DA urges drought-hit farmers to shift to veggie production

The Department of Agriculture (DA) is urging rice and corn farmers reeling from the latest El Niño attack to shift temporarily to vegetable production as an alternative means of livelihood while recouping their losses from the drought that is projected to pummel farms until July.

DA Secretary Bernie Fondevilla issued this call even as he assured farmers that "there is enough room for expansion" for those likely to be hit by the dry spell.

"Vegetable production could be a very profitable endeavor for our El Niño-hit farmers," Fondevilla said. "Our country's consumption of vegetables is still very low."

Fondevilla said that as early as July last year, then Agriculture Secretary Arthur Yap had directed all DA officials in charge of various commodities like palay and corn to draw up their respective contingency plans in preparation for the then looming El Niño onslaught.

On top of cloud seeding to mitigate the effects of El Niño on farm production, Fondevilla ordered regional field units (RFUs) of the Department to work with local government units (LGUs) on the speedy distribution of a package of assistance to the affected palay and corn farmers.

Fondevilla directed RFU officials, particularly those in Isabela and the rest of the El Niño-battered Cagayan Valley, to ensure that this aid package that includes seeds, open source pumps (OSPs) and fuel subsidies for water pumps, reach the intended farmer-beneficiaries soon enough and to step up their monitoring developments so that the DA can get an accurate picture of the situation and carry out all needed intervention programs for the actual number of farmer-victims.

As early as December last year, the RFU in Northern Luzon had already purchased rodenticides and insecticides and has, since then, treated 10,000 hectares as a preemptive measure against possible outbreaks of tungro and other diseases that could be triggered by the dry spell.

This RFU is set to distribute 25,000 packets of vegetable seedlings to affected farmers and has already bidded out the contract for the supply of another P10 million-worth of vegetable seedlings for distribution to the next batch of farmer-beneficiaries.

Also, it is negotiating for the acquisition of OSPs and has started providing fuel subsidies to farmers with water pumps. This fuel subsidy program has been piloted in two municipalities under a counter-parting scheme with the concerned local governments, and this project will be expanded to eventually cover all towns in the region where affected farmers own water pumps.

Moreover, the DA and other agencies, among them the Department of Social Welfare (DSWD) and Development and the National Nutrition Council (NNC), are working on an emergency food aid package for an estimated one million rural families reeling from the latest El Niño onslaught.

Fondevilla said the array of mitigation measures include cloud-seeding operations in watershed areas; construction of shallow tube wells; provision of fish cages, vegetable seeds, fruit flower inducers and microbial fertilizers; building of small scale irrigation facilities; and provision of livelihood assistance.

RFUs in the El Niño-hit regions are already drawing up with local government units (LGUs) their respective master lists of affected farmers eligible for food aid under the Emergency Food Assistance Program of DSWD.

Separate master lists are also being prepared by RFUs and LGUs, he said, for farmer-victims qualified to enroll in skills training programs of the Technical Education and Skills Development Authority (TESDA) or for possible emergency employment for the construction or repair of farm-to-market roads (FMRs) and irrigation facilities.

The cloud seeding operations in eight regions: CAR, 3, 4, 6, 9, 10, 11 and 12 are still on-going while in regions 2 and 5 were already completed. The operation is led and supervised by the Bureau of Soils and Water Management (BSWM) in cooperation with the Philippine Atmospheric, Geophysical and Astronomical Service Administration (PAGASA) and the Philippine Air Force (PAF). *(DA Press Office)*

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Fondevilla is new agriculture secretary

Arthur Yap, the longest serving secretary of the Department of Agriculture (DA) under the Arroyo administration, formally turned over the stewardship of the department to his successor, Sec. Bernie G. Fondevilla, in simple rites held on 10 March 2010 at the BSWM Convention Hall, Visayas Ave., Diliman, Quezon City.

Yap thanked Pres. Gloria Macapagal-Arroyo, for designating one who belongs to the DA family as his replacement, and officials and employees of DA for helping him shepherd the department through numerous challenges that it faced under the Arroyo administration.

"I would like to thank the President for appointing someone from our ranks to replace me," said Yap, who resigned from the Cabinet to vie in this year's polls for a seat in the House of Representatives for the third district of Bohol.

Usec for Policy and Planning Segfredo Serrano, Usec Salvador Salacup, DA Regional Director Lealyn Ramos of Region 10, and members of the staff of the Office of the Secretary gave their testimonials about Yap's accomplishments, his skills as a crisis manager, his work ethics and how he is as a boss, mentor, and friend to many of the DA's officers and employees.

Fondevilla, for his part, thanked President Arroyo and Yap for "entrusting me with the responsibility of being the next agriculture secretary." He said he considers his job as the DA chief "an enormous challenge," but quickly added that "I do not shy away from challenges and responsibilities placed upon my shoulders."

He assured the DA family and representatives of the private sector present during the gathering that he will continue Yap's programs and " will do more, work some more and innovate some more" on the breakthroughs and initiatives that his predecessor had done in the department.

Outgoing Sec Arthur C. Yap (left) passes the torch to Atty. Bernie G. Fondevilla, the new DA secretary. PHOTO: E AGRON

Prior to his current post, Fondevilla was executive director of the National Agricultural and Fisheries Council (NAFC) and department undersecretary in charge of the DA's attached state corporations. He is a lawyer who had honed his skills in several of the country's top law firms. The new DA chief started as a legal associate at the Santiago Nalus Law Office in 1990 and later became associate lawyer at the Araulo Gruba Chua and Associates, where he handled mostly labor cases. Fondevilla also practiced law at the Azcuna Sarmiento Arroyo Chua Law Offices where he gained extensive experience in, among others, mining law, criminal law, family relation cases and the litigation of cases involving labor disputes, real estate, trademarks and copyrights, government controls and regulations, and election-related suits.

In 2000, Fondevilla became founding partner of the Fondevilla Jasarino Young Rondario and Librojo Law Offices and a year later was made its managing partner.

