

# BAR to participate in 2012 AgriLink

The animal sector will take center stage in the upcoming 19<sup>th</sup> AgriLink, FoodLink and AquaLink with the theme, “Improving Animal Productivity Beyond Medication” on 4-6 October 2012 at the World Trade Center. AgriLink is an annual event of the Foundation for Resource Linkage and Development (FRLD) in collaboration with the Department of Agriculture (DA) and other partner agencies that seek to showcase and uphold strategies, practices, and technologies geared towards optimizing animal health for a sustainable farming environment and a stable economy.

As DA's research and development arm and as one of the sponsors in the event, the Bureau of Agricultural Research (BAR) will participate through an exhibit and seminar series. The exhibit will showcase the bureau's R&D programs and projects that are focused on the improvement of the Philippine animal sector.

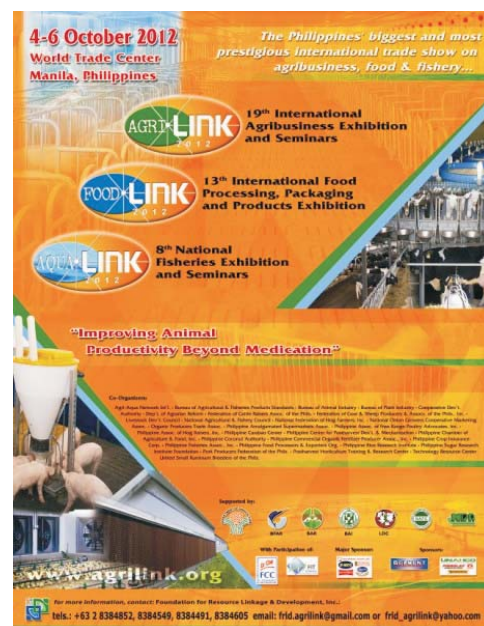
In the National Research and Development, Extension Agenda and Programs (NRDEAP) of BAR for 2011-2015, researchable areas in the animal sector were identified. These concerns were focused on improving and optimizing the areas of breeding, health and nutrition, production and management, processing, waste management, and marketing. With these issues at hand, BAR gears its programs towards creating a more vibrant Philippine animal sector.

Through its banner programs, the Community-based Participatory Action Research (CPAR) and the National Technology Commercialization Program (NTCP), BAR continues to implement and support the livestock and poultry projects

conducted by Regional Integrated Agricultural Research Centers (RIARCs), Regional Fisheries Research and Development Centers (RFRDCs), Regional Field Units (RFUs), DA-attached bureaus and partner agencies, local government units (LGUs), private sector, and state universities and colleges (SUCs).

Through the CPAR projects, the bureau strives to progress farming systems technologies in particular, micro agro-climatic environments within certain communities. Meanwhile, the NTCP supports the commercialization and further development of under-emphasized products in the sector.

Aside from the exhibit, BAR will also sponsor three seminars on 5 October 2012 on the topics: *sakwa* as an alternative feed resource for native swine, benefits of oregano in livestock and poultry, and on-farm production of vermicompost and earthworm biomass for organic tilapia (Please refer to the table for the schedule). ### (Leila Denisse E. Padilla)



## 9<sup>TH</sup> AGRILINK, FOODLINK AND AQUALINK

### (SEMINAR SERIES SPONSORED BY BAR)

1:00 PM - 1:40 PM	<b>Sakwa: Alternative Feed Resource for Native Swine</b> <b>Dr. Mary Jean G. Bulatao</b> University Researcher, College of Agriculture University of the Philippines Los Baños
1:00 PM - 1:40 PM	<b>Multiple Benefits of Oregano in Livestock and Poultry</b> <b>Dr. Estela C. Taño</b> Researcher, Quezon Agricultural Experimental Station DA-Regional Field Unit 4A
1:00 PM - 1:40 PM	<b>On-Farm Production of Vermicompost and Earthworm Biomass for Organic Tilapia in Freshwater Pond</b> <b>Dr. Rafael D. Guerrero</b> General Manager, Aquatic Biosystems



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# Mechanized agriculture highlights MakinaSaka 2012

To showcase the available machinery and equipment for the prospective farmer-beneficiaries, participants and visitors and see first-hand the existing technologies for the agriculture and fisheries sector, the Department of Agriculture (DA) spearheaded the “MakinaSaka 2012 Agri-Machinery Road Show” on 4-7 July 2012 at the World Trade Center, Pasay City.

The activity was organized in collaboration with DA attached agencies and staff bureaus including the Agricultural Training Institute (ATI), Bureau of Agricultural Research (BAR), Philippine Rice Research Institute (PhilRice), National Agricultural and Fishery Council (NAFC).

In an effort to call together concerned stakeholders in the mechanization of the industry, participants included representatives from the Small Water Impounding System Associations (SWISAs), Irrigators' Association (IAs), and Agricultural and Fishery Councils (AFCs) around the country.

Present during the opening event were DA key officials including Undersecretary Antonio A. Fleta, Undersecretary Joel S. Rudinas, Assistant Secretary Ofelia P. Agawin, and Assistant Secretary Dante S. De Lima.

“*Ang MakinaSaka ay isang maliit lamang na hakbang upang punan ang puwang na namamagitan sa kagawaran at sa nagpapakain ng taumbayan,*” shared Asst. Sec. De Lima to the audience of farmers and fishermen seated in groups representing their respective organizations. De Lima asked all the farmers to stand up—as he shared his hope-filled message and expressed his gratitude for their overwhelming support and trust in the DA and the leadership of Secretary Proceso J. Alcala.

After the opening ceremonies, participants and VIP guests were ushered into the main hall for the viewing of the



DA-RFU 4A/STIARC Manager Digna Narvacan (right) offers Agriculture Asst. Secretary Dante S. De Lima (left) samples *espasol*, a locally-developed recipe made from adlai grains. Adlai is one of the featured R&D initiatives inside the BAR booth during the MakinaSaka 2012. Also in the photo is BAR Director Nicomedes P. Eleazar (center). PHOTO: MVALDEABELLA

exhibits. Apart from the machines and mills displayed at the center, supplier booths surrounded the scene—displaying the products made available through the technologies in the convention.

The Bureau of Agricultural Research (BAR) showcased two of its many projects highlighting the benefits from the mechanization of the industry. Sweet sorghum and adlai products decked the BAR booth. Staff members present during the event handed out food products such as *sinukmani*, *suman*, *espasol* from adlai, and juice from sweet sorghum.

BAR Director Nicomedes P. Eleazar joined his team in distributing food samples and in discussing potentials of sweet sorghum and adlai products to

visitors and other distinguished officials in the likes of Asst. Sec. De Lima and Philippine Coconut Authority (PCA) Administrator Euclides G. Forbes.

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# CPAR Manual revisited

The effectiveness of this activity is measured by how BAR responds to the emerging concerns and issues raised by the implementers, without compromising the standards set forth in the implementation of the Community-based Participatory Action Research (CPAR)."

Thus, Dr. Nicomedes P. Eleazar, director of the Bureau of Agricultural Research (BAR) in his message, setting a motivating guide for the conduct of the "Writeshop on Updating the CPAR Operational Guidelines and Procedures" held on 11-13 July 2012 at Viewpark Hotel, Tagaytay City.

The success of the island-wide reorientation on CPAR has led the BAR Technical Working Group (TWG) to revisit the CPAR Manual and come up with an improved and updated operational guidebook to all CPAR stakeholders for a standardized implementation.

The writeshop was participated by the BAR staff members and the CPAR TWG led by Dr. Roberto Rañola, who facilitated the discussion on CPAR concepts and guidelines.

Generally, the activity aimed to enhance the CPAR guidelines and procedures to ensure the quality of project implementation through updating the guidelines and procedures; finalize an updated operational manual; package modules; and formulate report formats.

