

RUBBER

The Money Tree

The rubber tree is a bank, every drop is money," that is according to Dr. Romulo L. Cena, director of the Philippine Industrial Crops Research Institute (PICRI), based at the Univesrity of Southern Mindanao (USM). A six-year old rubber tree, for example, can provide a farmer an income of Php 10, 800 every month or an annual income of roughly Php 120,000. Also, since the rubber tree is a permanent crop, as the trees grow older, the yield also increases, thereby providing farmers more income.

Rubber tree (*Hevea brasiliensis*) was introduced in Southeast Asia, including the Philippines, as early as 1900's. But it was only in the 1950's that rubber was utilized to its potential when local private corporations started establishing rubber processing plants in Mindanao. Currently, Cotabato is one of the major rubber producing provinces in the Philippines.

Given its high-impact potential to farmers and the economy, rubber is one of the priorities of the Department of Agriculture (DA). Aside from generating employment in the rural areas and planting rubber in idle hillylands and uplands, rubber cultivation enhances environmental rehabilitation being an excellent plant species in the sequestration of carbon dioxide in the air. ###

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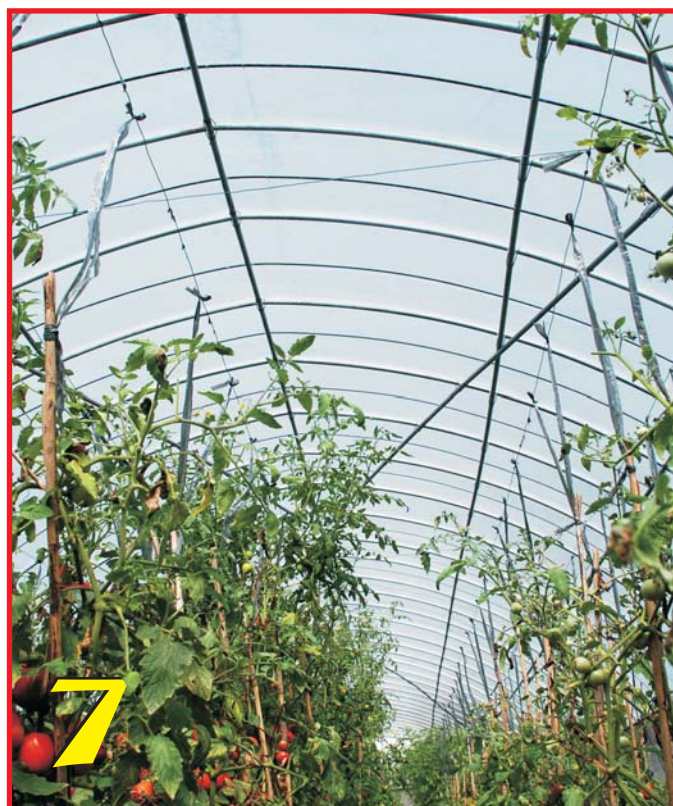
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April - June 2012



Strengthening R&D through institutional support



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The cover photo by Zuellen B. Reynoso features the Makapuno Tissue Culture Laboratory of DA-QAES in Tiaong, Quezon. The backcover photo features a rubber plantation in M'lang, Cotabato as photographed by Rita. dela Cruz.

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In the news...from page 30

Equipment upgrading, roof rehabilitation, repainting works, repair of broken laboratory equipment, and procurement of additional tools and materials for the laboratory were some of the observed rectifications to be done.

Similar remarks were examined at the following institutes namely: Dairy Science and Training Research Institute (DTRI), Institute of Mathematical Sciences and Physics (IMSP), Institute of Chemistry (IC), Institute of Biological Sciences (IBS) and School of Environmental Science and Management (SESAM), wherein repairs on ceiling and lighting fixtures, installation of stainless steel cabinets/compartments, and exhausts, and tile works are needed.

In the Dairy Science Training and Research Institute (DTRI) of the Institute of Animal and Dairy Science Cluster (ADSC), the team met with Dr. Olivia C. Emata, head of the Dairy Products and Technology Development Division of the ADSC-UPLB. Dr. Emata discussed the current facilities and equipment of DTRI, including the new cold storage room that has a capacity to preserve various dairy products.

In terms of product development, it was suggested that the products need further improvement particularly with its packaging design. The dairy products produced by DTRI have a high potential in competing with the current products in the market in terms of quality. It will further help if the packaging and labeling of the products would undergo enhancement and improvement. Through this, it will be easy for the product to penetrate the market through promotion and compete with existing dairy product producers. It can also increase the shelf life of the dairy products. To address the issue, Dr. Emata confirmed that she will be sending proposal to DA-BAR regarding product development.

At IBS, the Entomology Department of the Crop Protection Cluster of the College of Agriculture was also inspected and found to have limited equipment as well.

In the Soils Analysis Laboratory at Agronomy Building of the Crop Science Cluster, a promising innovation was conceptualized by experts, which is to be named as "Mobile Soils Analysis Laboratory." An on-site service by a fully equipped research laboratory is visualized to be contained in a vehicle.

The researchers from the School of Environmental Science and Management (SESAM) also have plans of carrying out a "Roving Laboratory" for Risk Reduction Management, which is seen to be significant in the Climate Change program.

The last stop of the field visit was concluded at the College of Forestry and Natural Resources (CFNR), where the laboratory facilities in its vicinity were the prospects for Institutional Development Support and Assistance.

Done to assess and evaluate the potential IDG support, specifically for infrastructure improvement and procurement of advanced equipment/facilities that the bureau may provide to the said agency, possible project proponents were encouraged to submit IDG proposals. ###

Eleazar visits UPLB to assess needed inst'l dev't support

BY MARA SHYN M. VALDEABELLA

The Bureau of Agricultural Research (BAR), as the mandated national coordinating agency for agriculture and fisheries R&D of the Department of Agriculture (DA), recognizes the vital role that state universities and colleges play in revitalizing and strengthening the agriculture sector, especially in the realm of research, development, and extension (RDE).

The University of the Philippines Los Baños (UPLB), known to have emerged as one of the leading academic institutions in Southeast Asia, is in constant partnership with the bureau. Recognizing the expertise that the members of the university faculty have, especially in the field of agricultural RD&E, the bureau also requested several experts from the university to be members of the BAR Pool of Experts.

Dr. Segfredo R. Serrano, Undersecretary for Policy, Planning, Research and Regulations of the Department of Agriculture, likewise recognizing UPLB's role in advancing and reinforcing excellence in agricultural RD&E, sought to discuss important matters on further improving the university's instruction in the agricultural RD&E with the newly proclaimed chancellor of the university, Dr. Rex Victor Cruz.

With this, Usec. Serrano instructed BAR Director Nicomedes P. Eleazar to convey his message and instructions for the university as well as to conduct site visits on different infrastructures and facilities that the

university has. Hence, a team from BAR, headed by Director Eleazar, went to UPLB on 1 February 2012.

The BAR team, assisted by UPLB Chancellor Rex Victor Cruz, Vice-Chancellor for RDE Ma. Victoria Espaldon, deans and other staff of the visited colleges, conducted field visits and site inspections through the various facilities/laboratories of UPLB.

The itinerary started with the visit to the Tissue Culture and Molecular Laboratory of the Institute of Plant Breeding (IPB). Last 28 January 2012, the National Plant Genetic Resource Laboratory (NPGRL) was burnt down due to faulty electrical wirings. The equipment and infrastructure of the facility, especially those in the second level of the building, have been damaged. While there were still some equipment recovered, these are not sufficient for the facility to be functional again. Large-scale renovation procedures and procurement of new equipment are thus needed.

Also, in the Institute is the Cold Storage Laboratory that needs full furnishing and finishing (paintworks). It should, however, be noted that a total of PhP19M had been granted as BAR-Institutional Development Grant (IDG) support to IPB before it suffered from flooding in 2009.