He also delved in private business ventures when he served as president and general manager of Crystal Business Intelligence Systems Inc., the sole distributor in the Philippines of products from Crystal Divisions, Inc., which was formerly known as Seagate Software Inc.

In 2002, Fondevilla was appointed president and vice chairman of the board of directors of the Food Terminal Inc. Three years later, he was named executive director of NAFC.

From November 2006 to March 2010, he served as chief of staff of the Office of Secretary Yap and senior undersecretary of the department.

Fondevilla, an active member of Integrated Bar of the Philippines, obtained his BS Economics from Ateneo de Manila University and his law studies from the University of the Philippines.

He is a member of the church council of the Capitol City Foursquare Church and the national board and corporate counsel of the Church of the Foursquare Gospel in the Philippines. *(DA Press Office)*

What's inside...

Sweet sorghum business plan in Alaminos City signed

(L-R) Dr. Heraldo Layaoen of MMSU, Dir. Nicomedes Eleazar of BAR, Dir. Homer Tobias of DAR, Mayor Hernani Braganza of Alaminos City, and Cong. Leonardo Montemayor of ABA-Partylist. PHOTO: AOBLIGADO

A 500-hectare village in Alaminos City will be the site of the Bioenergy Crop for a Sustainable Transformed Village Model of an Integrated Production, Bioethanol Distillery and Cogeneration.

To further promote sweet sorghum for food, feed, fuel, and fertilizer, Dr. Nicomedes P. Eleazar, director of the Bureau of Agricultural Research (BAR), the research arm of the Department of Agriculture (DA), formally signed a Memorandum of Agreement (MOA) for the creation of a business plan for Sweet Sorghum Development in Alaminos City on 19 March 2010.

This is a recent outcome of BAR's initiatives to beef up and pitch for sweet sorghum research and development (R&D).

This project was conceptualized by Dr. Bernardo Tadeo of Full Advantage Co. Ltd., who serves as the project leader, in coordination with BAR.

Signing the agreement as witnesses were Cong. Leonardo Q. Montemayor of ABA partylist, Mayor Hernani A. Braganza of Alaminos City, Dr. Heraldo L. Layaoen of the Mariano Marcos State University (MMSU), and Dir. Homer P. Tobias of the Department of Agrarian Reform (DAR).

BAR has already come up with a Feasibility Study for an Integrated Anhydrous Alcohol Production Plant using sweet sorghum as feedstock as early as March 2007 but there were no commercial take-off business models existing then for bioethanol distillery and cogeneration facility.

A 500-hectare village in Alaminos City will be the site of the Bioenergy Crop for a Sustainable Transformed (BEST) Village Model of an Integrated Production, Bioethanol Distillery and Cogeneration.

The business plan for this village will contain business strategies, management and human capital structure, and analyses on the industry, financial, risk, scenario and impacts. The enterprise is seen as a boost to Alaminos City's economic growth including livelihood opportunities for the locals. *(Ira Olivia O. Garcia)*

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Key officials and staff from BAR headed by Asst. Dir. Teodoro Solsoloy (3rd from right) pose with researchers from NFC led by VP for Operations Norberto Mendoza (3rd from left) at the research site in Batac, Ilocos Norte.

yield to almost complete yield loss under severe cases. Since varieties resistant to this disease have not yet been developed, farmers remain defenseless against it, watching helplessly as the disease reaches outbreak state.

The disease was first observed in the country in 1968 but was only considered a major disease in 1985. In the late 1990s, the disease started to spread in the tomato-growing areas nationwide, including Ilocos Norte and Ilocos Sur.

According to Raquel G. de la Cruz, researcher and lead breeder at NFC, the *kulot* disease is spread by a vector, the whitefly (*Bemisia tabaci*), that carries the virus and infects the tomato plants. It damages the tissues of the plant, removing the sap and eventually the vigor of the plant.

She added that the symptoms of *kulot* virus appear one to two weeks after the onset of infection. It is manifested through severe stunting, curling of leaf edges, reduction in leaf size and *chlorosis* of leaf margins, mottling, and flower abscission. The infected plants do not die outright but are not productive causing significant reduction in yield. Yield loss can reach 100 percent, particularly when infection occurs early in the season.

Developing kulot-resistant tomatoes

Given the damage caused by the *kulot* outbreak, researchers from the NFC have become more resolute in strengthening their Research and Development (R&D) particularly technologies on seed varietal improvement and related concerns.

"We want to develop tomato processing varieties that are not only high-yielding but, more importantly, tolerant to the *kulot* disease. There is a need to improve our existing tomato varieties and purify them by segregating populations through filial generations," said Mendoza.

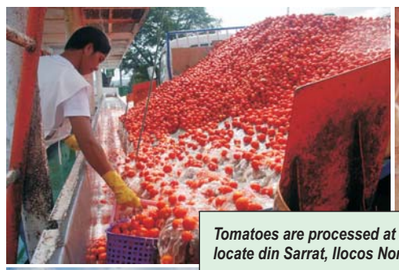
In 2007, with funding support from the Bureau of Agricultural Research (BAR), researchers from NFC led by Mendoza undertook a three-year study to address the problem of *kulot* and resolve the supply need for quality and high-yielding processing tomato variety.

The project titled, "Development of Processing Tomato Variety for Tomato Leaf Curl Virus (ToLCV) Tolerance", used the pedigree method or the segregation of populations. It refers to the successive generations of progeny in a controlled series of crosses starting with two specific parents and intercrossing the progeny of each new offspring. Hence, F1 refers to the first offspring, F2 is the second and so on.

Through this method, NFC researchers were able to select 19 lines from the initial six F1 crosses. The 19 lines were selected for F7 generation which passed from F2 to F6 generation advancement. Selections were done based on their tolerance to ToLCV and processing quality traits.

