissemination of genetic materials from quality breeders to improve the blood composition of farm animals.

Although AI is more widely-used for cattle and swine, it has promise for goat breeding. It is still not being adopted by the goat raisers due to: 1) unavailability of processed semen, 2) lack of trained inseminators, and 3) absence of a viable industry to support the commercialization of the technology.

To address these constraints, the Cagayan Valley Small Ruminants Research Center (CVSRRC) of the Isabela State University implemented a project in 2012 titled, "Commercialization and Institutionalization of Artificial

Insemination for Goats Delivery System in Cagayan Valley". Funded by the Bureau of Agricultural Research (BAR), this initiative is headed by Dr. Jonathan Nayga of CVSRRC with the main hope of upgrading local stocks that would make the technology accessible to target clients. Specifically, the project aims to increase the production of processed goat semen intended for AI and to train more technicians who will facilitate the delivery of insemination services to intended clients.

Six years after, the project is now producing benefits not only to direct beneficiaries but the goat industry as a whole. After the development of AI protocols, the project was able to sustain the upgrading of stocks for the production of quality slaughter goats in the Cagayan Valley region through

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Eleazar and staff visit ISU projects



BAR Director Eleazar looks at the Saanen goat breed. The Multi-Purpose Poultry House is situated inside the ISU-Echague Campus.

PHOTO: MEAQUINO



Ms. Aubrey Joy Balbin discussing about some of their modern equipment used for checking semen quality characteristics.

PHOTO: MEAQUINO

Officials and staff of the Bureau of Agricultural Research (BAR), led by Director Nicomedes P. Eleazar visited BAR-funded projects being implemented by the Isabela State University (ISU) on 21 February 2018. Joining the director were Ms. Digna L. Sandoval, head of BAR-Institutional Development Division (IDD) and Ms. Nadine B. Coronado also from IDD.

Dr. William Medrano, vice

president for Research and Development and Extension and Training (RDET) of ISU led the tour. The group first visited the ISU Artificial Insemination Goat Semen Processing Laboratory that the bureau, under its Institutional Development Grant (IDG) program, has funded, particularly the upgrading of facility and acquisition of equipment. The group also visited the sites of projects funded under the bureau's National

Technology Commercialization Program (NTCP), namely: 1) Commercialization of Artificial Insemination (AI) Delivery System for Goat in Cagayan Valley; and 2) Technology Promotion and Commercialization of Upgraded Native Chicken in Isabela, where they were updated on project developments.

ISU is one of BAR's active partners in the generation and

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AFACI deputy secretary general visits BAR



L-R (seated): Ms. Maria Rosario Em, AFACI national contact person; Ms. Julia Lapitan, ACD head and PI for ATIN project; Dr. Kim Min-Kyeong, AFACI deputy secretary general; and Ms. Kim Eun-ji, AFACI coordinator for ATIN project.

PHOTO: RHERMOSO

Dr. Kim Min-Kyeong, deputy secretary general of the Asian Food and Agriculture Cooperation Initiative's (AFACI), visited the Bureau of Agricultural Research (BAR) on 30 January 2018. Joining her were Ms. Kim Eun-ji, AFACI coordinator for Agricultural Technology Information Network in

Asia (ATIN) project; and Ms. Maria Rosario Em, AFACI national contact person (NCP) in the Philippines.

Meeting them was Ms. Julia Lapitan, head of the Applied Communication Division (ACD) head. She is also the principal investigator (PI) of the ATIN project in the Philippines, which is being

headed by BAR Director Nicomedes Eleazar.

AFACI, established in 2009 in South Korea, is an international cooperation body geared towards promoting sustainable agricultural growth in the Asian region and contributing to the consistent

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Groundbreaking ceremony for ISU's climate change R&D facility held



BAR Director Nicomedes Eleazar, BAR-IDD Head Digna Sandoval, ISU President Ricmar Aquino, and ISU Vice President for RDET William Medrano doing the groundbreaking ceremony for ISU's climate change R&D facility. PHOTO: FGRETCHIN

With climate change being a pressing concern in the agriculture sector, research projects and facilities are directed to support the development of adaptation and mitigation strategies which are in line with the Department of Agriculture (DA)'s thrusts. In the Philippines, Isabela is among the highly-productive agricultural provinces which have been experiencing increased losses due to the more frequent occurrence of typhoons and other natural calamities.

