

## 'Bonus' cropping...from page 19

Municipal Agriculturist Office (MAO) and ILIARC, they are able to forge partnership with the National Agribusiness Corporation (NABCOR) which bought directly the harvest of the Lussoc and Borobor farmers.

This marketing agreement with NABCOR lessened the production cost as the farmers no longer at the mercy of traders or middlemen. Moreover, they no longer need to undergo the process on shelling and drying the harvested crops as the NABCOR is buying the crops in its raw state.

"We learned to research. We have this so-called CPAR *kalan* (CPAR stove) in which we use corn cobs as the source of fuel/energy" explained Mr. Modesto Tacbas, FC and CPAR head in Brgy. Lussoc. According to him, through CPAR, they are able to create their own version of stove which is made of recyclable parts of house appliances and uses indigenous materials. Using 18 pieces of corn cobs as the "coal", it can cook one to two kilograms of rice. Through this invention, the farmers are able to save a lot in terms of LPG consumption.

Furthermore, they are experimenting on the use of goat manure as a substrate in making organic fertilizer such as goat tea and compost.

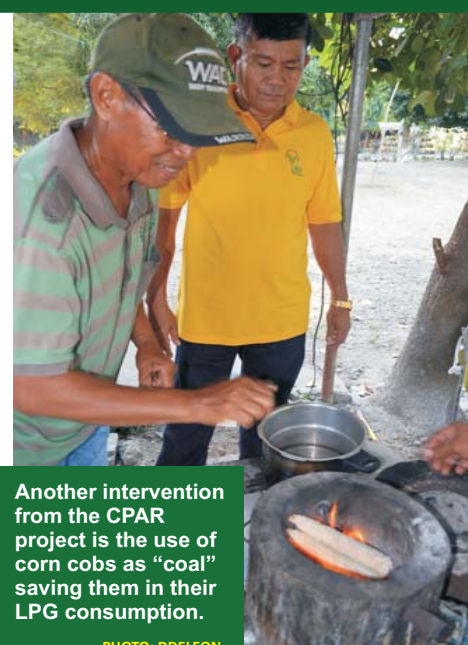
Normally, adding another cropping season can lead to soil and nutrient depletion especially on corn which is voracious consumers of

nitrogen. Ms. Calumpit said that after two years of the project implementation, they commissioned for soil analysis. The results pointed out that there are no signs of soil degradation. It still has high level of nitrogen. She said that this is due to continuous application of the organic fertilizer applied in the field. She advised the farmers to continue the application of organic fertilizer to avoid problems on the soil properties (physical and chemical).

Mr. Tacbas stated that as they (the LGU) are shifting to the practice of organic agriculture, the LGU spearheaded a program on vermi composting wherein they are giving worms to the farmers and trainings on other organic practices in which the Lussoc and Borobor are among the 10 selected barangays.

Through the farmers' group efficient roll-over system and the desire to sustain the project, the farmers are able to repay 100 percent of their loans.

The ILIARC is on its way on expanding the project into other four barangays which are barangay Nalasin, Padu Chico, Cabigbigaan and Calautit. The achievements enjoyed by the FCs and the adapters in Brgy. Lussoc and Borobor is hopefully be replicated by these barangays. To make sure that soil depletion will be prevented, the project implementers will add and intercrop mungbean in corn and instead of goat, they will shift to cattle fattening. ###



## Eleazar leads...from page 1

commercialization.

Moreover, the BAR has supported BUCAF's projects under the basic and applied researches. These include, the "Assessment of the Status of Swimming Crabs Fishery Resource in San Miguel Bay with Focus on Christian Crab"; and "Integrated Management Systems in the Rice Production Areas of Albay Under Changing Rainfall Pattern"—which are in line with the Department of Agriculture's (DA) goals of responding to the impact of climate change in rice production in Albay.

Officially closing the inauguration ceremonies and the program was Dr. Ligaya O. Vargas, assistant dean of BUCAF. ### (Mara Shyn M. Valdeabella)

## Eleazar leads inauguration of BUCAF TechCom & Info Center

In celebration of its centennial anniversary, the Bicol University College of Agriculture and Forestry (BUCAF) held the inauguration of one of its premier infrastructures, the Research and Technology Commercialization and Information Center, on 7 September 2012.

Situated at Guinobatan, Albay, the center, known also as the Market and Information Center, was established through the Institutional Development Grant (IDG) program of the Bureau of Agricultural Research (BAR).

Leading the ribbon cutting ceremony was BAR Director Nicomedes P. Eleazar. A thanksgiving mass and blessing officiated by the university chaplain, Rev. Florante T. Afafe, was held thereafter. Attending the inauguration ceremonies were Dr. Fay Lea Patria M. Lauraya, president of Bicol University, Dr. Marissa N. Estrella, dean of BUCAF, and other heads and members of the BU and BUCAF faculty.

Dir. Eleazar, who also served as the keynote speaker, expressed his gratitude to the BUCAF for being a strong partner in the bureau's goal of strengthening the agriculture and fisheries R&D in the Bicol Region. The bureau chief commended the various research activities being pursued by the college and the university to further advance the research and development sector.

Priority to these is the modern and state-of-the-art R&D facilities that the bureau has awarded to the college under its IDG program.

"BAR, being the national coordinating agency for agriculture and fisheries R&D, recognizes the important role that modern and state-of-the-art R&D facilities play in empowering our researchers, members



BAR Director Nicomedes P. Eleazar leading the inauguration of the IDG-supported facility at BUCAF.  
PHOTO: JBORROMEO



of the faculty, students, and as well as the farmers and fisherfolk to generate timely and relevant technologies that will ultimately benefit the not only the college, but also the agriculture sector of the region and the country as a whole," said Dir. Eleazar.

In the past years, BAR has supported various projects and research activities of the university. Among these include, the "Institutional Development Support for Strengthening Capacities of BUCAF: Improvement of Technology Development and Resource Center" in 2000 and the "Establishment of Indigenous Breeding and Dairy Production Facilities in BUCAF"—an on-going project, which started in 2011 which is aimed at increasing the income of farmers' household.

Believing in the importance of the college's agricultural undertakings, BAR furthered its support to the college through its assistance in the establishment of "Research and

Technology Commercialization and Information Center at BUCAF."

Through the grant, BUCAF has been able to acquire pieces of equipment and to improve its facilities which are essential in the delivery and enhancement of its services in the fields of instruction, research, extension, and production specifically for technology

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# R&D program to harness Phl aquatic agri'l systems underway

According to the WorldFish Center, more than 700 million people depend on Aquatic Agricultural Systems (AAS) for their livelihoods. They live in aquatic agricultural systems despite their vulnerability because these are highly productive systems that provide multiple opportunities for growing or harvesting food and generating income.

In the Philippines, AAS dependent communities continue to face significant development challenges that need to be addressed comprehensively if only to ensure that poverty and food insecurity are reduced significantly.