The inspection proceeded to the Institute of Animal Science (IAS) with the Animal Nutrition Laboratory and Animal Husbandry as focal points.



Dr. Eleazar visiting the various institutions around the UPLB campus. PHOTOS BY MVALDEABELLA

Strengthening R&D through institutional support

BY DR. NICOMEDES P. ELEAZAR CESO IV

“Tantamount to qualified manpower are research and development (R&D) facilities support that will provide a conducive and appropriate environment to make the R&D workforce effective and efficient.”

For an organization to successfully attain its goals, it should have the capable human resource necessary to perform its task. Tantamount to qualified manpower are research and development (R&D) facilities support that will provide a conducive and appropriate environment to make the R&D workforce effective and efficient. After all, what is a researcher if there are no facilities and equipment that would make his/her research endeavor feasible.

The Bureau of Agricultural Research (BAR), as the national coordinating body for the agriculture and fisheries R&D of the country, ensures that appropriate support is given to institutions that are conducting research and other research-related activities.

This support is awarded to R&D institutions in the form of a grant which is envisioned to fast track and to contribute in the modernization of the agriculture and fisheries sectors of the country.

The Institutional Development Grant (IDG) program aims to enhance the capabilities of the R&D institutions, in particular, the member-institutions of the National R&D System for Agriculture and Fisheries (NaRDSAF) for them to efficiently and effectively implement and manage R&D programs/activities in agriculture and fisheries.

NaRDSAF member institutions include the national and regional agencies/offices of the Department of Agriculture (DA), specifically, Regional Integrated Agricultural Research Centers (RIARCs), Regional Research Outreach Stations (ROSeS), Regional Fisheries Research and Development Centers (RFRDCs), state universities and colleges (SUCs) belonging to the National and Regional Centers for Agriculture and Fisheries, Provincial R&D Centers, Provincial Technological Institutes and Colleges (PTIAFs), local government units (LGUs), and other government and private institutions that are involved in agriculture and



PHOTO: RDELACRUZ

fisheries R&D.

It is divided into two: Human Resource Development (HRD) and R&D Facilities Development. Both programs work hand-in-hand with the aim of strengthening and capacitating the R&D institutions in the agriculture and fisheries sectors.

The Research and Development Facilities Development Program aims for the improvement of quality of research outputs through state-of-the-art facilities and laboratory equipment.

Specifically, it 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 program also includes the formulation of the Management and Operations Manual for the DA

regional R&D centers and station development planning of the whole R&D system.

The program is a “flexible” funding facility awarded by the bureau to qualified R&D agencies and institutions. It is said to be “flexible” because the qualified recipient is entitled to a grant amount based on the priority needs that will complement or support the implementation of the institution’s R&D projects.

Grants provided

Established in 1999, the IDG was created specifically to assist qualified R&D institutions in availing of the financial assistance to upgrade, procure and acquire facilities, equipment and other related physical infrastructure based on the centers/institutions’ mandates to conduct research activities.

The program is being

specifically handled by the Institutional Development Division (IDD) of the bureau. IDD is tasked to screen and evaluate all proposals submitted to the bureau for funding ensuring that all proposals for funding are supported by the required documents as stated in the guidelines.

Aside from the conformity of the R&D mandate of the institution applying, crucial in the approval of the grant are the: 1) importance of the facility in implementing the R&D program, 2) previous performance in managing collaborative R&D programs, and 3) duly approved Master Development Plan of the agency.

For 13 years now, IDG continues its support to R&D institutions. To date, there are 482 IDG projects funded, from which 268 are completed and 214 are on-going. Still for funding are 44 more IDG projects,



PHOTO: ZREYNOSO

necessary for their specific R&D initiative needs.

BFAR-CVRFRDC

Established in the 1950s, the Bureau of Fisheries and Aquatic Resources – Central Visayas Regional Fisheries Research Development Center (BFAR-CVRFRDC) stood in a modest 10-hectare field in Calape, Bohol. Previously supervised by the Philippine Fisheries Commission, CVRFRDC was founded for the R&D of milkfish fingerlings, aimed at developing aquaculture practices to increase marketability and enhance the cultural practices of Bohol’s local fisherfolk. Since the 1970s, CVRFRDC served as one of the major training center and demonstration farm site in the country.

Through the years, the Center continued its development— infrastructure- and R&D-wise. Expanding to 37 hectares, CVRFRDC dedicated 1 hectare to several infrastructures such as administration buildings and offices, dorms, and postharvest halls, and the remaining land modified into brackishwater fishponds. A satellite station in Lawis, Pangangan Island, Calape, Bohol also serves as venue for cages in developing

broodstock.

As the demand for milkfish in the region increased, more milkfish broodstock were obtained. Other species such as abalone, grouper and other high value species were also included in the initiative. With the growing responsibilities around the Center, duties are not solely distributed to production but also in R&D initiatives such as the “Milkfish Agribusiness Development Project” funded by BAR. Additional infrastructure to accommodate both staff and visitors in offices, dorms, and halls becomes an essential requirement.

ReBUILDING

In full commitment to supporting projects that pursue agriculture and fisheries development, BAR, together with BFAR-Central Office, funds the “Rehabilitation and Improvement of BFAR-RFRDC-7 Administration/Office Building at Bentig, Calape, Bohol.” The project focuses on restoring and rebuilding the CVRFRDC office/administration building constructed during the late 70s. Apart from the rehabilitation, other fixtures and furnitures to improve the Center are also included in

the project.

To date, the project is ongoing. With the new building almost in its completion, the staff members are all but excited to see and experience their newly rebuilt administration building.

Looking into projects such as this one, building construction might not largely be connected to attaining food security. However, in a deeper sense of understanding, when researchers and staff members are secure of their safety (sturdy building structure) and they are equipped with the latest tools, we can expect progress in R&D initiatives they are involved in. Their capacity to generate relevant and timely researches is increased, contributing to the need of the industry. And with both agriculture and fisheries sectors focusing on providing answer to food security issues in the country, this simple building could be a step closer to finally serving a full plate for the generations to come. ###

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ReBUILDING towards food security

ZUELLEN B. REYNOSO

“Continuing development in the industry requires state-of-the-art equipment and ample building structures to allow progress and improvement.”

Recover, regenerate, repair, re-establish, and revitalize—these are just a few of the many synonyms of the word rehabilitate. Anything that is broken or damaged can be restored, given the proper tools and methods. The process of rebuilding proves the presence of hope—that restoration is still a possible outcome. Rebuilding something means that which was ruined, could still be saved and used once more.

In the many infrastructures of the agriculture and fisheries sector in the country, some need rehabilitation. Continuing development in the industry requires state-of-the-art equipment and ample building structures to allow progress and improvement. Ensuring that workplaces are safe can contribute to the increased productivity of workers. However little or small the changes in the environment may be, the behavior of workers are affected and so is their productivity.

Fighting for a food secure Philippines

The Department of Agriculture (DA) is charged with the “promotion of agriculture and fisheries development.” Numerous research and development (R&D) initiatives are ongoing through DA and its attached agencies like the Bureau of Agricultural Research (BAR) among others.

Apart from projects that directly involve regional field units (RFUs) and farmer cooperatives through its major banner programs such as the Community-based Participatory Action Research (CPAR) and the National Technology Commercialization Program (NTCP), BAR also provides institutional support through its Institutional Development Grant (IDG) program. Under the IDG, R&D Facilities Development Program enables the National R&D System for Agriculture and Fisheries (NaRDSAF) members to acquire funds for the construction or renovation of basic facilities and obtain equipments

Sec. Alcala heightens support to institutional dev't program

BY PATRICK RAYMUND A. LESACA

Having been in the agriculture portfolio for more than 24 months now, Department of Agriculture (DA) Secretary Proceso J. Alcala has laid down his marching orders for 2012 during the first Management Committee (ManCom) Meeting. Secretary Alcala reported the performance of the department in 2011 that despite the havoc brought by successive typhoons that hit the country, DA bounced back and gained better insights in securing the agriculture and fisheries sector for such eventualities.