In response, the Isabela State University (ISU) has taken a step made possible by the Bureau of Agricultural Research (BAR), through the Institutional Development Division (IDD). The groundbreaking ceremony for the Climate Change Research and Development (R&D) Support Facility took place on 21 February 2018. The ceremony was attended by BAR Director Nicomedes P. Eleazar and BAR-IDD Head Digna L. Sandoval. Joining them were ISU President Ricmar P. Aquino and ISU Vice President for Research, Development, Extension, and

Training (RDET) William C. Medrano.

Recognizing the importance of the climate change issue and the Philippines' vulnerability, Director Eleazar commended ISU for packaging the project and for dedicating experts in an effort to continually address the impact of climate change to agriculture and to the country as a whole. He noted the appropriateness of establishing a service facility in the province which will also house an RDE lab.

ISU researchers were challenged by University President Aquino to come up with projects resulting to information and technologies that will deliver high impact to the stakeholders. Meanwhile, VP for RDET Medrano mentioned that the facility will be a venue for capacity-building activities for various stakeholders including farmers and fisherfolk in Cagayan Valley, agriculture R&D personnel, extensionists, and LGU partners. It will also encourage the convergence of instruction, research, extension, and production. ### (Nadine B. Coronado)

AFACI deputy...from page 3

economic development of member countries through the technological cooperation in agricultural and food sectors. Its Secretariat is based at the International Technology Cooperation Center (ITCC), Rural Development Administration (RDA) in Jeonju, South Korea.

ATIN is one of the projects under the Extension Program that is being coordinated by AFACI, to which the Philippines is a member-country. ATIN is an initiative that aims to build a standardized network and/or web-based information database system for agricultural knowledge and share information among AFACI member-countries. Among the specific outputs of ATIN include maintenance of AFACI website as a platform to upload and share technological innovations and relevant information; publication and distribution of IEC materials including crop calendars, production guides, etc.; and building network of database on agricultural information from research outputs that can be systematically shared and retrieved by member countries.

Also present during the meeting were: Ms. Digna Sandoval, head of the Institutional Development Division; Ms. Melissa Resma, head of the Information Management Unit; Dr. Andrea Agillon of the Technology Commercialization Division; Ms. Amavel Velasco, asst. head of the Program Monitoring and Evaluation Division (PMED); Ms. Rita dela Cruz, asst. head of ACD; Ms. Apolonia Mendoza of PMED, and Ms. Chiqui Padullon of the Program Development Division.

After the short orientation meeting with BAR staff, the AFACI representatives attended a business meeting with the AFACI NCP and AFACI-ATIN PI. They were also toured at the BAR Technology Commercialization Center showcasing some research-generated technologies supported and funded by the bureau. ### (Rita T. dela Cruz)

CPAR on SSNM for yellow corn foresees better income for farmers

by Daryl Lou A. Battad

Occidental Mindoro thrives on two major crops: rice and corn. In MIMAROPA region, Occidental Mindoro supplies most of the region's yellow corn, with 76,934 metric tons in 2014 (PSA, 2016). However, 80 percent of smallhold corn farmers suffer from low income due to the decreasing production with only five tons per hectare.

One prevailing issue causing such concern, as shown in the results of the Participatory Rural Appraisal (PRA) conducted, was that farmers do not follow the proper amount of fertilizers applied in the field. Project leader and proponent, Ms. Elenita Marasigan of the DA-MIMAROPA research division, said that most farmers do not have enough capital to supply proper fertilization for yellow corn production.

"Farmers need to understand the effect of best management practices when it comes to corn production. This is why we introduced, through the Community-based Participatory Action Research (CPAR) the Site Specific Nutrient Management

(SSNM) technology that could help corn farmers in Sablayan particularly, to increase their production and income," Marasigan said.

SSNM is an approach that promotes the timely application of fertilizers at optimal rates to fill the deficit between the nutrient needs of a high-yielding crop and the nutrient supply from naturally occurring indigenous resources that includes soil, crop residues, manures, and irrigation water (IPNI, 2010).

With the success of the SSNM technology in maize production across the country, Marasigan and her project team did not hesitate to introduce it to the farmers of Sablayan. During the inception meeting, Marasigan said that the farmers were enthusiastic to adopt the technology through CPAR.

