



## BAR intensifies support to jackfruit R&D



EVIARC Sweet is an NSIC-registered variety known as the sweetest jackfruit variety.

PHOTO FROM JACKFRUIT EVIARC SWEET FB PAGE

Jackfruit is a champion crop of Eastern Visayas and with the introduction of EVIARC Sweet variety, Region 8 has been recognized as the “jackfruit capital of the country.” The variety was named after its developer, the Eastern Visayas Integrated Agricultural Research Center (EVIARC) of the Department of Agriculture-Regional Field Office (DA-RFO) 8.

The EVIARC Sweet is a National Seed Industry Council-registered variety in 2007. Its fruit

is aromatic, ellipsoid in shape, and contains moderate latex. The color of its aril is golden yellow. The tree is about seven meters tall with spreading branches and produces on the average 35 fruits per fruiting season.

The development of the Eastern Visayas’ jackfruit industry has picked up as a result of the various Research and Development (R&D) initiatives and other support systems of the DA-RFO 8.

From 2010 to 2013, DA-EVIARC, in collaboration with the Visayas State University (VSU), developed and introduced technology interventions on jackfruit production and product processing through the “Community-based Participatory Action Research on Jackfruit Production and Processing in Barangays San Isidro and Malinao in Mahaplag, Leyte.” Funded by the Bureau of Agricultural Research (BAR), the project aimed to pilot a village-level production and

processing scheme for jackfruit to support its commercialization in the region. Since then, BAR has intensified its support to jackfruit R&D initiatives in collaboration with various research institutions.

BAR has funded projects that aimed to maximize the full potential of jackfruit. One of which was the BAR-VSU project that was aimed to produce *chitin* and *chitosan* from *chitin*-containing crustacean exoskeleton wastes, and to evaluate their potential together with raw materials for the control of *Phytophthora palmivora*, the cause of the decline syndrome that plagued the Eastern Visayas’ jackfruit industry in the late nineties. *Chitin* and *chitosan* which are reported to induce resistance against several diseases may have the potential to control jackfruit decline. However, these were not readily available to the local farmers. Through the project, researchers were able to

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# BAR joins agri-industry research forum



Forum participants include stakeholders from selected agencies such as DA, DENR, DILG, DOST, and DTI. PHOTO: DLBATTAD



Dr. Nicomedes Eleazar (2<sup>nd</sup> to the right), BAR director, led the participants from the bureau during the agri-industry research forum. PHOTO COURTESY OF DLBATTAD

The National Economic and Development Authority, in partnership with the Department of Trade and Industry, Department of Science and Technology (DOST), and the

Department of Agriculture (DA) organized an agri-industry research forum on 15 May 2019 at the DOST-Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development

Innovation and Technology Center, Los Baños, Laguna.

The forum aimed to determine challenges hindering the sector’s growth and productivity, identify gaps and come up with recommendations for the private sector in providing complementary investments that will support government interventions for the agriculture and fisheries sector.

This is in response to President Rodrigo Duterte’s directive through Sulong Pilipinas, an annual consultative conference between the Duterte Administration and the private sector. In 2018, the administration solicited feedback from micro, small, and medium enterprises (MSMEs), accounting for more than 99 percent of businesses in the Philippines.

Three of the top 10 MSMEs recommendations focused on agriculture which include prioritizing agricultural productivity and increase farmers’ income; building more infrastructure to improve access and mobility; and simplifying loan requirements for MSMEs and farmers.

The Bureau of Agricultural Research, as the national coordinating arm of the DA for research and development, participated the forum led by its director, Dr. Nicomedes Eleazar. ###  
*(Daryl Lou A. Battad)*



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# DA-RFO MIMAROPA hosts 2<sup>nd</sup> RM Meeting

Following the success of the first Research Management (RM) meeting held in February in Quezon City, the Bureau of Agricultural Research (BAR), as the lead coordinating agency for agriculture and fisheries research and development (R&D), spearheaded the conduct of the second RM meeting on 28-31 May 2019 in Puerto Princesa, Palawan.

Serving as the host region for the meeting was the Department of Agriculture-Regional Field Office (DA-RFO) MIMAROPA. Regional Technical Director Ma. Louella Rowena de Jesus-Lorenzana welcomed the participants of the meeting expressing the region's enthusiasm in hosting this year's RM meeting.

BAR OIC-Assistant Director Digna Sandoval delivered a message in behalf of Director Nicomedes Eleazar. She noted the event as one of the most well attended RM meetings and commended MIMAROPA for graciously hosting it.

Two plenary topics were presented featuring results of BAR-supported R&D initiatives implemented by the International Rice Research Institute (IRRI) and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). Presenting the first topic on "Benchmarking the research capacity of the regional rice and rice-based R&D network: Key Results Recommendations" was Dr. Madonna Casimero of IRRI. The second topic on "Enhancing Innovation in Agricultural Research and Development" was reported to the group by Dr. Merlyne Paunlagui of SEARCA.