Recognizing this, the WorldFish Center, in cooperation with various partners, is implementing a new research program to harness the development potential of AAS. The program aims to improve the lives of the 15 million poor and vulnerable users of AAS by 2016, hence, benefitting 50 million people by 2022 through the adoption of new technologies and knowledge.

Aquatic agricultural systems are diverse farming systems where families cultivate a range of crops, raise livestock, farm or catch fish, gather fruits and other tree crops, and harness natural resources such as timber, reeds and wildlife. They occur where the rural environment is dominated by aquatic ecosystems along freshwater floodplains, coastal deltas, and inshore marine waters, and are characterized by their dependence on



PHOTO: RDELACRUZ

**AAS dependent communities continue to face significant development challenges that need to be addressed comprehensively if only to ensure that poverty and food insecurity...**

seasonal changes in productivity, driven by seasonal variation in rainfall, river flow and/or coastal and marine processes.

“The CGIAR Research Program on Aquatic Agricultural Systems embraces innovation through an effective partnership that espouses participatory action research involving partners and the target clientele right from the start” said Dr. Maripaz L. Perez, WorldFish Center regional director for Asia and country manager for the Philippines.

Based on the project documents presented to BAR, CGIAR is moving away from the supply-driven approaches often described as research for development, to a much more

demand-driven approach of research in development.

“The program intends to explore possible investments to improve farming practices and access to markets and services, reduce gender inequity and vulnerability to exclusion, exploitation and natural disasters, and strengthen socio-ecological resilience and adaptive capacity as well as institutions and policy to empower AAS users,” Dr. Perez added.

To date, AAS Program in the Philippines has identified learning hubs in Visayas (Bohol, Negros Oriental, Cebu, Samar, Southern Leyte, and Leyte) and Mindanao (Agusan del Norte, Bukidnon, Lanao del Norte, Misamis Oriental, Misamis Occidental,



PHOTOS: DDELEON

**For the first corn cropping, from 4 tons per hectares, it goes up to 6 tons per hectare. On the other hand, the second corn cropping, which is the main intervention of the project, using the BT corn, posted yield as high as 6 tons per hectare.**

**Goat intervention**

trainings on technology updates on rice, corn, and goat production, composting, record keeping, entrepreneurial management, village production of earwig, and vermi composting, and participation on Farmer Livestock School (FLS) and series of *labbay-aral* (educational tours) to other progressive farms.

As the results of these technological interventions, significant increase in yield both in corn and rice was noted during its three years of implementation. For the rice, the inbred rice yields goes up to at least 40 percent increase. The implementers introduced the hybrid rice during the year 2 of the project which further boosted up the rice production of the FCs. It posted an average yield of over 6 tons per hectare.

For the first corn cropping, from 4 tons per hectares, it goes up to 6 tons per hectare. On the other hand, the second corn cropping, which is the main intervention of the project, using the BT corn, posted yield as high as 6 tons per hectare.

On the other hand, the goat intervention is not yet in its full capacity to induce high income as there is a high mortality rate recorded. According to the analysis done, the deaths were caused by a

virus causing *Caphrine Arthritis Encephalitis* which is traced back in one of the awarded bucks.

Apart from the little setback on the goat intervention, the project is still considered a success. Following the rice-corn-corn + goat farming system, the net income of Php 21,000 is surged up to Php 105,000 after three years of implementation.

“On our former farming practice, we spent a lot on inputs, and yet less profit. In the one hectare corn harvested, we spent as much as Php 20,000 and we earned of about Php30,000-35,000. Now, if you invested the same amount for the inputs, you can earn Php 50,000 – 60,000. That's only for corn” proudly reported by Bonifacio Fajela, farmer cooperator from Brgy. Borobor.

From this income, the FCs and

adopters were able to continuously support the everyday subsistence of their family. They are able to buy their own farm equipment such as *kuliglig* (two-wheeled trailer pulled by a two-wheeled tractor similar to a rotary tiller), water pump, generator, electric pump, motorcycle, tricycle, house maintenance and repair, appliances, among others. They are able to build their own shallow and deep well. With this, they do not need to ask further assistance to other agency for their irrigation requirements.

Ms. Calumpit attributed the overwhelming success of the project to the unwavering support of the local government unit (LGU) through its municipal agriculturist, Mr. Tacbas and staff. Through

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**As the results of these technological interventions, significant increase in yield both in corn and rice was noted during its three years of implementation.**



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# “Bonus” cropping season better profit for Sto. Domingo's farmers

BY DIANA ROSE A. DE LEON



CPAR farmer-cooperators with Mr. Mamerto Tacbas (1st row, second from left), municipal agriculturist in Sto. Domingo, Ilocos Sur. PHOTO: DDELEON

Adding another cropping season really makes a big difference to the income of the farmers. This was realized during the implementation of the Community-based Participatory Action Research (CPAR) in Sto. Domingo, Ilocos Sur.

In 2008, the Bureau of Agricultural Research (BAR) through the Ilocos Integrated Agricultural Research Center (ILIARC) implemented the CPAR on rice – corn – corn + goat farming system that enhanced the farm productivity and profitability of the farmers in Sto. Domingo.

“The existing practice of the farmers here is rice – corn pattern. Now, we really pushed that there should another corn cropping pattern and added the livestock component which is the goat” explained Ms.

Melinda G. Calumpit of ILIARC, co-proponent of the project.

Sto. Domingo is an agricultural municipality with 80 percent of the working force engaged in agriculture and half of the total land area is used for various agricultural-related activities. The major crops produced are: rice, corn, sugarcane, tobacco, and various vegetables.

“The land here remains fallowed from early March to May. With that cropping pattern, there is what we considered a 'bonus' cropping season. They were able to maximize the use of the land” elaborated Mr. Mamerto Tacbas, municipal agriculturist.

The two adjacent barangays: Brgy. Lussoc and Borobor were selected as the site of interventions. Eight farmer-cooperators (FCs) from Lussoc and 13 FCs from Borobor

were originally involved in the project.

The technology options offered and introduced to the two barangays were the use of organic fertilizer and/or compost + bio-fertilizer + inorganic fertilizer, use of leaf color chart (LCC) as to the time of nitrogen (N) application, use of light trap, release of biological control agent such as earwigs and crop residue utilization for the crops.

For the goat, the implementers applied the Integrated Goat Management Technology (IGMT) such as improved housing, feeds and feeding management, health management and used of goat manure as fertilizer aside from utilization of upgraded buck F2 Anglo-Anglo/Boer-Boer/Boer-Anglo bucks with bloodline 75:25.

It is reinforced by an array of



Officials of the WorldFish Center meet with BAR staff. PHOTO: MEAQUINO

and Zamboanga del Norte).

Preliminary scoping activities have been initiated to identify and validate key development challenges and opportunities facing the hub. These will provide the diagnosis that will identify not only the existing development R&D activities in the hub but perhaps more importantly ensure complementation of AAS activities with national, regional and local development plans and programs in the country.

CGIAR will implement AAS through strengthened collaboration with national, local institution, and international development partners.

