ISSN 1655-3942

BARChronicle

BUREAU OF AGRICULTURAL RESEARCH

www.bar.gov.ph @DABAROfficial

Volume 19 Issue No. 9 | A monthly publication of the Bureau of Agricultural Research | September 2018

Eleazar highlights BAR-supported rice researches in R4D conference

PHOTO COURTESY OF CDACUMOS/PHILRICE

INSET: Dr. Nicomedes P. Eleazar, BAR director, delivers keynote address. In his message, he emphasized the significant role of R&D in producing "quality rice that we can grow, eat and sell at a competitive price," thus leading to providing the people with a "quality life."

PHOTO: JIBERMAS

Bureau of Agricultural Research (BAR) Director Nicomedes P. Eleazar served as keynote speaker during the "31st National Rice Research for Development (R4D) Conference" on 6 September 2018 in Science City of Munoz, Nueva Ecija.

The R4D Conference is an annual event conducted by the Philippine Rice Research Institute (PhilRice) to present results of various rice research and development (R&D) initiatives aimed at improving and sustaining rice production in the country.

The theme of the conference was "Quality Rice, Quality Life" highlighting the value of rice R&D in improving and advancing the life of the rice farmers and seed growers, and other key players in the industry.

Dr. Eleazar mentioned in his speech how self-sufficiency in rice "remains the Holy Grail and achieving it requires a multi-pronged approach of which research and development (R&D) plays a crucial part."

He said that, "R&D has a lot to do with producing quality rice" but "rice quality is not just dependent on the variety of rice, as it also depends on the crop production environment, harvesting, processing and postharvest systems."

As the lead R&D coordinating agency, BAR, through the DA's National Rice Program, has been supporting relevant programs and projects on rice in the areas of crop management, pest and disease management, varietal improvement, and postharvest practices and processing, among others. The realization of research, development and promotion of appropriate technologies over the entire scale of rice production is seen as one of the major service interventions in strengthening the production of the country's food staple. Pursuing this goal requires proactive campaigns and effective dissemination of

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information particularly on the results of R&D.

Dr. Eleazar said that "the time is right that we be more aggressive in getting technology and other products of research into the production mainstream. This means getting farmers, producers and investors to really adopt the technologies that our research partners have developed and transform these into profit-making ventures."

Aside from the presentations of plenary papers on research and updates, part of the event was a phygital (physical + digital) exhibit featuring the research outputs generated from 13 BAR-funded rice R&D projects. These include: 1) Philippine Rice Information System Management (PRISM), 2) Next-Generation Rice Varieties, 3) Associated Rice Production Technologies, 4) Bulk Handling and Drying of Processing Palay, 5) Improving Technology Promotion and Delivery (IPaD), 6) Rice Crop Manager (RCM), 7) Heirloom Rice, 8) Benchmarking the Philippine Rice Economy, 9) Rice Yield Gap, 10) Value Chain Analysis of Rice, 11) Profiling and Seed Multiplication, 12) Varietal Mixtures of Rice (VarMix), and 13) Palayamanan.

According to Dr. Eleazar, showcasing these BAR-supported R&D projects on rice is a good testament to and a concrete manifestation of what the government has been doing for the last two decades or so. "Finally we can say that, government investment in rice research was never in vain because the results are here and are already in use," he said. ### ***(Rita T. dela Cruz)***

BAR Director Nicomedes P. Eleazar (center), together with PhilRice Acting Executive Director Sailila E. Abdula (2nd to the left) and other PhilRice officials, does the ceremonial ribbon-cutting to open the poster exhibit. PHOTO: JIBERMAS

Dr. Nicomedes P. Eleazar (center), BAR director, together with PhilRice officials, poses in front of the newly-opened Rice Science Museum.

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

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

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ISSN 1655-3942

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2,900 accessions of traditional white corn collected under CGUARD

From 2015, since the Corn Germplasm Utilization through Advance Research and Development (CGUARD) program of the Institute of Plant Breeding, University of the Philippines (UP) Los Baños in collaboration with the Department of Agriculture (DA) was initiated, a total of 2,900 accessions of traditional white corn have already been collected by the 16 regions and implementing agencies. This was reported by Dr. Artemio Salazar, CGUARD program coordinator, during the "2018 National CGUARD Review and Planning Workshop" held on 11-14 September 2018 in Baguio City.

According to Dr. Salazar, the top five regions with the most number of corn collections included regions 6, 7, 4A, 5, and 4B with 571, 335, 250, 249, and 200 accessions, respectively.

The CGUARD program, which is being supported by the Bureau of Agricultural Research (BAR), aims to conserve and use previous and still existing traditional native corn varieties in corn farming communities; develop breeding materials using traditional corn germplasm; and determine genes responsible for different unique traits in traditional varieties.

"The CGUARD program is providential in making meaningful effort to conserve precious seeds worked on by the farmers through centuries. The program provides essential support to the government's effort for food security in the countryside and urban areas. Because crop production starts with seeds," said Dr. Salazar.

Through the program, inbred lines that are 100 percent resistant to downy mildew have been developed which is a first in our country, according to Dr. Salazar. Likewise, collections that are resistant to weevil and corn borer have also been identified.