Other topics presented during the meeting included the implementing guidelines of the RD&E continuum and results-based



DA-RFO MIMAROPA RTD for Research and Regulation Ma. Louella Rowena de Jesus-Lorenzana (left) and BAR OIC-Asst. Dir. Digna Sandoval (right) unveil the PGR marker.

regional R&D programs; updates on the RRDEN implementation and zonal activities; status of RRDEN office; status of RRDEN networking funds and related activities; Results-based Monitoring and Evaluation training for researchers and managers; Community-based Participatory Action Research data needs; and barangay agriculture profiling survey.

Other highlights of the event were the inauguration of DA-RFO MIMAROPA's Plant Genetic Resources (PGR) Center and the project site visits at the Palawan Research Experiment Station including the Dairy Production and Development Center and the Livestock Resource Center.

The PGR Center was established as a repository of crop germplasm for the conservation and management of genetic diversity in the region and likewise to promote R&D activities that will address various threats and challenges relevant to biodiversity

promotion. BAR OIC-Asst. Dir. Sandoval mentioned in her message the importance of establishing a PGR center in every region and hoped that the facility will be sustained and properly maintained to complement the conservation effort of the government.

The RM meeting was attended by the regional technical directors for research, and research managers from the different Research Divisions of DA-RFOs and DA-Bureau of Fisheries and Aquatic Resources Regional Offices. Also present were representatives from R&D implementing attached agencies and staff bureaus of DA.

The RM Meeting is a quarterly activity of BAR through its Program Monitoring and Evaluation Division to ensure that all R&D initiatives being coordinated and supported are being smoothly implemented according to the thrusts and priorities of DA. ### (Rita T. dela Cruz)

# Bidibidi Bags now in mainstream market

Gaining interest from a wider audience, the Bidibidi handbags are now on display and are being sold in select Kultura Inc. outlets in the country, particularly at SM Megamall, Mandaluyong; and SM Aura Premiere, Taguig City.

Originating as village-level handicrafts, these handbags are locally-made products from *ragiwdiw* or *bankuan* (seagrass), a perennial sedge that grows abundantly in flood-prone areas in Bicol. Dried stalks from seagrass are hand twined together to create the raw material for handicraft making by a group of creative women from Camarines Sur.

The group was assisted through the project, “Enterprise Development in Flood Prone Areas in Camarines Sur” which is being implemented by the Department of Agriculture-Regional Field Office (DA-RFO) 5 and funded by Bureau of Agricultural Research. The project aimed to develop rice-based production systems within the framework of integrated farming systems approach and identify researchable areas for optimized seagrass-based enterprise development.

After the completion of the project, DA-RFO 5 continued its efforts in upscaling and expanding the seagrass craft industry in Camarines Sur. With the help of the Bidibidi Enterprise, a social enterprise that combines fashion, arts, and upcycling while providing livelihood to local women and out-of-school youth in Baa0, Camarines Sur, the products of the local *Bikolanas* behind the handicraft started to expand its market to various cities and provinces.

Despite the project’s completion, the Bidibidi handbags continue to reach more customers as it is now endorsed by Kultura Inc., which offers a wide range of Filipino products from fashion, home, and souvenirs to the public. ### (Clarisse Mae N. Abao)



Bidibidi bags on display and on sale at Kultura Inc., SM Aura Premiere (top) and SM Megamall (bottom).

PHOTOS: CMABAO

# Grand Farmer's Fiesta features R&D products

With more than 2,000 farmers in attendance, the “Grand Farmers’ Fiesta,” organized and spearheaded by the Department of Agriculture-Regional Field Office (DA-RFO) 11, showcased an array of products developed from its research and development (R&D) initiatives. The fiesta was conducted on 17 May 2019 in Manambulan, Tugbok District, Davao City in celebration of the Farmers’ and Fisherfolk’s Month.

Featured in the exhibit and product displays were various results of R&D projects funded by the Bureau of Agricultural Research (BAR). These products included *Adlay*, cacao, rice, breadfruit, *Apali* (lesser yam), native corn, and off-season mangosteen, among others.

With the theme, “*Magsasaka at mangingisdang Pilipino, saludo ang buong bansa sa sipag, tibay, at lakas ninyo,*” the event aimed to showcase various technologies generated from the various research initiatives of the region improving the production and income of the farming and fishing communities.

BAR OIC-Asst. Director Digna Sandoval graced the activity wherein she underscored the long and fruitful partnership of BAR and DA-RFO 11 and how the technologies generated from research are to be used in improving the sector. “Together, we have been dynamic in implementing various programs and activities for our farmers and fishers making this partnership stronger through time,” Sandoval said.

Joining her in the celebration were DA-RFO 11 officials, Regional Executive Director Ricardo Oñate, Regional Technical Director Angelina Pancho, and Research Division Chief Melani Provido.

Aside from the exhibit and product display, the activity also showcased techno clinic; *buko* juice launching; and simultaneous lectures



BAR OIC-Asst. Dir. Digna Sandoval inside the Research Division booth of DA-RFO 11.



BAR supported products on display inside the Research Division booth.

on chocolate making, *bonsai* culture, mushroom production, and soybean processing. Planting materials

were also provided to thousands of farmers who attended the event. ###  
(Rita T. dela Cruz)

# AgriTalk draws huge crowd in Cagayan de Oro City

About 700 farmers and agriculture enthusiasts attended the AgriTalk held on 24 May 2019 at SM Cagayan De Oro Downtown Premier, Cagayan De Oro City. This activity created a notable increase of 23 percent attendees as compared to previously-held AgriTalk seminars.