Currently, NFC is evaluating an on-station research of the 49 F1 hybrid crosses developed from the 19 lines of F6 generations for *kulot* tolerance and processing quality traits. From these lines, selected entries will be finally evaluated in the farmers' fields in the 2011 crop season which will be the basis for going into seed production of a *kulot*-tolerant variety.

"The study," according Dr. Nicomedes P. Eleazar, director of BAR, "is a commendable effort on the part of NFC to immediately address the problem of the sector considering that the beneficiaries of the result of NFC's project are the tomato farmers themselves." He added that tomato lines introduced and used in the study which have passed through the series of crosses can also be used for the production of table tomatoes which are not as strict in terms of quality requirements as that for processing tomatoes.



Tomatoes are processed at NFC Plant locate din Sarrat, Ilocos Norte.

Tomatoes specially grown to resist the dreaded "*kulot*" disease

Text and Photos by:
RITA T. DELA CRUZ

There are tomatoes that end up at the table and eaten fresh that do not call much attention to their texture, color, and ripeness; but there are also those that are grown specifically for their deep rich red color, thick juicy flesh, and firm skin. These are the tomato varieties grown specifically for processing purposes like the one that the Northern Food Corporation (NFC) developed, the *Ilocos Red*.

NFC, an attached corporation of the Department of Agriculture (DA) that mainly manufactures tomato paste, is the largest and the only remaining tomato processing plant in the country. The plant, which is located in Sarrat, Ilocos Norte, processes 500 tons of fresh tomatoes everyday to produce 4,500 metric tons of tomato paste from February to April every year which it supplies to the leading food chains, fish canners and tomato sauce/catsup manufacturers in the country. The raw materials come from the 3,000 Ilocano farmers who annually enter into a contract growing agreement with NFC.

"There is a reason why we set particular traits for tomatoes to be processed. They need to be mature, full red ripe because we don't put food coloring in them. The flesh has to be thick, has more soluble solids and stays fresh longer than the table tomatoes. And more important, the skin has to be firm to stand postharvest handling during harvesting and transportation to the processing plant," explained NFC Vice President for Operations Norberto D. Mendoza.

Ilocos Red has all the qualities of a good tomato processing variety. It has a deep, red color and is as juicy as it looks. The flesh is thick and stays fresh longer than the other types of tomato. Its skin is firm and not as easily bruised by handling making it an excellent variety to be processed into tomato paste.

In 1999, NFC developed the *Ilocos Red* and was introduced to their contract growers. Until now, tomato farmers still prefer this variety for its excellent processing characteristics.

However, with the outbreak of the tomato leaf curl (ToLC) which hit Ilocos Norte during the 2005-2006 cropping season, production declined which was a bad blow for the farmers and the entire industry. From an average of 45 tons per hectare, yield declined to as low as 13 tons per hectare. Although *Ilocos Red* possesses the excellent traits for a tomato processing variety, it is not resistant to the dreaded tomato leaf curl disease.

The nemesis called "kulot"

The disease, tomato leaf curl or "kulot", is the most destructive virus disease of tomato in the country, with infection resulting to reduced crop

BAR holds seminar on climate change for agri and fishery prime movers

PHOTOS: EAGRON

To disseminate significant information and increase awareness on climate change, the Bureau of Agricultural Research (BAR), as the lead institution for R&D in fisheries and agriculture, held another seminar, "Climate Change and its Effects on the Agricultural and Fisheries Sectors" on 19 March 2009 at RDMIC Bldg., Visayas Ave., Diliman, Quezon City.

"Climate change is one tough problem that we are facing today. One strategy that BAR uses to address this concern is to tap, from time to time, experts who are very much involved in this field. Through this, we are able to educate the people and the movers of the agriculture sector on the latest developments regarding this issue," said Dr. Nicomedes P. Eleazar, BAR director, in his welcome remarks.

Dr. Virginia C. Cuevas, professor from the Environmental Biology Division, Institute of Biological Sciences of the College of Arts and Sciences (CAS) and an affiliate professor in the School of Environmental Science and Management (which spearheads the Climate Change Inter-Disciplinary Team of UPLB) served as one of the speakers.

In Dr. Cuevas' presentation, she talked about 1) the basic information about the greenhouse effect –highlighting the important role of carbon dioxide in regulating global temperature, 2) the impact of changes in global temperature on life on earth, 3) the impacts of climate change to the agriculture sector, and 4) what individuals and institutions alike can do to properly address the situation.

Dr. Cesar L. Villanoy, professor at the Marine Science Institute (MSI) of the University of the Philippines Diliman served as the other seminar speaker for fisheries. In his presentation, he highlighted the risks of climate variability in the different ecosystems in marine waters such as the coral ecosystem, sea grasses and the mangrove ecosystem that provide shelter to the most productive and biologically diverse communities of invertebrates and fishes.

The Philippines is one of the identified countries that is highly vulnerable to climate change and whose agriculture and fisheries sectors are under threat. *(Don P. Lejano)*

PHOTOS: EAGRON

Dr. Cesar L. Villanoy of MSI-UP Diliman talks on the effects/ impacts of climate change in the fisheries sector. PHOTOS: EAGRON

Dr. Virginia C. Cuevas of UPLB discusses the effects/impacts of climate change in the agriculture sector. PHOTOS: EAGRON

Eleazar receives CSSP's William D. Dar Award in Research Management

BAR Dir. Nicomedes Eleazar (right) receives the award from the officials of the Crop Science Society of the Philippines (CSSP). PHOTO: AOBLIGADO

Dr. Nicomedes P. Eleazar, director of the Bureau of Agricultural Research (BAR), was conferred the 2010 William D. Dar Award in Research Management "in recognition of his excellent management of the leading agricultural research institution in the country, BAR, making it much more equipped and capable in serving the country's crop science research needs efficiently, for six years."

The award was conferred by the Crop Science Society of the Philippines (CSSP) during its 40th Scientific Conference and Anniversary held on 18 March 2010 at the Grand Regal Hotel, Davao City.