BAR OIC-Assistant Director Digna Sandoval delivered the opening message, in behalf of BAR Director Nicomedes Eleazar. In her message, she mentioned the establishment of the Plant Genetic Resources Center (PGR) in the three pilot regions (2, 4A, and 5) funded by BAR through the Institutional Development Grant in support to the CGUARD program. The PGR facility, according to her, has provided for the housing of the traditional corn collection under the program. "What we started in corn, I hope that we can also do with other high-value crops," she said.

Accomplishments of projects implemented by 16 regional field offices of the DA and UP Los Baños for smooth implementation and improvement. Serving as evaluators during the review were: Dr. Artemio Salazar of UP Los Baños, Dr. Candido Damo of DA, Assistant Regional Director Milo delos Reyes of DA-RFO 4A, and Joell Lales and Salvacion Ritual of BAR.

Another highlight of the activity was the opening of a mini exhibit featuring posters and actual displays of traditional corn varieties collected from each region.

The review was spearheaded by the BAR-Program Monitoring and Evaluation Division. ### ***(Rita T. dela Cruz)***

BAR conducts field validation for Gawad Saka OAS, OAR nominees


PHOTO: MMOSENDE

Dr. Julius Abela of Visayas State University, Gawad Saka Outstanding Agricultural Scientist (OAs) nominee

Dr. Cesar Limbaga of University of Southeastern Philippines, Gawad Saka OAS nominee PHOTO: MEAQUINO

Dr. Norvie Manigbas of Philippine Rice Research Institute, Gawad Saka OAS nominee PHOTO: DLBATTAD

Dr. Irene Adion of DA-RFO 3, Gawad Saka Outstanding Agricultural Researcher (OAR) nominee PHOTO: EJGESTUPA

Resurreccion Esturas of DA-RFO 9, Gawad Saka OAR nominee PHOTO: MMOSENDE

Daisynette Manalo of DA-RFO CALABARZON, Gawad Saka OAR nominee PHOTO: EJGESTUPA

The National Technical Committee (NTC) for the 2018 Gawad Saka Search for Outstanding Agricultural Researcher (OAR) and Outstanding Agricultural Scientist (OAS) conducted its field validation activities from August to September 2018. The committee is chaired by BAR Director Nicomedes Eleazar and co-chaired by OIC-Assistant Director Digna Sandoval.

Annually, the Department of Agriculture (DA) assigns the Bureau of Agricultural Research (BAR) to conduct evaluation and on-site validation of potential Gawad Saka awardees nominated by their respective regions under the OAS and OAR categories. The activity aims to verify and measure the accuracy of the nominees' various research information and activities at the field level, and assess high impact technologies that can contribute to the development of the agri-fishery sector.

The NTC members include Dr. Enrico Supangco, Dr. Josephine Cruz, Dr. Edralina Serrano, Dr. Emmanuel Vera Cruz, Dr. Jose Hernandez, and Dr. Elda Esguerra – experts from the University of the Philippines Los Baños (UPLB), Central Luzon State University (CLSU), and Central Bicol State University of Agriculture (CBSUA).

The team visited six nominees in Central Luzon, CALABARZON, Zamboanga Peninsula, Davao, and Eastern Visayas regions.

The shortlisted nominees for OAS include: Dr. Julius Abela, associate professor and livestock expert from the Visayas State University; Dr. Cesar Limbaga, dean and high-value crop expert from the University of Southeastern Philippines; and Dr. Norvie Manigbas, scientist and supervising science research specialist

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16 Tech Com projects undergo progress review

INSET: BAR-TCD Head Anthony Obligado stresses the importance of the activity and underscores the need to determine the status, impact, and the sustainability of the NTCP projects. He also encourages everyone to adhere to the core goals of NTCP that is, making commodity products and by-products profitable and marketable. PHOTO: PRLESACA

The Bureau of Agricultural Research (BAR), through its Technology Commercialization Division (TCD) conducted a project progress review of 16 BAR-funded and assisted projects under the National Technology Commercialization Program (NTCP) on 19-21 September 2018 in Silang, Cavite.

The project progress review was conducted to monitor the status of the projects, evaluate how the projects are being implemented, and assess technologies with Intellectual Property (IP) potentials for the completed ones.

In his welcome address, Anthony Obligado, TCD head, said that the importance of the activity is vital in determining the development, impact and sustainability of the projects. He also encouraged everyone to adhere to the core goals of NTCP, that is, by making commodity products and by-products profitable and marketable. The NTCP is one of the banner programs of the bureau.

Of the 16 projects subjected to review, 10 are on crops, five on livestock and poultry, and one on fisheries. The project proponents who presented salient accomplishments of their on-going projects during the review came from various agencies from the Department of Agriculture, state universities and colleges, and accredited private organizations.

Serving as external panel of evaluators were: Dr. Glenn Baticados, Dr. Cesar Quicoy and Dr. Edna Aguilar, experts from the University of the Philippines Los Baños; Dr. Rene Santiago, center chief of the Bureau of Animal Industry-National Swine and Poultry Research Development Center; and Obligado and Evelyn Juanillo of BAR. ### ***(Patrick Raymund A. Lesaca)***

BAR conducts field...from page 4

specializing in breeding for heat tolerant rice varieties at the Philippine Rice Research Institute in Nueva Ecija.