AgriTalk is a one-day seminar featuring various topics on agricultural practices and package of technologies which are adaptable for urban farming. The activity is a collaborative effort of Department of Agriculture's (DA) Agricultural Training Institute (ATI) and Bureau of Agricultural Research (BAR); and

Manila Bulletin Corporation.

Participants and attendees were welcomed by Dr. Carlota Madriaga, regional technical director for research and operation of DA-RFO 10; Ma. Lydia Echavez, center director of ATI-RFO 10; and Dante Simangan, vice-president for circulation of Manila Bulletin Publishing Corporation.

Among the topics featured during AgriTalk were the squarefoot organic urban gardening, basic production of stingless bee, and cultivation of oyster mushroom.

Mayshell Tumilap, DA-RFO 10 technical expert on mushroom, presented the topic, "Cultivation of

Oyster Mushroom," highlighting on the commodity's social, economic, and environmental benefits. Tumilap recognized how mushroom farming can lead to the economic betterment of small farmers. She said that aside from its nutritional and medicinal values, mushroom can be a viable means of generating employment and a good cash crop.

Jocelyn Ellevera, DA-RFO 10 technical expert on apiculture, discussed the topic, "Basic Beekeeping." She explained the proper rearing, care and management of honeybees for obtaining honey, wax and other substances. She cited

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Around 700 individuals attended the AgriTalk Cagayan de Oro featuring discussion on squarefoot organic urban gardening, basic production of stingless bee, and cultivation of oyster mushroom.

PHOTO: RDELACRUZ

# Scaling-up cattle production highlights BAR seminar



Dr. William C. Medrano (top right) of ISU and Dr. Bernardita S. Tabada (bottom right) of the Province of Siquijor serve as the resources persons during the BAR in-house seminar held on 30 May 2019.

PHOTOS: LFONTANIL

Two research initiatives on cattle production funded by the Bureau of Agricultural Research (BAR) highlighted the seminar on 30 May 2019 at BAR.

The first topic, “Commercialization of Philippine Native Cattle for Optimum of Siquijor Beef,” was presented by Dr. Bernardita S. Tabada of the Province of Siquijor; while the second topic, “Promotion of Artificial Insemination (AI) as Breeding Tool for Cattle Production in Region 2” was discussed by Dr. William C. Medrano of the Isabela State University.

Both resource speakers, aside from their known expertise on the topics are also the proponents of the two BAR-funded projects. They discussed the importance of raising, propagating, conserving the genetic pool of the country’s cattle and how the native animals can be processed into healthy beef and beef by-products.

Dr. Tabada mentioned that the Siquijor native beef is commonly raised as dual-type of cattle in the

province and farmers are interested in improving its traits in relation to breeding, milk, and meat production. Aside from the premium meat grade of Siquijor beef, it also has an excellent reproductive traits and potential for dairy production. In her presentation, Dr. Tabada also showed the various native beef products and by-products that can be developed from Siquijor beef.

Dr. Medrano, on the other hand, said that the country is a major importer of beef and milk. Total cattle inventory as of 2016 stood at 2.5 million heads, of this population, only 181,628 heads are found in Cagayan Valley Region or a share of only 7.13 percent. Despite small inventory percentage, the region offers great potentials for cattle production considering huge idle lands and available feed resources from dominant farming systems.

He said that the cattle industry is confronted with challenges foremost of which include: 1) limited number of quality breeder stocks, and 2) poor genetic composition of existing

breeder population. One possible solution, Dr. Medrano pointed out, is through AI. He furthered that AI provides potential to improve the genetic composition and increase the breeder population base of cattle in Region 2.

He cited some of the advantages of breeding cattle artificially. These include: increasing the chance of uniformity of offspring; overcoming certain physical handicaps to mating; maintaining expensive breeding bull for a herd is no longer needed; and preventing the spread of certain diseases and sterility due to genital diseases.

The BAR seminar, a monthly activity facilitated by BAR’s Applied Communication Division, aims to provide a venue for sharing of knowledge and information to the public with the hope that the technologies generated from research will be used to improve the farming and fishing production and provide ideas for livelihood opportunities to stakeholders. ### (Patrick Raymund A. Lesaca)



# Promoting native bee species in Lanao del Norte

Text and photos  
by Rena S. Hermoso

**W**orld Bee Day is observed every 20<sup>th</sup> of May to celebrate the essential role of bees and other pollinators in keeping the people and the planet healthy. In view of this, the University of the Philippines Los Baños (UPLB) Bee Program initiated the first-ever Lanao del Norte Bee Day on 26 March 2019. This served as the culminating activity of the project, “Pollination Conservation and Promotion of Stingless Bee Technologies in Lanao del Norte” funded by the Bureau of Agricultural Research.

## Pollination and native bees

Pollination happens when pollen from anther (male reproductive organ of the flower) is rubbed off onto the stigma, or the tip of the pistil (female reproductive organ of the flower). In order for this to happen, pollinators such as bees and other insects are needed.