People always look at the performance of the department as a yardstick in measuring the country's economic gains. Based on the assessment report prepared under the Philippine Development Plan 2011–2016, the agriculture and fisheries sector contributed an average of 18.4 percent to the Gross Domestic Product (GDP). In terms of

employment, the sector employed an average of 11.8 million people. Needless to say, the sector is still the biggest contributor and employer that could propel the country into a tiger economy. To sustain and even surpass this growth is yet another challenge that DA must reckon with.

The proactiveness of DA officials led by Secretary Alcala dramatically cushioned the negative impact brought about by destructive typhoons. Some of the measures installed include the immediate distribution of buffer seeds to calamity stricken areas; ratooning of some valuable crops covering an estimated area of 50 hectares in the Visayas; and immediate repair of irrigations systems and other water tributaries.

DA also procured the storm-damaged palay and distributed climate-resilient seeds. These are just some of the specific measures implemented by DA in order not to lose its focus on the delivery of basic goods and services.

In a meeting held during the first quarter of the year, Secretary

Alcala reminded and instructed members of the ManCom to prioritize the establishment and refurbishment of DA facilities, intensify its soils and water management, and support vigorously the implementation of Integrated Pest Management (IPM). These specific instructions formed part of the bigger thrusts that DA hopes to achieve and accomplish for the year and the succeeding years.

In a nutshell, the 2012 DA thrusts include: 1) call for Food Staples and Sufficiency Program; 2) regeneration, production and protection of the fisheries sector; 3) intensification of livestock and poultry production, considering that the country is still Foot-and-Mouth Disease (FMD) and Avian Influenza-free; 4) integration of high-value crops to the food value chain process; 5) upgrading and developing agricultural and fisheries product standards; 6) installation of effective services such as research, development and extension; and 7) strengthening local government collaborations.



PHOTO: ZREYNOSO

Specific to R&D, the DA chief stressed the importance of upgrading the facilities of the DA nationwide to address the basic requirements in conducting basic and applied researches. By doing so, one can easily configure and re-configure their experiments based on accurate findings and results obtained through laboratory findings and analysis.

The modernization of research stations, stock farms and other agricultural and fisheries stations are deemed necessary and imperative for agricultural development. Giving high importance to institutional development will paint an image that the agriculture department is committed to pursuing agricultural modernization.

DA infrastructure initiatives

DA, being the prime institution responsible for the promotion of agricultural development and growth in the country, is mandated to provide policy framework, help direct public investments, and in partnership with the local government units (LGUs) extend support services necessary to make agriculture, fisheries as well as agri-based enterprises profitable, and to assist in spreading the benefits of development to the poor, particularly in

the rural areas.

Progressive agriculture and rural growth are the primary solutions to the country's food and food security concerns. Although not a remedy to all our difficulties, agricultural and rural development can also provide the much needed answers to the problems of food security and sufficiency.

Necessary reforms must also be undertaken in order to accelerate agricultural and rural development in the country.

First and most important is to increase infrastructure support, the hardware component of development. In order for Filipino farmers to participate in market-oriented, competitive agriculture, their farms must be sufficiently irrigated and linked to the national transportation system of major roads, rails and waterways. Better ports and postharvest facilities must be built to facilitate the inter-island transport of goods and reduce postharvest losses.

Second necessary reform calls for improved and well funded research and development interventions, the software component of development. Physical resources are of limited value unless there exists the knowledge and

capability to use them efficiently and so, the agriculture sector must have access to both hardware and software developments. The technologies that are to be made available to farmers should include better seed varieties, improved production farms and fishery practices, and adequate technical information borne out of better R&D facilities.

While it is true that the food and poverty problem is a concern for all Filipinos, only the government can carry out this solution. Governments can set the policies, strengthen the necessary institutions, and reach farmers, fishermen and other rural people. It is thus the government's responsibility to see to it that these imperatives are addressed.

BAR R&D facilities development

Even before the pronouncement made by Secretary Alcala, BAR is already at the forefront of addressing the institutional development of DA nationwide. Through the Institutional Development Grant (IDG), the bureau is able to support and fund R&D institutions that are involved in agriculture and fisheries research nationwide.

Handling the program is BAR's Institutional Development Division (IDD) which was primarily created to establish and maintain a database of existing facilities, equipment and other related physical infrastructure of the R&D system. IDD is also responsible for the development, upgrading, procurement and acquisition of facilities, equipment and other related physical infrastructure of the different centers and institutions under the NaRDSAF based on the research centers/institutions' mandates. The division also implements policies and guidelines set for the improvement of existing facilities and related physical infrastructure of the R&D system and develop a system of generating revenues to support R&D endeavors.

The construction, acquisition and renovation of R&D related infrastructure are directed toward the development and enhancement of R&D centers in the country. ###



PHOTOS: ILIARC

“With all the revamping and refurbishing of ISS2 facilities, the station is now ready to cater to its clients with more efficient services. These are all geared towards the development and betterment of the agriculture sector of the Ilocos region and of the country as a whole.”

gadget, water valve, pump and tank. A better watering system is expected to cater to the high value crops.

Currently, honeydew melons and off-season tomatoes are planted in the greenhouse. Additionally, the repair of the floriculture nursery resulted to its better appearance and more functional operation. It now appears orderly, well-ventilated and in good shape. With this, it is presently used as a means in the propagation of ornamentals, dragon fruits, and other crops. It also serves as a venue for the establishment of seedling growth of tomatoes before field transplantation. The vermiculture area, on the other hand, will primarily be a laboratory for ISS2's goat manure project. Aside from that, it will also be used to house the production of vermicast and other organic materials for crop production in support of organic agriculture. The vermicast produced from animal dungs will be promoted and distributed for farmers' utilization.

ISS2 has undergone complete renovation from inside to the outside of the R&D building. Mounted air-conditioners and new curtains, repainted walls, installed glass doors,

and replaced tables would now provide more comfort and a fresh working ambiance for the people working in the station and also to the clients who plan to visit the place. Newly-acquired equipments including a desktop computer, filing cabinets, a laptop, a netbook and a digicam will help in the documentation and data management of the various research activities held and conducted at ISS2.

As of this writing, the project is still on-going. The renovation of the peripheral fence of the experimental station is the last activity to be implemented and is expected to be finished within the year. With all the revamping and refurbishing of ISS2 facilities, the station is now ready to cater to its clients with more efficient services. These are all geared towards the development and betterment of the agriculture sector of the Ilocos region and of the country as a whole. ###

For more information, please contact Dr. Aida D. Solsoloy, scientist II, Department of Agriculture - Ilocos Integrated Agricultural Research Center at tel no. 077 792 4468.



PHOTOS: ILIARC

hybrid rice varieties from the Philippine Rice Research Institute and private institutions are also evaluated and promoted in this station. The production of high value crops such as honeydew melon hybrid varieties under greenhouse conditions are also done at ISS2. Crops including eggplant and bitter gourd varieties are also screened here for desirable qualities.

Improving the facilities

ISS2 became an instrument for farmers and various concerned stakeholders where they can obtain significant and relevant information for utilization towards uplifting the condition of their farming and other related activities. The station houses a greenhouse structure, a floriculture nursery, and offices of the Provincial Station Manager, R&D and Operations sections. However, the state and quality of these facilities have deteriorated over time.

First is the greenhouse. A greenhouse structure functions as a protector of crops from extreme weather conditions under a controlled environment. However, with an

uncovered roof, lost panels, and destroyed wall sidings, a greenhouse cannot and will not be able to perform its ultimate purpose. Second, a disorganized and messy nursery is not a suitable place to grow plants in. Instead of ensuring a healthy produce, the facility may turn out to be a nursery of weak and wilted crops. Third, an atmosphere conducive to working is essential for an employee to work effectively. But a hot and firefly-invaded office will result not only to an irritated staff, but can also affect their health conditions. Moreover, the lack of modern equipments for the conduct of activities related to R&D may encourage less productivity and poor results. With such conditions mentioned, the station might not really be able to perform well and promote efficiency.