Meanwhile, shortlisted nominees for the OAR category include: Resureccion Esturas, white corn expert from DA-Regional Field Office (DA-RFO) 9 (Zamboanga Peninsula); Dr. Irene Adion, sweet potato expert from DA-RFO 3 (Central Luzon); and Daisynette Manalo, macapuno and cacao expert from DA-RFO 4A (CALABARZON).

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. ### ***(Daryl Lou A. Battad)***


PHOTO: DLBATTAD

BAR-SEARCA IKM Mentorship Program produces pioneer batch

Sixteen learners composed of research and information officers from the Department of Agriculture-Regional Field Offices (DA-RFOs) emerged as finishers and graduates of the Information and Knowledge Management (IKM) Mentorship Program, a first-of-its-kind course program that aims to facilitate improved agricultural and fisheries research reporting and knowledge management in the agri-fishery sector.

The course has four modules focusing on science communication through print, audio-visual, and online platforms to increase visibility of research and development technologies and innovations ultimately geared towards inclusive and sustainable development. These include: (Module 1) Science Communication in the Context of Inclusive Growth and Sustainable Development in Agriculture Research; (Module 2) Writing for Dissemination of Agriculture Technology and Research Results; (Module 3) Photography and Videography for Dissemination of Agriculture Technology; and (Module 4) Online Writing and Production for Dissemination of Agriculture Technology and Research Results.

Using the blended learning approach, the IKM mentorship program implemented the modules through a combination of online and face to face sessions.

Funded by the Bureau of Agricultural Research (BAR) and coordinated by its Applied Communication Division (ACD), the program is being implemented by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) in collaboration with the University of the Philippines Los Baños-College of Development Communication (UPLB-CDC).

Assistant professors from UPLB-CDC served as the mentors of the program, with Prof. Elaine Llarena as project leader and overall facilitator; Prof. Pamela Joyce Eleazar, mentor on Online and Publications Writing and Production; Dr. Edmund Centeno, mentor on Photography and Audio-Visual Writing and Production; and UPLB Extension Specialist Rikki Lee Mendiola, mentor for Online Learning and Content.

During the final assessment and testimonial ceremony held on 25-26 September 2018 at Los

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PHOTO: DLBATTAD

In behalf of BAR Director Nicomedes Eleazar, BAR OIC-Assistant Director Digna Sandoval delivers his message which stressed the importance of IKM in R&D.

AgriTalk Manila draws urban farming enthusiasts

Due to insistent public demand, the Agricultural Training Institute (ATI) and the Bureau of Agricultural Research (BAR) of the Department of Agriculture, in collaboration with the Manila Bulletin Publishing Corporation, conducted AgriTalk Manila on 28 September 2018 at ATI, Diliman, Quezon City. This was after two AgriTalk seminars were concluded in Iloilo and Cabanatuan, Nueva Ecija, in May and June, respectively.

Featured in AgriTalk Manila were five topics that are hoped to inspire more people to venture into farming, particularly targeting city dwellers to practice urban agriculture and learn other farming technologies. These included: 1) Mushroom production, 2) Making organic concoctions, 3) Goat production, 4) Square foot gardening, and 5) Exotic fruit trees.

A most requested topic among seminar attendees is mushroom production which was discussed by Dr. Emily Soriano. Specifically, she presented mushroom tissue culture, and spawn and fruiting bag production. Dr. Soriano is the agricultural center chief of Research Upland Station of the Department of Agriculture-Regional Field Office (DA-RFO) 3. Meanwhile, Emma Tolentino of the Eco Natural Integrated Farm discussed the use and importance of beneficial microorganisms including the selection of proper raw materials for organic concoctions application.

Goat production, specifically on the recommended production management strategies and how to make it a profitable agribusiness activity, was discussed by Robinel Ocampo, science research specialist of DA-RFO 3 while Honorio Cervantes of ATI talked on square foot urban organic gardening. Cervantes is an experienced farmer who is into growing vegetables in confined spaces.

The last to present was Zac Sarian, veteran agriculture journalist and editor-in-chief of Manila Bulletin's Agriculture Magazine. He discussed the topic on growing exotic fruit trees in containers.

Part also of the activity was the distribution of information, education and communication (IEC) materials to the participants. The distribution of IEC materials is an initiative of BAR, through its Applied Communication Division, in collaboration with the Asian Food and Agriculture Cooperative Initiative.

Participated in by hundreds of individuals, AgriTalk provides an avenue for agriculture practitioners and farming enthusiasts on the latest trends and technologies in agricultural development. ###

(Leoveliza C. Fontanil)

INSET: Dr. Emily Soriano (left), agricultural center chief, and Robinel Ocampo (right), science research specialist from DA-RFO 3 serve as resource speakers during the AgriTalk Manila.

Attended by 461 participants, the AgriTalk Manila was held on 28 September 2018 at ATI in Quezon City. PHOTOS: LFONTANIL

BAR features innovative products in PAFT trade fair

The Bureau's booth during the Philippine Association of Food Technologists Annual Convention and Trade Fair held on 12-15 September 2018 in Libis, Quezon City. PHOTO: LFONTANIL

The Bureau of Agricultural Research (BAR), through its Applied Communication Division, participated in the Philippine Association of Food Technologists (PAFT) Annual Convention and Trade Fair held on 12-15 September 2018 at Blue Leaf Cosmopolitan Venue, Libis, Quezon City.