Pollinators are essential to the production of the many micronutrient rich fruits, vegetables, nuts, seeds, and oils. According to the Food and Agriculture Organization of

the United Nations, “pollination is the highest agricultural contributor to yields worldwide, contributing far beyond any other agricultural management practice.”

Compared to introduced species, native bee species such as stingless bees (*kiwot*) and native honey bees (*laywan*) are resistant to pests and diseases and is easier to mass produce. “Harnessing the potential of local bee species further reduces farm input because of its sustainability and resilience,” said Dr. Cleofas R. Cervancia, project leader. Aside from this, farmers can also earn additional income from hive products such as pollen, honey, and propolis.

## Hive products

Bees forage for pollen and nectar to feed and sustain the colony. Bee pollen is rich in protein and vitamin B. Nectar, on the other hand, is a sweet liquid that contains sugar (glucose, fructose, and sucrose), amino acids, proteins, and lipids among others. When forager bees return to the colony, the nectar stored in their stomach is transferred from

one worker to another until the water within it diminishes. At this point, the nectar becomes honey. They keep honey in cells for later use. Aside from foraging for food, bees also collect substances from plants, buds, and exudates to produce propolis. Often called “bee glue,” bees use propolis to seal cracks in the bee hive. Propolis has antiseptic properties thus it doubles as a means of protection for the bees.

Bee pollen is used as dietary supplement. “Instead of buying synthetic pollen, we can use the pollen directly harvested from our colonies,” shared Dr. Cervancia. While, honey is a nutritious energy food. According to Dr. Cervancia, initial studies showed that stingless bee honey has higher antioxidant property. Although they have the same energy content, honey from *kiwot* bees is better in terms of clinical value as explained by Dr. Cervancia.

Due to its pharmacological properties, propolis is commercially used as an ingredient for medicine and cosmetics.

Dr. Cervancia proudly



shared that amongst the bee products, propolis has the highest antimicrobial property which contains flavonoids and phenolics. Flavonoids and phenolics are known by their antioxidant properties and other important bioactive agents that benefits human health.

### Beekeeping project in Lanao del Norte

According to Dr. Cervancia, the officials of Lanao del Norte went to BAR and laid down their cards on the table. One, they wanted an additional source of livelihood; and two, they knew that Lanao del Norte, as an agricultural area, needs pollinators that could augment their harvest. Thus, through their initiative, this project came to life and was funded by BAR under its banner program, the National Technology Commercialization Program (NTCP). NTCP ensures the proper transfer of mature technologies for adoption and utilization by target farmers and fishers.

“This project is through the initiative of the community. It is what we call, ‘bottom-up approach,’ because this is what they need,” shared Dr. Cervancia. The project started in April 2017 in three municipalities: Tubod, Kapatagan, and Sultan Naga Dimaporo.

According to Francisco C. Bihod, Livelihood and Inclusive Growth Program Consultant of the Provincial Government of Lanao del Norte, they started by forming associations in the three pilot municipalities.

Propagation of stingless bees requires training, as it could hardly be learned by observing said Dr. Cervancia. Led by Dr. Cervancia, the UPLB team began by teaching the farmers the importance of bees to agriculture and environment and the conservation of pollinators.

This was followed by series of training on the propagation of stingless bees for production of hive products and pollination. After this, the project team provided a post-training monitoring to strengthen the competence of beekeepers in managing their bees. Lecture on harvesting and processing the hive

products ended these series of training.

The community harvested honey, pollen, and propolis. “They were already able to sell these products which in turn serve as an inspiration to them,” said Dr. Cervancia. She also proudly shared that the bee products made conform to the standards set by the Bureau of Agriculture and Fisheries Standards.

“Now, they already have an additional income. But, they still need to propagate their bees,” said Dr. Cervancia. Beekeeping is a game of numbers. The farmer cooperators would have to increase the number of colonies they are keeping for them to enter the commercial scale of production. And, the project was aimed to equip them with the necessary skills needed to successfully manage their bees. With this, “they are now ready to undertake bigger project,” shared Dr. Cervancia.

Aside from the added income coming from the hive products, the communities now have a better appreciation of the role of stingless bees in pollination. They saw for themselves the benefits of good pollination in their crops. They noticed the improvement in the size of their fruits and vegetables grown in the area after the project

commenced.

Dr. Cervancia proudly said that the communities were able to properly manage the colonies they gave for training. Now that the project has ended, Dr. Cervancia shared that they now have strong colonies. This allowed them to split the colonies for distribution to other beneficiaries.

According to Bihod, “colonies were given to three more municipalities, for a total of six municipalities.” He has also observed that the cooperation from the municipalities made this feat possible.

“From this project, we can get additional income, since the income from crop like rice is just once a year,” shared Elinor A. Jocson, farmer cooperator in Sultan Naga Dimaporo.

Dr. Cervancia hopes that Jocson and the other farmers would be able to uplift their lives through the help of the stingless bee technologies they have taught them. ###

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Extracting and packaging honey is one of the hands-on activities during the Lanao del Norte Bee Day.