As the Department of Agriculture's (DA) lead coordinating R&D agency for agriculture and fisheries, the Bureau of Agricultural Research (BAR) has supported various projects and initiatives on agriculture and fisheries-related technologies.

BAR committed its support to the implementation of AAS, as it coincides with one of its banner programs—the Community-based Participatory Action Research (CPAR). CPAR focuses on empowering the communities by conducting research cum extension activities based on the technology needs identified by the community.

BAR will facilitate linkages with the Regional Integrated Agricultural Research Centers (RIARCs) and other networks and will identify R&D thrusts and immediate interventions to align with the AAS current programs and thrusts.

“The program will be a catalyst for innovation in aquatic-agricultural

systems that build networks of knowledge, learning and influence,” Dr. Perez concluded.

The WorldFish Center is an international, non-profit research organization dedicated to reducing poverty and hunger thereby improving

aquaculture and fisheries through research and development efforts. The establishment of an office of WorldFish in the Philippines was ratified under Senate Resolution No. 79 dated 6 March 2012. ### (Ma. Eloisa H. Aquino)



Dr. Maripaz L. Perez, WorldFish Center regional director for Asia and country manager for the Philippines, discusses the CGIAR Research Program on AAS. Also in the photo are: Ms. Julie Ann Baril and Mr. Len Garces of WorldFish Center. PHOTO: MEAQUINO



BAR Asst. Dir. Teodoro S. Solsoloy provides BAR publications to the officials from WorldFish Center. PHOTO: MEAQUINO



# BAR, UPLB conclude 2<sup>ND</sup> SWEET SORGHUM BUSINESS SUMMIT

To provide a venue for business matching opportunities for researchers, private partners, and other interested individuals; and to commercialize sweet sorghum as a viable complementary feedstock for bioethanol, the Bureau of Agricultural Research (BAR) and the University of the Philippines Los Baños (UPLB) held the 2<sup>nd</sup> Sweet Sorghum Business Summit at the Pampanga Agricultural College (PAC), Magalang, Pampanga.

Mr. Rosiler Dayrit welcomed the guests and participants in behalf of Mayor Romulo F. Pecson of Magalang, Pampanga. Reading the mayor's message, he hoped for the success of the sweet sorghum initiative just like the sweet tamarind which PAC also initiated and implemented.

Meanwhile, PAC President Honorio M. Soriano, Jr. delivered the opening remarks. He acknowledged the importance of the activity and recognized the initiative of the stakeholders and the people who believe in sweet sorghum as an important crop. "We need to invest our talents and encourage others that there is indeed a big potential in sweet sorghum as a crop," Dr. Soriano underscored.

Mr. Anthony Obligado, head of BAR-Technology Commercialization Division, delivered the inspirational message of BAR Director Nicomedes P.

Eleazar. In the message, he called for the various key players to continue working hand-in-hand to attain the goal of reducing dependence to imported fuels by utilizing sweet sorghum as a viable feedstock for bioethanol production and processing various by-products from the crop. He added that this will benefit not only the industry players but also most importantly, the local farmers, processors, and the whole agriculture sector.

The summit showed a well-attended crowd representing various sectors including the academe, research institutions, government regulators, local government units, non-government organizations, planters, farmers, ethanol industry, private sector, and financial institutions.

A wide array of topics were presented to the participants including, sweet sorghum prospects, its agronomic performance in Tarlac and Pangasinan, results of commercial sweet sorghum plantation in Sagay City, Negros Occidental, and financial assistance programs of the Development Bank of the Philippines, among others.

Professor Rex B. Demafelis of UPLB and Biofuels convenor presented the highlights of the DA-BAR Sweet Sorghum Initiatives.

In May 2012, the first



PHOTO: MEAQUINO

anhydrous sweet sorghum was produced in Negros Occidental. From the 30-hectare land planted with sweet sorghum, 479 tons of stalks were harvested. The stalks were milled and evaporated at OPTION Multipurpose Cooperative, wherein 61.78 tons of sweet sorghum syrup was produced. The syrup was further processed at San Carlos Bioenergy, Inc. (SCBI), wherein 15,231L of anhydrous ethanol was produced. SCBI is a pioneer ethanol producer in the Philippines.

Results showed that production cost per hectare ranges from Php39,000 to Php54,000 with an estimated potential net income ranging from Php 2,820 to Php77, 820 per ton cane.

Culminating the event was a panel discussion. Answering the queries from the audience were Prof. Demafelis, Mr. Obligado, Mr. D. Cruz, Dr. Cecilia



Exhibited at the lobby of the venue were results of various sweet sorghum initiatives and projects in cooperation with other institutions.

PHOTO: MEAQUINO



PHOTO: RBERNARDO

Applying the vermicompost

PHOTO: RBERNARDO

## Commercializing and expanding the vermicomposting technology

Initially, three *saba* farmers from Brgy. Kigtan and Brgy. Viñas were identified as the project's farmer cooperators. Staff from QAES assisted in setting up three vermibeds per farmer. From three farmers, the number of cooperators instantaneously expanded. "As of today, there are 16 vermicast production sites in 13 different barangays including the project sites in Kigtan and Viñas. Each unit has the capacity of producing 1,000 kg of vermicast in a year," a promising result of the project as told by Dr. Lalas.

In 2011, all the project participants including the farmers, members of Municipal Agriculture and Fishery Council (MAFC) and DA staff underwent capacity-building trainings and seminars on vermicomposting. Among the topics discussed were cultural management practices, banana propagation, pest and disease management, and vermicomposting technology commercialization.

The vermicomposting sites in Barangays Pinagkamaligan, Kinalin Ibaba, Kalibo, Patihan, Pandanan, Anahawan, Sumilang, Sta. Milagrosa, Doña Aurora, Bantulino, Apad Lutao, Lagay, Tiniguiban, Kapaluhan, and the



PHOTO: RDELACRUZ

two project sites produced 5,601 tons of vermicast in January 2012. Seeing this notable outcome, QAES decided to raise the production to 26 tons which entails the establishment of ten more units.

## Gaining more through vermicomposting

The farmer cooperators witnessed the significant improvements of their *saba* plantation and harvest through the use of vermicomposting. The plants became healthier-looking and more resistant to diseases. The yield also increased and the quality of harvest improved significantly.

Some farmer cooperators are already selling their vermicast and ANC worms to nearby locales and some are already producing vermitea, an organic liquid fertilizer brewed from the

vermicast. "We are planning to expand the technology adoption in Tagkawayan, where there are portions planted with *saba*," said Dr. Lalas. QAES will also impart the technology in all the local government units not only for banana production but also for other crops.

"In Calauag, vermicomposting is not utilized only in *saba* farms but also in *Gulayan sa Paaralan*," said Dr. Lalas. The utilization of vermicast in Calauag won the municipality first place in District IV and second place in the provincial level of Developing Agriculture through Vegetable Production Integration Drive in School (DAVPIDS) (*Gulayan sa Paaralan*).