The society cited Dr. Eleazar for providing leadership in the formulation of the overall research and development (R&D) agenda in agriculture and fisheries, development of the R&D Strategic Plan and its translation into annual operational targets. These have been potent instruments in transforming the Philippine agriculture.

Other recipients of the CSSP achievement awards were: Dr. Roland J. Buresh, Sr. of the International Rice Research Institute (IRRI) and Dr. Rene Rafael C. Espino of the DA-High Value Commercial Crops (HVCC) as *CSSP Honorary Fellows*; Mr. Rodolfo S. Toledo and Mr. Carlos L. Casal, Jr. of IRRI for the *Sant S. Virmani Hybrid Rice Award*; and Dr. Nenita Desamero of the Philippine Rice Research Institute (PhilRice) with the *CSSP Achievement Award in Research*.

The Nutrient Management Team for Rice of IRRI also received the *CSSP Achievement Award for Technology Development* given in recognition of the team's significant contribution to the development of the Site-Specific Nutrient Management (SSNM) technology for rice and the computer-based decision software, Nutrient Manager for Rice.

Carrying the theme, "Harnessing genetic and ecosystem diversity for sustainable agriculture", officers and members of the CSSP, together with other R&D partners in the field of crop science, convened to conduct the 40th Annual Scientific Conference and Anniversary. This year's activity was attended by 350 participants composed of crop scientists and researchers, extension specialists, and members of the academe nationwide.

CSSP is a non-stock, non-profit corporation organized to promote basic and applied researches on crops and related sciences, foster high quality education in crop science, and intensify dissemination and exchange of knowledge in crop science and crop production. *(Rita T. dela Cruz)*

PHOTO: AOBLIGADO

SMIARC conducts GOPP seminar-workshop

To better equip researchers in preparing and analyzing R&D project plans in Region 11, particularly in the implementation of the Community-based Participatory Action Research (CPAR) projects, the Department of Agriculture-Southern Mindanao Integrated Agricultural Research Center (DA-SMIARC) conducted a two-day seminar workshop on Goal Oriented Project Planning (GOPP) on 2010 March 25-26 in the Island Garden City of Samal. The activity is a re-echo of a previous GOPP seminar conducted by the Bureau of Agricultural Research (BAR) for the R&D personnel in the regions.

Attending on behalf of the bureau was Mr. Alexander Arizabal, R&D coordinator for Region 11 who also served as a panelist. In his message, he stressed the importance of developing and understanding practical skills in the application of project cycle management and logical framework enabling researchers in the field to analyze and prepare project plans in a participative way. As a panelist, Arizabal ensured that the outputs of the participants are aligned with the GOPP approach.

Simeon Fernandez and Jessel Cardinez, agriculturists from SMIARC, who have previously attended the GOPP seminar conducted by BAR, served as speakers and facilitators. In his rationale, Fernandez emphasized the importance of GOPP, stressing the need to equip researchers with the necessary implements of project cycle preparation for their projects to succeed.

Meanwhile, Dr. Alfredo M. Cayabyab, SMIARC manager, said that "GOPP is a very useful tool in implementing projects, particularly in CPAR." He stressed that during the pre-implementation phase of CPAR projects, BAR had already recommended the improvement of the objective statements of some of the proposals submitted and had then felt the need for a workshop on GOPP.

Attending the GOPP seminar-workshop were 30 participants composed of LGU technicians assigned to the CPAR projects, provincial staff and facilitators from DA-SMIARC led by Dr. Miguela S. Anabesa, and the CPAR program coordinator for DA RFU 11.

Highlights of the activity included presentations of group outputs by project location, which intensified the understanding among team members of the preparation of the project problem tree, objective tree and log frame; and brief one-page presentation of goal, purpose, output, activities, with corresponding indicators, and means of verification and assumption. *(Anecita I. Telabangco, DA-SMIARC)*

PHOTOS: DA-SMIARC/RFU 11

"GOPP is a very useful tool in implementing projects, particularly in CPAR."

Bridging R and E through
EVIARC-implemented CPAR projects

PHOTO: AVELASCO

It is not only the San Juanico Bridge that unites Leyte to Samar. Another thing that brings them together is the implementation of the Community-based Participatory Action Research (CPAR). The provinces are one in their goal to help alleviate rural poverty by implementing community-based researches that provide farmers with livelihood opportunities. Like the San Juanico Bridge, CPAR bridges the gap between research and extension (R&E).

All five provinces in Region 8 have CPAR projects. Currently, there are 10 new CPAR projects being implemented in the region funded by the Bureau of Agricultural Research (BAR), some of which started in 2009.

To ensure the smooth operation of these projects, the region held a CPAR Planning Workshop led by the Eastern Visayas Integrated Agricultural Research Center (EVIARC) with Dr. Elvira C. Torres, assistant manager for technical programs, presiding over the activity. The planning workshop was held on 4-5 March 2010 at the Main RIARC office in Babatngon, Leyte.

Dr. Elvira C. Torres, EVIARC assistant manager for technical programs, presides over the CPAR Planning Workshop. PHOTO: AVELASCO

In attendance was a 10-member CPAR Regional Commodity Team (CPAR-RCT) which is also chaired by Dr. Torres. The CPAR-RCT is an initiative of EVIARC to ensure that technical assistance and mentoring are provided to EVIARC counterparts at the local government units (LGUs).

The region has a separate regional Monitoring and Evaluation Team (MET) for each CPAR project, and if needed, it includes an external evaluator, or non-CPAR RCT MET member. Other participants included the project leaders, farmer partners, Provincial Research and Extension Coordinators (PREC), research directors of the participating Provincial Technical Institutes of Agriculture (PTIA) and extension workers from the different provinces. Researchers and experts from the different state universities and colleges (SUCs) in the region were strategically tapped to provide technical assistance and guidance to their respective partners from the provincial and municipal LGUs.