The consolidated inputs from the reorientation and leveling off seminar series conducted in Luzon, Visayas, and Mindanao have been the major considerations in refining the guidelines on CPAR implementation.



PHOTO: DBATTAD

Dr. Eleazar emphasized the value of participatory learning and action as the foundation of all CPAR endeavors such as this activity. Thus, the writeshop has obtained its goal by consolidating the issues raised by the implementers, as well as integrating the different findings and most pressing concerns that are critical in improving CPAR.

The three-day activity was spent in finalizing the standardized procedures of CPAR implementation by revisiting the existing manual and guidebook. Groups were assigned to review the background, framework, strategy of implementation, proposal packaging and approval, project implementation, monitoring and evaluation, institutionalization of CPAR, and financial management. To serve the sole purpose of participatory research, the TWG members made sure that all issues were integrated in finalizing the procedure in these major areas mentioned, at the same time recognizing

the already existing policies that have been as effective over the years CPAR was being implemented. "We still have to meet in the middle. There are still policies and regulations which are proven effective and of value to both BAR and CPAR implementers especially in the regions," said Dr. Rañola.

To efficiently bring out the results of the writeshop activity, each group presented its outputs to the whole team. Each presentation was subjected for further deliberation and review. The CPAR TWG and BAR staff worked closely in the intent of coming up with a simple, yet standardized set of protocols to continuously improve CPAR, being one of the banner programs of the DA-BAR.

Dr. Eleazar stressed that this activity should precede plans on rewriting the manual and operational guidebook of CPAR and to continuously keep the regions updated. ### (Daryl Lou A. Battad)

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sustainable parasite control, and food-feed systems. *Lakbay-aral* (field trip) to various research institutions and model goat farms was also part of the learning process embedded in the project.

One of the highly appreciated interventions was the livestock upgrading through infusion of graded bucks such as Anglo-Nubian and Boer. "Before, we breed native goats which were small in structure but through project we are able to upgrade our goats. Now, they are big and heavy" said Carlos Garcia, Oaig-daya member and technology adopter.

Compared to native goats which are priced at PhP1,500-2,000, the upgraded goats commanded a better price in the market due to its bigger body weight. Goats that are 5-7 months old (20 kilograms) can be sold at PhP 2,500 – 3,500.

## Small investment, bigger returns

Goat raising does not require a high capital compared to other ruminants and the return of investment is quicker because a doe gives birth three times in two years with a range of 1-2 kids per birth or an average of 1.5 kidding rate.

Within a period of two years, the investment is already recovered with profits. The estimated initial capital for a 5-doe level is more or less PhP 10,000. It is estimated that following the IGMT, the average income of 5-doe level is increased from PhP 951 to 14,106 and 10-doe level from PhP 1,648 to 27,469 after 3-4 years of implementation.

"You just need a small capital in raising goats. You just have to work hard with lots of perseverance" affirmed Reynaldo Gacusan, Candon City Agricultural technician, also a goat raiser.

With these figures, there were plenty of potential adopters who have showed their interest in goat raising. Since the start of FLS, 115 graduates have adopted the technology. With this, the Oaig-daya formed three sub-organizations (clustered according to barangay) to accommodate the new and future goat raisers. As the mother association, the Oaig-daya will see to it that each sub-organization will register as a formal association. This is also their way of ensuring that the sub-organizations are functioning well and are actively participating in their activities.

"Goat raising helps us realize our hopes and dreams. Although it is just our secondary source of income, it helps us in our financial needs especially in times of emergency or crisis. It is marketable, you can earn as much as PhP2,000 – 3,500 pesos for a single goat," revealed Virgilio Tagsi, member of Oaig-daya.

The success of the project and its sustainability is greatly attributed to the harmonious working relationship among the LGU, project implementers, and association members. Even though the project has been completed, the LGU continues to support the initiatives of the association.

To see the larger impact of the project, Mr. Gacusan summarized it with this statement, "The goat industry is slowly being overtaken by the swine industry here in Candon. Many of the swine houses is now being converted into goat house."

For the future direction of the goat industry, the association wanted to engage in technology commercialization of goat milk and dairy products production and make goat as the One Town, One Product (OTOP) of Candon City. They are also aiming to be a model goat farm of the

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affordable equipment, and provide capital for commercial scale production. For the export market the plans are to increase the volume of production to address the increasing demand, standardize processing for product quality compliance, strict compliance to the GMP-HACCP and other regulatory requirements, and establish international trading system and market linkages.

## Kappaphycus seaweed: low-cost, organic fertilizer

Not all residues or excesses are "wasteables". This classic environmental mantra gives light to one perfect example which is the organic foliar fertilizer in the form of seaweed drippings. This technology was discussed by Ms. Graciela L. Caballero of SPAMAST.

It was found that the drippings of the commonly cultured *Kappaphycus* seaweed is rich in nutrients and elements such as nitrogen, phosphorus, potassium, calcium, magnesium, copper, zinc, iron, and manganese that are advantageous to maintain soil fertility and sustain plant growth and vigor.

After utilizing the drippings collected from hanging and drying fresh *Kappaphycus*, results showed that it can improve the yield of rice and other crops like mango, cauliflower, orchid, and *pechay*.

SPAMAST's product named KD Foliar Fertilizer, with KD as *Kappaphycus* Drippings, is currently undergoing promotional and marketing strategies. Ms. Caballero emphasized that "seaweed is one among the potential income earners today both in the local and export markets." With Philippines as one of the largest suppliers of seaweeds, innovations like this can be the key to create a vibrant industry that can provide more opportunities and possibilities for the country's betterment.

The seminar was well attended with more than 60 participants from various partner agencies, staff bureaus and attached agencies of the Department of Agriculture, state universities and colleges, and private sector, and other walk-in participants. The BAR Seminar Series is a monthly activity of the bureau featuring recent innovations, breakthroughs, trends and issues in the agriculture and fisheries sectors. The activity is being facilitated by the BAR Applied Communication Division. For announcements and updates, please visit the BAR Website at [www.bar.gov.ph](http://www.bar.gov.ph). ### (Leila Denisse E. Padilla)



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## CPAR-ADP vitalizes goat industry in Region I

STORY & PHOTOS BY DIANA ROSE A. DE LEON

Goat is a reliable source of livelihood. Even though cattle and swine meat are much popular among the Filipino consumers, dominating the livestock industry in the country, goat was able to carve its niche in the domestic market. This is what the Oaig-daya Candon City Goat Raisers Association Inc. has been proving being the beneficiary of the Community-based Participatory Action Research - Goat Agribusiness Development Project (CPAR-ADP) in Region I.

Initiated in 2005, the CPAR-ADP on goat aimed to help the smallhold goat raisers to increase their productivity and profitability through the Integrated Goat Management Technology (IGMT). The project focused on technology transfer which the goat raisers were able to effectively adopt and utilize.

The goat association was formed in Candon City, the trade and commerce center of Ilocos Sur. Initiating the goat agribusiness in the area was favorable because there were no

established suppliers of goat in the municipality at that time.

"Among the project sites covered, Candon City has the most supportive LGU and goat raisers. The goat association (Oaig-daya) here is very proactive. Also, after the project was completed they even voluntarily registered their goat association," revealed Melinda G. Calumpit, co-project proponent from the DA-Ilocos Integrated Agricultural Research Center (DA-ILIARC).

Unlike other CPAR projects wherein there are already existing groups and associations, Oaig-daya started from the scratch. There was no existing goat association in the municipality when the CPAR-ADP started, as goat raising then was only considered as a backyard practice among the residents. As it is imperative in the project to have a cooperative/group in the municipality, the project paved way to the establishment of Oaig-daya Candon City Goat Raisers. Registered in

2010, the association is comprised of eight original farmer-recipients and interested technology adopters.

Through the project, goat raising was realized as a profitable industry in Candon City. With the technological interventions introduced through the CPAR project, the once dying goat sector is now a booming industry. From the original eight barangays, the project expanded to 40.