To determine the proper fertilizer requirement for both soil and crop, a soil sampling was conducted prior to planting of corn. The farmers were also trained on proper planting rates and distance to achieve ideal results. A rate of one seed per hill with a

distance of 70 centimeters (cms) between furrows and 20 cms between hills were carried out.

Using the published 'Quick Guide for Yellow Corn' (resulting from a collaborative project of the International Plant Nutrition Institute (IPNI) and the Bureau of Agricultural Research), the CPAR farmer-cooperators made use of the fertilizer application based on the SSNM rates.

Bio-N was applied at the rate of 6 packs per hectare, coated to corn seeds before planting. Ten bags of organic fertilizers were plowed prior to furrowing, and inorganic fertilizers were also applied following the SSNM rates indicated in the Quick Guide.

Basal application was done with 30% Nitrogen (N), 100% Phosphorus (P), and 100% Potassium (K). The succeeding applications were done according to the determined SSNM rates. Based on the results of the SSNM trials in the project sites in

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SSNM corn production area in Sablayan, Occidental Mindoro

PHOTO: DLBATTAD

Increasing corn and peanut productivity with sea water

by Ephraim John J. Gestupa



Mr. Domingo Mendoza, farmer cooperater (in stripes), hauls and pours water on the treatment plots at the field trial site in B. Don Pedro, Mansalay, Oriental Mindoro. PHOTOS COURTESY OF ASC, CA-UPLB

Agriculture, on this day and age, calls attention to the diminishing resources and alternative measures. Take irrigation for example, in Dr. William Dar's Manila Times column in 10 February 2017, the former Agriculture Secretary pointed out that "of the three million irrigable lands in the Philippines, about 1.73 million hectares are irrigated, for a coverage of approximately 57.33 percent."

Still, there is one resource that will always be available in the Philippine archipelago, and that is, sea water.

Researchers from the University of the Philippines Los Baños (UPLB) recently conducted a research project exploring the proper utilization and management of sea water as part of farm irrigation which not only it can serve as an alternative to freshwater irrigation but also as a source of nutrients that can increase farm yield. The study, spearheaded by Dr. Romulo G. Davide of the Crop

Science Cluster is titled, "Sea Water and Farm Resources Management (SEAFARM) for Increased Corn and Peanut Productivity." The study was implemented by UPLB's Agricultural Systems Institute and was funded by the Bureau of Agricultural Research.

Among the previous research experiments that prompted this project was a study conducted in 2010 by Ms. Cirila Cuyacot, a trained farmer-scientist from Ubay, Bohol. In her small backyard experiment, she noticed that when she watered peanut crops with sea water, it led to an increase in peanut growth. Taking note of this experiment, UPLB conducted a research project that would study the impact of sea water application on the physical and chemical properties of soil, the nutrient uptake of corn and peanut crops, and the growth and yield responses of the said crops.

They limited the crops studied for their projects to peanut and corn

as these were among the major crops propagated across the country that were considered to have high tolerance to sea water. Since UPLB's research also included a comparative analysis on the effects of seawater on soil, the crops were planted on Faraon clay from Cebu, San Manuel loam from Oriental Mindoro, Luisiana clay loam Laguna, and Ubay sandy loam from Bohol. After conducting pot experiments in UPLB, the researchers also did field experiments from where the sample soils were derived.

Corn and peanut were treated with varying sea water concentrations beginning from 0% (pure freshwater) to 100% (pure sea water). Both crops displayed increasing yields with the integration of sea water concentrations of up to 50%. Any higher and crop yield would lean towards lower or inconsistent results. It was concluded in the study that peanut exhibited

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Six on-going research projects on onion armyworm reviewed



The review on the six on-going research projects on onion armyworm was held on 13 February 2018 at BAR.

INSET: The damage caused by *Spodoptera* sp. on the onion leaves.

PHOTO: PRLESACA

In lieu of the reported cases of onion armyworm (*Spodoptera exigua* Hübner) in the provinces of Tarlac, Nueva Ecija, and Pangasinan, farmers, consumers, and the local government units (LGUs) have raised their concerns in various consultation meetings with the Department of Agriculture (DA), through the Regional Crop Protection Center (RCPC) III and selected state universities and colleges (SUC).