While CPAR projects are being orchestrated at the regional level by EVIARC, these are also implemented at the local level in close collaboration with the LGUs with the SUCs providing strong technical back stopping. The SCUs involved include the Visayas State University (Leyte), Naval State University (Biliran), Eastern Samar State University (Eastern Samar), University of the Philippines (Northern Samar), and Southern Leyte State University (Southern Leyte).

Project leaders presented the status and highlights of the on-going projects. They were also required to present their exit plans, while the MET provided insights and suggested strategies on the sites to better ensure the sustainability of the project even after the termination of the BAR funding. As decided by the group, regional CPAR quarterly meetings will be conducted to be held in the various provinces (in rotation hosting) to ensure the efficient implementation of the projects.

BAR is funding the CPAR projects for two years, after which the project will be turned over to the LGUs that will continue and sustain the implementation and will still be closely monitored and assisted by EVIARC. To date, Region 8 has 19 CPAR projects implemented region-wide. *(Amavel A. Velasco)*

BAR-funded technologies showcased at LBIX 2010

PHOTO: RDELACRUZ

Various technologies and significant research results conducted and implemented by the University of the Philippines Los Baños (UPLB) and funded by the Bureau of Agricultural Research (BAR) were showcased during the 2nd Laguna Business and Investment Exposition (LBIX) held on 4-5 March 2010 at the Enchanted Kingdom, Sta. Rosa, Laguna.

BAR, as the national R&D coordinator and the Department of Agriculture's (DA) funding agency for agriculture and fisheries R&D, has been collaborating with various state universities and colleges (SUCs) including UPLB, the premier learning institution in the country, to embark on significant research endeavors that will have impact on the industry and stakeholders. It has also assisted UPLB in its technology promotion efforts through sponsorship of the university's participation in major events and activities of DA showcasing the products of their R&D which brings them closer to the private sector and entrepreneurial end-users.

Among the BAR-funded technologies showcased at LBIX were food processing products such as *bignay,* tropical wine and ubi powder; postharvest handling technologies such as the Hot Water Tank (HWT) technique to control disease in mango, wax emulsion for pineapple and extending of shelf life, and enhancing quality of tomato using coconut coir dust; and other relevant technologies such as the Simple Nutrients Addition Program (SNAP) hydroponics, and biofertilizers, including Bio-N, among others. Majority of these technologies were funded and supported by BAR through its National technology Commercialization Program (NTCP).

Established in 2005, NTCP is a banner program of BAR that gives particular emphasis to R&D breakthroughs and mature technologies generated and developed by research institutions. It serves as a vital support for the development of enterprises and the improvement of agriculture and fisheries-related industries anchored on appropriate activities emphasizing technology transfer, promotion, adoption, utilization and commercialization. This program supports the pronouncements of DA on making agriculture business for which BAR endeavors to transform into reality through the generation of the right information at the right time. .

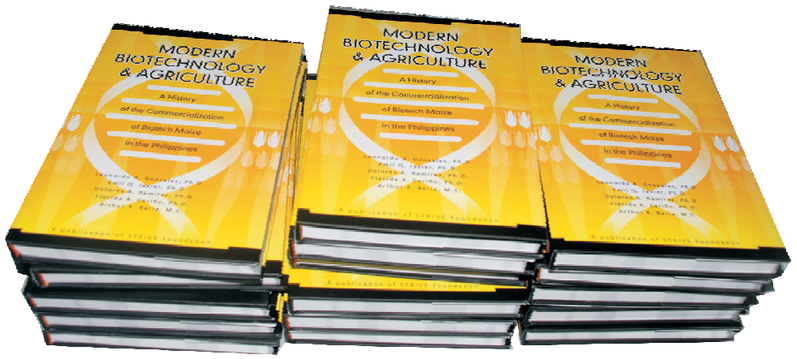
Other UPLB technologies showcased during the LBIX exhibit were on: 1) plant breeding (gumamela hybrids, improved varieties of tropical fruits, and enhanced varieties of vegetables); 2) food processing (papaya juice , accelerated process for fish sauce, textured vegetable protein from full-fat soy flour, coco milk beverage, rice bran, Pinoy ice cream, and pastillas de leche); 3) manufacturing and storage technologies (modified vapor heat treatment for mangoes, modified atmosphere packaging of broccoli, banana, and papaya, cold storage of tropical fruits and vegetables, and 4) duck ranger solar *balut* incubator.

BAR-funded technologies featured at the 2010 LBIX Exhibit: FST fruit wine and SNAP hydroponics. PHOTOS: RDELACRUZ

LBIX is an initiative of the Provincial Government of Laguna, and the City Government of Santa Rosa with the aim of showcasing what the province has to offer, making it the benchmark activity for establishing a dynamic and modern agro-industrial economy.

The purpose of the UPLB exhibit and seminar of the LBIX activities is to showcase the latest agri technologies to the business sector and to attract potential investors and other business players to commercialize the university's research products with the aim of generating income for the university's further researches. *(Rita T. dela Cruz)*

BAR levels up on *Bt* corn to avert common misunderstandings



"Modern Biotechnology & Agriculture"- a first of its kind book narrating the history of the commercialization of biotech corn in the Philippines. PHOTO: EAGRON

Generally, the introduction of new technology raises apprehensions that could center on the idea of risks. This was dramatized in the case of *Bt* corn. When it was first introduced in the country, there were only two reactions observed - guarded skepticism and/or outright rejection.

However, instead of being reactive, the government together with the respected scientists, members of the academe and industry associations became proactive and looked into the opportunities that the technology can bring, not only to the agriculture sector, but to the economy of the country as well.

This was the center of the discussion during a seminar conducted by the Bureau of Agricultural Research (BAR) titled, "Modern Biotechnology and Agriculture: The Case of Biotech Maize in the Philippines", held at BAR Conference Hall on 25 March 2010, Quezon City.