### The bigger, the better

To ensure the sustainability of the project, interested adopters were encouraged to attend the Farmer Livestock School (FLS) and to establish multiplier farm to house quality breeder stocks. Other interventions were training sessions on IGMT including the standardization of goat housing, improved feeding using cheap and locally available feed materials (*ipil-ipil*, *kakawate*, etc.), establishment of forage garden, health management through

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## BAR pools PRA field trainers



Dr. Blesilda Calub, an expert who authored the guidebook on PRA in 2004, served as the resource person and facilitator during the "PRA National Workshop". PHOTO: DBATTAD

**Every facilitator is a participant. Every participant is a facilitator."**

Letting people do a task is one effective way of promoting and sustaining participation in its truest essence. This is one of the key principles of the participatory rural appraisal (PRA) in which the participants are given the opportunity to analyze and understand their given situations in a holistic manner, thus providing themselves their own power to act for the betterment of their inner and outer environment.

This guiding principle was adopted during the recently conducted "PRA National Workshop" held on 16-18 July 2012 at the Bureau of Agricultural Research (BAR). Dr. Blesilda Calub, an expert who authored the guidebook on PRA in 2004, served as the resource person and facilitator during the three-day activity. But for her, a different training approach has given the participants a sense of empowerment which has made it altogether effective in producing PRA trainers in the field. She has been using such approach during her various conduct of PRA not only in the Philippines, but also in other countries such as Thailand, Cambodia, and Indonesia.

The training-workshop was attended by 19 CPAR implementers and researchers. Together with the CPAR Technical Working Group (TWG) and BAR technical staff members, such

activity was aimed to come up with a refresher course for CPAR trainers; produce training materials for CPAR implementers; conduct a training program for Luzon, Visayas, and Mindanao; and produce PRA trainers who will train PRA implementers in their respective regions.

The three-day workshop served as a refresher and a venue for the participants to exchange their ideas and actual experiences in the field to be able to formulate training materials and program that are more appropriate and more up-to-date in conducting CPAR. More importantly, they have used actual PRA reports which have helped them point out certain issues and findings that may be improved for a more standardized conduct of PRA.

PRA resource persons Mr. Len Garces, Ms. Rose Mary Aquino, and Mr. Elmer Enicola also shared their technical expertise on various PRA tools for fisheries and agriculture, as well as the on CPAR project proposal preparation, the logical framework, work plan, budget summary, and project summary. In the light of creating a standard process of PRA, they have provided the finalization of training program which include the criteria for site selection, selection of farmer partners, identification of participants, and the schedule of training for the zonal PRA workshop.

What made this activity unique is the approach used by Dr. Calub in guiding the participants through the use of traditional tools such as visualizations and diagramming which made use of symbols, cut-outs, and drawings. This kind of mechanism enhanced the participation and interaction of PRA partakers in the field, and they were able to practice how an actual PRA is being done.

The workshop focused on determining the capacity of the participants in terms of conducting PRA, and the suggested ways on how they can improve their knowledge and expertise in facilitating PRA activities. Through this, they themselves were able to establish the starting point of the entire activity. The participants then were tasked to use their existing CPAR proposals, and were asked to situate what they think were the key methods used to implement the project; the different key success factors; and the lessons they have learned in conducting CPAR. They presented their outputs to give others a chance to share comments to improve their means in carrying out PRA, as well as verify errors which they may avoid for future PRA endeavors.

"We are now more equipped with the right skills and will be more proficient as PRA trainers," were the words left by Dr. Catherine Buenaventura, CPAR focal person, PLGU-Ifugao and one of the participants. ### (Daryl Lou A. Battad)



# BAR awards research grants to advocacy groups helping IPs

The Bureau of Agricultural Research (BAR), led by Director Nicomedes P. Eleazar, awarded two checks worth PhP1.5M each to two non-government organizations (NGOs) namely, Dulangan Manobo Free Farmers Organization (DMFFO) and Southphil Muslim Lumad Christian People's Development Foundation, Inc. (SMLCPDF), as part of the research grants dedicated to the self-empowerment of indigenous peoples and the upliftment of the lives of indigenous communities in the country. Receiving the checks were DMFFO President Balindo C. Apang and SMLCPDF President Orlando B. Tongcua on 6 July 2012 at the 2F Conference Hall, RDMIC Bldg., Visayas Avenue in Diliman, Quezon City. Present during the awarding were officials and staff members from BAR.

A PhP1.5 M check which was awarded to DMFFO is for the project titled, *"Technology Utilization and Promotion of Rubber (Hevea Brasiliensis) Production in the Uplands of Kalamansig, Sultan Kudarat,"* which aims to plant rubber in 1,000 hectares in Kalamansig, Sultan Kudarat by 2016 and develop a model community-managed rubber nursery in the area. The other PhP1.5 M check given to SMLCPDF is to be allotted for the project titled, *"Community-based Participatory Organic Agriculture Project,"* which hopes to optimize the value of existing idle lands by utilizing them for agricultural and other economic purposes



BAR Director Nicomedes P. Eleazar shakehands with the recipients during the ceremonial awarding of checks to DMFFO and SMLCPDF representatives. PHOTO: EAQUINO

to provide livelihood opportunities and to promote food security in the community. The project also seeks to introduce and/or enhance organic-based farming systems and promote the use of organic inputs.

Prior to the turnover, a brief meeting was held to orient the visitors about the bureau. An audio visual presentation, *2012 BAR Primer*, was also shown to present in detail the bureau's banner programs, projects, current R&D initiatives, activities, and services.

BAR Director Nicomedes P. Eleazar welcomed the guests and expressed his delight with such partnership with the two advocacy groups that focus on the welfare of the indigenous peoples (IPs) and the communities. He mentioned how this

kind of initiative will be able to help them particularly in bringing the results of research closer the people.

In response, DMFFO President Balindo C. Apang expressed their gratitude to the initiative of the government and promised to use the fund support for the betterment of their community, particularly to uplift them from poverty.

SMLCPDF President Orlando B. Tongcua, a former employee of the Department of Agriculture (DA), an extension worker, and a teacher, also shared his thoughts and appreciation to the bureau. He mentioned that their group is committed to improve the lives of the people in the upland, provide opportunities for the IPs so that they could have a better life, and bring their own children to school.

BAR staff members, Raymond Patrick L. Cabrera of the Planning and Project Development Division (PPDD) and Jose Ira Archimedes D. Borromeo of the Office of the Director discussed the project implementation guidelines of the bureau.

After the briefing and awarding of checks, guests visited the R&D Technology Commercialization Center which showcases R&D generated technologies and breakthroughs supported by DA, through BAR's flagship programs: the Community-based Participatory Action Research (CPAR) and National Technology Commercialization Program (NTCP). ### (Ma. Eloisa H. Aquino)



(L-R) DMFFO President Balindo C. Apang and SMLCPDF President Orlando B. Tongcua PHOTO: EAQUINO



PHOTO: BFAR VII

## Bohol takes on abalone

In the Central Visayas region, the island province of Bohol takes a big leap in abalone aquaculture. The joint effort of the Department of Agriculture – Bureau of Agricultural Research (DA-BAR) and the DA-Bureau of Fisheries and Aquatic Resources (BFAR) Region VII, lead by the Central Visayas Regional Fisheries Research and Development Center (CVRFRDC), a project titled, "Growth and Survival of Abalone (*Haliotis asinina*) Fed

Different Seaweeds in Different Culture Units" was launched under BAR's Community-based Participatory Action Research (CPAR). The main objective of the study is to determine better culture techniques to increase production and encourage more fishfarmers to take on abalone production as an alternative means of livelihood.