In response, the Bureau of Agricultural Research (BAR), together with the High Value Crops Development Program (HVCDP) and the Bureau of Plant Industry (BPI), has been working in partnership with the National Crop Protection Center-University of the Philippines Los Baños (NCPC-UPLB); Post Harvest Training and Research Center, College of Agriculture and Food Science, UPLB; and Central Luzon State University (CLSU), on the conduct of six on-going BAR-funded projects on onion armyworm. These are: 1) Spatial Tracking, Damage, and Yield Assessment and Mapping of Armyworm

Infestation and Diseases of Onion Using Remote Sensing Technology; 2) Early Detection and Warning: Surveillance and Monitoring of Different Crops/Areas Affected; 3) Biological Studies; 4) Efficacy Test of Bio-pesticides and Microbials; 5) Insecticide Management and Resistance Studies; and 6) Quality and Safety Assessment and Postharvest Behavior of Onion Grown under Integrated Pest Management Program.

These projects are aimed to provide farmers and the onion industry players with vital information on the behavior of the pest and how to eliminate, if not reduce the degree of infestation, in a science-based integrated approach, as well as produce updated reference material to be used in region-wide farmer education campaign on armyworm Integrated Pest Management (IPM).

To update on the progress of these projects, a review on the "Comprehensive Research and Development on Integrated Pest Management (IPM) for Onion Armyworm" was conducted on 13 February 2018 at BAR. The

updates and project highlights were presented during the review.

Mr. Joell Lales, head of BAR's Program Development Division, gave the rationale of the program review articulating the pronouncement of Agriculture Secretary Emmanuel Piñol to look into the onion armyworm infestation and come up with R&D initiatives on combating said infestation particularly in the provinces of Nueva Ecija and Pangasinan.

The activity was also attended by Ms. Salvacion Ritual, head of the BAR's Program Monitoring and Evaluation Division; Mr. Jose Jeffrey Rodriguez and Mr. Gamelzar Dean, who represented Undersecretary for High Value Crops and Rural Credit Evelyn Laviña; and project proponents from the NCPC-UPLB and CLSU.

Presented and discussed were the various IPM strategies to manage armyworms in helping our farmers and other stakeholders. The RCPC, on its part, will assist the proponents in coordinating with the LGUs and farmers during the implementation of the projects. ### (Patrick Raymund A. Lesaca)



PhilMech's cassava digger reduces labor up to 88%

Cassava is one of the most versatile agricultural crops. It has been characterized as a subsistence crop, and one of the most widely cultivated root crops in the tropics because of its long growth season production. The crop, mainly used for food, can also be used as raw material for industrial uses. According to the Philippine Statistical Authority, in 2016 cassava production reached 2.71 million metric tons (mmt) and cultivated to roughly 223,000 hectares.

One of the major concerns,

that beset the cassava industry, is low productivity and lack of farm machineries. In view of the increasing demand for cassava and its economic contribution in the crops sub-sector, the Department of Agriculture (DA) has crafted the national cassava development plan that will address low productivity; make use of high-yielding varieties; adopt recommended crop production technologies; address inadequate credit, financing, limited mechanization, and postharvest equipment, among others.

Eleazar and staff...from page 3

development of technologies. Among the BAR-ISU projects are on cacao, mango, corn, indigenous vegetables, fruit wines, pigeon pea, peanut, sweet sorghum, chevon, dairy cattle, upgraded chicken, goat, *Sargassum* for fisheries, and farm management practices that resulted to promising results both for production and profitability.

Visiting the AI Goat Semen Processing Laboratory, Ms. Aubrey Joy Balbin discussed to the group the modern equipment used for checking semen quality characteristics. BAR, through the IDG program, has provided the funds for the acquisition of equipment for the rapid production of quality goat breeder stocks; production and distribution of quality frozen semen; and upgrading existing and indigenous goat populations.

The group also went to

the Multi-Purpose Poultry House showcasing the various goat breeds including Toggenburg, Saanen, Anglo-Nubian, and Boer. AI technician demonstrated the process of semen collection from a Toggenburg and Anglo-Nubian goat breed. Technicians are continuously providing insemination services to qualified does. AI is one of the technologies being used as an alternative option to natural breeding and fast track dissemination of genetic materials to improve the blood composition of local farm animals.

Another NTCP project visited was on the "Technology Promotion and Commercialization of Upgraded Native Chicken in Isabela" which aims to enhance the production of upgraded native chicken in Isabela and promote technologies on feeding, brooding, rearing, housing management, and control of parasites and diseases.