The seminar was aimed to provide insights and foster public understanding of modern biotechnology, particularly on *Bt* corn to allay skepticism and misgivings of people about the Genetically Modified Organisms (GMOs).

GMOs are products of biological engineering that allow the transfer of specific genes within the organism or genes from one organism to another. Bt corn is a GMO because of a certain gene from the naturally-occurring soil bacterium, *Bacillus thuringiensis* (Bt) that has been transferred to corn. This gene, coded for the production of a specific protein, *delta-endotoxin protein,* can be used to control specific insects such as corn borer and other *Lepidopteran* pests that cause tremendous losses for the corn industry.

Dr. Dolores A. Ramirez, national scientist and university professor emeritus of genetics and plant breeding at the University of the Philippines Los Baños (UPLB), presented the structures and protocols developed by the government, for the introduction, testing, propagation, and commercialization of modern biotechnology products in the country.

In her presentation, Dr. Ramirez stressed the role of the National Committee on Biosafety of the Philippines (NCBP) as a focal agency tasked by the government to oversee compliance with biosafety policies and guidelines including biotechnology researches in the country. NCBP is an organized interdepartment committee composed of scientists from the Department of Agriculture (DA), Department of Environment and Natural Resources (DENR), Department of Health (DOH) and Department of Science and Technology (DOST).

Meanwhile, Dr. Flerida A Cariño, physical scientist and member of the Department of Science and Technology (DOST) Biosafety Committee, and professor of biochemistry at the Institute of Chemistry in UP Diliman, presented the technical descriptions of *Bt* corn. She

next page

Four of the five authors of the book, "Modern Biotechnology & Agriculture: A history of the Commercialization of Biotech Maize in the Philippines" conducting lectures during the BAR Seminar Series on Biotechnology. (L-R): Dr. Leonardo A. Gonzales, Dr. Dolores A. Ramirez, Dr. Flerida A. Cariño, and Mr. Arthur R. Baria. PHOTOS: EAGRON

Strengthening A/F R&D pushed in VZAFRDC's 1st quarter meeting

To strengthen and update on-going agriculture and fisheries R&D projects in the Central Visayas Region, the Visayas Zonal Agriculture and Fisheries Research and Development Cluster (VZAFRDC) held its 1st Quarter Meeting on 22-24 March 2010 at the Casa Pilar, Station II, Boracay Island, Aklan.

Representing the Bureau of Agricultural Research (BAR) in the event were Ligaya Santos of the Research Coordination Division (RCD) and Elena Garces of the Technology Commercialization Unit (TCU).

Santos provided an update on various BAR projects concerning the fisheries sector for the information, reference, and appropriate actions of the different stakeholders concerned. She also reported on the operationalization of the CPAR *e-Pinoy* FARMS System, conduct of Technology Forum and Product Exhibition in SM Megamall, launching of the book "Sweet Sorghum Food Products: A Compendium", increase in the participation at the 21st National Research Symposium (NRS), crafting of the 2011-2015 Research, Development and Extension Agenda and Programs (RDEAP), conduct of Site Specific Nutrient Management System (SSNM) for corn during the 2009 Dry Season National Workshop, and conduct of a training seminar on Knowledge Management (KM) and Community-based Initiatives for Sustainable Agriculture and Fisheries, among others.

Meanwhile, delegates from the Western Visayas Integrated Agricultural Research Center (WESVIARC), Central Visayas Integrated Agricultural Research Center (CENVIARC), and Eastern Visayas Integrated Agricultural Research Center (EVIARC) raised the issues and concerns they are experiencing in implementing their respective projects. The same is true with the Regional Fisheries Research and Development Center (RFRDC) of the three regions.

"BAR deems that it is very important to hear the problems that the regions encounter in the implementation of their respective projects. This way, we will be able to work hand-in-hand in deliberating the best possible solutions to address them. The lessons that we will be learning from doing this should come in handy with our future endeavors in the agriculture and fisheries sector," explained Santos.

Other projects discussed were the zonal germplasm and seed system for jackfruit, the Integrated Regional Laboratory Services (IRLS) for Agriculture Complex in Tacloban City, and the Abalone R&D project in Regions 6, 7, and 8. *(Don P. Lejano)*

Marginal... from page 10

illegal fishing is intensified through the *"Proyekto natin, Bantay natin program,"* a parallel program from the local government unit where members of the fisherfolk association become devoted stewards for the protection and conservation of the marine resources of the community.

Another highlight of the project is that, the relationships among fisherfolk have strengthened through the *"buddy-buddy"* system, an approach where fisherfolk fish with a chosen buddy and share gasoline or any agreed expenses incurred during the fishing activity.

On the other hand, the S*amahan ng mga Maliliit na Mangingisda ni Apo San Rafael* is also a big help to its members by providing financial assistance or loans through the funds generated from their daily contributions. According to Benjie Manuel, president of the association, they started with 20 members only but it dramatically increased when other fisherfolk in the community learned about the good things that have happened to the project. "Members have now grown to 75 and it continues to increase" said Manuel. With the organization of the group, the community has also benefitted from it especially in the implementation of community development projects like cleaning the river. "There is less hassle for the community," Manuel happily noted.

Garcia shared the strategies they used in the project. "First, we lead the fisherfolk into a vision and let their minds see that the project has something to do in their lives. We inculcated to them a certain conviction; imbibed in their hearts that they must do it and that they should be accountable for it because conviction will give life to the vision" Garcia explained.

"Leading them to a particular

vision is one thing, accepting the burden of doing it is another, but how to do it is the most important thing. The team is always available to teach them the details they needed to know. Garcia added. "Then we monitor, to ensure that what the fisherfolk are doing will lead them to their desired results."

The project serves as an example or the result of a partnership where government organizations work together for the common good of the marginal people," Garcia concluded. *(Edmon B. Agron)*

Marginal fisherfolk in Bataan find hope in CPAR blue crab

Blue crab, scientifically known as *Portunus pelagicus* or "alimasag" in local dialect is a major seafood among Filipinos. It is deliciously served in various dishes from ordinary diners to the finest restaurants here and abroad. Given the demand for it, it is considered a potential money-earning industry for the fisheries sector and an important source of income for the marginal fisherfolk.