The make shift cages made from PVC pipes covered in plastic screens and perforated containers were set in the coastal waters of Barangay Lawis,

Pangangan Island in Calape, Bohol. Every three days, abalone stocks in six separate cages were fed with experimental feed composed of fresh seaweeds, *Gracilaria Sp.* and *Eucheuma*. Growth weight of experimental abalone was determined after 458 days or 15 months. Results showed that higher growth was achieved in abalone set in PVC make-shift cages fed with *Gracilaria* feed.

With these results, local fishfarmers are presented with a method that will enable them to produce a high value commodity, with little investment capital. Though in the beginning, their production may not be for export, the increasing local demand will be supplied by our own Filipino fishermen. Further R&D initiatives such as those by BAR and other DA-attached agencies will help produce more information in culturing abalone, and soon we will be able to reap the benefits of becoming the world's top supplier of the exquisite and very expensive abalone. ###

*This article is based on the reports submitted for the project "Growth and Survival of Abalone (Haliotis asinina) Fed Different Seaweeds in Different Culture Units," by proponents Galicana A. Toston (Sr. Aquaculturist) and Nimfa I. Mesina (Agriculturist II) of BFAR Region VII, CVRFRDC.*

## Mechanized agriculture...from page 1

BAR is a constant participant of exhibits like this event to showcase the developments achieved by the agency in collaboration with both the private and public sectors around the country. Showcasing products developed from various research and development (R&D) initiatives demonstrate the continued commitment of the bureau not only in pursuing food security, but also in ensuring that the Philippine community is aware of such developments aimed at achieving a food self-sufficient Philippines by 2013.

The second day of the affair proved to be no less than exciting. His Excellency President Benigno S. Aquino III visited the road show, along with the arrival of Agriculture Secretary Proceso J. Alcala.

It was also during this day that Sec. Alcala signed a Memorandum of Understanding (MOU) with Department of Science and Technology (DOST) Secretary Mario Montejo. This cooperation between DA and DOST focuses on R&D initiatives for the development of farm mechanization throughout the country. Apart from the MOU signed during the day, Sec. Alcala

also presented the Food Staples Sufficiency Program (FSSP) to the President.

FSSP is the banner program of the Aquino Administration that aims to ensure food self-sufficiency in the Philippines.

Pres. Aquino shared in his keynote speech, *"Sa pamamagitan ng ating Food Staples Sufficiency Program, hindi daw po magtatagal, maging ang iba pang produkto tulad ng mais at cassava, pati ang iba pang prutas at gulay, hindi na rin natin kailangan angkatin pa."* ("through the Food Staples Sufficiency Program, it wouldn't take long before, even other products such as corn and cassava, and other fruits and vegetables, would not need importing.")

In Sec. Alcala's presentation, he shared *"As of now, nagugustuhan naman po ng mamamayan ang mga programa natin sa agrikultura, at kung hindi man maibigay ang 100 percent, I'm sure ibinibigay naman po natin yung 75-80 percent ng makakaya natin."*

Truly, the success of the second MakinaSaka is testament to the pooled efforts of the entire agriculture and fisheries sector towards achieving the DA 2013 goal. ### (Zuellen B. Reynoso)



BAR Director Nicomedes P. Eleazar (left) discusses the potentials of sweet sorghum to PCA Administrator Euclides G. Forbes. PHOTO: MVALDEABELLA



BAR Director Eleazar imparting information as he answers the questions of walk-in visitors at the BAR booth. PHOTO: MVALDEABELLA



# Abalone:

## Don't judge the snail by the shell

BY ZUELLEN B. REYNOSO



PHOTO: RDELACRUZ

One are the days when blue whales, great white sharks and bottlenose dolphins dominate the seas. For the longest time, these majestic sea creatures were the focus of human interest. But the tides of change have washed other equally interesting species ashore – one of them, is the abalone. Albeit strange-looking creatures, these sea snails are a lot more than meets the eye. They may look creepy and peculiar in the beginning, but that doesn't mean that's all there is to see.

Abalone belongs to the *Phylum Mollusca* in the family *Haliotidae*, along with octopus and squid, clams, sea slugs, and scallops and other edible sea snails. The abalone shell has a low and open spiral structure where several open respiratory pores line the outer edge. Abalone feed on marine algae, specifically the algae known as *glacilaria*, which can be easily cultured. Its local name “*kapinan*,” “*lapas*,” or “*sabra-sabra*” is gaining popularity in the country as more and more research

projects and initiatives are currently underway in culturing the once unknown abalone.

### Abalone in the Philippine market

Across international waters, abalone is a known delicacy. Its price ranges from US\$12–120 per kilo in China and Japan alone. It is known as one of the “biggest earners among exportable aquaculture in many countries” and its demand continues to rise, as does its cost. With a high international marketable value, this commodity proves to be a gold mine, especially for fishfarmers where the donkey's ear abalone is abundant.

According to Southeast Asian Fisheries Development Center (SEAFDEC), abalone aquaculture may be in its infancy in the country, but with these initiatives available, commercial farms could be soon operational. Apart from the favorable weather that makes for various sites in the Philippines suitable to culture abalone, there are

numerous methods that can be applied to increase its production. The species can be cultured in pens, ponds, and tanks. In the country for example, some grow-out farms use buckets, plastic barrels, or perforated drums that are anchored to the ocean floor, or net cages suspended from buoys. This is recommended as water will be free flowing from any direction, and ensures high surface-to-volume ratio.

The Philippines used to be the top frozen abalone exporter to Hong Kong. It also supplied abalone to other Asian countries such as Japan, Korea, Taiwan, Australia and Singapore. Locally, abalone costs around Php 750–800 per can, but demands a higher price across international waters when exported—making it a one-billion dollar world market value. These numbers alone are enough to encourage more research and development (R&D) initiatives, and more practitioners of abalone aquaculture in the Philippines.

**The species can be cultured in pens, ponds, and tanks. In the country for example, some grow-out farms use buckets, plastic barrels, or perforated drums that are anchored to the ocean floor, or net cages suspended from buoys.**



PHOTOS: BFAR VII

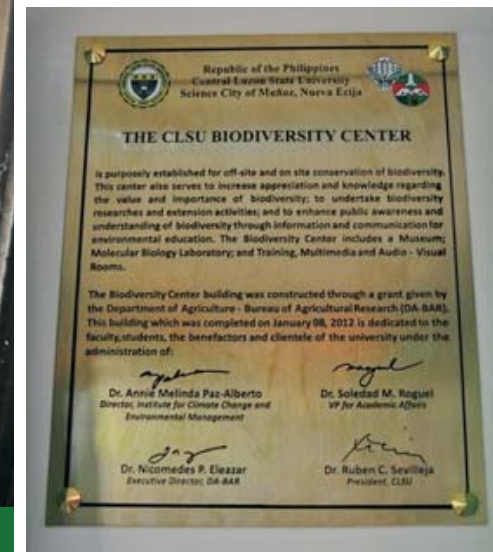
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# BAR-supported

## CLSU Biodiversity Center now opens



CLSU President Ruben C. Sevilleja (right) and BAR Executive Assistant for Administration Jose Ira Archimedes D. Borromeo (left) who represented Director Nicomedes Eleazar lead the ribbon cutting ceremony during the inauguration of the CLSU Biodiversity Research Center. The marker of the newly-established facility was also unveiled (right photo). PHOTOS: CLSU



Marker of the Biodiversity Center

Following the directive of Agriculture Secretary Proceso J. Alcala to heighten support to R&D institutions in the conduct of research and development (R&D) endeavors, the Bureau of Agricultural Research (BAR) responded by providing funds for the establishment of the Biodiversity Research Center at the Central Luzon State University (CLSU). The support was made possible through the Research and Development Facilities Development Program of BAR which aims to improve the quality of research outputs through state-of-the-art facilities and laboratory equipment. Specifically, the program supports the acquisition of scientific equipment and information technology wares, construction and renovation of R&D facilities (office buildings, laboratories and experimental farms) and basic facilities of R&D institutions.