Among the identified strategies to boost cassava production was the provision of a mechanized cassava harvesting equipment. The lack of mechanized equipment has been one of the clamors among cassava growers, particularly the food and industrial processors. It has been observed that the insufficiency of equipment in harvesting operations entails tedious and longer working hours that could result to additional labor cost for farm owners, thus affecting farm-gate prices. Further, farm productivity could also be affected. From the viewpoint of harvesting, a farmer can harvest around 500 kilograms a day and around 20 persons are needed to harvest a hectare.

In view of increasing unavailability of farm labor especially during harvest season, farmers are expressing the need for a mechanized harvester.

To aid in the cassava development plan, the Philippine Center for Postharvest Development and Mechanization (PhilMech), in collaboration with the Bureau of Agricultural Research (BAR), to fabricate a cassava digger to help farmers on the rigors of harvesting, **turn to page 11**

Under the project, Purebred Cantonese roosters were given to farmer cooperators in Dallakip, Angadanan, Isabela while purebred Barred Plymouth Rock were distributed to farmer cooperators in San Isidro, Jones, Isabela.

Dir. Eleazar and BAR staff during the visit were able to have discussions with ISU key officials: ISU President, Dr. Ricmar Aquino; VP for RDET, Dr. William Medrano; VP for Admin and Finance Services, Atty. Romano Cammayo; and VP for Academic and Related Affairs, Dr. Editha AUSA; Director for Extension and Training, Dr. Pedrita Medrano; Director for Research and Development, Dr. Dante M. Aquino; Dean of the College of Agriculture, Dr. Joel Reyes; Director of the Cagayan Valley Small Ruminants Research Center at ISU-Echague, Dr. Jonathan Nayga; and Animal Husbandry Program Chair, Dr. Oliva Gaffud. ### (Ma. Eloisa H. Aquino)

BAR sponsors 1st Ikeda Symposium

One with achieving peace through academic discourse, the Bureau of Agricultural Research (BAR) co-sponsored the First Ikeda Symposium on 24 February 2018 at the Manila International Peace Center, Soka Gakkai International (SGI) of the Philippines, Binondo, Manila.

The symposium, named after SGI founding President and Soka Schools System Founder Dr. Daisaku Ikeda, aims to provide a venue for discourse in realizing the Sustainable Development Goals

(SGDs) by developing a culture of peace where every member of the society is able to maximize his potential to lead fulfilling lives. The one-day symposium drew 355 participants from various academic institutions in the Philippines, Taiwan, and Japan.

Hilario G. Davide Jr., the former Chief Justice of the Supreme Court of the Philippines served as the symposium's guest of honor and plenary speaker on the topic titled, "Peace: The Key to Full Human and Global Development, Progress,

Security, and Stability."

Davide was joined by other plenary speakers, Dr. Junichi Kanzaka, director of the Soka Education Research Institute and dean of the Faculty of Economics, Soka University; Dr. Jasmin Nario-Galace, executive director of the Center for Peace Education, Miriam College; Dr. Maria Guajardo, deputy vice president and professor, Soka University; and Dr. Tingyang Lewis Liu, professor at the National Kaohsiung Normal University.

Dr. Zosimo M. Battad, chancellor of the University of the East – Caloocan campus conceptualized the conduct of the 1st Ikeda symposium in the Philippines. Resonating Dr. Ikeda's philosophy, Dr. Battad said that "educational institutions had the greatest power to influence the youth." He added that such academic dialogue would raise a greater, and a more sophisticated appreciation towards the need of man to create and transform society without compromising peace and education.

BAR, in its unswerving interest in the application of scientific knowledge to enhance awareness and knowledge management, supported the activity through its Scientific Publication Grant (SPG) Program. ### (Daryl Lou A. Battad)



Former Chief Justice Hilario G. Davide Jr. reiterates the innate goodness of every human being and how this can lead to achieving a happy, peaceful world for all.

PhilMech's cassava...from page 6

and lessen production cost. The project, "Enhancing Agricultural Mechanization Technologies for Crop Production and Post-Harvest Processing of Cassava" is funded under the Asian Food and Agriculture Cooperation Initiative (AFACI) of South Korea, of which, the Philippines is a member-country.