For a service-oriented institution like ISS2, providing a more efficient service to people is a must. With pitiable situations like those stated above, a proficient service for various clienteles of agriculture is far from happening. Without the needed

facilities and infrastructures, a research institution like the ISS2 will have difficulty to deliver satisfaction to its clients. However, no matter how DA-RFU 1 and ILIARC want to refurbish the facilities themselves, financial constraints are preventing them from doing so.

Hence, an ILIARC project titled, “Rehabilitation of Facilities of ISS2, Batac City for Providing Efficient Technical Services” was funded by BAR. The project aimed to: 1) repair the greenhouse for the cultivation of high value crops; 2) renovate the nursery to accommodate a vermiculture set up; 3) refurbish the researchers’ office for a more comfortable atmosphere; and 4) equip the station with equipments for better documentation and presentation of research activities.

What now

With the implementation of the project, the rehabilitation of ISS2 facilities and infrastructures is now almost completed. The used-to-be-not-so-functional greenhouse is now renovated with installed misters, blowers, computerized water metering



PHOTOS: BPI-BNCRDC

When a particular species is endangered, one of the oldest and best ways to protect it is through ex-situ conservation. Simply known as “off-site conservation,” ex-situ conservation aims to safeguard an endangered plant or animal species by relocating it to a safer and less threatened niche, either in another wild area or in a domestic setting.

With the need to maintain a stable and sustainable ex-situ conservation of fruit and vegetable germplasm resources, the Bureau of Plant Industry-Baguio National Crop Research and Development Center (BPI-BNCRDC) improved and upgraded its plant genetic resources (PGR)

facilities and equipment with the support of the Institutional Development Grant (IDG) of the Bureau of Agricultural Research (BAR). This was completed in 2010.

Through an upgraded ex-situ conservation facility, BPI-BNCRDC seeks “to safeguard elite vegetable and fruit germplasm resources in support to the goals of modernizing agricultural production in the country by producing and distributing high quality seed and plant materials while conserving biodiversity,” as stated Dr. Juliet M. Ochasan, project leader and BPI-BNCRDC senior agriculturist.

Gearing towards diversity conservation

A quotation of Dr. Cary Fowler, executive director of the

Global Crop Diversity Trust, in a recent press release states that “our crop diversity is constantly under threat, from dramatic dangers such as fires, political unrest, war and tornadoes, as well as the mundane, such as failing refrigeration systems and budget cuts. But these seeds are the future of our food supply, as they carry genetic treasure such as heat resistance, drought tolerance, or disease and pest resistance.”

Vulnerable crop diversity is a global issue since it is triggered by various global phenomena causing major environmental and agro-climatic changes in all parts of the world.

Zooming in the Philippine scenario, our dry seasons are becoming drier and the wet seasons



wetter. These deviations have been posing severe impacts in agriculture, endangering high value crops like vegetables and fruits.

In the Cordillera Administrative Region (CAR) and in other regions with parallel agro-climatic conditions (mild tropical climate), fruits and vegetables are the core commodities and BPI-BNCRDC is the main institution in CAR that is mandated to produce basic seeds and plant materials through a sustainable seed system and to conserve and maintain genebanks ex-situ.

Conserving germplasm resources to address diversity loss

Located in a strategic area, BPI-BNCRDC can hold and safeguard both tropical and sub-tropical germplasm materials. “At present, BPI-Baguio holds and maintains a sizeable number of germplasm materials in both in-vitro and field genebanks. It has existing and modern tissue culture laboratories, disease indexing laboratories, plastic

houses, and available area for field genebanks. It has trained manpower resources who are handling the collections, as well as in tissue culture and indexing activities,” expounded Dr. Ochasan.

However, according to Dr. Ochasan, these facilities and manpower resources are not enough if they are not sustained and stabilized in order to maintain integrity, prevent loss, and enhance the germplasm resources. The regeneration and convenience of these materials is not only crucial in the seed system and germplasm exchange but also in research and

development. Hence, the upgrading of BPI-BNCRDC’s PGR facilities and equipment.

The core goal of this IDG-supported project is to combat crop diversity loss by conserving germplasm resources through stable and sustainable ex-situ conservation. Bearing this in mind, the project conducted systematic strategies focusing on five major components: 1) conservation and management of germplasm collections, 2) preliminary characterization and evaluation of germplasms, 3) systemic disease identification and elimination, and recovery of healthy plants,

“At present, BPI-Baguio holds and maintains a sizeable number of germplasm materials in both in-vitro and field genebanks. It has existing and modern tissue culture laboratories, disease indexing laboratories, plastic houses, and available area for field genebanks.”

Revamping ISS2 facilities for more efficient services



PHOTOS: ILIARC



BY ANNE CAMILLE B. BRION

As the years go by, technological advances have changed the way people live their lives. Products and equipment borne out of technology are becoming more of a necessity than a luxury. Can you imagine life without a computer, ipod, or even just your mobile phone? Just like in research and development (R&D), the absence of necessary tools and facilities will slow down the progress of the agriculture sector. Technological interventions and innovations are major contributors for the growth of the sector and the progress of the nation.

Agriculture is one of the main sources of livelihood in Ilocos Norte. Commodities such as rice, garlic, tomatoes, bitter melon, and eggplant are being produced in the province. Studies, focusing on R&D initiatives on these crops, should be taken to the next level

to further enhance their productivity and production. This will ensure Ilocanos not only of a bountiful harvest, but also food security for themselves and their families as well. However, for this to be fully realized, capacities of the equipment and facilities used for such activities should first be considered and given utmost attention.

ISS2: Research arm of Region 1

Situated in Batac City, Ilocos Norte, the Ilocos Satellite Station II, also known as ISS2, serves as the research arm of the Department of Agriculture - Ilocos Integrated Agricultural Research Center (DA-ILIARC) for information and technology generation. It involves research and development endeavors related to agricultural development. This is where research undertakings regarding various crops of the region

are being conducted. By forging ties with other research institutions like the University of the Philippines Los Baños (UPLB) and the Bureau of Plant Industry (BPI), ISS2 has fulfilled its role as a reliable research institution catering to the community and the province. Such linkages have enabled the station to adopt technologies that result to the upgrading of its technical capabilities.

Ilocos region is known to be the best producer of the garlic crop in the country. The garlic produced in the said region has a unique and strong tangy taste and odor that other regions could not develop. At ISS2, garlic is extensively studied regarding its field production up to processing, as it is considered a major industry and source of income for most farmers. Likewise, off-season tomatoes developed by Mariano Marcos State University (MMSU), as well as lowland



PHOTO from <http://blog.agriculture.ph>

PHOTO: ZREYNOSO

MAKAPUNO

able to sold 155 seedlings.

The three-hectare makapuno demonstration farm were already planted with 300 embryo culture makapuno palms wherein after 4–5 years will be a source of makapuno embryos that will be used to sustain the project. Currently, these palms are on its growing stage.

The university accommodates interested clients and walk-in buyers of the makapuno seedlings from the nearby towns and provinces. A single seedling costs 500–1000 pesos depending on its height.

As part of the technology promotion, they are participating in various agri-trade fair exhibits wherein they showcase the technology and distribute flyers that tackles topics on “Makapuno Embryo culture technology” and “Gabay sa Pagtanim ng Makapuno.”

To continue honing the minds of the future scientists and agriculturists, the laboratory served also as a venue for the researchers to conduct their studies and also for the

training students to have a hands-on training in ECT processes such as extraction and excision of makapuno embryos, media preparation, sterilization, reflasking or transferring of germinated embryos and cultured seedlings in different media, among others.