Through the technology commercialization of vermicomposting in Quezon, not only *saba* farmers but all farmers in general will surely continue to reap better harvest and higher income. ###



Farmer-cooperators, adoptors of the vermicomposting technology for *Saba* banana in Quezon with project leader, Dr. Eduardo R. Lalas (right) of QAES.

PHOTO: RBERNARDO



# Calauag Saba:

BY LEILA DENISSE E. PADILLA

## with vermicomposting

Calauag, a municipality located in eastern Quezon, rears an abundance of coconut that covers more than 22,000 hectares. With the predominance of coconut in town comes the rising of yet another high-value crop, Cardava bananas or *saba*. Aside from being the largest fruit awardee, the *saba* variety grown in Calauag possesses a quality that is decidedly comparable to Mindanao's variety. Due to the competitive quality of Calauag's *saba*, the town opts to maintain and remain as a consistent and excellent supplier of this crop, making the town not only known for its vast coconut plantations but also for its premium quality *saba*.

"However, traditional culture of banana and other local cultivars has been unsystematic; backyard and subsistence level has no external input other than initial planting material and labor for occasional clearing and harvesting," as stated by project leader Dr. Eduardo R. Lalas of the Quezon Agricultural Experiment Station (QAES).

### Making *saba* organic and profitable through vermicomposting

To increase the farmers' earnings through *saba* production optimization using the organic practice of vermicomposting, QAES in partnership with the Bureau of Agricultural Research (BAR) conducted the "Technology Commercialization of Vermicomposting for *Saba* Banana Plantation in Quezon Province".

Previously, the Calauag local government unit implemented the "Restoring Local Agricultural Practices through Sustainable Agriculture", a project which also promotes and supports the Organic Agriculture Act. These projects on organic agriculture made the

town one of the "prime movers" in Quezon.

"[Part of] the components of the [QAES] project are the promotion and development of organic farming and construction of vermibeds," explained Dr. Lalas. Vermicomposting utilizes earthworms as decomposers to produce high quality fertilizer in a short period. The organic wastes are collected and mixed in a vermibed and after the decomposition process, it turns into a nutrient-rich compost called vermicast.

### Identifying the best substrate for *saba* vermicast

According to Dr. Lalas, the idea of the project is to utilize all the available substrates found in the farm. "We selected the kinds of substrates that are not costly and are readily available in the farms," he added. In Tiaong, Quezon where QAES is located, the proponents made use of three substrates, *madre de cacao* leaves, neem leaves,

and banana stalks. Meanwhile, they utilized the same substrates in Calauag except for the neem leaves which were replaced by *maria-maria* leaves instead.

The first phase of the project aimed to identify which of these substrates is the most helpful and cost-effective in procuring significant improvements in the quality of *saba*. The ratio of their vermicast is 75 percent substrate and 25 percent cow manure. After the soil analysis and comparative analysis conducted by QAES and the Regional Soils Laboratory, it was found that *madre de cacao* and neem produced the most favorable outcomes. But as observed by the proponents, *madre de cacao* is found almost anywhere in the locality making this substrate more economical for the farmers. Dr. Lalas also informed that if the objective is to rapidly reproduce the African Night Crawler (ANC), the best substrate to use is the banana stalks.



## LOCAL EVENT

### Food products...from page 7

B. Pascual (pest and disease expert, Institute of Plant Breeding, UPLB), Mr. Jerelu Ganancial (Sagay City agricultural officer), Dr. Ruben Camurungan, (president of First Pampanga Biofuels Corp.), Mr. Arnel J. Amparo (resident manager of SCBI), and Dr. Emanuel Samson of (university researcher at UPLB La Granja Research and Training Station).

Mr. Amparo and Dr. Camarungan also presented the "Economics of Bioethanol Production from Sweet Sorghum" and the "Prospects of Sweet Sorghum for Bioethanol Production in Central Luzon", respectively.

Exhibited at the lobby of the venue were results of various sweet sorghum initiatives and projects in cooperation with other institutions. One of them was the BAPAMIN, a private-sector company based in Ilocos Norte that produces processed products from sweet sorghum like wine, vinegar, and syrup. BAPAMIN is also producing hand sanitizer from sweet sorghum, their latest product along with the sweeter which is still under refinement. PAC also exhibited their sweet sorghum products including soap, liniment, and shower gel. In 2010, BAR packaged a compendium of sweet sorghum recipes which were developed by PAC. ### (Ma. Eloisa H. Aquino)



Mr. Anthony B. Oblgado  
BAR-TCO OIC-HEAD



Prof. Rex B. Demafelis  
UPLB



Dr. Honorio M. Soriano, Jr.  
PAC PRESIDENT

**The summit showed a well-attended crowd representing various sectors including the academe, research institutions, government regulators, local government units, non-government organizations, planters, farmers, ethanol industry, private sector, and financial institutions.**

and 'brown' cultivars, they must be harvested 80-90 days from their fruit sets. She also mentioned that using appropriate tools is important to minimize losses during harvesting. For storability, Marang fruits can be prolonged using appropriate packaging materials and cold storage. For ripening techniques, washing and covering the fruit with wet sack or cloth were found to be faster, easier while ethylene scrubber and packing in a closed polyethylene bag or keeping them under modified atmosphere condition could delay the ripening.

The group of Dr. Sales was able to develop at least 11 products from Marang, nine from the pulp and two from its seeds. The food products from the pulp include: blanched pulp, concentrate, juice, jam, conserve, jelly, ice cream, vacuum-fried, and vinegar. Meanwhile, among the food products developed from its seeds are coffee and nut butter.

To produce the blanched Marang pulp, an antioxidant, *Metabisulfite*, was added when packed in either polyethylene bag (Ziploc) or Styrofoam. The antioxidant will delay the browning. Cold storage is set at 0°C and 4°C. The taste and appearance of the pulps were rated acceptable. The Marang concentrate is a combination of the puree and sugar while the Marang juice comes from the diluted concentrate. The Marang jam is produced from sugar and pulp fruit while the conserve is jam mixed with dried fruits and nuts. Marang jelly is made from the water used in blanching the pulp carrying with it the flavor from the fruit. Ice cream made from Marang fruit is a home-made frozen dessert capturing the flavor and taste from the fresh fruit while the vacuum-fried is the crispy pulp version. The overripe Marang are usually made into vinegar.

The seeds of Marang are also edible. It can be roasted and grind to make Marang coffee; and can be pulverized and mixed with sugar, oil, and butter to produce Marang nut butter. ### (Rita dela Cruz)



# CABI officials visit BAR; potential R&D partnership discussed



CABI officials: Drs. Trevor Nicholls (left) and Loke Wai-hong (right) visiting BAR.

PHOTO: LPADILLA

To explore further the opportunity for future collaboration towards agricultural development, officials of the Centre for AgriBiosciences International (CABI), namely: Dr. Trevor Nicholls, chief executive officer of CABI United Kingdom (UK) and Dr. Loke Wai-Hong, regional director of CABI Southeast and East Asia Regional Centre (SEARC), visited the Bureau of Agricultural Research (BAR).