Project leader, Dr. Romualdo Martinez of PhilMech cited that AFACI project aimed to: 1) develop and establish appropriate cassava mechanization technologies for crop production and postharvest processing that are suited to the requirements of cassava farmers (and other end-users) and their local conditions; 2) assess technical feasibility and economic viability of established cassava mechanization

technologies; 3) enhance farmers access to improve cassava mechanization technologies; and 4) foster stronger network among AFACI-participating countries to facilitate exchange of technologies and best practices.

The prototype fabrication of the cassava digger, which started in 2013, was part of the partnership between PhilMech and AFACI. According to Dr. Martinez, the technical and socio-economic studies were conducted in the provinces of Isabela, Pampanga, Leyte, Bukidnon and South Cotabato, while the prototype was pre-tested in the provinces of Isabela and Quirino and passed the required specifications needed to operate.

Feedbacks gathered from farmers and other stakeholders showed that the use of the cassava

digger reduced labor requirement up to 88%. Obtained 100% and 81% in terms of harvesting time and losses, respectively. Furthermore, majority of the stakeholders expressed their interest to use the digger.

The AFACI project played a key role in introducing mechanized harvesting of cassava in the Philippines. In collaboration with project counterpart from Thailand, a tractor drawn digging implement was localized, evaluated and further developed. The cassava digger was eventually promoted, adopted by farmers and commercially manufactured. The project demonstrated the importance of inter-country collaboration for rapid introduction and adoption of appropriate technologies. ### (Patrick Raymund A. Lesaca)

Cacao highlights BAR seminar series



Ms. Josephine Ramos of OPTIONS and Dr. Fe N. Dimero of CavSU serve as the resource speaker for this month's in-house seminar. PHOTOS: RHERMOSO

Attended by more than 190 participants, this month's seminar featuring cacao was held on 28 February 2018 at the Bureau of Agricultural Research (BAR). Ms. Josephine V. Ramos, project leader and managing editor, Organization for Partnerships, Teamwork and Initiatives on Opportunities for Nature Steward, Inc. (OPTIONS) and Dr. Fe N. Dimero, associate professor and faculty researcher, Cavite State University (CavSU) served as the resource speakers.

Ms. Ramos discussed the livelihood opportunities in cacao production. According to her,

Philippines is in proximity to the growing demand markets for cacao in Asia and that most of the country has the necessary climate to produce cacao beans. She also discussed the National Seed Industry Council registered cacao clones, establishment and management of cacao farm, coconut-cacao intercropping, farm maintenance, management of pests and diseases, and required post-production practices.

Dr. Dimero discussed the cacao bean processing as well as the Code of Practice for Philippine Cacao Beans developed by the Bureau of Agriculture and Fisheries Product

Standards. This code of practice recommends production practices that are economically sustainable and socially acceptable, promotes food safety, and contributes to sustainable agriculture. More so, she also explained the qualifications that tablea should possess for it to be labeled as "Philippine Tablea."

Categorized as a high-value crop by the Department of Agriculture (DA), cacao may significantly contribute to poverty alleviation and inclusive growth through livelihood and job generation according to DA. Likewise, Ms. Ramos also said in her presentation that, "[c]acao production can take significant part in fostering resilient livelihoods for millions of farm households. As an intercrop under coconut, as part of the agro-forestry system or management of the forest base areas in several parts of the country. Sustainable cacao production could be a viable source of income with disrupting the existing crop or tree crop activities."

Spearheaded by BAR's Applied Communication Division, the activity is part of a monthly in-house seminar series of the bureau. Various information and educational (IEC) materials and flyers were provided to the participants during the seminar. The production of these IEC materials was funded by the Asian Food and Agriculture Cooperative Initiative. ### (Rena S. Hermoso)

Corn-TWG sets...from page 7

and limited good quality of grains.

The group agreed to put initial plans and targets for the Philippine native corn registration for its proper seed production and distribution. Among the agreements were to: 1) set basic criteria and indexes for the recommended corn native varieties for field trial; 2) form a special National Cooperative Testing (NCT) for native corn; 3) test the performance of potential CGUARD native corn varieties under wide range of agro-ecological conditions (AEC) that will be conducted by selected Research Outreach Stations (ROS); and 4) recommend varieties from the field trial with the desired important characteristics adaptable

in different AEC to the National Seed Industry Council (NSIC) for accreditation and registration as native corn commercial varieties.

