

BAR sends researchers to UC Davis biotechnology training



Researchers from the Philippines learn lessons and hands-on training on laboratory procedures and other basic biotechnology tools done at UCLA and at the GlobeTek Science Foundation laboratory. In the photo are: Dr. Carmencita Kagaoan (2nd from left) and Salvacion Ritual (left) of BAR. PHOTO COURTESY: SRITUAL

The Department of Agriculture-Bureau of Agricultural Research (DA-BAR), in partnership with the GlobeTek Science Foundation, recently sent four researchers and research managers from the University of the Philippines Los Baños (UPLB), Bureau of Fisheries and Aquatic Resources-National Fisheries Research and Development Institute (BFAR-NFRDI) and DA-BAR to the University of California (UC) Davis for a training program on biotechnology.

The training program was held in July-August 2010 and was composed of two-parts. The first part, a formal training on Proteomics and Flow Cytometry, was conducted at the UC Davis campus which gave the participants a theoretical

background on proteomics and flow cytometry as biotechnology tools and their applications in agriculture and fisheries. Part two of the training program was a combination of laboratory lessons and hands-on training on laboratory procedures and other basic biotechnology tools such as mammalian cell culture, DNA analysis, immunological techniques, and others. These were done at University of California Los Angeles (UCLA) and at the GlobeTek Science Foundation laboratories.

The trainees, Norvida Gatdula of BFAR-NFRDI, Ma. Cecilia Reamillo of UPLB, and Carmencita Kagaoan and Salvacion Ritual of DA-BAR were also

oriented on the potential applications of these tools by Dr. Samuel Bernal, professor emeritus at UCLA and lead scientist of the GlobeTek Science Foundation.

The training is part of a biotechnology program implemented by the GlobeTek Science Foundation (formerly Pacific Rim Foundation for Advanced Technology Transfers, Inc.) which aims to help the Philippines maximize the use of biotechnology advances for the country's agriculture sector.

Potential applications of the procedures and tools learned by the trainees include analysis of GMOs, genetic characterization of species and variant organisms, identification of genetic mutations for genomic characterization, genetic expression and genetic products, and identification of genetic mutations, variants and many more. A seminar on these biotech tools and their applications will be conducted at BAR to re-echo what has been learned from the training program for the benefit of the DA R&D staff and other local researchers. ### (Carmencita V. Kagaoan, PhD)

New DA chief is organic agri supporter



Outgoing DA Secretary Bernie G. Fondevilla (right) hands over the flag to incoming Sec. Proceso J. Alcala (left) signifying the change in leadership.

PHOTOS: NDELROSARIO III

The former representative of the 2nd district of Quezon, Proceso J. Alcala, was appointed new chief of the Department of Agriculture (DA). This was made official in a brief turnover ceremony held on 5 July 2010 at the DA Central Office in Diliman, Quezon City with outgoing DA Secretary Bernie G. Fondevilla officially passing the leadership to his successor.

Secretary Alcala or simply "Procy" as he is fondly called, delivered his message to the employees of DA and vowed to maintain a transparent leadership. He encouraged all DA officials and employees to provide efficient service and adequate support to small farmers and fisherfolk so that they can earn income and produce enough food for all.

As a two-term congressman in Quezon and vice chair of the House Committee on Agriculture and Food, Alcala authored bills that benefitted both the agriculture and environment

sectors. He was instrumental in the passage of the Organic Agricultural Act of 2010 (RA10068) and the Mounts Banahaw-San Cristobal Protected Landscape Act (RA2718). He was a co-author of the Climate Change Act (RA 9729) and the Expanded Senior Citizens Act (RA 9994). He also sponsored the filing and eventual enactment in the House of Representatives of the Hazardous and Radioactive Waste Management Act.

One of his important initiatives is the establishment of the "Sentrong Pamilihan ng Produktong Agrikultura sa Quezon" which serves as a trading post for vegetables and other farm products in the province. The facility aims to reduce the involvement of middlemen in the marketing chain by providing farmers a venue to sell their products directly to the consumers thus providing higher income for them. The trading post made farm crops accessible to buyers and consumers who come from as far as Bicol, Batangas, Laguna, and Metro Manila.

His other agri-related initiatives included the rehabilitation of postharvest facilities in Quezon and the establishment of a scholarship program for students who want to pursue an education in agriculture.

Believing that the sustainable way to farming is through organic farming, Alcala's core advocacy is geared toward organic agriculture. In relation to solid waste management, he initiated the promotion of organic

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Alacala swears in 6 DA officials



Agriculture Secretary Proceso J. Alcala (left) swears in six DA officials (L-R): Bernadette Romulo-Puyat as usec for Special Concerns; Dr. Segfredo Serrano as usec for Policy, Planning, Research and Regulation; Joel Rudinas as usec for Field Operations; Antonio Fleta as usec for Administration and Finance; Claron Alcantara as usec and chief of staff; and Leandro Gazmin as director of the DA-AMAS. PHOTO: ALAN JAY JACALAN/DA-INFO SERVICE

As the Department of Agriculture (DA) anticipates the next evolution of the agriculture and fisheries development in the country after recently ushering in newly-appointed Agriculture Secretary Proceso Alcala at its helm, DA welcomed another batch of key officials who will help realize and achieve its goals.