# Organic farming community comes into bloom

Text and photos  
by Patrick Raymund A. Lesaca

The Province of Camiguin is best known for producing lanzones (*Lansium parasiticum*). It has been a common expression that this fruit, once produced in the province, is sweet and can be one of the best, if not the best. The island is also home to pristine and white-sand beaches, tourist destinations, and a hub for agribusiness activities.

Businesses and farming activities remain the dominant force and source of livelihood of its people. However, little is known about a small, and thriving women's group that is about to make an edge in the field of organic farming.

The group, Mt. Timpoong Hibok-Hibok Ecotourism Association (MTHEA), is the current farmer-beneficiary of the Philippine-Korean project, under the Asian Network for Sustainable Organic Farming Technology (ANSOFT), which is one of the projects of the Korea-based Asian Food and Agriculture Cooperative Initiative (AFACI), of which, the Philippines is a member-

nation.

## Organic practices, put into practiced

MTHEA, organized in 2013, is registered as a farmers' organization with the Department of Labor and Employment. Their members are mostly women and are residents of Mambajao, Camiguin.

In 2018, the provincial government of Camiguin tapped the association to roll out an organic farming village partnership with AFACI, which eventually became its active partner.

The group is now actively engaged in organic farming and other organic practices such as making their own organic fertilizers and bio-pesticides. As an association, they are cultivating 5,000-square meter (m<sup>2</sup>) farm land planted with organically-grown eggplant, lettuce, tomato, cucumber, and sweet pepper. As an individual farmer, they also grow, other than the mentioned vegetables, sweet corn, sweet potato and rice to augment their income.

According to Estrelita Balaman, MTHEA president, prior to their engagement with the AFACI project, most of the farmers are into the use and application of synthetic or chemical-based fertilizers to grow their crops. Balaman admitted that their association is small, yet, with only 20 active members, it aspires to become big.

The farmer-beneficiaries have been recipients of various training on organic production. And in the course of the training, they were taught how to conserve the soil by showing contour farming with various types of hedgerows used and mix of cash crops and perennials grown in between; organic soil fertility management practices; and other good agricultural practices like multiple cropping, crop rotation, crop diversification, integrated farming to reflect agro-biodiversity.

Proof of their labor, the association harvested their organically-grown vegetables and was able to sell their produce in their municipality. A small vegetable-stall



was also set-up in the public market of Camiguin.

### ANSOFT-AFACI Project in the Philippines

The first phase (2010-2012) of the ANSOFT-AFACI project in the Philippines was the establishment of the Mindanao Network for Sustainable Organic Farming System, a network of networked members designed to organize regional group of organic producers, technicians, and consumers. During project implementation, series of training and workshops were conducted to enhance the technical capabilities of organic researchers on organic agriculture.

The Department of Agriculture (DA)-Bureau of Soils and Water Management is the lead project proponent, while Karen Bautista of BSWM is named principal investigator of the of the ANSOFT-AFACI project in the Philippines.

To showcase organic farming technologies using local resources and soil conservation farm planning, a model organic farming village was first demonstrated in Brgy. Mainit, Catarman, Camiguin, and was later expanded in Sitio Itum, Brgy. Baylao, Mambajao, Camiguin in 2018.

According to Bautista, there are about 25 indigenous highland farmers, the MTHEA, receiving intensive trainings on organic agriculture production systems covering crop and livestock production principles and practices based on the Asset Based Sustainable Agriculture and Community Development philosophy.

The main objective of the project is to continue the development of organic farming village by providing interventions to address farm productivity issues. These interventions are focused on key agricultural production such as, water resources development and management; soil conservation and agro-biodiversity management; and sustainable soil fertility management.

Aside from the mentioned interventions, there are continuing training and technology transfer activities being done through on-site coaching, sharing of experiences and



Farmer cooperator shows her organically-grown produce.

exchange of information to farmers.

The project also intends to widen the implementation of organic farming village in the province in support to the vision of the province to be declared as one of the organic provinces in the Philippines.

The Camiguin provincial and local government, together with the Provincial Agriculturist Office and the Department of Environment and Natural Resources-Provincial Environment and Natural Resources Office played major roles in the overall development of the project.

The Bureau of Agricultural Research (BAR) is the overall national coordinator of AFACI projects in the Philippines. To date, out of the 14 projects being coordinated by BAR among the various proponents from the DA-bureaus and selected state universities and colleges, 10 have already been completed and four are still on-going including the organic farm village in Camiguin. ###

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### AgriTalk draws...from page 6

that beekeeping needs only low investments, so farmers may use it as additional income generating activity. Besides honey, other valuable products can be derived from beekeeping such as beeswax, propolis, and royal jelly. Ellevera underscored that beekeeping also helps in cross pollination of crops creating mutual benefits for the ecosystem.

Honorio Cervantes of ATI talked on “Square Foot Urban Organic Gardening,” a practical and doable method of planting for starters who wanted to build their own organic farm at the comforts of their backyards. He described the square foot farming as an improvised form of vertical farming that maximizes the planting space and reaps more organic produce. Cervantes is an experienced farmer in growing vegetables using square foot gardening system in Cagayan De Oro City.