Organized by PAFT, in celebration of its 57th year anniversary, this year's convention and trade fair focused on the theme, "Winning Solutions for Food Challenges and Innovation." The event aimed to gather industry professionals and experts to bring the latest trends and innovations on food technology solutions, and highlight the need to create and develop new technologies to maximize their application.

In line with this year's theme, BAR showcased various innovative food products and technologies funded and developed through R&D projects. These included: 1) cacao wine and coffee liqueur of the Department of Agriculture-Quezon Agricultural Research Experiment Station (DA-QARES); 2) *kapis* chips of DA-Bureau of Fisheries and Aquatic Resources 3; 3) maize silky sip of DA-Regional Field Office (RFO) 2; 4) adlay sweet cone of DA-RFO MIMAROPA; 5) Queen pineapple vinegar of DA-RFO 5; and 6) instant chevon-based products of Central Luzon State University.

During the event, BAR also sponsored a seminar featuring the technology development and commercialization of production system and meat processing of organically-grown native pig presented by Gina D. Bocaya of DA-RFO CALABARZON. In her presentation, Bocaya showcased the different product lines from organically-grown native pig including tapa, longanisa, tocino, and burger patties, among others. BAR also distributed free information and communication materials such technology brochures. The production was made possible through a collaborative effort between BAR and Asian Food and Agriculture Cooperation Initiative. ### ***(Leoveliza C. Fontanil)***

CVRC develops Mang Bean line to boost mungbean industry

Cagayan Valley region ranks as one of the top mungbean producing regions contributing about 24 percent to the country's total output from 2012 to 2016, according to the Philippine Statistics Authority.

To further boost the mungbean industry in the region, in terms of production and consumption, the Department of Agriculture-Cagayan Valley Research Center (DA-CVRC) developed various products from mungbean.

"The development of better and improved mungbean food products can potentially increase mungbean consumption in the domestic market and improve the region's competitiveness in the export market," shared Vanessa Joy F. Calderon, project leader of the DA-CVRC's High Value Crops Development Program-Legumes. Thus, the "DA-CVRC initiated the development of mungbean-based food products in 2018. [We] officially launched the brand 'Mang Bean' in San Mateo during their 10th Balatong Festival [on] 9 May 2018," said Calderon. San Mateo, Isabela is tagged as the "Mungbean Capital of the Philippines."

Through the support of the Bureau of Agricultural Research, DA-CVRC was able to develop various mungbean products which include: instant mungbean noodles which is made from mungbean flour and packed with dehydrated vegetables and salt; instant mungbean soup which is a five-minute instant *ginisang munggo*; vacuum fried mungbean sprouts; and mungbean milk.

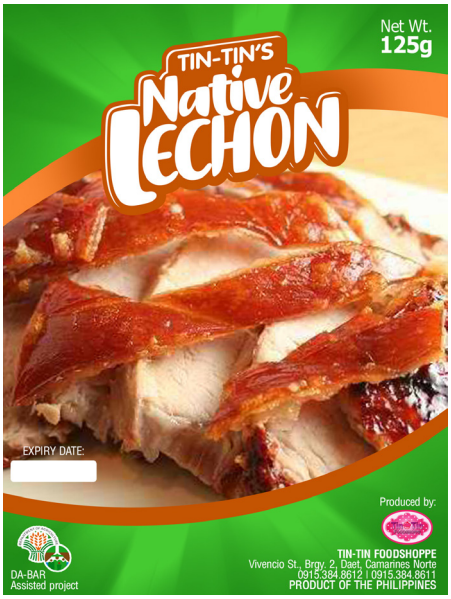
As the development of these products has already been conducted, the next stage is product commercialization which includes packaging, labelling, and marketing. "This phase will be beneficial for easy marketing by their future adaptors," added Calderon.

The Mang Bean line recently bagged the "2nd Best Product Award" during the 2018 Agriculture and Fisheries Technology Forum and Product Exhibition held at Megatrade Hall 2, SM Megamall, Mandaluyong City. The Mang Bean's mungbean soup will also be featured during the AgriLink to be held on 4-6 October 2018 at the World Trade Center, Manila. ###

(Rena S. Hermoso)

The Mang Bean line was developed by the Department of Agriculture-Cagayan Valley Research Center to further boost the mungbean industry in the region. Vacuum fried mungbean sprouts, instant mungbean soup, and instant mungbean noodles are some of the products from the line. PHOTO: RDELACRUZ

Region 5's native pork products soon to hit the market



Developed by the Department of Agriculture-Regional Field Office (DA-RFO) 5-Camarines Norte Lowland Rainfed Research Station (CNLRRS), processed products from native pig will soon hit the market in Daet, Camarines Norte.

The processed native pork products include lechon, tapa, tocino and siomai. These are currently being multiplied with the packaging and labelling soon to be ready for mass production.

This initiative is being made possible through the project, "Production, Promotion and Commercialization of Native Pigs in Camarines Norte," funded by the Bureau of Agricultural Research (BAR) through its National Technology Commercialization Program.

Aside from product development and commercialization, the project aims to: establish and maintain a demonstration farm for native pig production; intensify information-education campaign on native pig production; identify the native pig growers and determine the existing population of native pigs; promote and sustain native pig production; and conduct a market study on native pork products.

Native pigs can adapt to local environmental conditions and resist parasites and diseases. They can feed on locally-available feeds, including kitchen and farm refuse, and can cope with low-quality feeds and maintenance. Thus, "with the growing demand for swine meat, producing native breeds is a promising alternative," said Engr. Bella B. Frias, project leader and agricultural center chief of CNLRRS.