The culture embryo laboratory in URS-Tanay is only one of the facilities being funded by BAR that supports the growth of makapuno industry in the country. Currently, the bureau funded the upgrading of makapuno embryo culture facility of Quezon Agricultural and Experimental Station (QAES) in Tiaong, Quezon that will help the country to be the world’s largest makapuno producer.

Decades ago, mass propagation of makapuno seems impossible. Now, in the presence of innovative technologies and modernized facilities, the feat is turning into something positive and tangible. With continuous endeavors made by the government, academe,

and even private institutions to revitalize the makapuno industry in the country, our hope to become the top makapuno producer will not be wasted. ###

For further inquiries, please contact Dr. Dorothy C. Solano, embryo culture laboratory leader and professor at URS-Tanay. You may contact her through her email address: dory_solano@yahoo.com

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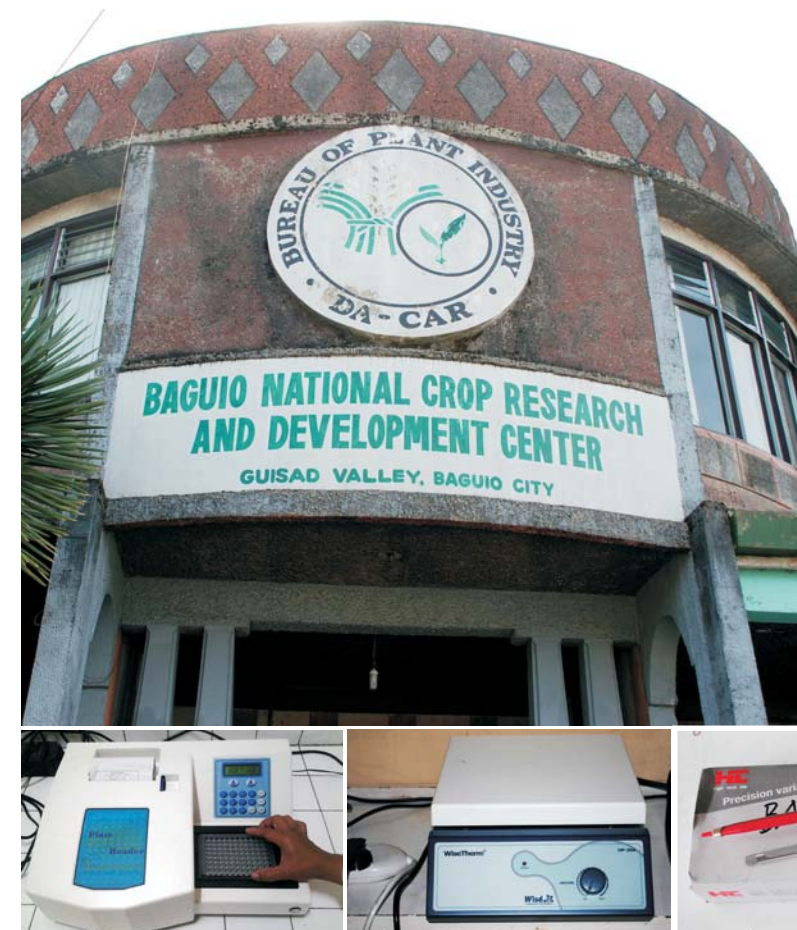


PHOTO: BPI-BNCRDC

Through effective conservation and management of germplasm resources, superior varieties of fruits and vegetables are constantly protected, enhanced, multiplied, and made available not only to researchers and extension workers but also to concerned consumers and farmers.

4) regeneration (production) and distribution of regenerated materials, and 5) data banking and documentation.

Impacts

Through effective conservation and management of germplasm resources, superior varieties of fruits and vegetables are constantly protected, enhanced, multiplied, and made available not only to researchers and extension workers but also to concerned consumers and farmers. The germplasm collections housed in BPI-BNCRDC are reared in three different settings, the field genebank, protected cultivation (plastic/screenhouse), and in vitro.

Research institutions can have better access to superior varieties that they can utilize in conducting more research and development efforts to further improve the production of these crops. “Biodiversity is preserved and risk of loss is reduced,” Dr. Ochanan emphasized. Importantly, local appreciation and respect to agricultural biodiversity is being promoted and extended to different sectors benefitting

from the consumption of these high-value crops.

Loss of crop diversity is a serious problem that is becoming more severe because of extreme environmental phenomena and abusive human activities. Many actions can be done like that of BPI-BNCRDC’s grand way of sustainably conserving fruit and vegetable germplasms. But in our own small ways, like simply respecting the environment, we can definitely save more crop species from possible extinction.

For more details, please contact Dr. Juliet M. Ochanan, project leader and BPI-BNCRDC senior agriculturist, through contact number: (074) 300 3584.

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PHOTOS: DA-RFU 5/BIARC



Regional Tech Com and R&D Center for *lahar-laden* areas, a first in Bicolandia

BY DIANA ROSE A. DE LEON

Region 5 otherwise known as the Bicol region is part of the Luzon Peninsula comprising of six provinces, namely: Albay, Camarines Norte, Camarines Sur, Sorsogon, Catanduanes, and Masbate that individually contributes to the larger economy dynamics of the region and even to the national growth of the country.

According to the National Statistical Coordination Board, the Bicol region posted the fastest economic growth in the country in 2009. Even though the increase is predominantly due to the service sector, the agriculture sector contributes to the positive turnabout. The economic activities in Bicol are still centered around

agriculture-related activities by which 50 percent of the region workforce is dependent on.

To boost the economic progress, the agriculture sector must be able to sustain their performance by which research and development (R&D) plays a critical role.

The Bicol Integrated Agricultural Research Center (BIARC) is at the heart of agriculture research, development and extension (RDE) in Bicol. As the R&D arm of the region, BIARC ensures that the overall RDE strategic thrusts, programs, plans, and policies of the Department of Agriculture (DA) is being conveyed and implemented in the region.

Concurrent with attaining their RDE goals, the BIARC proposed to the Bureau of Agricultural Research

(BAR) an institutional development project for the construction and rehabilitation of a Technology Commercialization (TechCom) Center and R&D Center for *lahar-laden* areas.

BAR supports its partner institution in achieving their respective R&D goals through funding appropriate facilities development.

R&D center for *lahar-laden* areas

In 2006, when typhoon Reming shook the country, the most devastated was the Bicol region— affecting the production in the agriculture sector. The debris carried away by the floods from volcanoes, made both lowland and upland farms inept for farming, thus, affecting food productivity and agricultural development as a whole. Hence, R&D interventions and



PHOTOS: URS

More makapuno through an embryo culture laboratory

Prior to the establishment of embryo culture laboratory in URS-Tanay, there are already six operating culture laboratories in the country and these laboratories can absorb the need for makapuno planting materials in the Bicol region and Mindanao. These laboratories are not enough to meet the demand in the Southern Tagalog region and the rest of Luzon areas. The URS-Tanay saw the need, thus, sought the assistance from the

Bureau of Agricultural Research (BAR) to fund the construction of their embryo culture laboratory.

Through BAR's R&D Facilities Development Program, URS-Tanay received a million-peso grant for the project titled, "Establishment of Makapuno Embryo Culture Laboratory at URS-Tanay." The amount awarded was used for the construction and purchasing of supplies, materials, and equipment of the laboratory. Makapuno nursery and demonstration farm were also established as part of the project.

URS-Tanay itself counter-

parted more than three million pesos and also the Department of Science and Technology (DOST) through capability trainings and technical assistance.

Aside from propagation of the makapuno palms out of the cultured embryo, the project aimed to produce clean and disease-free planting materials for distribution and technology transfer to the municipality of Rizal and its adjacent towns, which will benefit the upland farmers and the indigenous peoples—the *Dumagats* and the *Remontados*.

The project was funded in 2006 and the laboratory has been in full operation since 2008.