The CABI officials had a

meeting with the bureau's division heads and technical staff about the possible collaboration areas between the two agricultural institutions.

The BAR Institutional Development Division (IDD), represented by its OIC Head Digna Sandoval and assistant head Victoriano Guiam, hosted the meeting which was attended by Ms. Julia Lapitan, OIC head of the Applied Communications Division (ACD), Ms. Ligaya Santos, assistant head of the Project Monitoring and Evaluation Division

(PMED), and technical staff from the Technology Commercialization Division (TCD), Project and Planning Development Division (PPDD), ACD, IDD, and PMED.

The BAR's primer video was presented to the officials providing them an overview of the bureau's R&D thrusts, programs, priorities, services, and technologies generated. Subsequently, Dr. Nicholls and Dr. Wai-Hong showed a presentation about CABI's thrusts and mission, what it does, and how it can aid in the progression of the Philippine

agriculture sector.

The areas of collaboration that are being looked at are: sharing and improving services on capabilities, expertise and technologies on agricultural R&D literature, information and communication. Implementation of joint projects and research on crop productivity and protection was also included in the discourse.

Dr. Nicholls commended the state of agriculture R&D in the Philippines and how exemplary BAR commits on its role towards a progressive agriculture sector. He said, "[The Philippines] has more integrated approach and is more advanced compared to other countries. BAR has a forward-looking and up-to-date approach".

Meanwhile, Wai-Hong stressed the fluency of Filipinos in English as an advantage in forging strong international partnerships and collaborations and in creating effective project proposals. He also perceived the country's large population as leverage over other countries in terms of workforce and labor power.

CABI is a unique not-for-profit science-based international development and information organization aiming to provide scientific expertise and information about agriculture and the environment. The Philippines is one of the Asian country members of this organization. ### (Leila Denisse E. Padilla)



Visitors from CABI with BAR officials and technical staff members in a group photo op.

PHOTO: LPADILLA

PHOTOS: BAR/UPLB

Swine and Poultry Research and Development Center (NSPRDC) could be through proper selection of the best genetic resource for reproduction. Selection is highly encouraged because it would help in the sustainability and conservation of the native pigs and chickens. The process involves selecting the animals possessing the desirable traits which are then used as breeders.

## What are BT Blacks?

With years of thorough and careful selection for the best genetic resources for native pig production, NSPRDC was able to develop the BAI-Tiaong Black Pigs, or known as the BT Blacks.

Since the late '90s, NSPRDC has been maintaining native pigs coming from Benguet, Marinduque and Quezon Province. These native pigs were bred with each other and the ones with the desirable qualities are selected to be the next breeders. Hence, the BT Blacks were born. They are native pigs which are improved through selection and have shown better performance than most pure native pigs found in the country. This includes faster growth and more number of offsprings without losing the desirable traits. Their distinctive features are their pure black color and medium-sized ears. BT Blacks have an average litter size of 8 piglets while 7 piglets for weaning size. Birth weight averages 750 grams.

Seeing the potential of the native pigs as another source of income for farmers, the BAR-funded project titled "Evaluation and Commercialization of Philippine Native Pigs" was implemented. BT Blacks have been distributed to different farmer-cooperators in Quezon, Laguna and Batangas to see the income potential of raising them based on the housing and management practices developed by NSPRDC. Instead, the farmer-cooperators chose to adopt their own housing and feeding practices, and yet still resulted in promising outcomes.

Further studies are needed to realize the full potential of the BT Blacks. As of now, 10 farmer-cooperators from Tiaong, Dolores, and Tagkawayan



in Quezon and Paete in Laguna are raising BT Blacks and are being monitored by NSPRDC. They are now becoming sources of breeder animals sold in different parts of Luzon. Some of them are even saying that they are in need of more production as demand for native pigs for lechon is now increasing. NSPRDC encourages those provinces with existing native pigs to improve them through proper breeding and selection, housing, feeding and over-all management so that there will be more sources of breeders all throughout the country. Currently, BAI-Animal Products and Development Center (APDC) based in Marulas, Valenzuela explores other market potential for native pigs aside from lechon such as processed meat and leather, among others.

Government support is an essential component in order for native production be sustainable for our farmers. The Department of Agriculture (DA) is responsible in ensuring that the

country's native chickens and native pigs are conserved. In 2010, the Bureau of Animal Industry (BAI) launched the Philippine Native Animal Development (PNAD), an initiative that will help promote the conservation and utilization of domesticated native animals as food. The said project is aimed at highlighting the significant role that native animals play especially in providing food and income-generating activities for the Filipino people. In view of this, the Bureau of Agricultural Research (BAR), through its Technology Commercialization Division (TCD), has been supporting related R&D projects geared towards the promotion and development of our own native chickens and native pigs. ###

For more information regarding native chicken and pig production and BT Blacks, you may contact Dr. Rene Santiago or Dr. Flomella Caguicla of BAI-NSPRDC at (042) 585-7727 or email them thru: bai\_nsprdc@yahoo.com

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2. Powerpoint presentations presented by Dr. Rene Santiago and Dr. Flomella Caguicla during the seminar series held at BAR last 24 September 2012.

**Government support is an essential component in order for native production be sustainable for our farmers.**



# Why choose native?

BY ANNE CAMILLE B. BRION



According to the Food and Fertilizer Technology Center for the Asian and Pacific Region, native animals have provided valuable contributions in the cultural, social, and economic status of farming communities in the rural areas. Aside from providing them with an alternative source of livelihood, these animals have been known to contain high quality protein.

The growing population around the world prompted the demand for producing more which led to intensive farming, making use of exotic commercial breeds and hybrids. But with people becoming more conscious of their health, natural products exhibit potentials for choosing native chicken and pig when it comes to animal production.

Native pigs can be found in many parts of the country like Abra, Kalinga, Mt. Province, Marinduque, Quezon, Iloilo, and Davao - mostly in far-flung villages or barangays. These pigs are known for their ability to grow and reproduce even under adverse conditions and are more resistant to parasites and common diseases as compared to the standard or imported breeds. Most of all, they are budget-friendly especially to small-scale farmers who cannot afford to buy commercial

feeds because they only require low-cost production inputs in terms of housing and feeding. Locally available resources found in many areas including *Gabing San Fernando*, *sakwa*, *kamote* and *kamote tops*, *kangkong*, banana trunks and leaves, copra, rice bran, cooked cassava and *kamoteng kahoy*, *pongapong*, as well as *madre de agua* can be fed to them. Meanwhile, herbal plants can act as substitutes to ease common diseases and illnesses like *ipil-ipil* seeds and *niyog-niyogan* for deworming, *madre cacao* or *kakawate* for skin parasites, *sambong* for respiratory problems, and star apple and guava leaves concoction for scouring.