A young fisher from Brgy. Sibacan in Balanga, Bataan looks at his fresh catch using gillnets, the intervention introduced in the CPAR project on blue crab implemented by BFAR Reg 3. PHOTO: RDELACRUZ

Portunus pelagicus PHOTO: RDELACRUZ

Fisherfolk in Brgy. Sibacan wake up early to harvest blue crabs. PHOTO: EAGRON

Blue crabs are abundant in Pampanga, Bulacan, and Bataan in Luzon. In fact, some areas in Bataan greatly depend on blue crab as source of livelihood like Brgy. Sibacan in Balanga wherein 40 percent of the population relies on catching blue crab to sustain their daily needs. However, due to lack of information and appropriate technologies in catching blue crab, fisherfolk in the area remain impoverished and are left behind in terms of appropriate methods of fishing.

Recognizing the potentials of blue crab for major fishery production, the Bureau of Agricultural Research (BAR), in collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR) in Region 3 and the local government unit of Bataan, embarked on a project that would help marginalized blue crab catchers increase their income through environment-friendly fishing techniques.

The project titled, "Community-based Participatory Action Research (CPAR) in Blue Crab Fishing Using Gillnets for the Marginal Fisherfolk of Bataan" is headed by Lilian C. Garcia, manager of the Regional Fisheries Research and Development Center (RFRDC) in Region 3.

According to Garcia, there are two ways of catching blue crab. Fisherfolk in Balanga, Bataan use bare hands to manually catch blue crab during low tide, this method is locally known as *"pangangapa."* Another method is through the use of gillnets or *"panyo."* These methods are both environment-friendly, however they differ in the volume and size of catch. Using bare hands or "*pangangapa*", fisherfolk catch 2-3 kgs in a day while using gillnets allows them to catch 6-8 kgs a day. The project therefore, recommends the use of gillnets to increase the monthly volume of catch of the marginal fisherfolk.

Meanwhile, Gladys Resubal and Gaudelia Calinao, experts from the Office of the Provincial Agriculturist (OPA) of Bataan and the Office of City Agriculturist (OCA) in Balanga have been working with the project to provide technical assistance to fisherfolk-cooperators. They impart on them appropriate fishing technology using gillnets. The project also provides relevant orientation and trainings on resource management, leadership and organizational skills, values formation and orientation, and briefings on rules and regulations on fisheries and other relevant laws geared towards the protection and conservation, not only of the blue crabs, but also other marine resources that are threatened or have been abused by illegal fishing.

Although the project was implemented only in November 2009, Garcia proudly said that, some positive changes in the lives of the fisher-cooperators have already been evident. First, the daily catch increased from 2-3 kgs to 6-8 kgs a day. Second, the project has led to the strengthening of the fisherfolk association, "*Samahan ng mga Maliliit na Mangingisda ni Apo San Rafael".* Third, the campaign against

turn to page 11

BAR levels... from page 5

also discussed the struggles they encountered with both anti- and pro-GMO groups during the process of rigorous trials.

Dr. Cariño said *Bt* corn has stirred animated and passionate debates on the streets, in academic circles, in mass media as well as in both chambers of the Philippine legislatures. In fact, the anti-GMO groups have filed petitions with local government units (where trials are conducted), the House of Representatives, the Senate, and even the Supreme Court that have resulted to various congressional resolutions and Senate bills.

Processes are strictly supervised and monitored by the NCBP. Everything is religiously recorded and documented so as to ensure safety not only for humans but also to animals as well as to the environment, Dr. Cariño added.

On the other hand, Dr. Leonardo A. Gonzales, president of the Society Towards Reinforcing Inherent Viability for Enrichment (STRIVE Inc.), presented the socio-economic impacts of *Bt* corn and their technological challenges to Philippine agriculture. He discussed the different measures that need to be undertaken in order to meet these challenges.

In his presentation, Dr. Gonzales said that, "modern biotechnology has a profound impact in agricultural productivity and performs a key role in addressing four major development challenges in the Philippine agriculture sector: 1) micropropagation or multiplication of newly-developed varieties through tissue culture, 2) diagnostic kits or tools that can be used to rapidly detect plant, food, and feed pathogens and mycotoxins so that appropriate control measures could be implemented, 3) the growing concern for food safety and the integrity of the environment, the increasing pressure to do away completely with chemicals and switch to the naturally-occurring substances or organisms – or the so called biopesticides; and 4) biofertilizers."

"These biotechnologies will increasingly be more precise and sophisticated with advances in molecular biology, chemistry, ecology, and information technology."

"Modern biotechnology will also be the principal source of technological changes in the Philippine agriculture in the coming decades that will bring about distributional impacts among different classes of producers, exporters and importers, as well as producers and consumers," Dr. Gonzales stressed.

Victory in the battle for *Bt* corn commercialization in Philippines opens up opportunities not only to farmers but also to the economy of the country as well. *(Edmon B. Agron)*

IT'S HARVEST TIME! *Farmers from Pangasinan are harvesting Bt corn which will be delivered to a feed milling company.* PHOTOS: RDELACRUZ

Bt corn PHOTO: RDELACRUZ

"...modern biotechnology has a profound impact in agricultural productivity and performs a key role in addressing four major development challenges in the Philippine agriculture sector."

~ Dr. Gonzalez

Results of SSNM upscaling for corn in Region 2 showcased in farmers' field day

Mr. Severino C. Tumamang, SSNM for corn project leader and SSNM focal person in Region 2, explains to Farmers' Field Day participants and attendees the results of the corn yield with SSNM plus Organic Fertilizer which was showcased in the 30-hectare technology demonstration farm. PHOTO: RDELACRUZ

Technologies are made available to farmers in order to advance in their production and income. Hence, the true measure of a successful technology transfer is the stage when farmers are already adopting these technologies in the field and their lives are improved as a result.