Cagayan de Oro, the host for the AgriTalk, is a boomtown located on the central coast of Northern Mindanao in the Southern Philippines. Most of farmers reported various constraints in urban crop production including occurrence of pests, limited knowledge on appropriate inputs, high rates for additional labour, limited access to land, and adverse climatic conditions, among many others.

Through the AgriTalk, attendees were provided with the latest trends and development in agriculture research and technology on urban gardening as source of additional profit.

Two more AgriTalk seminars are scheduled in the third and fourth quarters of the year, to be held in Cebu City and in Cavite, respectively. ###  
*(Leoveliza C. Fontanil)*

# Capacitating farmers to grow *organic mango*

Text and photos by Ephraim John J. Gestupa



Organic agriculture in the Philippines is heavily driven by its potential for putting out premium products and enterprises that can compete in both local and international markets. Achieving this requires a revolutionary change in the farming practices for producing the country's top dollar earning commodities. Fourth on the list of top crop exports after banana, sugar, and pineapple is mango. At the forefront of organic mango R&D is the President Ramon Magsaysay State University (PRMSU, formerly known as the Ramon Magsaysay Technological University).

Transforming conventionally grown mango orchards into organic involves a lot of careful planning. PRMSU, even before the enactment of RA 10068 otherwise known as the Organic Agriculture Act of 2010, PRMSU had already begun research on organic mango production in Zambales.

Research continues up until today with an ongoing partnership with the Bureau of Agricultural Research (BAR) through the project titled, "Development of Organic Mango-based Farming System in Ramon Magsaysay Technological University." Part of this initiative

was the conduct of training on alternative flower inducers and botanical extracts held on 30-31 May 2019. The training, which focused on Carabao mango variety, was hosted by PRMSU and BAR.

"This serves as a response to the growing concern of consumers regarding the safety of the mangoes they buy. Conventionally-grown mangoes are heavy on chemicals," said Prof. Susana Garcia, member of the research proponents. During the training, Garcia was accompanied by Florida Domingo and Ferdinand Domingo who served as the resource persons for the training.

On the first day of the training, Florida Domingo discussed the process that went into screening natural ingredients for making mango flower inducers. Flower inducers should exhibit high levels of calcium and potassium. Just like the conventional method, inducers must be administered to the tree warm. This combination induces the sprouting of buds where they eventually develop into mango fruit. Conventional flower inducers stimulate mango trees through the direct application of calcium nitrate and potassium nitrate, the alternative that was presented during the training

is a mixture of extracted plant materials that exhibit high levels of the same elements.

Raw ingredients included waste plant material from sweet sorghum, banana, and mango mixed together with extracts from egg shells, seaweed, and hot pepper.

Making sure that fruit development reaches its full potential, farmers must also use biological extracts that can serve as pest control. On the second day of the training, Ferdinand Domingo explained the ideal schedule of administering biopesticides on to mango trees as well as the recipe for creating the biopesticides which includes extracted juice from both mango and Carael trees.

Meanwhile, Ferdinand Domingo reiterated the importance of farm management practices that will ensure the timely and prolific growth of mango. Pre-production practices include the pruning of dead and infected branches and proper irrigation. There is one other type of pruning Domingo presented which is called center canopy pruning which opens the tree to more sunlight and lessens the incidence of mango pulp weevil.

The training included a tour

of the mango orchards used as the experiment sites for PRMSU's mango research projects which dually serves as demo fields. Participants were also toured inside the BAR-funded building facility where PRMSU conducts laboratory tests for mango research and product development. Aside from studying farm management for organic mango, the funding from BAR also supported the development of mango product processing. PRMSU currently processes and markets mango in dried, wine, and puree form.

Another important component of the project is the development of PRMSU's BS Agriculture curriculum. Garcia led the review of the agriculture related courses offered at PRMSU wherein she ensured the inclusion of organic agriculture to be part of the course modules.

In a message of BAR Director Nicomedes Eleazar's read during the opening program of the training, he encouraged the participants to explore opportunities for collaborating with the university and adopting technologies that can secure their being organic certified.

Garcia further explained that while the results of the project are not conclusive, part of the training's objective was to present to the stakeholders the promising initial results of their study. By doing so, the project team can further validate the outcomes witnessed within PRMSU.

The training was attended by agricultural extension workers, farmer's cooperatives, and private mango farm owners from Bulacan, Bataan, La Union, and Zambales.

For Marvin Macasil of Bulacan and Jun Almario of Bataan, the training conducted helped introduce a relatively new approach to growing mango the organic way. Throughout the activity, participants were in open dialogue with regards to their own experiences in growing mango and the potential problems they might encounter when adopting the new technologies discussed. Nevertheless, the participants expressed their excitement in further sharing their learnings to their peers back home. ####

### *BAR intensifies...from page 1*

identify the most effective *chitin* and *chitosan* source and the most effective method of treatment application.