For native chickens, different kinds of breeds that exist in the Philippines include the *Banaba* in Batangas, *Paraoakan* in Palawan, *Joloano* in Mindanao, and *Darag* in Panay Island. Native chickens possess almost the same advantageous characteristics like the native pigs. But aside from those, they also have the ability to look for their own foods, hence intensive production is not that much needed. Feeding them is easy as readily-available local feeds such as corn, palay, rice bran, kitchen leftovers,

grasses or even insects and worms are palatable to them. They can also be beneficial for those who are planting other agricultural crops because they aid in improving soil fertility.

Aside from providing nutritious foods for the family, raising these native animals can become an additional source of income for small-scale farmers especially in rural areas. They are used in ritual practices, as cure for the sick especially in the Northern areas, as payment for debts, or even as a hobby because they are very easy to manage. They are usually in demand during feasts and occasions because of their distinct taste. Native pigs, for example, when roasted and turned into lechon, have crispier skin and tastier meat which suits the Filipinos' palates. With a leaner and tastier meat, alongside associated healthy benefits, native production can draw higher demand and command a better price in the market.

Major identified setbacks, however, of venturing into native animal production are slow growth rate and inconsistencies in production performance. So why still endeavor in this undertaking?

Solution to these problems according to experts from BAI-National



## Food products from Marang developed

Marang (*Artocarpus odoratissima*) can be easily mistaken for a jackfruit (*Artocarpus heterophyllus*) or a breadfruit (*Artocarpus altilis*). But unlike the two, Marang is smaller and softer than jackfruit and a little bigger in fruit size than breadfruit. Marang is native to the Philippines and can thrive well in the marginal and hilly areas of Mindanao.

There are two varieties of Marang that are locally available and are commercially sold in the market: brown and evergreen. The brown variety has light to dark brown peel with white to off-white pulp. The average fruit size weighs 1,250-1,700 grams and has 6-10 percent edible portion. Meanwhile, the evergreen variety has green to light green peel and white pulp. It is heavier (1,300-1,800 grams), has more edible portion (10-15 percent), and is sweeter than the brown variety.

Going beyond its thorny and unsightly appearance, Marang has become a favorite fruit for those who

have tasted it. It is known for its appetizing taste, strong but fragrant sugary smell, and nutritive value. It contains protein, fat, carbohydrates, crude fiber, ash, calcium, phosphorus, iron, retinol, beta-carotene, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid.

But this fruit is seasonal. It is only available from May to September. After harvest, a mature fruit becomes highly perishable, lasting for 2-3 days only. Once opened, a ripe Marang must be consumed immediately because it can easily lose its flavor and it oxidizes causing the pulp to brown. It was due to the seasonality and perishability of Marang that this fruit is undervalued and underutilized. Given its high demand, its short shelf life hinders its market potential.

To address this, a group of researchers from the University of Southern Mindanao Agricultural Research Center (USMARC) led by Dr. Emma K. Sales, implemented the project titled "Pilot Testing of Postharvest Technologies and Product

Diversification of Marang". This research initiative, funded by the Bureau of Agricultural Research (BAR) and the High Value Commercial Development Program (HVCDP) of the Department of Agriculture (DA), looked into the possibility of making processed products from Marang and making them readily available even during off-season. The result of this project is also seen to encourage growers, farmers, enthusiasts, and entrepreneurs to explore and venture into Marang processing.

Dr. Sales underscored that through the processing technologies that they have developed for Marang, postharvest loss is reduced. On the business potential, the food products will be a good source of livelihood and additional income for Marang growers. Once the products are known, it will provide a niche for this exotic fruit in the market. Products can be marketed not only locally but also to foreign consumers.

In terms of postharvest techniques, Dr. Sales emphasized that in harvesting the fruit, it is important that the right stage of maturity is determined. For the

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**Dr. Sales underscored that through the processing technologies that they have developed for Marang, postharvest loss is reduced.**



# Support to PAC R&D facilities intensified



PHOTO: MEAQUINO

In view of the pronouncement of Agriculture Secretary Proceso J. Alcala to expedite the rehabilitation and upgrading of R&D facilities in the country, the Bureau of Agricultural Research (BAR) intensified its support to various research institutions and partners through its Institutional Development Grant (IDG) R&D Facilities Development Program.

During the Management Committee Meeting held early this year, Sec. Alcala stressed the importance of upgrading the R&D facilities of the DA nationwide to address the basic requirements in conducting basic and applied researchers. One of the recent recipients was the Pampanga Agricultural College (PAC) in Magalang, Pampanga.

PAC President Honorio M. Soriano, Jr. presented the various facilities supported by the BAR under its IDG program during the visit of BAR staff to the campus.

The IDG program aims to enhance the capabilities of the National

Research and Development System for Agriculture and Fisheries (NaRDSAF) member-institutions to efficiently and effectively implement and manage R&D programs and activities in agriculture and fisheries.

The program supports the acquisition of scientific equipment and information technology wares, construction and renovation R&D facilities and basic facilities of NaRDSAF member-institutions.

The BAR Team who visited PAC was composed of Mr. Anthony B. Obligado, OIC head of Technology Commercialization Division (TCD), Ms. Ethcel Princess H. Patulot and Ms. Ma. Eloisa H. Aquino, technical staff members. The group also visited the Knowledge Information and Technology Sharing (KITS) Center which was also funded by BAR in 2002 which was then called, PAC-BAR IEC Center. In 2005, additional support was given to purchase other vital equipment to improve the services of the center.

The KITS Center packages,

prints, and disseminates IEC materials and scientific journals to various sectors including farmers, researchers, extensionists, local government units, agricultural technologists, entrepreneurs, faculty and students of different state universities and colleges in the region, government agencies and other stakeholders.

Prof. Mary Grace B. Gatan showed the equipment purchased under the project titled, “Upgrading of PAC-BAR KITS Center Equipment in support to its Instruction, Research, Extension and Information Technology Dissemination” in 2011.

The Research, Extension and Training (RET) Technology showroom which is under the KITS Center showcases PAC-generated technologies and products including soap, spa salt, wine, vinegar, among others. Also, on display is PAC-BAR publication titled, “Sweet Sorghum Food Products: A Compendium”. The book was packaged and published by BAR through its Scientific Publication Grant.

The group also toured the PAC Feed Testing Center. The bureau also funded the upgrading of the equipment capability of the said Center aimed which was aimed to be a modernized testing facility providing the most up-to-date and accurate chemical analysis on feeds. The PAC Feed Testing Center, an accredited and licensed feed laboratory, was established in 1998 through the Grants-in-Aid (GIA) Program of DOST Region 3. Seven years after, operations was turned-over to PAC to perform feed analysis and ensure quality feed formulation, production, and distribution. The laboratory provides services requiring feed analysis data to its clients (students, faculty, researchers, feed millers, farmers, and other individuals. ### (Ma. Eloisa H. Aquino)



BAR Director Nicomedes P. Eleazar and staff tasting the “Binucao” fruit at the DA-RFU 6 booth during the 8th Agriculture & Fisheries Technology Forum & Product Exhibition.