Since 2008, BAR has been funding R&D projects geared towards the promotion and development of native animals in support to the Philippine Native Animal Development (PNAD) Program of the DA-Bureau of Animal Industry. ### ***(Bernalin P. Cadayong and Rena S. Hermoso)***

BAR-SEARCA IKM...from page 6

Baños, Laguna, the learners were given recognition for finishing the short course on IKM. BAR OIC-Assistant Director Digna Sandoval, BAR-ACD Head Julia Lapitan, and SEARCA-Project Development and Technical Services (PDTS) Program Specialist Nancy Landicho awarded the certificates of course completion to all 16 finishers.

Aside from the certificate of course completion, special awards were given to learner-participants who showed excellence in their final outputs using various media platforms. A distinction was also given to Kevin Biol of the DA-RFO 8 as the most outstanding learner-participant of this batch. Biol is currently a BAR scholar under the bureau's Human Resource Development Program.

In the message of BAR Director Nicomedes Eleazar, he underscored the importance of IKM in research and development (R&D), being one of its important pillars in putting forward timely and relevant information and technologies in bridging the gap between research and technology utilization. ### ***(Daryl Lou A. Battad)***

Intensified R&D program to address onion armyworm delivers results

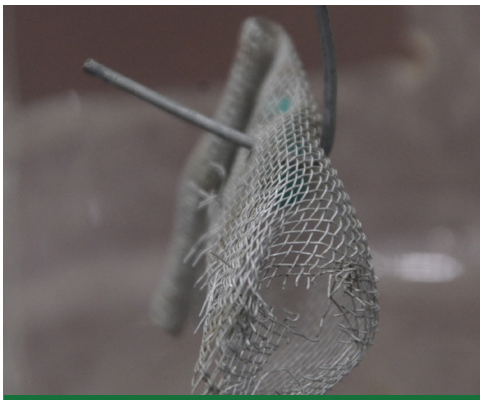
One of the direct instructions of Agriculture Secretary Emmanuel Piñol to the Bureau of Agricultural Research (BAR) is to look into the infestations of onion armyworm and to come up with a research agenda and program, and deliverables in addressing their occurrence in affected municipalities in Tarlac, Nueva Ecija, and Pangasinan.

In response, BAR, in partnership with the Department of Agriculture's High Value Crops Development Program, created an ad hoc group to conduct an in-depth and science-based study on the behavior and management of onion armyworm. The group is composed of scientist-researchers from the National Crop Protection Center (NCPC) and the Postharvest Training and Research Center (PHTRC) of the University of the Philippines Los Baños (UPLB); and the Central Luzon State University.

The partnership, which was institutionalized during the mid-part of 2017, resulted in the creation of a BAR-funded and assisted program, "A Comprehensive Research and Development (R&D) on Integrated Pest Management for Onion Armyworm, *Spodopetra exigua*." The general objective of the program is to develop integrated pest management options for onion armyworm and to come up with science-based approaches and recommendations.

The R&D program is composed of seven sub-studies that aimed to provide onion farmers and onion industry players with vital information on the behavior of the pest and how to eliminate it, and to produce updated reference materials to be used in a region-wide farmer education campaign on armyworm Integrated Pest Management (IPM).

Liquefied nuclear polyhedrosis virus infected onion armyworm placed in a microcentriguge tubes PHOTO: PRLESACA



Aluminum wire mesh as container of the sex pheromone held in place in the gallon trap with wire PHOTO: PRLESACA

Program results and undertakings

Among the significant outputs of the project is the placement of sex pheromone traps in Brgy. Dolores in Sto. Domingo, Nueva Ecija. The traps are primarily intended for monitoring when the adult starts to come out or when their peak population occurs. This enables onion farmers to determine them when to apply management options against the pest. Apart from the setting pheromone traps, onion farmer cooperatives in Sto. Domingo and Bongabon, Nueva Ecija, were trained on pheromone trapping. Further, the local government units (LGUs) in Region 3 and the Regional Crop Protection Center (RCPC) were likewise given synthetic pheromone traps as an initial step in their monitoring activities.

Pheromone traps can be used as control method or as monitoring method. They can be an effective control method if they are able to attract sufficient numbers of the insect pests. They are also used to monitor the presence and level of pest infestations in order to improve the timing of pesticide applications. Sex pheromone traps, unlike pesticides, are environment-friendly.

The use of nuclear polyhedrosis virus (NPV), being environmentally-safe and effective, is an ideal part of the IPM strategy being employed through the program. A local strain of onion armyworm NPV was collected from diseased larvae of onion armyworms in Brgy. Abar, San Jose City in Nueva Ecija. NPV infected larvae were placed in microcentrifuge tubes and stored in the refrigerator until ready for use. These microcentrifuge tubes with infected larvae were given to onion farmers, LGUs, Crop Pest Management Division of Bureau of Plant Industry, RCPCs of regions 1, 2 and 3, and farmer cooperatives to serve as a source for NPV production and utilization in onion fields and other alternate crops that the onion armyworm might infest.