After five years since its completion, the culture laboratory is still in its full capacity to operate. There are already 1,409 existing makapuno cultures in the laboratory. There are 338 makapuno seedlings varying in ages and the university was

Aside from propagation of the makapuno palms out of the cultured embryo, the project aimed to produce clean and disease-free planting materials for distribution and technology transfer to the municipality of Rizal and its adjacent towns...

URS' Culture Lab:



Ensuring sustainable production of cultured makapuno seedlings

DR. DOROTHY C. SOLANO & DIANA ROSE A. DE LEON

Decades back, makapuno is known for its rarity. Rare, as there is only 15–20 percent chance of getting makapuno from a regular coconut tree. Moreover, planting a makapuno nut will not ensure that the tree will also bear makapuno. It is said that the abnormality to the makapuno's endosperm makes its embryo ineffective for germination.

It was not only in the 1960s that late Dr. Emerita de Guzman of the University of the Philippines Los Baños (UPLB) discovered how to make the makapuno embryo germinate and grow trees that bear 75–100 percent makapuno nuts. This is through embryo culture technology (ECT). With this technology, the makapuno embryos are obtained, rescued, and cultured in an in vitro solution

producing the true-to-type seedlings.

However, the protocol takes more than a year before the cultured embryo is ready for field planting. Hence, through the efforts of Dr. Erlinda P. Rillo of the Philippine Coconut Authority (PCA) - Albay Research Center, the protocol was improved, and the gestation period was shortened lowering the cost of seedlings. She also spearheaded the technology commercialization of makapuno.

The efforts of mass propagating the makapuno has been intensified because it is considered as a high value food crop. The nuts are sold at prices higher than the ordinary coconut. Its white, soft, jelly-like meat is highly suitable in making ice cream, pastries, and other sweet delicacies. Also it is a valuable raw material for

the pharmaceutical and personal care products. It was also found that makapuno is rich in galactomannan, which is a good food stabilizer.

Annually, millions of kilos of makapuno meat are needed to fill the demand of food processors internationally. In the Philippines alone, more than four million kilos of makapuno meat are needed for ice cream production of major ice cream processors.

To compensate this widening gap, there is a need to set-up makapuno embryo culture laboratories nationwide to ensure continuous and sustainable production of cultured makapuno seedlings. One of which is a culture laboratory just like that of the University of Rizal System-Tanay (URS-Tanay).



PHOTOS: DA-RFU 5/BIARC

technologies into these *lahar*-affected areas were found necessary and important.

With this, BIARC proposed to BAR a two-million peso project wherein a R&D center in Buang, Tabaco City, Albay is established to cater specifically to the needs of the farmers affected by typhoons and *lahar*.

It will house various research laboratory equipments that will aid in on-station researches and experimentation on formulating and packaging quick-response interventions focusing on soil and water management, soil amelioration, crop adaptation, water conservation, solar energy system, hydrology, climatology, renewable resources and biotechnology. The results of these researches will be shared and disseminated to the affected farmers and other stakeholders.

Among the initial research activities conducted include: microbial examination for *lahar* soils characterization; a replicated 3-factor pot experiment in two *lahar* soils of Mt. Bulusan and Mt. Mayon using sweet sorghum and corn as test crop; and expansion site (using *lahar* deposit) for Site Specific Nutrient Management (SSNM) trials that is composed of nine treatment combinations using inorganic,

organic and bio-N fertilizers.

The BIARC aims to conceptualize long-term strategies and interventions appropriate for *lahar* areas and to commercialize these technologies develop.

A One-stop-shop

Recognizing the significance of technology promotion, commercialization, and utilization, BIARC established its first technology commercialization center in the DA Compound, Pili, Camarines Sur. The Regional Technology Commercialization Center (RTCC) of BIARC is a one stop shop for Bicol's agricultural technologies and products.

The RTCC was made possible through the IDG support provided by BAR. Through the center, the technology generated and adapted in Bicol region will help in broader adaption and at the same time, creating new agribusiness and livelihood opportunities especially for the micro-, small-, and medium-scale enterprises.

Aside from the usual showcasing of products from R&D endeavors, the center also offers affordable internet connection for farmer partners to access up-to-date

and relevant agricultural info and technologies. Business incubation is also being undertaken wherein the first-time farmer-entrepreneurs are assisted and guided on business start-up. They also offer hands-on training and demonstration of new technologies on product development, packaging and presentation. They also have the Information, Education and Communication (IEC) section wherein various IEC materials related to agriculture is displayed and made available to the public.

To strengthen and provide a much wider scope of product lines, BIARC is coordinating with the DA-RFU 5 stations and attached agencies to gather and compile priority agriculture commodities and technologies, and also are tapping private manufacturers and processors to display their agricultural products in the center.

Both centers are the response of BIARC in the call of being an adaptive and responsive institution, by which will not only help the marginalized farmers in alleviating their status in life, but also in bringing a holistic growth to the region. ###

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A comprehensive and state-of-the-art R&D facility



Soon to rise in DA-RFU 2

| BY RITA T. DELA CRUZ

Every R&D institution, in order to effectively respond to the need of the sector and establish credibility, must be equipped facility-wise. In a competitive arena, no R&D institution can go with the flow if its agricultural laboratories are obsolete or worst, nonfunctional. It will not even be responsive to the requirement of quality assurance and biosafety measures that are needed for laboratory services to be recognized.

The Department of Agriculture-Regional Field Office (DA-RFO) 2, with the Cagayan Valley Integrated Agricultural Research Center (CVIARC) as the prime

plant breeding station in the region, is initializing the construction of another first of its kind, comprehensive Cagayan Valley Integrated Agricultural Laboratory Services in Tuguegarao City, Cagayan.

The R&D facility will provide various diagnostic services, analysis, and produce recommendations to ensure product quality, consumer safety and environment protection, which is a mandatory requirement in penetrating the global market.

In producing and processing raw materials for local consumption and for export, products must adhere

to food and biosafety standards, and with this facility, the vast potential of Region 2 towards agricultural development is not far behind.

The 5-in-1 R&D facility

The Cagayan Valley Integrated Agricultural Laboratory Services will be composed of the five regional laboratory services and center: 1) soils lab, 2) animal disease diagnostic lab, 3) plant health clinic and pesticide lab, 4) feed lab, and 5) animal products development center.

The Regional Soils Laboratory is a facility that provides analysis, technical

With quality seeds on the ground, the possibility of quality produce becomes higher, thereby providing a bigger opportunity to put quality food on the table.



PHOTO: BPI



PHOTO from: <http://science.easternblot.net>



PHOTO from: <http://www.meridian.k12.il.us>



PHOTO: BAR

and vegetables are the ones largely affected by the poor storage facility. Significantly, these crops—soybean, peanut, rice, varieties of corn, vegetables—are considered priority crops in the Research and Development, Extension Agenda and Programs (RDEAP, 2011–2016) of the Department of Agriculture – Bureau of Agricultural Research (DA-BAR). And in order to provide good quality planting materials, renovation of their old storage building is necessary and new equipment should be supplied to further the research and development (R&D) initiatives under BAR banner programs such as the Community-based Participatory Action Research (CPAR) and the National Technology Commercialization Program (NTCP).

IDG program helps save seeds

In 2004, BAR launched a four-phase project through its Institutional Development Grant (IDG) program, and in cooperation with the Congressional Development Fund. The project titled, “Upgrading of Existing BPI-LGNCRDC Seed Storage Facilities”

aimed to 1) establish efficient seed storage, 2) improve seed production technology through proper postharvest handling system, and 3) meet the demand for higher quality seeds of farmers in the national and regional levels.

Infrastructure improvement and acquisition of equipment are simple contributions to ensure that crop seeds live long enough to reach the ground. Initiatives such as this ensure that the demand for quality seeds at any given time of the year could be met. With quality seeds on the ground, the possibility of quality produce becomes higher, thereby providing a bigger opportunity to put quality food on the table. ###

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SAVING SEEDS FOR TOMORROW:



PHOTO from: www.ars.usda.gov

Upgrading BPI-LGNCRDC Seed Storage Facilities

ZUELLEN B. REYNOSO

Seed storage is an essential part in the process of securing food for an entire nation. Without the proper storage of seeds, time, effort, and money used in producing crop seeds become a big waste. And instead of guaranteeing food on the table, we are misusing resources intended to feed the hungry people.