The recently established Biodiversity Research Center was inaugurated on 25 June 2012 with CLSU President Ruben C. Sevilleja and Bureau of Agricultural Research (BAR) Executive Assistant for Administration Jose Ira Archimedes D. Borromeo, representing Director Nicomedes Eleazar,

leading the ribbon cutting ceremony and the unveiling of the marker.

The center is now open to interested sectors including those from the academe, researchers, farmers, and local government units, among others.

According to CLSU officials, the center houses the Agrobiodiversity Museum, Biodiversity Molecular Laboratory, Training Room and enhanced Arboretum, Conservation Park and Nursery. The newly-constructed agrobiodiversity museum is equipped with PhP 500,000 worth of equipment that will reinforce the R&D manpower of the center in the conduct of various biodiversity research undertakings.

The center was established to

ensure the continuous public awareness and education on the conservation of the natural environment. The facility also serves as a venue for trainings, seminars and film showings on biodiversity and environmental management topics as well as a briefing venue for visitors. Meanwhile, the museum will increase the appreciation and knowledge of students, faculty, staff, and visitors on the value and importance of agrobiodiversity through different informative components such as preserved specimens of various crops, herbarium, posters on agrobiodiversity studies and agroecosystem management practices in Central Luzon. ###

(Rommel O. Obias)

**The newly-constructed agrobiodiversity museum is equipped with PhP 500,000 worth of equipment that will reinforce the R&D manpower of the center in the conduct of various biodiversity research undertakings.**



# NAST 34<sup>th</sup> Annual Scientific Meeting

## highlights **WATER** as important resource

As the population around the world increases, competition for resources also tightens. To address issues and concerns regarding water, one of the most important natural resources, the National Academy of Science and Technology (NAST) held the 34<sup>th</sup> Annual Scientific Meeting on 11-12 July 2012 at the Manila Hotel, Manila.

With this year's theme, "Philippine Water 2050" the ASM aimed to: 1) assess the present and possible future situations of water resources in the country; 2) review water resources development plans, projects, and programs of the different concerned departments and agencies; 3) prepare a long-term research and development agenda for water; and 4) craft recommendations to key officials and agencies who are responsible for the planning and development of water resources.

Academician Emil Q. Javier, president of NAST, opened the event and welcomed all the participants. He noted the significance of water to human life and the rest of the world. Gracing the event was Secretary Mario G. Montejo of the Department of Science and Technology (DOST). In his message, he discussed the different initiatives undertaken by DOST involving water resources and cited 3D mapping as an example. Through the project, flood problems can be lessened as areas which are at high-risk of being flooded during typhoons. He added that, the convention served as a useful venue to further develop the roadmap for water.

Secretary Rogelio L. Singson of the Department of Public Works and Highways (DPWH) keynoted the event. He strongly advocated the increase of water services and coverage throughout the country and imposed on the challenge of "rejuvenating" the country's natural water aquifers using excess storm water to national scientists.

Seven plenary sessions followed the opening ceremonies. First in line was Academician Fernando P. Siringan from the University of the Philippines Diliman (UPD) who presented "The Country's Water Resources by 2050" and stressed that as indications reveal a doubling population in 2050, the management of freshwater resource would be even more critical.

Academician Rodel D. Lasco from the World Agroforestry Centre discussed



(L-R) Academician Evelyn Mae Tecson-Mendoza (NAST secretary), Academician Emil Q. Javier (NAST president), Hon. Rogelio L. Singson (DPWH secretary), Hon. Mario G. Montejo (DOST secretary), and National Scientist Mercedes B. Concepcion (NAST vice president). PHOTO: ABRION

"Water for Food Security in the Philippines" which emphasized the importance of water in the agriculture industry and food production system, specifically on the irrigation aspect and cited some initiatives of the government and academic institutions in ensuring the adequacy of water supply for the agriculture sector.

Academician Leonardo Q. Liongson from UPD discussed "Water Supply and Sewerage, Flood Control and Drainage: Managing Water in Both Scarcity and Excess" that revolved around water resources management, flood control, and the issues and challenges concerning them. He cited policies and framework planning documents relevant to future development targets and investments regarding the water sector.

Dr. Erlie S. Castillo from the National Poison Management and Control Center explained in his presentation "Water: Health and Safety Issues" the biological and chemical hazards which affect water quality and safety.

Academician Ernesto J. Del Rosario from the University of the Philippines Los Baños (UPLB) discussed the need to review and update policies for recognition of bottled water in his presentation "Purification and Quality of Drinking Water: Issues and Concerns".

Academician Rhodora V. Azanza from UPD reviewed the biodiversity and environmental status of Agusan Marsh, Lake Lanao, and Laguna de Bay in relation to their utilization in addressing human needs.

The last presenter, Academician Agnes C. Rola from UPLB, expounded the need for water governance through her

presentation "Towards Good Water Governance in the Philippines".

Presenting the summary of the resolutions towards the proper and effective management and conservation of the country's water resources was Academician Siringan. Meanwhile, Prof. Fortunato T. De La Peña, undersecretary for Scientific and Technological Services of DOST, responded with DOST's commitment in doing their part towards the achievement of the said resolutions.

ASM activities also included: Scientific Posters Session, Book Launching of "Addressing the Problems and Solutions of Environmental Pollution through Bioremediation", NAST Awarding, and Investiture and Oath Taking of New Academicians/Corresponding Members.

Participants of the event included national scientists, researchers from key institutions, officers and representatives from various agencies, universities and colleges, and private sector. BAR staff who attended were Mara Shyn Valdeabella, executive assistant for communications, Office of the Director; Karla Zapiter, project development officer, Technology Commercialization Division; and Anne Camille Brion, information officer, Applied Communication Division.

Founded in 1976, NAST Philippines is the country's highest advisory body to the government and the science community on matters related to science and technology. ASM is one of its activities held annually which gathers together scientists from all over the country to discuss relevant issues related to science and technology. ### (Anne Camille B. Brion)

construction was completed in October 2010.

Three thousand pieces of tilapia fingerlings for broodstock development were procured from the National Freshwater Technology Center at the Central Luzon State University (CLSU) in Munoz, Nueva Ecija and were later dispersed in the hatchery complex.

The fingerlings were fed with starter and grower feeds based on their average body weight (ABW). Samplings were done every 15 days to adjust the amount of feeds. The stocks were fed three times daily. After two months of culture, gendering (or sexing) was done to segregate the females and the males were reared until maturity for breeding. Fingerlings developed for breeders were stocked in the breeding ponds with a ratio of 3:1. Breeders were fed with commercial feeds starting at 3 percent of the fish body weight and adjusted to 2.5 percent on the remaining culture days.



The fingerlings stocked were developed into breeders. Maturity was observed to take 6-7 months from stocking. The developed breeders weighing 50g to 100g were used for breeding.

The maintenance of the hatchery paved the way for the successful dispersal of an estimated 60,000 tilapia fingerlings to the first set of fisherfolk beneficiaries. This harvest became their seed or source of fingerlings to their backyard fishpond operations. The project did not only provide an easy access to tilapia fingerlings and its continuous supply, but assured fisherfolk of additional income.

Mr. Jasher Cervas, president of the PLMPC, shared that the CPAR project is the first hatchery of tilapia in the province. He added that aside from government support, the area became a productive site from a non-productive area.

The project is now on fingerlings production stage. The association has already started to sell tilapia fingerlings at 50 centavos a piece to tilapia fishpond operators in the province. Since the program was launched barely a year ago, different aura of success and contentment were visible in the faces of the people of Dinagat. Indeed, these people are the voice of the sea. The ingredient for success spelled in this experience is imperative and a requisite for agricultural development particularly in the fisheries sector. ###





# Tilapia pond-based hatchery established

STORY & PHOTOS BY PATRICK RAYMUND A. LESACA

**T**he powdery sand and calm waters of Dinagat Island have been a constant attraction among tourists and travelers in Dinagat province. Sometimes, a flock of vibrant seagull is visible in mid-air above the bluish green waters -- hoping to catch a good meal for the day.