Another significant result of the program was the production of two information, education, and communication (IEC) materials by NCPC-UPLB. The materials, which are written in the vernacular, include: "*Gabay sa Paggamit ng Pestisidyo sa Pangangalaga ng Sibuyas Laban sa Harabas*" and "*Harabas ng Sibuyas*." Onion armyworm is also known as *harabas* in Filipino. The IEC materials are intensively being distributed to onion farmers and other stakeholders.

High resolution maps of onion affected and non-affected areas were generated and turned over to different municipalities covered. Under the program, the quality profile and storage behavior of onion farmers from Nueva Ecija and Pangasinan to serve as baseline data.

The knowledge and information generated and the progressive variables identified so far will immediately help onion farmers and onion industry players in understanding onion armyworm prevention, reduction, and possibly complete eradication.

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Addressing climate change at the community level

Text and photos by Ephraim John J. Gestupa

It comes as no surprise to know that the Philippines is a country that is heavily affected by climate change. As an archipelago facing the vast Pacific Ocean in the east, typhoons frequently make landfall. Climate change makes them more destructive, wreaking economic havoc among its agriculture and fisheries communities.

Back in 2009, the Philippine government through the Bureau of Agricultural Research (BAR) began working on a Climate Change Research, Development, and Extension Agenda and Program (RDEAP). This was initiated in response to the escalating risks experienced by farming and fishing communities brought about by climate change. Guided by the RDEAP, BAR forged a partnership first with state universities and colleges (SUCs) across the country to map out the climate change risks and vulnerabilities existing in the regions. The research results were then turned over to regional field offices (RFOs) of the Department of Agriculture (DA) and local government units (LGUs) that can use the data and information for policy and planning geared towards climate change adaptation.

Research results from the climate risk assessment studies conducted by SUCs are now being used as baseline data in a new initiative of putting up the Climate Change Adaptation and Mitigation Initiative in Agriculture (AMIA) villages in highly vulnerable farming communities.

A huge percentage of the nation's farmland is managed by smallscale farmers. To address the specific needs of smallscale farmers who are part of bigger communities of farming households, BAR is making use of the Community-based Participatory Action Research approach in introducing Climate-resilient Agriculture (CRA) technologies to AMIA cooperatives and beneficiaries.

"*Ang pagpili namin sa* pilot sites *ay naka*-base *sa* geo-spatial mapping *na ginawa ng* Mariano Marcos Memorial State University. *Base sa datos doon, naikapag*-coordinate *kami sa* provincial [agriculturist's] office *sa pagpili ng tatlong barangay*," explained Dr. Mary Jane Alcedo of the Research Division, DA-RFO 1. She also serves as the project leader of the CPAR for CRA in Region 1.

The study helped in revealing highly vulnerable areas in Region 1. These areas include San Emilio, Ilocos Sur. This municipality sits at the border between the Ilocos Region and the Cordillera Administrative Region with its agricultural practice being mostly upland. Climate change hazards in San Emilio are soil erosion and drought. While barangays are usually in close proximity to a river, farmers are still struggling to get water up to elevated areas where their farmland is located.

During wet season, heavy rains help provide for the farmer's water supply but it also causes landslides and soil erosion, damaging their crops and lessening their planting areas.

After organizing AMIA farmer's groups in three barangays in San Emilio, DA-RFO 1, in close partnership with the municipality's LGU, introduced a package of technologies of climate resilient agriculture.

Through the CPAR project, farmer cooperatives are provided with capacity building training and are given options of what technologies best fit in their community.

One of the technologies introduced was drip irrigation, a method used in areas with scarce water sources. Through this technology, crops get irrigation in small but continuous dripping water spread out evenly through tubes that run across the planting area.

"*Sa* drip irrigation, *makakatipid ka sa tubig. Pagbukas mo ng* hose, *paunti-unti lang ang labas ng tubig at sa isang oras, natutubigan na ang lahat ng tanim*," said Vergara Banua Ginatang, farmer-beneficiary of the CPAR project in Brgy. Calumpsing, San Emilio. He is a member of the cooperative that was initiated into the project which is registered under the name, "*Calumpsing Rangtay ti panag rang-ay*" which is translated as "Calumpsing: A bridge to prosperity." "*Ito ang nagiging tulay upang may ikagaganda ang mga buhay ng mga miyembro*," added Artemio Ruiz who serves as the president of the association.

Drip irrigation is just one of the many CRA technologies made available through BAR-RFO 1 project. Farmers were also trained in storing harvested rainwater in pits dug in the ground and lined with polyethylene plastic. They were also trained on native livestock raising wherein an initial stock was provided to them.

In Brgy. Lancuas, farmers adopted diversified cropping and beekeeping. This practice has augmented their income as they can process their yield into vegetable chips and honey while also selling beehives for other interested farmers to start their beekeeping, one of the technologies introduced. Other CRA technologies adopted by farmers in San Emilio include vermicomposting, soybean production, and mulching.

The same research conducted by Dr. Alcedo were also done in lowland rice-based farming communities in the municipality of Victoria, Tarlac. The major climate-related risks in Victoria are prolonged wet and dry seasons. Tropical cyclones bring about floods that damage most of the region's rice crops. During El Niño episodes, rice crops have low yield due to lack of water.