PHOTOS: RBERNARDO &amp; RDELACRUZ

visitors.” He described its sourness as something that is “difficult to pin down, which makes it stand out even just on the national dining table simply because *batuan* is not used in most parts of the country.” He even claimed that, “if properly promoted, *Batuan* may well be one of our tickets to international gastronomical fame.”

He reported in his column that currently, there are already available technologies that enable consumers to enjoy this sour fruit even if it's not in season. The bottled *Batuan* puree and candied *Batuan* in sugar syrup are being sold commercially in Negros Occidental where according to him, “there is a robust eating tradition for this fruit that is difficult to propagate.”

In the recently concluded 8<sup>th</sup> Agriculture and Fisheries Technology Forum and Product Exhibition organized by BAR held at the SM

Megatrade Halls 1&2, the *binucao* plants and fruits were exhibited at the booth of the Department of Agriculture-Regional Field Unit VI (DA-RFU 6). BAR Director Nicomedes P. Eleazar and other staff were able to have a taste of the sour fruit. ###

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**...if properly promoted, Batuan may well be one of our tickets to international gastronomical fame.”**

## Technologies on swine...from page 9

people for choosing healthier options open opportunities for organic production. Besides own consumption, the production of native animals can also be a good source of income. Demand for native pigs' “lechon” and native chickens' meat and eggs exist because they are known to have that distinct and palatable taste better than non-natives. They can also thrive under adverse conditions and can adapt well in local conditions.

However, as Dr. Caguicla said, “*medyo mabagal pero matipid naman silang palakihin*”. Aside from being disease-resistant compared with the standard breeds, they only require low-cost production inputs such that locally available feed resources can be given to these animals. For native chickens, raisers can look for alternative economical feeds such as corn or palay, kitchen leftovers, and worms or insects while sakwa, kamote and kamote tops, and banana trunks and leaves can be fed to native pigs. Inexpensive medicinal substitutes can also be used for native pigs including *ipil-ipil* seeds and *niyog-niyogan* as herbal dewormers, *sambong* as remedy for coughs and colds, and star apple leaves to ease diarrhea. Drs. Santiago and Caguicla also highlighted the importance of proper housing, good growing and feeding practices, and health and sanitation issues for a more successful production of these native animals.

As the national coordinating body for research and development, BAR has been providing support to R&D projects which will enhance the livestock and poultry industries, among them are towards the promotion of the country's very own native chickens and native pigs. ### (Anne Camille B. Brion)

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For more information regarding the topics, you may contact the following persons:

1. Dr. Jhun Cahusay at (02) 375 1560 loc. 108 for PIGS’ “Babuyang Walang Amoy”
2. Dr. Rene Santiago or Dr. Flomella Caguicla at (042) 585-7727 for Native Chicken and Pig Production



# Binucao: The underutilized souring agent

BY RITA T. DELA CRUZ



PLANTS of *Garcinia binucao*



FRUITS of *Garcinia binucao*

***Batuan is the secret agent in the Negrense cook's souring arsenal that makes his kansì or sinigang so fruity sour, it never fails to impress visitors.***  
~ *Tajanlangit*

Often when one mentions of “sinigang”—a favorite Filipino dish, the usual souring agent used is *sampalok* (*Tamarindus indicus*). If tamarind is not available, the next best alternatives that come to mind are calamansi/*kalamondin* (*Citrofortunella microcarpa*), guava (*Psidium guajava*), or *kamias* (*Averrhoa balimbì*).

But rarely does the “binucao” come to mind. In fact, the name will not even ring a bell as most of us have not heard of it.

*Binucao* or *binukaw* (*Garcinia binucao*) among the Tagalogs or *balakut* to the Ilocanos is a fruit that is indigenous to the Philippines and is well-craved for in the Visayan regions as the “best souring agent” for their *sinigang*. In fact, they claim that the fruit of *binucao* or *batuan* or *batuwan*, as referred to by the Visayans, is even better than the good ol’ *sampalok* that most of

us have been traditionally using to sour our *sinigang*.

*Binucao* is one of the 300 species of fruits with economic importance or potentials that was identified and included in the book, “Imported and Underutilized Edible Fruits of the Philippines” authored by Dr. Roberto E. Coronel, a noted Filipino agricultural scientist and a professor at the University of the Philippines Los Baños (UPLB). The publication was funded by the Bureau of Agricultural Research (BAR) and the UPLB Foundation Inc.

*Binucao* is mentioned to have originated in the Philippines and Indonesia. In the Philippines, it is commonly found from Luzon to Mindanao but mostly in Panay and Negros. The tree thrives well in primary forests at low and medium altitudes.

This wonder souring agent is a

close relative of mangosteen (*Garcinia mangostana*), both are sub-globose fruits and each has a multi-sectioned pod of sour seeds.

As described, the tree of *binucao* is medium-sized with ovate oblong leaves that are about 15 cm long and rounded at both ends. The tree flowers in clusters in greenish white. The fruit are subglobose and grows up to 3 cm long and yellowish in color. The fruit is juicy and five-seeded.

According to the book of Dr. Coronel, this underutilized species is useful as a home garden fruit tree and its fruits may be eaten raw.

In the article, “*Garcinia binucao*”, Visayan Daily Star columnist, Eli F.J. Tajanlangit mentioned that “*Batuan* is the secret agent in the Negrense cook's souring arsenal that makes his *kansì* or *sinigang* so fruity sour, it never fails to impress

## Technologies on swine, poultry prod'n highlight BAR seminar series



(L-R) Dr. Jhun Cahusay of the Pro-Natural Feed Corporation presenting Profitable Innovative Growing System (PIGS) for “Babuyang Walang Amoy”; and Dr. Rene Santiago and Dr. Flomella Caguicla from BAI-NSPRDC on native chicken and pig production.

PHOTOS: ABRION

To promote awareness regarding new breakthroughs and relevant information that will help improve the agriculture and fisheries sector, the Bureau of Agricultural Research (BAR) held a series of seminar on livestock and poultry production on 24 September 2012 at the 4<sup>th</sup> floor Conference Hall of the RDMIC Building. In particular, the seminar topics included, Profitable Innovative Growing System (PIGS) for “Babuyang Walang Amoy” and native chicken and pig production of the Bureau of Animal Industry-National

Swine and Poultry Research and Development Center (BAI-NSPRDC).

The livestock and poultry subsectors are important contributors to the total production and overall development of the agriculture sector. “Strengthening these subsectors is therefore necessary to boost and to enhance their performance, because together with rice, they provide food to millions of Filipinos and people all over the world,” said BAR Director Nicomedes P. Eleazar.

In view of supporting the public-private-partnership (PPP)

program of the government, BAR invited a private company to share new promising technologies regarding odorless pig production. Dr. Jhun Cahusay from the Pro-Natural Feed Corporation based in Quezon City talked about PIGS. This kind of technology allows an individual to venture into pig raising within the vicinity of his/her own house because pigpens are almost odor-free. Hence, irritated neighbors will not be an issue anymore. Aside from its advantage of being easy to manage, the raiser can already expect about 70-80 kilos of pig weight within a span of four months. There was even an instance where a raiser's pig was able to weigh this much within just two months. In addition, pigs grown through PIGS are fed only with natural feeds, hence consumers are given the assurance that the meat is safe to eat.