To perform the NCT, rules and regulation for ROS field testing of corn native varieties were also identified during the meeting such as: 1) regional entries should be promising in yield with degree of resistance to major insect pests and diseases. The yield must equal or outperform the standard check variety; 2) the entries shall be evaluated on station for a minimum of 2 growing seasons (wet and dry) in at least 3 locations for regional and national recommendations; and 3) data to be considered must have allowable coefficient of variation of 25% for the dry season and 30

percent for wet seasons, respectively. Only the yield data with significant differences in terms of yield range, maturity, pest and diseases reactions, eating and processing qualities will be included in the final evaluation.

The CGUARD program was initiated in 2015 through the DA-National Corn Program, in collaboration of BAR, to implement activities in the establishment of corn germplasm collection, pouring investment on researches for improving productivity and profitability for corn sector. The program is also in line with the Seed Industry Development Act of 1992 or "Seed Act" that aims to promote and accelerate the development of the country's seed industry. ### (Leoveliza C. Fontanil)

Corn-TWG sets plans for testing and accreditation of native corn



PHOTO: LFONTANIL

To finalize the guidelines on testing, accreditation, seed production and distribution of corn varieties derived from the Corn Germplasm Utilization through Advanced Research and Development (CGUARD) Program, the Bureau of Agricultural Research (BAR) called a special meeting among members of the National

Corn Technical Working Group (Corn-TWG) on 2 February 2018 at BAR.

Among the members of Corn-TWG present were: Dr. Candido Damo of the National Corn Program; Dr. Edralina Serrano of University of the Philippines Los Baños (UPLB); Dr. Julieta Roa of Visayas State University (VSU);

Mr. Roynic Aquino of DA-Regional Field Office 2 (DA-RFO 2); Dr. Vivencio Mamaril of the Bureau of Agricultural and Fisheries Standard (BAFS); Ms. Elvia Morales of the Bureau of Plant Industry (BPI); Dr. Artemio Salazar of Institute of Plant Breeding-UPLB and CGUARD coordinator; and BAR Program Development Division Head Joell Lales; and selected BAR focal persons of the National Corn Program.

Discussion started with the current situation implying that there was no clear provision for testing and accreditation of corn seed varieties derived from its native corn germplasm that usually leads to low farm yield, minimum farm inputs

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BAR conducts review of bureau-funded technology commercialization projects



PHOTO: VGUAM

The Bureau of Agricultural Research (BAR) conducted a review of the progress of nineteen BAR-funded projects under its National Technology Commercialization Program on 12-15 February 2018 in Tagaytay City. Broadly, in the message of BAR Director Dr. Nicomedes P. Eleazar read by Mr. Anthony B. Obligado, Head of BAR's Technology Commercialization Division (TCD), the review is a way of "assessing how the technologies we have introduced and commercialized, through the various projects, have become instrumental in making the agri-fishery sector productive and

our farmers and fishers progressive". More to the point, the activity aimed to come up with updates and accomplishments on each effort in technology commercialization, and to discuss and address project implementation and management issues and concerns. Coordinated by the TCD, the activity was attended by project implementers from DA agencies and regional units, partner state universities and colleges (SUCs), reviewers from BAR's pool of experts, and selected bureau staff. The project reviewers were: Dr. Edralina P. Serrano, Dr. Cesar B. Quicoy and Mr. Elmer E. Enicola of UPLB; Dr. Rene C.

Santiago, Center Director of the BAI National Swine and Poultry Research and Development Center; and Mr. Anthony B. Obligado and Dr. Andrea B. Agillon of BAR.

Reviewed were projects on food processing (production of coconut water, rapid drying of mango, community-based coffee processing, and native animal production system and meat processing), product development (mango liquor, chevon value adding technologies, cacao products, and unpolished organic rice by-products), agricultural practices (IPM for mango, mungbean before rice, , selected agro-forestry technologies, edible landscape gardens, garlic production in Bicol, hydroponics and aquaponics, and Barringtonia asiatica or boton as pesticide), seed production systems (peanut, pigeon pea, longan propagation and commercialization), and supply value chain analysis of native chicken.