The Dinagat fisherfolk demonstrate an aura of confidence and unity. People in the area consider the sea as their source of wealth. Local villagers enjoy the luxury of a traffic-free metropolis. With no high rise malls, distracting billboards, and congested pedestrian, their natural and permanent back drafts are natures' wonders.

Villagers in the area are into the cultivation of grouper (*lapu-lapu*), lobsters, seaweeds, and other marine life. These species have become their hidden treasures from the sea. Large and small catch determine their everyday existence. The cultivation of tilapia (St. Peter's Fish) in Barangay Cayetano, Dinagat Island serves as their main source of livelihood.

To intensify and contribute to the development of the aquaculture

sector in Dinagat, the Department of Agriculture - Bureau of Fisheries and Aquatic Resources (DA-BFAR) – Caraga Fisheries Research and Development Center (CFRDC) in Butuan City proposed a fisheries project “Community-based Participatory Action Research Program: Tilapia Pond-based Hatchery and Nursery in Cayetano, Dinagat, Dinagat Island”. With funding support from the Bureau of Agricultural Research (BAR), the project was initiated in November of 2009.

Leading the project were Dr. Miguel O. Baay, center manager and Helen L. Suarez, assistant center manager of DA-BFAR XIII. Collaborating agencies included the Provincial Fishery Office, Provincial and Municipal Agriculture Offices of the Province of Dinagat Island and the Professionals League Multi-Purpose Cooperative (PLMPC) which served as the cooperator and partners of the project.

The objectives of the project were to showcase the feasibility and viability of tilapia hatchery technology in the province for the production of

good quality tilapia fingerlings and to increase the income of tilapia growers of the province.

Barangay Cayetano was selected as an ideal freshwater nursery for tilapia. The soil is sandy loam and best for pond-based hatchery while the flat terrain is an added attraction for easier excavation and leveling. The establishment of the tilapia hatchery is a first in the island giving spark to the economic activity of the province.

To ensure successful implementation, the proponents of the project conducted specialized hands-on training on tilapia pond-based hatchery for the fisherfolk beneficiaries. Different hatchery activities were dealt with thoroughly explaining the entire pond-based hatchery development and management.

The hatchery complex established in the barangay comprised of two grow-out ponds measuring 50 x 50 meters for the production and conditioning of breeders; 4 breeding ponds measuring 20 x 30 meters; and three nursery ponds for fry rearing measuring 10 x 10 meters each. Pond

# Coco sap sugar, seaweed fertilizer featured in BAR Seminar

**C**ommitted to support and disseminate significant research results that could benefit the agriculture and fisheries sectors, the Bureau of Agricultural Research (BAR) featured in its seminar series coco sap sugar (a healthy alternative sweetener) and seaweed fertilizer (a low-cost yet effective organic marine-based substitute to synthetic fertilizer) on 19 July 2012 at BAR.

The invited speakers were Ms. Erlene C. Manohar, project development officer and researcher from the Philippine Coconut Authority (PCA) and Ms. Graciela L. Caballero, researcher from the Southern Philippines Agribusiness Marine and Aquatic School of Technology (SPAMAST).

BAR Director Nicomedes P. Eleazar, in his message, as read by Ms. Doris Disnee Dioso of the Applied Communication Division (BAR-ACD), stated that “BAR, through its banner programs – National Technology Commercialization Program (NTCP) and Community-based Participatory Action Research (CPAR) – is committed and is constantly seeking to support these kinds of R&D projects and efforts that possess high-value potentials in advancing the agri-fisheries sector.” The bureau chief added that, BAR is committed to showcase these kinds of innovations and important research results so that it will reach the stakeholders and partners who are the true champions in agriculture and fisheries.



Coco sap sugar

## Coco sap sugar, a healthy sweetener

People are becoming more health conscious and are keener on using food products that are not only healthy but also natural. This is the reason why the demand for coco sap sugar has been on a steady rise since 2007. The industry's local and global situation was further emphasized by Manohar in her presentation.

“[The] growing interest of exporters and trading sectors [is] due to increasing demand [of coco sap sugar] in the local and export market,” reported Erlene C. Manohar of PCA. The current export price is US\$ 4.50-6.50 per pound with a partial data of over 40,000 kilograms of coco sugar export volume in 2011. The export destinations of our coco sap sugar include Canada, USA, Japan, South Korea, France, New Zealand, Norway and the Middle East.

The low Glycemic Index (GI) of



Erlene C. Manohar of PCA

coco sap sugar is its leverage over the table sugar that is usually sold in the market. This is an ideal alternative sweetener for people with diabetes.

According to the data of the World Health Organization (WHO) as shown in Manohar's presentation, the number of diabetic individuals in the world is on a constant ascent with an estimate of 346 million in 2011.

An industry development plan for coco sap sugar in the domestic and export market was also discussed. The objectives for such plan is to: 1) increase the production trend of coconut sap sugar to address the increasing market demand, (2) capture at least one percent of the projected average world requirement of diabetics for alternative sweetener from 2012-2016 which is estimated at an average of 36 MMT after five years, 3) conduct in-depth medical research and studies to support product promotion, 4) introduce innovation to lower the cost of production, processing, and packaging through R&D, and 5) safeguard product quality to maintain the competitive advantage of the product in the global market.

Manohar also expounded on the industry development plan for coco sap sugar both for domestic and export markets. For the domestic market the plans include: promote utilization to produce healthy and natural high-end products, conduct further research on the health benefits of the product, develop low input product processing and

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Seaweed fertilizer



Graciela L. Caballero of SPAMAST



# IFUGAO FARMERS

## closer to organic farming certification

**I**n support to the Organic Agriculture Act of the national government that focuses on promoting and encouraging more farmers to go into organic farming, the Ifugao province is getting closer in being certified by the Organic Certification Center of the Philippines (OCCP). The certification is made possible through various BAR-funded Community-based Participatory Action Research (CPAR) projects in Ifugao, which introduce various interventions on organic farming practices.

Over the past few years, there have been different measures undertaken to be at par with the growing number of provinces and farmer groups who practice organic farming. Being one of the provinces with rich natural resources, the province of Ifugao continues to keep its pace in achieving identification on organic farming. For the Ifugao farmers, promoting a sound ecosystem will always be their cup of tea.

### Small steps, big undertakings

The Bureau of Agricultural Research (BAR) has been supporting the conduct of CPAR projects in organic farming. To date, there are five CPAR projects in the province, all of which focus on organic farming practices. This has been one of the major programs close to the hearts of the Ifugao farmers that paved way for them to be recognized as organic farmers through conduct of series of Farmers' Field Schools, capacity-building training on organic fertilizer and pesticide formulation, organic-internal control system seminar-workshops, and finally the certification of organic farming through the OCCP. Most of the farmer-partners of the CPAR have been undergoing such capability-building training which empowered them from being just an 'indigenous' farmer, so they say.

Dr. Catherine Buenaventura, supervising agriculturist and CPAR lead coordinator in Ifugao, has been



PHOTOS: DBATTAD

supportive to the CPAR projects providing the farmers opportunities on capacity-enhancing activities which are beneficial to the farmers themselves.

To mention, some of the significant outputs include: 1) farmers in Asipulo and Kiangnan are already organically producing vegetables and there were by now established market outlets where they can promote and sell their organic vegetables; 2) Tinawon rice farmers were able to produce organic fertilizer and pesticide which reduced the use of spray chemicals; 3) certification of Organic Farming through OCCP of Hungdwan farmers; and 4) farmers in Hingyon trained on the formulation of organic fertilizers.

Such practices, no matter how small or big, have enabled the farmers in different municipalities in the province to raise crops and livestock the safest and most natural way. Chemical-free agriculture preserves not only the environment, but most importantly, the farmers and consumers alike. And for the Ifugao farmers, it has to dwell in their culture.