Meanwhile, Dr. Rene Santiago and Dr. Flomella Caguicla from BAI-NSPRDC discussed native chicken and pig production, respectively. According to Dr. Caguicla, the changing preferences of

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# 12<sup>th</sup> ICRS addresses global coral risks

**C**oral reefs are undeniably one of the world's greatest treasures, providing food and shelter to a wide range of marine life. Its beauty and diversity offer a significant impact not only to underwater species, but also to mankind and the environment.

For many years, these biologically complex marine ecosystems have illustrated significant contributions in the lives of many people around the world: physical, social, economic, and environmental. Coral reefs provide food for commercial fishing enterprises; they are also now becoming source of treatments and remedies such that evidences assert that reef inhabitants could potentially provide equally important medicines; they also captivate tourists which in turn become a means of generating income, contributing largely to the revenues of countries with coral reefs, thus making it an important economic asset; jobs are also generated, improving livelihoods of more fishing communities; they create sand for beaches, and serve as barriers for shorelines. These benefits are so vital that various governments and private groups call for preserving and nurturing such rich resources that are facing degradation because of human and most especially, environmental threats.

The world's major coral reef science meeting, the International Coral Reef Symposium, provides a global



response in addressing such risks to coral reefs. ICRS is held every four years, with the International Society for Reef Studies as its sanctioning organization. Since 1969, ICRS has been providing great opportunities for scientists, government agencies, non-government organizations, resource managers, and other private groups to share scientific findings and researches to better inform policy makers around the world in managing and conserving coral reefs, thus ensuring its future.

Together with more than 2000 delegates from 80 countries around the globe, the Bureau of Agricultural Research (BAR), represented by Ms. Ligaya C. Santos, assistant head of the Project Monitoring and Evaluation Division (PMED), joined the convention held in Cairns, Queensland,

Australia. It was hosted by the Australian Research Council Centre of Excellence for Coral Reef Studies and James Cook University.

The week-long assembly began with a welcome remarks by the Convenor of the Symposium, Terry Hughes. It is followed by an inspirational introduction from the Governor of Queensland Her Excellency Ms. Penelope Wensley AC which centered about her concern for the environment and sustainable development, and her involvement in the International Coral Reef Initiative as an Australian diplomat.

The Premier of Queensland was represented by Mr. Michael Trout MP who spoke of the benefits of hosting the symposium and the importance of protecting the Australia's very own

wonder of the world, the Great Barrier Reef.

Then, one of the highlights of the symposium is the launching of the Consensus Statement on Climate Change and Coral Reefs which was spearheaded by Mr. Bob Richmond, president of the International Society for Reef Studies.

The Consensus Statement on Climate Change and Coral Reefs is an output from a group of scientists and being supported by the Center for Ocean Solutions to address the impacts of the changing climate to the coral reefs. It calls on all governments and policy makers to ensure the preservation of coral reefs for future generations. The authors of this consensus statement namely Mr. Richmond, Mr. Hughes and Mr. Steve Palumbi, endorsed the statement in which it was able to attract 3,150 endorsees as of August 1, 2012.

ICRS 2012 is consisted of 72 *mini-symposia* aggregated into 22 symposia themes. They provided the framework for 1,300 talks and 225 posters presented by the delegates. The program included 12 concurrent sessions across two adjoining venues, the Cairns Convention Centre and the Sebel Hotel. The program was designed to maximize the number of delegates giving them the opportunity to speak, resulting in a 25 percent increase in the size of the oral program compared to ICRS 2008.

Many research areas have expanded since ICRS started four years ago, and the program reflected the increased interest in ocean acidification climate change, coral bleaching, and in modeling the dynamics of reefs into the future.

With a stronger focus on climate change adaptation strategies in the agriculture and fisheries research and development, BAR ensures that certain guidelines and protocols it is implementing are timely, competitive and globally inclined to effectively address issues through the bureau's projects and researches. BAR continues to establish partnerships and linkages to widen its perspective and be able to provide contributions in preserving and enhancing rich and natural resources, benefitting the agriculture and fisheries sectors of the country. ### (Daryl Lou A. Battad)

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## Nueva Ecija dairy farmers visit BAR



**F**ifty farmers from various dairy-based cooperatives in Nueva Ecija visited the Bureau of Agricultural Research (BAR) as part of their three-day Lakbay Aral activities. The Lakbay Aral is part of the Philippine Carabao Center's (PCC) Carabao Development Program (CDP) which is intended to capacitate dairy-based farmers and cooperatives. The program's ultimate focus is the establishment of village-based buffalo dairy enterprises.

The PCC-CDP is being implemented nationwide with the province of Nueva Ecija as the National Impact Zone (NIZ). Over the years, the NIZ is being promoted as a developmental approach toward the advancement of Philippine carabao through pro-active promotion, preservation, propagation and management of carabao in the countryside. Furthermore, NIZ is also considered a medium to promote the livestock carabao, carabeef, meat, dairy and other carabao-based products as potential agribusiness endeavors among cooperative-led dairy enterprises. There is an economic bright spot for this animal considering that for the 2010 livestock production performance, the sub-sector was up by 1.48 percent. Goat, cattle, carabao and dairy production increased from 1.38 percent to 8.95 percent (DA, 2010 Annual Report).

The Applied Communication Division (ACD) of the bureau facilitated the visit and spoke in behalf of Dr. Nicomedes P. Eleazar, director of BAR.

The ACD presented the 2012 BAR Primer, to show the R&D thrusts, programs, priorities, services and technologies generated by BAR from its funded researches. After the presentation, Mr. Ricardo Castro of the Project Monitoring and Evaluation Division (PMED) presented the concept of the Community-based Participatory Action Research (CPAR) to the farmers. CPAR is one of the banner programs of BAR that empowers rural and urban communities leading to more vibrant agri-fishery enterprises. Another major program of the agency which focuses on technology-based approach is the National Technology Commercialization Program (NTCP) which was presented by Mr. Alvin Fontanil of the Technology Commercialization Division (TCD). NTCP highlights the research and development (R&D) breakthroughs of mature technologies generated and developed by research institutions. Mr. Fontanil added that there are three BAR funded projects in PCC.

The visiting farmers are officers and bonafide members of Agpapa Cooperative, SIPBU Multi Purpose Cooperative, Kadre Cooperative, I-Masikap Coop, New Mamandil Dairy Coop, and Angat-Buhay Producers Coop.

The group was also scheduled to visit other DA agencies including, National Dairy Authority (NDA), Bureau of Soils and Water Management (BSWM) and DA-Agribusiness Center. ### (Patrick Raymund A. Lesaca)



Ms. Ligaya C. Santos, (third from right) assistant head of the BAR-Project Monitoring and Evaluation Division (PMED), joining the 2000 delegates representing 80 countries including the Philippines.

PHOTO: courtesy of LSANTOS