Among the significant findings of the BAR-VSU project were: 1) *chitin* and *chitosan* extracted from shrimp and crab exoskeletons were comparable with standards; 2) both *chitin* and *chitosan* were effective in controlling the disease in inoculated jackfruit seedling; 3) monthly stem injection was the most cost-effective method of *chitosan* application followed by weekly spraying; and 4) *chitosan* was more effective in reducing lesion length when applied before pathogen inoculation or as preventive treatment than when applied after pathogen inoculation or as eradivative treatment.

BAR also funded another VSU project that increased the productivity and raise competitiveness of the jackfruit industry in Eastern Visayas through science-based manipulation of year-round production of fruits to support fresh market and processing industries. The study sought to develop techniques for increasing female flower production of jackfruit trees, for off-season/continuous flowering and fruiting in jackfruit, and for improved fruit development, and to improve nutrient management.

The University of the Philippines Los Baños, through funding support from BAR, is exploring ways to improve the characterization, conservation and utilization of jackfruit and its related endemic species through the creation of quick, cost-effective and reliable identification, monitoring, and characterization scheme using DNA barcodes, georeferenced maps and characterization profiles.

With the technical experts from DA-RFO 8 drafting for the jackfruit roadmap, the Agriculture Secretary's support to the industry, and the various R&D initiatives to maximize the industry's potential, the jackfruit industry is indeed looking forward to a sweeter future. #### (Rena S. Hermoso)



**Researcher Florida Domingo showcases the raw materials used in making alternative flower inducers and biopesticides.**

# Agripreneurs make income from processed Batuan

Text and photos  
by Leoveliza C. Fontanil



L-R: Suzette Demo, Bonifacio Stefan, and Amalia Nobleza are the agripreneurs assisted by DA-RFO 6 on processing of *batuan* products.

**B**atuan (*Garcinia binucao*), is an indigenous fruit crop usually found in tropical climate countries like the Philippines. It is usually eaten ripe and widely-used as souring agent to Filipino dishes including *sinigang*. *Batuan* is particularly famous in the province of Iloilo and a main ingredient to Ilonggo's *cansi*, *pinalmahan*, KBL (*kadyos*, *baboy*, *langka*), among others. *Batuan* is synonymous to the *sampalok* of the Tagalog.

Aside from being a souring agent, *batuan* is also known for its health benefits. Containing antioxidants that fight free radicals from the body, it can reduce a cholesterol level which is good for those with hypertension. It is also rich in vitamin C which can help boost the immune system and give human optimum health. This shows that there is a lot more to this indigenous crop.

The Western Visayas Integrated Agricultural Research Center of the Department of Agriculture-Regional

Field Office (DA-RFO) 6, led by Dr. Peter S.

Sobrevega together with his colleagues, Elizabeth F. Amit are carrying out studies to further explore the potentials of *batuan*.

With the funding support from Bureau of Agricultural Research (BAR), DA-RFO 6 embarked on studies that will look into the possible interventions to tap the benefits of *batuan* particularly as processed products.

In 2016, with funding support from BAR, DA-RFO 6 implemented the project, "Production and Technology Promotion of *Batuan* (*Garcinia binucao* (Blanco) *Choicy*)." The project aimed to enhance the income of farmers through utilization of *batuan* and develop new products for commercialization.

As a result, three agripreneurs from the province of Iloilo, assisted under the project, are now into food processing and value-adding of *batuan*. Through technical assistance from the capability training conducted by DA-RFO 6, their products are now commercially-

available in the mainstream market.

## From wage earners to agripreneurs

Suzette Demo, 43, from Jaro, Iloilo, is one of the assisted agripreneurs who is now into food processing of *batuan*. Her *batuan* tart, jam, and jelly are now available in eight branches of Carlos Bakeshop [Bakery-Café], a popular all-time favorite *pasalubong* and pastry shop in Iloilo. A total of 2,250 pieces per week of *batuan* tart are produced and sold for Php 55 per piece in the bakeshop.

Demo narrated her business venture started, when she met Rosalie Treñas, owner of Carlos Bakeshop, in one of the trade fairs organized by DA-RFO 6 in February 2019 during the Dinagyang Festival. At that time, Treñas was looking for native and local products that still not offered in the market.

"So 'yun ang naging opportunity, nag-usap kami at sinabi ni Ma'am Rosalie gagawa siya ng tart or any pastries para sa kanyang bakeshop from the *batuan* jam na isu-supply ko sa kanya," Demo recalled. "So, na-excite ako parang

na-trigger ang interest ko na i-go na namin,” she added. In a matter of week, hundreds of bottles of jam and jelly were sold in the bakeshop.

Her bottled products such as *batuan* puree and *batuan* jelly are also being sold in famous supermarkets of Iloilo such as SM Iloilo City, Robinson, and Festive Walk Kiosk. Her *batuan* jam was also included as one of the pastry spreads that are served in the buffet breakfast at Marriott Hotel and GT Hotel in Mandurriao, Iloilo City. And lastly, *batuan* *piyaya*, is soon to be available at Brendans House of Lengua De Gato in Uton, Iloilo. “*Ang batuan ay nag-open ng malaking opportunity sa amin, blessing talaga ang batuan,*” Demo added.