Technical comments given by the project reviewers and financial observances of BAR's administrative staff shall provide guidance to the implementers on the completion of their respective projects. ### (Victoriano B. Guiam)

BAR conducts training-writeshop on Research Proposal Preparation and Technical Writing

To capacitate new and budding pool of researchers of the Department of Agriculture (DA), the Bureau of Agricultural Research (BAR), through its Institutional Development Division (IDD), spearheaded the conduct of three batches of “Training-Writeshop on Research Proposal Preparation and Technical Writing” specific for junior research staff of the DA-Regional Field Offices in the country.

The intensive three-week series was conducted in Los Baños, Laguna and held on 5-10 February for Luzon, 12-17 February for the Visayas, and 19-24 February for Mindanao.

The objective of the training was to provide the participants an overview of the fundamentals in writing quality project proposals, technical papers, and scientific papers. It was emphasized that the thrusts and priorities of DA from which they will be requesting support must always be considered. Being knowledgeable of the basic guidelines, researchers may gain good reviews during evaluation, get approved for funding, and be published in refereed journals.

BAR Director Dr. Nicomedes P. Eleazar expressed the bureau’s aim to invest in new and young research staff, especially with the “new young bloods”. He gave importance in having foresight regarding the transition of responsibilities from current DA-RFO officials and staff to the next generation.

Resource speakers were Dr. Ofelia K. Bautista, Dr. Matilde V. Maunahan and Ms. Leonisa A. Artes from the University of the Philippines-Postharvest Training and Research Center, and Mr. Roberto K. Bautista from the private sector.

The participants brought draft concept proposals and technical papers which were reviewed and revised based during the writeshop. Each of their daily outputs was constructively critiqued by their respective groups. Staff from



Top-Bottom: Training-Writeshop participants composed of research staff from DA-RFOs in Luzon, Visayas, and Mindanao. PHOTO COURTESY OF BAR-IDD

concerned divisions of BAR presented the format of proposals and answered queries from the participants. At the end of the training-writeshop, participants

were also encouraged to further polish their outputs and submit them to BAR as project proposals for possible funding. ### (Nadine B. Coronado)

2nd BAR Regional Seminar features hydroponics and aquaponics



Participants are given the chance to try the actual procedures on crop production using Hydroponics. PHOTO: LFONTANIL

To create awareness on the technologies generated by the Bureau of Agricultural Research (BAR), through its supportive research partners, the bureau gives high priority in conducting seminars that will provide them livelihood opportunities.

On 13 February 2018, more than 80 participants composed of principals, teachers, and other representatives from the first five districts of the province of Pangasinan attended the “2nd BAR Regional Seminar on Hydroponics and Aquaponics (Part 1)” in San Carlos City, Pangasinan. The activity was spearheaded by BAR’s Applied Communication Division (ACD) in collaboration with the Department of Education (DepEd) Division Office-San Carlos City.

The DepEd San Carlos City, one of the 14 division offices of DepEd in Region 1, requested the seminar as a means towards

an effective learning exercise on innovative and cutting-edge technology on crop gardening. This will equip the schools with relevant information and knowledge leading to a sustainable source of income and supplementary food for feeding program and potential establishment of hydroponics and aquaponics facilities in their area.

Dr. Chito Sace, project leader and professor at the Central Luzon State University (CLSU), served as resource speaker of the seminar. In his presentation titled, “Farming the Future through Soilless Agriculture (Hydroponics/Aquaponics),” he mentioned the importance of utilizing advanced systems such as hydroponics and aquaponics in producing more, safer, and cleaner food to meet the growing demand while preserving the environment.

On the other hand, Mr. Arjay Aquino, assistant professor at CLSU, discussed the nutrient management in circulating passive hydroponics.

He showed likewise the materials needed and exhibited how to prepare the proper medium and ratio for nutrient solution. Afterwards, the participants were given the chance to try the actual procedures of plant propagation through the “passive method” themselves.

Ms. Julia Lapitan, head of BAR-ACD, in her speech, said that the agency supports crop production technologies such as hydroponics and aquaponics not only to serve as an awareness to the public but also to provide them livelihood options.

During the course of the seminar, various information and educational materials and flyers are being provided to the participants, the production of which were funded by the Asian Food and Agriculture Cooperative Initiative.

The second part of the regional seminar series will be conducted on 12 April 2018 also in San Carlos City, Pangasinan. ### (Leoveliza C. Fontanil)