In Region 2, this proved to be true as more farmers became more interested in trying the Site-Specific Nutrient Management (SSNM) for corn in their own fields. This came about after witnessing the good results of the upscaling project which was showcased during the "SSNM Farmers' Field Day" in Brgy. Arubub, Jones in Isabela on 17 March 2010.

The Farmers' Field Day showcased the 30-hectare cornfields owned and managed by 42 farmers who are also cooperators for the SSNM upscaling project. This area also served as the technology demonstration site of the project which hopes to encourage other farmers to try the technology in their own fields.

According to Dr. Carmencita V. Kagaoan, chief of the Program Development Division (PDD) of BAR who was present during the farmers' field day, "The cornfield showcased is farmer-managed, given that farmers know what do to maximize the full potential of their lands by applying only the right amount of fertilizer. Aside from the promise of an increased yield, what is good about the SSNM technology is that it helps in the mitigation of climate change because of the lesser use of inorganic fertilizer. The use of synthetic fertilizers contributes to the global warming as it can cause the loss of soil carbon dioxide."

Ms. Apolonia A. Mendoza, BAR's SSNM coordinator, opens one of the corn cobs to see for herself the good result of the SSNM technology. Corn plants grown with SSNM and Bio-N are healthier, and bore bigger and longer ears compared to the corn planted using the Farmers' Practice. PHOTO: RDELACRUZ

The SSNM technology is an approach that recommends the use of available organic nutrient sources and inorganic fertilizer in meeting the nutrient demand of a high yielding crop. The use of organic matter increases the water holding capacity of the soil while the use of Bio-N, a microbial soil inoculant for root and shoot growth, enhances root development of corn at the early stage resulting in well-developed rooting systems that penetrate deeper into the soil. An extensive root system makes the plant more resilient to environmental stress. To help farmers decide whether the crop needs additional fertilizer or not, SSNM also introduced the use of the Leaf Color Chart (LCC), an easy-to-use and inexpensive diagnostic tool for monitoring the relative greenness of a corn leaf as an indicator of the plant's Nitrogen status.

The purpose of the Farmers' Field Day according to Mr. Orlando Lorenzana, CVIARC manager, is to showcase how the SSNM technology is able to increase corn production from an average yield of 5 tons per hectare to 8-10 tons per hectare. "We want to show to the other farmers the potential of this technology and that by following

next page


PHOTO: RDELACRUZ

the Package of Technology (POT), farmers will be able to achieve optimum increased in their yields. We also want to showcase this as model farm for other interested farmers. The farmer-cooperators also have good camaraderie and cooperation proving that they can work harmoniously to achieve a particular goal which is increased production and income."

Attesting to the success of the SSNM technology is Mr. Roger Salvador, one of the farmer-cooperators of the project in Brgy. Arubub. "SSNM helped us a lot in improving our livelihood with the increases in our yields following both the two technology interventions introduced to us: SSNM with organic and SSNM with Bio-N. If you compare our previous yield, there was an increase of 2-3 tons/ha particularly using SSNM with Bio-N. Based on our crop cut, we even reached 9.2 tons/ha which is a big difference from the yield from farmers' practice. With SSNM, we have higher yield and income, no wonder the farmers in Brgy. Arubub are happy."

He added that given the current El Nino phenomenon hitting Region 2, particularly Isabela, "we are not really that affected. Loss is just about 5 percent which proves that SSNM is good even with drought."

The SSNM for corn is implemented by the Department of Agriculture-Cagayan Valley Integrated Agricultural Research Center (DA-CVIARC) with funding support from the Bureau of Agricultural Research (BAR) and the DA-GMA Corn Program in partnership with the Bureau of Soil and Water Management (BSWM), University of the Philippines Los Baños (UPLB), and the International Plant Nutrition Institute (IPNI). *(Rita T. dela Cruz)*

BAR conducts project consultation with garlic cooperators in Ilocos

A project consultation meeting with the garlic cooperators of the "Garlic Technology Commercialization Project (Phase II)" was conducted by the Ilocos Integrated Agricultural Research Center (ILIARC) at the Cotton Development Authority (CODA) Conference Hall, Batac, Ilocos Norte on 10-12 March 2010.

Representing the Bureau of Agricultural Research (BAR) were Digna Sandoval and Rosalia Maranan of the Technology Commercialization Unit (TCU) with Dr. Edralina Serrano of the University of the Philippines Los Baños – Post Harvest Training Research Center (UPLB-PHTRC) who also acted as project evaluators.

Dr. Wilhelmina Castañeda, project leader, provided updates on the progress of the project implementation. According to her, "Four farmer associations from the municipalities of Vintar and Pasuquin participated in the project. As of now, the adoption of technology has expanded to two garlic growers association in San Nicolas and Pinili, Ilocos Norte. We are also now in the process of federating these four garlic farmers' association."

"Positive impacts of the technology using gibberellic acid have been reported with 50% increase in yield as compared with the farmers' practice. Right now, an enterprise on processing garlic products is being put up to supply a local supermarket chain," added Dr. Castañeda. "This project being supported by the DA-BAR has helped the farmers increase their yield and generate employment in the locality."

Farmer leaders of the different associations attended the project consultation to air their concerns and seek suggestions and recommendations from the evaluators and project leader.

After the meeting, common issues and concerns were identified as follows: 1) production technology, specifically on post-harvest handling, 2) market promotion and linkages, 3) credit facility, and 4) issues in technology promotion.

With the identification of problem areas and the recommendations given by the project evaluators, the project proponents are expected to deliver with a more improved project implementation.

A "Garlic Techno Forum," to be spearheaded by the Garlic Multi-Purpose Cooperative, is already ion the works. It is planned to be conducted in April in time with the garlic harvesting. *(Don P. Lejano)*