Another agripreneur who is also into processed *batuan* is Bonifacio Stefan, 51, from Miagao, Iloilo. He is processing *batuan* into powder as ingredients for *sinigang* mix. Stefan was has been a known processor of turmeric powder and ginger tea and a fixed business earner in Miagao.

“*Nagkaroon ako ng interest noon sa batuan dahil alam kong madaming batuan dito sa kabundukan namin. Nakita ko hindi pinapansin ng mga tao dahil akala nila wala itong pakinabang,*” Stefan explained. “*Kaya noong first time ko makita ng products na gawa sa batuan na display sa isang trade fare nagka-interest ako matuto.*”

Through DA-RFO 6, Stefan attended a special training on the proper handling and food safety of *batuan* before it subjects for processing. Stefan was able to learn about food procedure on sorting, pulping, proper dehydrating, and milling. And because of his creativity and practical thinking to have an economically yet cost-effective equipment for his processing, he even built and fabricated his own dryer specifically for *batuan* powder.

Meanwhile, an employed dresser, Amalia Nobleza, 53,

who’s also lived in Miagao, Iloilo, benefited from the two days training in making *batuan* jam and jelly. When she got home after attending the activity, she started to process a kilo of *batuan* and produced eight bottles wherein she earned Php 1,200 as initial start. Eventually, she increased her production and was able to produce 159 bottles per week. “*May umorder na kasi sa mga bayan, may bumibili rin sa akin galing pang Capiz, Bacolod, kaya dapat tuloy-tuloy ang produksyon dahil mabilis talaga ang benta, maganda ang kita,*” Nobleza happily shared.

Due to increasing demand for her products, Nobleza led to create an association, namely the Durog Rural Improvement Club (DRIC), to help her neighboring folks to generate income. The DRIC was able to develop strategies wherein food operation and management has been stabilized by the members to continue and enhance the production and distribution of their products.

The DA-RFO 6 stated that one of interventions of the project to utilize and promote *batuan* was through the conduct of training, trade fairs, and agro-exhibits. Through the project, the region organized and participated in trade fair at Festive Walk during Dinagyang Festival and in Iloilo Agriculture and Livestock Expo at Iloilo Convention Center in February 2018 and 2019.

Demo, Stefan, and Nobleza were participants in the hands-on training conducted by DA-RFO 6. The training was able to equip potential agripreneurs with proper processing techniques, mindset and values, practical knowledge and strategies, and consultation services to foster

successful and sustainable agri-enterprises.

Dr. Sobrevega, the project leader said that, “we introduced to them new products from *batuan* and we called them for training. For us, this is another outlet to encourage them to go into agripreneurial activities, which could potentially increase their incomes. It also a way to promote *batuan* as a viable economic activity.”

### R&D efforts on *batuan*

The importance of *batuan* as indigenous tropical fruit crop that has a commercial value is recognized by the Department of Agriculture (DA). In fact, DA has included *batuan* as one of the species subjected to DNA barcoding/fingerprinting for resource identification, conservation, and protection project. This will enable the Philippines to claim ownership of the fruit so that other interested parties will have to acknowledge the Philippines as the source of the species.

Supporting the endeavor, BAR, as the research arm of the DA, has funded numerous projects in partnership with other R&D partner-institutions to focus on the researchable areas of *batuan* including benchmarking studies, propagation, nursery establishment, product development, market research, and primary processing.

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Various *batuan* food products such as *batuan* *piyaya*, *batuan* tart, *batuan* pastries, *batuan* jam and jelly that are now available in the local and mainstream market.



Participants of the QMS training led by BAR Quality Management Representative Alexander Arizabal, Jr. (seated, 2<sup>nd</sup> from right) with BAR Director Nicomedes Eleazar (seated, 3<sup>rd</sup> from right) and SMS Consultant Enrique Tuazon (seated, 3<sup>rd</sup> from left). PHOTO: DLBATTAD

## BAR ISO TWG trains on QMS auditing

In preparation for the ISO 9001:2015 certification, the Bureau of Agricultural Research (BAR)'s ISO Technical Working Group (TWG) underwent a training-workshop on effective internal Quality Management System (QMS) auditing on 20-24 May 2019, Baguio City.

Synergized Macro Solutions, Inc. (SMS), BAR's ISO consultant specializing in international standards and common management control tools, facilitated the five-day activity.

SMS, Inc. President and Lead Consultant Susan Soliven and one

of its consultants, Enrique Tuazon, served as resource persons.

The participants gained basic knowledge and skills in conducting internal QMS audits and better understanding on the principles of root cause analysis and corrective action, and their applications in the management system. Moreover, through a series of workshop activities, BAR's ISO TWG were able to assess the bureau's process conformity, evaluate performance, and identify processes requiring improvement to ensure that the ISO 9001:2015 quality management

system remains fully implemented.

BAR Director Nicomedes Eleazar showed full support in the preparation process of the bureau's ISO 9001:2015 certification. In his message, he encouraged the TWG members to consistently commit to this endeavor not only to comply, but more importantly, to ensure that BAR's services are delivered excellently and with quality.

BAR officially launched its ISO 9001:2015 QMS implementation on 22 April 2019. The first stage of ISO certification is set in July 2019. ###  
*(Daryl Lou A. Battad)*



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