### The OCCP certification

OCCP is an independent,

private, membership-based organic standard setting and organic certification body that gives written assurance that a clearly identified production or processing system are methodically assessed and conforms to specified requirements and standards. The OCCP has been one of the partners of the local government unit (LGU) and the Provincial Agriculture, Environment and Natural Resources Office (PAENRO) of Ifugao in terms of conducting series of training and workshops in empowering their farmers to engage into organic growing of crops and animals.

The most recent activity held and sponsored by LGU of Ifugao was the "Training on Organic Agricultural-Internal Control System for Asipulo and Kiangnan." There were 25 farmers who participated in the training and was facilitated by Mr. Richard A. Abellon, Jr., one of the expert-trainers of the OCCP, and the Branch Office Coordinator in La Trinidad, Benguet.

The three-day activity discussed basic organizational profiling, profiling of farming processes and techniques, description of farming activities which include planting materials, land preparation, planting/transplanting, biodiversity, cropping patterns, nutrient

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PHOTOS: RDELACRUZ/ACD

specialist and Philippine coordinator from the World Agroforestry Centre, cited some of the initiatives of the government, particularly the agencies and bureaus under the Department of Agriculture (DA), in managing water resources effectively and efficiently to address food security.

The National Irrigation Administration (NIA), being the country's force responsible in the development and management of irrigation systems, is pursuing modernization schemes to further improve our irrigation. Augmenting water supply through the establishment of reservoir irrigation systems, conserving water supply with intermittent irrigation, and enhancing operating skills by technology module piloting are only among them. NIA is also incorporating technology-based interventions in trying to expand irrigated areas and better enhance irrigation performance.

Meanwhile, the Bureau of Soils and Water Management (BSWM), tasked to provide assistance regarding utilization of soils and water, are undertaking activities including water saving technologies such as the alternate wetting and drying (AWD). According to Lasco, this technology has the capacity to reduce the hours of irrigation use without affecting the yields

negatively. However, further testing is needed to validate its results. Aiming to improve irrigation methods for high-value commercial crops, overhead irrigation and localized irrigation are also being employed. The water in the former is being delivered to the crops through a sprinkler system, while in the latter, water is only applied in certain portions of the soil where it is needed. This technique encourages the efficient use of water as only little amount of water is wasted.

To add to these initiatives, the Bureau of Agricultural Research (BAR), national coordinator for R&D in agriculture, took the lead in the formulation of a unified and integrated Philippine Rainfed Agriculture Research, Development, and Extension Program (PhiRARDEP). The program is envisioned to strengthen existing rainfed farming systems and practices towards accelerating the development of rainfed agriculture in the country. Rainfed agriculture promotes the conservation of water as it does not rely on irrigation as source of water for the crops. Instead, it consumes water that comes from precipitation.

These are only among the many government agencies taking extra steps in further improving water resources for the agriculture sector. At the end of the day, it will just boil down to two significant players when it comes to managing the

world's water resources: technology and people. As FAO stated, "The best and most innovative technology in the world is of no use if people themselves cannot afford it, see no advantage to it, or do not understand it".

The vital key is equipping individuals and communities with information regarding proper water management. Give them the options, allow them to choose, but let them take responsibility for whatever choice they make. After all, they will be the recipients of the outcomes of their actions. ###

Sources:

1. Asian Development Bank. (2012). *12 Things to Know in 2012: Asian Agriculture*. Retrieved from <http://www.adb.org/features/12-things-know-2012-asian-agriculture?ref=sectors/water/features>
2. AQUASTAT. Philippines. Food and Agriculture Organization of the United Nations' Information System on Water and Agriculture. Retrieved from <http://www.fao.org/nr/water/aquastat/countries/philippines/index.stm>
3. Food and Agriculture Organization of the United Nations. *Water at a glance: The relationship between water, agriculture, food security and poverty*. Retrieved from <http://www.fao.org/nr/water/docs/waterataglance.pdf>
4. Lasco, R. *Water for food security in the Philippines*. Paper presented during the NAST 34<sup>th</sup> Annual Scientific Meeting at the Manila Hotel, Philippines.





PHOTOS: RDELACRUZ/ACD

# Water:

## Key resource to agriculture and fisheries

BY ANNE CAMILLE B. BRION

A person without water for more than a week is like putting a fish out of the sea, both will not be able to survive.

According to the Asian Development Bank (ADB), “water is one of our most precious resources, but it is threatened by growth, misuse, and pollution. In Asia and the Pacific, many countries are in a water crisis and the demand for water is huge and growing.” Water already caters to seven billion people around the world and as this figure is expected to expand as the years go by, the demand for water may just exceed its supply as different sectors will be vying to get a hold of the resource.

Water serves as one of the main reasons why we continue to live in this world. Majority of our activities involves the use of water and its scarcity is the least thing we could afford. Can you imagine brushing your teeth every other day, or taking a bath only after a week, or even washing your clothes only once every three months?

Water consumption is inevitable to humans because it has become a part of our daily routine. But water utilization goes beyond domestic consumption, as there are other sectors which actually have a higher need for water resources. The industrial and

agriculture sectors are being attributed as major consumers of this precious natural resource.

### Significance in agriculture

Undoubtedly, water is an essential component in the agriculture sector. Like any other living thing, plants need water in order to survive. Do we need to say more for the fisheries sector? Considered as the biggest user of water in most Asian countries, agriculture can reach up to almost 90 percent of the region's total water consumption in 2012 (ADB, 2012).

In the Philippines, agriculture-related activities including aquaculture were considered as the main users of water accounting to almost 82 percent of the total water withdrawal in 2009 (AQUASTAT).

It is important to give emphasis on the link that exists between water and agriculture in achieving food security. In a report made by the Food and Agriculture Organization (FAO) of the United Nations, about 1-3 tons of water is needed to grow just a kilogram of cereal. If a person's average water intake should be at least 2-4 liters a day, about 2,000 – 5,000 liters of water is necessary to produce a person's food for just a day. If there is not enough water for the crops, then food production will surely be affected.

In developing countries, drought, characterized by lack of water, is the most common cause of severe food shortages according to FAO. In fact, Africa, one of the driest continents, has the highest prevalence rate of hunger. These only imply that water is really an integral part of the food production system which translates to securing food for the people.

### Managing water resources

The challenges of the present situation entail productivity and efficient use of water amidst the threat of water shortage in the coming years. Agricultural crops are very much dependent on irrigation water to ensure production and productivity in order to meet the increasing demand for food all over the world. Hence, with water's crucial role in achieving food security, different initiatives from the government and other concerned institutions must be undertaken to ensure that there will be adequate water supply available for the agriculture sector.

The 34<sup>th</sup> Annual Scientific Meeting of the National Academy of Science and Technology held on July 11-12 July 2012 at the Manila Hotel, Manila focused on water as an important resource. Academician Rodel D. Lasco, senior natural resource management

## SEARCA, BAR participate in int'l conference on KM

G eared towards practicing effective and efficient knowledge management (KM) in agriculture, staff members from the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) and the Bureau of Agricultural Research (BAR) participated in the 6<sup>th</sup> Knowledge Management International Conference and Exhibition 2012 (KMICe2012) held in Johor Bahru, Malaysia on 4-6 July 2012.

Organized by the University Utara Malaysia-College of Arts and Sciences (UUM-CAS), the conference showcased various relevant research, development and extension (RDE) projects and endeavors centered on KM and its relevance and impacts to several facets of the society – from individual level to organizational level, from the government to the corporate world.

“The role of Information Technology is very crucial and it cuts across the boundaries of government, business, academia, and the community. The way we learn, create, retain, and transfer knowledge has a crucial part to play in the efficiency and effectiveness of any large or small organization,” said Dr. Abdul Malek HJ. Abdul Karim, assistant vice chancellor of UUM-CAS.