Germination percentages of crop seeds generally go lower when kept longer. And not all crop seeds could be sown right after they have been gathered as crops are very seasonal. So in order to maintain high a germination percentage, seed storage becomes an important tool where the viability of seeds depends largely on the temperature and moisture level with which it is kept. Without the proper technology in seed

storage, deterioration of the seeds can occur, resulting to loss of possible produce, making the entire process of producing crop seeds moot.

Storage requirements are basic and general. First and foremost, crop seed specimens should be cleaned and dried before storage. Molds due to excessive moisture, can attack and damage the seed if stored partially wet. Basic containers—such as glass jars, plastic containers, zip-lock storage bags—are good-enough alternates for home-use seed storage. But for larger, more commercial seed storage processing facilities, ample space and equipment must be dedicated to avoid deterioration of crop seeds.

La Granja NCRDC Seed Storage

The Bureau of Plant Industry (BPI) La Granja National Crop

Research and Development Center (LGNCRDC) in La Granja, La Carlota City, Negros Occidental serves as one of BPI's national centers in developing farming techniques of upland crops such as legumes and other vegetables. One important aspect of this is the production of high class seeds for dissemination, which the agency has been providing to promote and boost the country's agricultural production. However, issues in infrastructure continue to hinder the agency from maximizing its full potential. Efficient storage of crop seeds become a grueling task as the agency lacks the necessary equipment for proper storage, especially for the legumes, corn, and vegetables. As a result, large volumes of crop seeds are wasted due to deterioration.

Of the many crop seeds prepared by LGNCRDC, legumes, corn,



information, and fertilizer recommendations in relation to soil condition and plant nutrient requirements to help farmers in attaining the optimal benefits from the soils and environment protection.

To provide immediate and efficient diagnostic services to reduce the occurrence of major diseases and control outbreaks of livestock and poultry, the Regional Animal Disease Diagnostic Laboratory is established. This lab service will ensure product safety and protect the consumers' welfare.

The Plant Health Clinic and Pesticide Laboratory will be responsible in providing adequate information and immediate solution/control to problems on pests, diseases, nutritional disorders, and pesticide injury. This will ensure quality and protect consumers from possible health hazards due to careless and extensive use of pesticides.

Formulating and enforcing product standards will be the mandate of the Regional Feed Laboratory, a facility that ensures product quality, consumer safety and acceptability both locally and

globally.

The Regional Animal Products Development Center is a research and training facility that serves as the centerpiece that holds capacity-building activities on value-adding, food product processing and packaging, which is jointly undertaken with various stakeholders including state universities and colleges (SUCs), non-government organizations (NGOs), and farmer-entrepreneurs.

Given the range of the Cagayan Valley Integrated Agricultural Laboratory Services as a comprehensive facility, this serves as a one-stop-shop in the delivery of required diagnostic services to various stakeholders of the crops and livestock industries. The services, given their accessibility is also cost-efficient benefitting both clients from the government and private sectors.

Groundbreaking ceremony

In November 2011, BAR Director Nicomedes P. Eleazar visited the projects supported under the

bureau's IDG program in Region 2. Highlighting the visit is the groundbreaking ceremonies for the Cagayan Valley Integrated Agricultural Laboratory Services.

The rehabilitation and construction of the research facility is in line with CVIARC's goal of integrating and harmonizing its laboratory services towards asserting the Center's economic advantage and competitiveness in providing quality assurance and safety on the region's agricultural produce for domestic and international markets.

Leading the groundbreaking ceremony with Dir. Eleazar were CVIARC key officials led by Mr. Lucrecio R. Alviar Jr., regional executive director (RED) and Mr. Orlando J. Lorenzana, regional technical director (RTD).

Dr. Eleazar stressed how the IDG program is in line with the new priority plans, policies, directions of the DA's AgriPinoy framework and its overall goals. ###



BFAR 2's Integrated Fish Health Lab: Making water life sustainable

BY LEILA DENISSE E. PADILLA

Imagine the world without water creatures—empty and bare existing forms and horizons of water. Whether you are a fish lover or not, a world without these creatures is simply incomplete. And studies have shown that one day, our water forms will become empty basins if we don't make the right decisions and actions now.

In an effort to make water life sustainable, the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR) in Region 2 Cagayan Valley established an integrated fish health laboratory to improve local fish production through monitoring fish and water health within

the region.

The laboratory was constructed through the Institutional Development Grant (IDG) support provided by the Bureau of Agricultural Research (BAR), in view of the facility's potential to improve the livelihood of the fishing communities in Cagayan Valley and making their fishing environment healthy and sustainable.

Completed in 2009 the facility started its operation in 2010. Specifically, the IDG-supported facility seeks to “increase fish production in the region that would provide fish health services, research and development, advisory services, and

training needs of the fish farmers and fisherfolk in Region 2,” cited Dr. Evelyn C. Ame, project proponent and manager of the Regional Fisheries Research and Development Center (RFRDC), BFAR 2.

The looming crisis of fish kills

In 1998, Cagayan Valley has a fish sufficiency level of about 24 percent, making it a meager contributor to the total fisheries production of the Philippines. Even with the increase of 23 percent in 2006 (47 percent fish sufficiency level), it could still not provide a sufficient supply of fish for the ever-growing population of the region, what more of the whole country.

During those years, the country

expertise in biotechnology, PCC has the capacity to carry out research and development (R&D) initiatives. However, the lack of laboratory facilities and equipments continues to become a hindrance in pursuing the conduct of such activities. For this reason, PCC sought funding support from the Bureau of Agricultural Research of the Department of Agriculture (DA-BAR), through its Institutional Development Program (IDG) for the project titled, “Institutional Development Support in Strengthening the PCC-Biotech R & D Capabilities.”

It is intended to boost PCC's biotechnology capacities for research and development projects, specifically in the field of reproductive biotechnology and molecular genetics. While the former focuses on improving the reproduction of animals with desirable traits, the latter aims at the selection of improved livestock basing on their genetic makeup. One technique used in reproductive biotechnology is cloning through somatic cell nuclear transfer. This refers to the process of creating duplicates of genetically engineered animals in a single generation. The other one is ovum pick up, or improving the harvest of immature egg cells with the aid of an ultrasound. The genetic marker-assisted selection is a technique under molecular genetics. It involves the process of selecting a trait of interest based on a marker linked to it. These techniques were hoped to be strengthened through the project as they are essential in maintaining and improving genetic diversity and faster multiplication in animals.

These breeding techniques have provided valuable contributions towards the development of the livestock industry. They have been a big help in improving reproduction efficiency and speeding up the propagation of genetically superior animals. If these technologies are effectively employed, the desired genetic progress in water buffaloes will absolutely prosper.

Accomplishments

The project enabled PCC to purchase the needed equipment for its reproductive biotechnology laboratory. This includes 1 unit of mini multi gas incubator, 2 units of tank regulators for incubators, 1 unit of program embryo freezer, 1 set of ovum pick up accessories, and 1 unit of ultrasound machine.

With the procurement of these equipments, a number of cloned buffalo embryos have been produced for activities on cloning by somatic cell nuclear transfer. The ultrasound machine has been used for research undertakings on ovum pick up that uses superior female buffaloes as sources of genetic resource. Moreover, the ultra low temperature freezer, with its low-sub-zero temperature, was used to cryopreserve (to preserve the cells or whole tissues) the buffalo embryos produced in vitro.

The upgrading of facilities through acquirement of equipments is equally important in advancing the agriculture sector. Its role in R&D projects and activities should not be limited in strengthening an institution's capacity alone, but it should also be considered as one of the driving factors in accelerating the economic status of one's nation.