This is what compelled DA-RFO 3 to establish climate-resilient agricultural livelihood opportunities through community-based action research. "*Base sa nagawang* study ng Tarlac State University, *ang nakitang* CRA technology *na pwedeng i*-introduce *ay ang* alternate wetting and drying (AWD). *Nag*-conduct kami ng climate-enhanced farmer's field school *at itnuro namin doon ang paggamit at pag*-read *ng* AWD. *Ito ay malayo sa dating nakagawian nila na panay* flooded *palagi ang lupa, ngayon nakakatipid na sila ng tubig*," explained Eduviges Pelayo, supervising agriculturist from DA-RFO 3.

"*Malaking bagay na po para sa isang maliit na magsasaka ang makakuha ng patubig*," said Rina Apolonio of Brgy. Sta Cruz, Victoria. Apolonio serves as the president of a farmer's group that is adopting CRA technologies from the regional office. "*Dito po sa barangay namin walang irigasyon, umaasa lang po kami sa sahod ulan, isa sa mga* interventions *na natutunan namin ay yung makibagay sa pagbabago ng panahon, noon lahat kami sumusunod sa iisang kalendaryo ng pagtatanim, lahat nagsisimula ng* June."

Apolonio further mentioned that, having been trained by both DA-RFO 3 and LGU, farmers in her barangay have gotten over their sense of inferiority. "*Dati-rati ang mga* farmers *kung may nakikitang bisita nahihiya at nagtatago sa gilid, parang ang isip nila* 'farmer *lang kami*,' *pero ngayon umunlad ang* personality development *nila at na*-boost *ang kanilang* morale *dahil sila ay nabibigyan ng pansin*," added Apolonio.

Aside from AWD, diversified cropping, integrated farming, and stress-tolerant varieties were also introduced to local farmers through demo farms and training with the help of local farmer technicians. "*Sa panahon ngayon, hindi na* ideal *na iisa lang ang tinatanim ng magsasaka dahil kung darating ang baha o kaya* drought, *wala silang ibang* source of income," said Pelayo. In Brgy. Mangolago, the CRA project gave them to field trainings wherein they learned to integrate backyard goat raising in their farming practices.

Engr. Wilson Gardoce, municipal agriculturist of Victoria, reiterated the importance of an integrated farming system as a key to being climate resilient. He said that before DA-RFO 3's project, it was common to see unused patches of land right next to where rice was being planted. The CPAR project introduced the profitability of using those small pieces of land for other income-generating farming practices. Gardoce expressed his hopes of outscaling the model communities to include other barangays since the three initial farmer's groups are showing good results and increased farmer involvement.

The AMIA villages in San Emilio and Victoria are among the 10 pilot sites in regions that were established by DA through its System-Wide Climate Change Office and BAR.

Climate change may seem like an insurmountable problem with no redeeming solution, but with appropriately implementing community-based action research, it proves that the battle can be fought and won even at the barangay level.

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Aside from alternate wetting and drying approach, integrated crop-livestock farming was also introduced to the farmers in Barangay Mangolago, Victoria, Tarlac.

Living up to consumer expectations through food-safety techniques

Text and photos by Ephraim John J. Gestupa

With the vegetable market scene seeing the rise of weekend organic markets and specialty restaurants known to only cook with fresh and organic ingredients, it is only fitting that research is done on the safety of products being labelled as "organic."

Organic produce commands a higher price in the public market and when consumers are asked why they would opt to spend a couple of extra bucks for organic produce, they would normally justify their purchasing decisions on the assumption that organic is much safer to eat raw and that it also helps homegrown, local farmers.

This is what Dr. Elda B. Esguerra and Dr. Dormita R. del Carmen of the Postharvest Horticulture Training and Research Center-University of the Philippines Los Baños (PHTRC-UPLB) set out to clarify with their study on the postharvest quality and safety management of organically-grown fruits and vegetables. The research project is funded by the Bureau of Agricultural Research (BAR).

"*Ang mga* activities *na ginawa namin* under the project *ay una, nag*-gather *kami ng* baseline information *tungkol sa* organic production system *sa iba't ibang lugar dito sa* Luzon *at* Visayas. *Ikalawa, nag*-conduct *rin kami ng* consumer preference survey *sa iba't ibang* organic market. *Pangatlo, kami ay nag*-assess *ng* quality changes and microbial safety along the supply chain of organic fruits and vegetables. And then, after this, *nag*-develop *kami ng mga* postharvest handling technologies and protocols," explained Dr. del Carmen. She added that the developed technologies were then translated into information, education, and communication (IEC) materials that were disseminated to the industry stakeholders.

If one were to trace the source of organic produce in the grocery shelf all the way back to the farm, one major difference of organic produce from conventional crops that can be noted is the use of vermicompost as organic fertilizer. Vermicompost is organic matter from decomposed waste. It may have started as livestock feces, leftover food, or other agricultural waste. Worm species then expedite the decomposition process and their manure is considered to be the end product otherwise known as vermicast which can be used as fertilizer in soil form or by further converting it to vermitea.

There are still instances when the input for vermicomposting isn't processed entirely and this is what gives way for microbes to spread across crops treated with organic fertilizer. Dr. del Carmen said that based on the samples they were able to derive from organic farms and markets, "*may mga* critical control points along the supply chain *kung saan pwedeng magkaroon ng contamination ng E coli*. and

Sanitizing the produce in a washing solution containing organic acids like calamansi juice is one way of reducing microbial contamination in organic produce.