With the theme, “*Managing Knowledge for Global and Collaborative Innovations*,” the 6<sup>th</sup> KMICe presented several KM innovations and technologies that possess great potential in responding to global issues through creating partnerships between and among organizations and groups from all over the world. “This year's theme has attracted many local and worldwide participants including Ghana, India, Indonesia, and Sri Lanka,” said KMICe2012 Conference Chair Prof. Dr. Norshuhada Shiratuddin.

The conference highlighted 121 KM research papers which were presented through lecture sessions conducted simultaneously. The papers were categorized into nine sections: 1) KM in Education, 2) Intelligent System in KM, 3) KM in Business, 4) Innovation and Technologies, 5) Knowledge Sharing, 6) Software Engineering in KM, 7) Social Media and Multimedia Technologies, 8)

Knowledge Creation and Governance, and 9) KM in Health and Emergency.

The representatives from BAR and SEARCA also conducted agri-fisheries KM benchmarking visits at the National University of Singapore (NUS) and Nanyang Technological University (NTU) to meet with KM experts who comprehensively provided information and assistance regarding potential training opportunities, offered courses, and capacity building programs.

At NUS, the experts discussed program on pest management mobile application which is being improved and implemented to provide farmers in Singapore's neighbor countries convenient technical assistance in identifying ways on how to fight and prevent pest infestations. They also discussed some KM programs that they conduct in the university like the creation and maintenance of a knowledge database for each college. At NTU, the experts talked about the graduate courses on KM that they offer in full- and part-time bases. These courses are taken formally in the university but they also conduct training sessions and workshops wherein they are the ones who go to the organization or group who requested for assistance and education in KM principles and practices.

These benchmarking and capacity building activities being conducted by BAR and SEARCA are part of the joint project “*Capacity Development Program on Knowledge Management*” that aims to 1) develop a strategic framework for Philippine agricultural and fisheries



PHOTO: LPADILLA

information and knowledge management, 2) develop a strategic plan on KM capacity development for BAR based on the strategic framework, 3) design a comprehensive capacity development program for the agricultural research sub-sector, and 4) implement agricultural KM benchmarking visits of BAR technical staff for capacity building program planning purposes. ### (Leila Denisse E. Padilla)

### Ifugao farmers..from page 8

and soil management, pest and disease management, harvesting and post-harvest operations, and trading, labeling, and pricing.

Through a wide range of farming knowledge and understanding extended to the farmers during the training, they were able to capacitate farmers who can actually produce according to organic farming principles. This may lead to an increase in the level of awareness regarding organic

products, which can increase the number of consumers, thus a wider market.

In a few years' time, the province of Ifugao envisions to practice nothing but organic farming. For them, there is no better way of protecting the life of their environment and their people than achieving a province-wide organic approach to farming system. ### (Daryl Lou A. Battad)



# BAR participates in 16<sup>th</sup> PACIS



PHOTO: PLESACA

Information technology has served as the backbone of modern communication. The evolution of and the timeliness of these technologies affect the way people live and do business. Obtaining relevant and useful information through various platforms, such as information systems (IS) and knowledge management (KM), to name a few, have been the corner stone of this information age. Needless to say, IS and KM are powerful tools in transforming ideas and in achieving desired goals through various strategies and information processes.

To further enhance the strategic approaches particularly in managing knowledge in agriculture and fisheries R&D, the Bureau of Agricultural Research (BAR) joined more than 200 participants from 45 countries in the 16<sup>th</sup> Pacific Asia Conference on Information System (PACIS) held in Ho Chi Minh City, Vietnam on 12-15 July 2012. Representing the bureau were Patrick R.A. Lesaca and Ryan J.M. Abrigo of the Applied Communications Division (ACD).

PACIS is the premier region information system conference of the Association of Information Systems (AIS) which aims to provide researchers in Asia Pacific region the opportunity for networking and exchanging research

findings on the latest development in information systems (IS). With the theme, "IS Innovation in Pacific Asia," the conference represented an opportunity for researchers and information managers to think about how information and communication technologies can contribute to the advancement of social, cultural, economic as well as agricultural well being of the region.

The 16<sup>th</sup> PACIS kicked-off with a keynote speech delivered by Professor Doug Vogel, chair of the Information Systems, University of Hong Kong who highlighted on the importance of IS as an opportunity in advancing knowledge management, research and education in the country.

Program Co-Chairs Shan Ling Pan from the National University of Singapore (NUS) and Pan Tru H. Cao from the Ho Chi Minh University of Science, Vietnam National University, reported during the opening ceremonies that the conference received 383 research papers from 45 countries of which 130 papers and 51 research-in-progress papers were accepted and presented during the three day paper presentations. According to the program co-chairs, the number of papers submitted was the second highest number of submission to a

PACIS conference in history. Submitted papers were peer reviewed and classified.

Among the papers presented under the KM include: 1) Understanding the use of enterprise content management systems in coordination type of organizations; 2) An ontology-based collaborative inter-organizational knowledge management network; 3) Understanding the use of enterprise content management systems (ECMS) in diversification type of organizations; (4) Enterprise metadata management; 5) Through what mechanisms does business analytics contribute to business value; 6) Web Mining for Financial Market Prediction based on Online Sentiments. The topics included were found useful and relevant to the daily operations of BAR in terms of data management.

Professor Ting-Peng Liang from the National Chengchi University in Taiwan presented his research paper on "What Neuroscience can or cannot do for Information Systems" during the second day. The professor discussed how physical appearance affects the decision of the users in acquiring the system or software. The way the system was designed, the

color used, physical attributes, among others, affect or attract users. An impression from how the system looks on the computer screen automatically gives users judgments on how the systems function. Other papers presented includes: 7) Modeling Researchers' Characteristics for the formation of Research Team; 8) Platform-based Online Services, Competitive actions, and e-Marketplace Seller Performance; 9) Building member's Relationship Quality Toward Online Community from the Elaboration Likelihood Model Perspective; 10) Who needs to Know? How different aspects of the user's situation are important for answering different query types; 11) Affects and Post-adoption Behaviors of Blog Users; 12) VIP-focused CRM Strategies in an Open-Market.

The 13<sup>th</sup> paper, "Factors Affecting Knowledge Integration-based on Similarity-Attraction Theory" and its related sub-papers concluded the last day of paper presentations. The paper suggested and discussed factors that affect knowledge integration based on similarity-attraction theory. The paper simply suggests, it is best to have a relationship or establish a business relationship to someone who is similar to you. Sharing of common interest in goals and activities often attracts people before physical appearance, leading to a deeper connection and more meaningful relationship. Same goes to knowledge integration as discussed by the presenter. It was suggested that IS managers who intend to promote knowledge integration should carefully

consider the composition of the team involved since similarity and attraction can potentially affect the integration of knowledge in IS teams. However, limited research has been done to explore how IS or IT usage may improve the well being and life quality of individuals.

Valuable information was also obtained from the 14<sup>th</sup> paper presented, "Contextual factors, e-Participation and e-Government Development: Testing a Multiple-mediation Model". The paper forwarded the concept on the growing interest on the role and contribution of e-Government in the delivery of services and its functions. Results substantiate a significant relationship between e-

Government proponents and the bureaucracy they represent.

The conference on IS provided an opportunity for practitioners, professionals, and scholars to learn and share knowledge from each other. BAR, as the research arm of the Department of Agriculture that manages vast information from its funded and supported R&D initiatives has to adopt strategies that can be implemented and that will enable to capture generated knowledge and effectively cascade them to intended users and beneficiaries. ### (Patrick R.A. Lesaca and Ryan J.M. Abrigo )



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PHOTO: PLESACA

TOP Photo: Around 200 participants joined the 16<sup>th</sup> Pacific Asia Conference on Information System (PACIS) representing 45 countries including the Philippines.

BOTTOM Photo: Representing the bureau were Patrick R.A. Lesaca (right) and Ryan J.M. Abrigo of the Applied Communications Division (ACD).