The three new appointees, namely: Undersecretary Antonio Fleta for Administration and Finance, Undersecretary Claron Alcantara also chief of staff at the Office of the Secretary, and Director Leandro Gazmin of the Agribusiness and Marketing Assistance Service (AMAS), were sworn in to office by Secretary Alcala on 3 August 2010 at the DA Central Office in Diliman, Quezon City. They were joined in by three re-appointees, namely: Undersecretary Segfredo Serrano for Policy, Planning, Research and Regulation, Undersecretary Joel Rudinas for Field Operations, and Undersecretary Bernadette

Romulo-Puyat for Special Concerns.

Secretary Alcala said that the six officials form part of the first batch of the new DA management team whom he trusts to pursue the food security program of the government with him.

"Sila ang ilan sa ating magiging katuwang upang isulong ang minimithi ni Pangulong Aquino na kasapatan sa pagkain, lalong-lalo (na) sa bigas," Alcala said. He vowed earlier to end rice imports by 2013.

According to the DA-Agriculture and Fisheries Information Service (DA-AFIS), Fleta previously held the posts of undersecretary and executive director of the Coordinating Council for Private Sector Participation under the Office of the President from 2000 to 2001.

An accountant-banker, he finished the advanced banking management program at the Asian Institute of Management (AIM) in 1988,

and an advanced management program at the Wharton School of Business, University of Pennsylvania, USA, in 1994. He also served as a consultant at Equitable PCI Bank, and was a previous president of the Far East Savings Bank.

Alcantara, meanwhile, has worked at the Presidential Management Staff since President Corazon Aquino's time, and thereafter as chief of staff of Secretary Alcala, during his term at the House of Representatives. He finished his BS Degree in Economics at the University of the Philippines (UP) in 1987, and Masters in Development Management at AIM in 1997.

The youngest of the new appointees, Gazmin, is a UP mechanical engineering graduate and an organic farming advocate. He was previously involved in a joint project on commercial SNAP hydroponics with the Institute of Plant Breeding in UP Los Baños. ###

(Miko Jazmine J. Mojica)

and *duhat* represents red wine and mango, which is known worldwide for its sweet taste and good aroma, for the white wine," she said.

Grapelike bignay

Bignay (*Antidesma bunius* L.) could be easily mistaken for wild berries or even grapes based on the appearance of its fruits but it is none of these. It comes from the spurge family (*Euphorbiaceae*). With its ovoid-shaped fruits clustered together in a bunch, *bignay* is native to the Philippines and often grows in the mountains with a tropical climate. Each bunch consists of 30-40 fruits that become colorful due to their uneven ripening. Some are pale yellowish-green, pale yellow, bright red and/or dark red, nearly black when ripe. Fruits are harvested from June to September.

The skin of *bignay* is thin but tough. Its ripe fruits yield an abundance of bright-red juice which leaves a bright purple stain on the fingers when crushed. The taste of *bignay* fruit is both acidic and slightly sweet when fully ripe. Its distinct aroma and smooth flavor make it an excellent substrate for red wine.

According to Dr. Dizon, "*bignay* is considered a minor fruit but by utilizing it as a raw material for wine, we are putting high demand and value to it while at the same time promoting it as our home-grown fruit. And with the increasing awareness on the health benefits of red wine, or wine for that matter, we are giving the consumers an alternative to the usual, imported wines."

Healthful benefits

Most wine drinkers, according to Dr. Dizon, buy wine mainly for health reasons. "They have heard of the healthful benefits of drinking wine, particularly red wine. It is good not only for old people but for the young ones, in moderation, of course."

Specifically for *bignay* wine, it has phytochemicals and flavonoids including catechin, proyanidins, B1 and B2. A study suggests that the fruits of *bignay* possibly contain compounds with potential cytotoxic activity and methanolic properties.

As for health benefits, drinking *bignay* wine is said to reduce the incidence of coronary heart disease due to its antioxidant properties. The alcohol

content prevents the deposition of fats inside the arteries, reducing the incidence of *atherosclerosis* or arteriosclerotic vascular disease (or ASVD) which is a condition in which an artery wall thickens as the result of a build-up of fatty materials such as cholesterol. It was also reported that it can reduce cancer cells.

Dr. Dizon also revealed that there are a lot of benefits from drinking *bignay* wine. She advised to drink red wine during meal times, just like the French, because it can aid in the digestion of food.