While biotechnology has exhibited exceptional performance with its promising results, issues on consistency and sustainability still arise. These technological advancements

have provided a developing country like ours an opportunity to increase production, productivity, and product quality of the sector. However, if thinking is focused in the long-run, research capacities regarding this technology may also be the greatest challenge to overcome to be able to sustain its accomplishments. PCC is now on its way of being recognized in other countries when it comes to livestock development programs. Consistent efforts, with support from other institutions, will help the agency to be more competitive in the global world. ###

For more information, please contact Ms. Eufrocina Atabay, supervising science research specialist, Reproductive Biotechnology, Philippine Carabao Center, Science City of Muñoz, Nueva Ecija or through her e-mail: bingay2003@yahoo.com

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The IDG support for “Strengthening the PCC-Biotech R & D Capabilities” is intended to boost PCC's biotechnology capacities for research and development projects, specifically in the field of reproductive biotechnology and molecular genetics.



PHOTOS: PCC

subsector. Initial efforts from the wide-scale implementation of one of its banner services, artificial insemination (AI), have resulted in the production of animals with better productivity. In addition, through the National Carabao Development Program (NCDP), the problem on Philippine carabao's low genetic potential for milk production was addressed by cross-breeding it with the riverine buffaloes. Though the program recognizes the importance of conserving the genetic resources of native animals, it also considers the establishment of gene pools of elite animals. This hopes to improve their genetic potential to enhance meat and milk production, as well as the hide (animal skin treated for human use)

and draft power (use of animal's strength to help man with their activities) to meet human consumption demands.

Biotechnology for R&D

"Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products for specific use"—this was the definition of biotechnology given by the Convention on Biological Diversity (CBD).

With the introduction of biotechnology, debates have been sprouting from different perspectives. While some air out moral issues, health and environmental threats that

it may pose to humans, scientists and experts have been positive when it comes to what biotechnology can do to uplift human living conditions, specifically in crop and livestock production. Improved plant breeds have resulted in increased crop productivity and protection. The same goes with the animals breeds that produced higher milk yield and better growth rate. These are only among the positive results of the said technology.

PCC has 13 centers strategically located nationwide. Its headquarters and gene pool is located at the Science City of Munoz, Nueva Ecija, which houses biotechnology laboratories and equipments. With its technical

experienced the advent of the downward spiral in fish production that was primarily due to persistent illegal fishing activities that do not only deplete fish population, but also affect fish reproduction rate since the coral reefs that serve as nursery to fingerlings were also destroyed by the use of dynamites and other explosives and chemicals.

When aquaculture techniques were utilized to augment supply for the rising demand for fish and its by-products, thorough aquaculture farming methods were performed encompassing almost all dams, lakes, ponds, and rivers found in the Philippines. Among the conventional aquacultures practices applied were the excess use of feeds and application of products and chemicals to boost production in a short time without realizing its long-term effects.

Due to these malpractices, a series of fish kill incidences occurred and this greatly caused a decrease in production rate. "This is due to the accumulation of high organic matter in the bottom brought about by excess feeds and feeding of stocks," stated Dr. Jovita P. Ayson, project proponent and regional director of BFAR 2.

Until now, fish kill has been the looming crisis being experienced not only in Cagayan Valley but also throughout the country. But the local fisheries sector in the region do not want to suffer from low production rate and poor water quality anymore, hence the fish health laboratory.

A facility with a purpose

With the establishment of the laboratory, fishers are assisted and guided in determining the root cause of certain fish kill incidences and other problems that cause the downside in production. That way, they can identify the proper solutions and methods they can conduct to avoid problem recurrence.

The facility also leads the monitoring of water quality through surveillance of the use of banned chemicals that are harmful to water creatures and environment and to consumers. Wise and conscientious fish farming techniques that include natural methods suitable to maintaining water and fish health are being intensely promoted and utilized.

The laboratory also "serves as an area for the

With the establishment of the laboratory, fishers are assisted and guided in determining the root cause of certain fish kill incidences and other problems that cause the downside of production.





conduct of R&D studies that are inputs or have direct bearing on increasing fish production and income of fisherfolk,” stated Dr. Ame. Finally, it assists in the detection of chemicals like histamine that affect the quality of fish products.

These services are being accessed by the fisherfolk and concerned government and non-government agencies faced with fish and water issues in their locales. It is hoped that this laboratory will soon be adopted by other institutions in other regions concerning the fisheries sector.

For the past year, the laboratory has been serving its purpose in assisting and working with fishermen, and fisheries specialists and aquaculturists in Cagayan Valley to turn low fish production into a stably rising fish industry.

Lab specs

The specific services being conducted by the fish health laboratory include: fish disease diagnosis; water quality analysis related to disease diagnosis, fish health problems, and fish kill; technical advice on fish health management; fish disease surveillance and reporting system; technical support for fish inspection and quarantine services; on-site visitation of fish farms and areas plagued with fish health problems; fish kill investigation; technical support for quality control of feeds, veterinary drugs, and chemicals in aquaculture; and biochemical analysis.

The facility has eight components, two of which were constructed through BFAR 2's financial counterpart in the said IDG-supported project. The components include: 1) Hot room – for disinfection of equipment, lab glass wares, and water and other chemicals; 2) Microbiology room – for culture and isolation of microorganism and for chemical analysis; 3) Polymerase Chain Reaction (PCR) room – for accommodation of analysis of samples requiring DNA fingerprinting either for disease diagnosis or identification of species; 4) Seaweeds Culture Lab (BFAR 2 counterpart) – to produce branch and tissue cultures seaweeds that will serve as propagule for mass propagation; 5) Soil, Water and Fry Analysis room – for the analysis of soil, water quality, and fry quality; 6) Wet Lab/Sample Preparation room (BFAR 02 counterpart) – for preparation of all samples before they proceed to other rooms for analysis and a research area for diseases, feeding trials, bio-assay, etc; 7) Receiving area; and 8) Manager's office.

The fisheries sector plays an essential part in our society's economic development and health sustenance, which is why we need to make concrete efforts like this project. It is only through wise steps and actions that we can cause change, development, and stability not only of our fisheries sector but of the entire agricultural system that we humans truly need.

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mid=358.



Strengthening PCC's biotech capacities for better R&D activities

BY ANNE CAMILLE B. BRION

Livestock is one of the key components of the agriculture sector and plays an important role in advancing agricultural and economic development. Serving as an agent for food production, it also becomes a food source for households and an income-generating activity for rural communities. Thus, livestock production helps in attaining the goal of reducing poverty. Another notable use of the industry is that while wastes acquired from these animals are considered by some as pollutants that contribute to earth's degradation, they are considered as essential fertilizers for plant nutrients in the developing world.

Known as beast of burden, a 'carabao has been a Filipino farmer's best friend for its plowing capability

needed for farming. The Philippine carabao, classified as a swamp-type buffalo, has been a big help in the agricultural economy of the country. However, as reported by the Bureau of Agricultural Statistics (BAS), the volume of production of carabao in the Philippines reached 147.52 thousand metric tons in 2011, as compared to 148.02 thousand metric tons in 2010. This decrease in number should be a challenge for the sector to improve production. Project initiatives and innovations should be continuously carried out to enhance the industry.

The Philippine Carabao Center

Under the Administrative Order 9, Series of 2008, the Philippine Carabao Center (PCC) was tasked as the national lead agency of the Department of Agriculture (DA)

for livestock biotechnology research and development. Its vision and mandate is “towards better nutrition, higher levels of income and improved general well-being of the overwhelming sector, the rural farming families... through the conservation, propagation and promotion of water buffalo as important source of milk and meat, in addition to draft power and hide.” PCC has been working in close coordination with local and international research institutions to further studies regarding water buffaloes, which will help in enhancing reproduction and breeding, feeding and forage production, animal health and meat science.

PCC has implemented and improved various programs towards the development of the carabao