Evaporative cooling technique is used to reduce "field heat" and prolong produce's freshness. The technique makes use of wet cheesecloth to cover a crate of produce. The wet cloth absorbs the heat from the produce and reduces the temperature inside the container.

Salmonella. And this is why *gumawa kami ng mga* protocols to prevent the microbes from getting to the produce."

Dr. del Carmen assures the public that there are simple ways to reduce microbial contamination in organic produce. At the farm level, pruning shears and other harvesting equipment like crates must be sanitized. Consumers and store owners should also consider sanitizing the produce in a washing solution containing organic acids like vinegar, citric acid (calamansi juice), Zonrox solution, or baking soda. Such practices prove to be vital especially with salad vegetables like lettuce and tomatoes.

The PHTRC project also resulted to protocols that help prolong the shelf life of organic fruits and vegetables. These technologies prove to be useful for organic farmers and those who are involved in selling the produce as these reduce postharvest waste and adds to profit.

When crops are harvested, there's what Dr. del Carmen calls as "field heat," which can be a cause for produce to wilt faster. By using the evaporative cooling technique, field heat is reduced and freshness is prolonged.

Evaporative cooling technique makes use of cheesecloth covering a crate of produce. The cloth is first soaked in clean water before it is used as covering and what it does is, it absorbs the heat from the produce, reduces the temperature inside the container keeping the produce fresh. The cheesecloth is convenient for smallscale organic farmers who don't have an industrial size refrigerator to serve as storage space. According to Dr. del Carmen's study, evaporative cooling technique extends the shelf life of lettuce to one more day compared to when it is kept in ambient storage.

Sa mga susunod ng mga protocol *na ito, masisigurado ninyo kung hindi man* totally *na mawala ay nasa* safe levels *na ang* microbial contaminants *sa mga organikong produkto*.

"*Mapa*-organic or conventional *man ang ating* produce, *ang ating hangad sa* postharvest *ay maparating ito nang* fresh, *ma*-maintain *ang* quality, and *ma*-ensure *ang* safety *ng mga produkto. Ang mga* postharvest technologies *naman natin ay simple lang at kayang kaya natin i*-practice. These simple practices can make a huge difference in minimizing contamination *at ma*-improve *ang* shelf life *ng mga produkto*," said Dr. del Carmen. ###

"*Mapa*-organic or conventional *man ang ating* produce, *ang ating hangad sa* postharvest *ay maparating ito nang* fresh, *ma*-maintain *ang* quality, and *ma*-ensure *ang* safety *ng mga produkto. Ang mga* postharvest technologies *naman natin ay simple lang at kayang kaya natin i*-practice."

-Dr. Dormita R. del Carmen

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Multi-country collaboration on poultry and swine R&D intensified

The Philippines, through the Department of Agriculture's Bureau of Agricultural Research (DA-BAR) and DA-Philippine Agriculture and Fishery Biotechnology Program (Biotech Program), recently intensified its research and development (R&D) for swine through an international effort.

The UK-China-Philippines-Thailand Poultry and Swine Research Initiative is a collaborative research activity entered into by DA-BAR and the Biotech Program. The other agencies cooperating under the program are the UK Biotechnology and Biological Sciences Research Council, National Natural Science Foundation of China and the Thailand National Science and Technology Development Agency.

This research initiative, which is also part of the Newton Agham Programme, a partnership between the UK and the Philippines in science and innovation, aims to combine the strengths of academic research groups within the partner-countries and to work collaboratively on research that will underpin the development of novel strategies to diagnose, prevent, manage or treat microbiological diseases of swine and poultry; promote safe, healthy, resilient and sustainable food production systems in Southeast Asia; and reduce the incidence of zoonotic diseases.

From the 44 research proposals screened and evaluated from the initial Call and Partnering Workshop held in Bangkok, Thailand, in May 2017, 11 projects were approved.

Four of the 11 projects that have the Philippines as partner and are being co-funded by DA-BAR and the Biotech Program are: 1) Rapid diagnostics and control strategies for enteric bacterial pathogens in backyard and commercial poultry production in Thailand and the Philippines; 2) A strategic approach to identifying and combatting porcine reproductive and respiratory syndrome virus outbreaks and other porcine viral diseases; 3) Low cost portable molecular diagnostic platform for rapid detection of poultry infectious pathogens; and 4) Using genomics to trace Salmonella transmission and antimicrobial resistance in the poultry and swine food chains in Metropolitan Manila, Philippines.

Cynthia Remedios V. de Guia from BAR reading the messages in behalf of BAR Director Nicomedes P. Eleazar and DA-Biotech Director Vivencio R. Mamaril.

To bring together the funding agencies, key research organizations and leading academics from UK, China, Thailand and the Philippines that are involved in the research initiative, a kick-off workshop was conducted in 26-28 September in Beijing, China.

The workshop sought to provide a broader idea of the progress of implementation, discuss the succeeding plans, and identify possible synergies and coordination. ### ***(Cynthia Remedios V. de Guia)***

Intensified R&D...from page 11

The onion armyworm is one of the most important species of Noctuid moths which has a wide host range throughout tropical and subtropical regions of the world and occurs as a serious pest of vegetable, field, and flower crops. Among susceptible vegetable crops are asparagus, broccoli, cabbage, eggplant, lettuce, onion, potato, radish, spinach, tomato, among others. ### ***(Patrick Raymund A. Lesaca)***

BARChronicle
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