Other benefits from consuming wines, specifically, red wines, is that it can treat *anorexia nervosa* (loss of appetite). The alcohol in red wine can stimulate gastric juice secretion and, hence, can stimulate the appetite. It also works against food poisoning since alcohol can wipe out bacteria in the stomach thus, preventing their proliferation and possible gastroenteritis.

The great French chemist and microbiologist, Louis Pasteur, said that wine is one of the most healthful beverages compared to other drinks. It serves as stomach disinfectant and contains 500 calories which can be utilized efficiently by our body without causing an ounce of increase in weight, hence, the French Paradox. Drinking red wine can also reduce anxiety and tension because alcohol is considered a mild natural tranquilliser.

Packaged to perfection

In product marketing, looks matter. For the wine industry, packaging and labelling serve as the silent salesman. Hence, appropriate wine packaging design is crucial—from the types of bottle and cap used down to the nitty-gritty details of label design. As the famous line goes: "It's what's on the outside..."

One of the important objectives of the BAR-UPLB project on tropical wine is to improve the packaging design that will promote both product stability and market viability. Since the project started, the tropical wines developed by the Food Science Cluster of UPLB have been given various packaging designs before these reached the current "posh-, elegant-looking" packaging.



(L-R) Wines from bignay, mango and duhat developed and packaged by UPLB Food Cluster.

"We packaged our wines after developing the label design. We have also tested our products acceptability to the consumers and the profitability of this project," narrated Dr. Dizon.

In terms of consumers' acceptability, the group of Dr. Dizon conducted a survey around UPLB representing almost all units/departments and results showed that out of the three wines (mango, *duhat* and *bignay*), *bignay* is the most widely accepted in terms of taste. Their study also showed that consumers buy wines mainly for health reasons.

"As of now, we have already prepared the operational manual for processing of fruit wines, we also have IEC materials which we use for extension activities. We have already established all the processing parameters for wine making specifically for *duhat*, *bignay*, and mango. For interested technology takers or adopters, we can conduct trainings and seminars and provide other technical support to the private individuals who are interested in wine-making," explained Dr. Dizon.

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Bignay: Pinoy's posh red wine

Story and Photos by:
RITA T. DELA CRUZ

There is a reason why France is a wine-drinking country. In the “French Paradox”, Dr. Serge Renaud, a scientist from Bordeaux University observed that French people suffer a relatively low incidence of coronary heart disease, despite having a diet relatively rich in saturated fats. He attributed it to drinking of red wine which decreases the incidence of cardiac diseases. Red wine, he said, is rich in resveratrol, a phytoalexin which is heart-friendly.

In the Philippines, red wine is served only during special occasions. And because we don't grow grapes here, all red wine is imported, hence it is quite expensive. But given the country's abundance in tropical fruits, a group of researchers from the Food Science Cluster, College of Agriculture of the University of the Philippines Los Baños (UPLB) led by Dr. Erlinda I. Dizon revived the idea of producing wine using local fruits. “There is a large volume of wine importation from other countries.



Bignay fruits and bignay wine

Getting a share of the market for wines would help our farmers and the local food industries if we could just make our own wine using our home-grown fruits,” Dr. Dizon explained.

This idea was realized in 2008 through a project titled, “Technology Commercialization and Packaging of Wine from Selected Local Fruits” with funding support from the Bureau of Agricultural Research (BAR) through its National Technology Commercialization Program (NTCP).

The project sought to showcase appropriately packaged and quality wine from selected fruits and, eventually, to expand the market for local fruit wines.

With results from previous studies on wine-making, Dr. Dizon hoped to revalidate the processing parameters to produce quality wine from the laboratory scale to commercial scale production and also to improve the packaging of the products. “We aimed to establish the quality assurance system like the HACCP, GMP, and SSOP for wine processing, evaluate the marketability and profitability of production system, and enhance the capability of the technology adopters,” she said.

The Philippines, being a tropical country, has a wide array of fruits. According to Dr. Dizon, the country has around 30 kinds of fruits which their group screened for wine processing. “Way back in 1983, we had already screened almost all of the local fruits and looked at their potentials for wine-making. Majority of them were excellent and suitable for wine-making. In fact, some are way better compared to grapes in terms of flavor and aroma. Out of those 30 different fruits that we screened, bignay, duhat, and Carabao mango turned out to be excellent substrates for wine processing. Bignay



Dr. Erlinda I. Dizon (inset) of the Institute of Food Science and Technology, UPLB and project leader of the BAR-NTCP funded project on tropical wines.



Increasing use of locally-available plants in Reg.9

To increase the utilization of locally-available plants in the country, researchers from the Regional Food Processing and Preservation Center of the Department of Agriculture-RFU 9 (DA-RFU 9) and the Western Mindanao Integrated Agricultural Research Center (WESMIARC) in Zamboanga Sibugay, is conducting a study to develop and package locally-available plants for commercialization. The project titled, “Development and Promotion of Locally-Available Botanical Plants” entails the assessment of the market potential and profitability of the products, and capability building in product promotion and responding to end-user expectations.

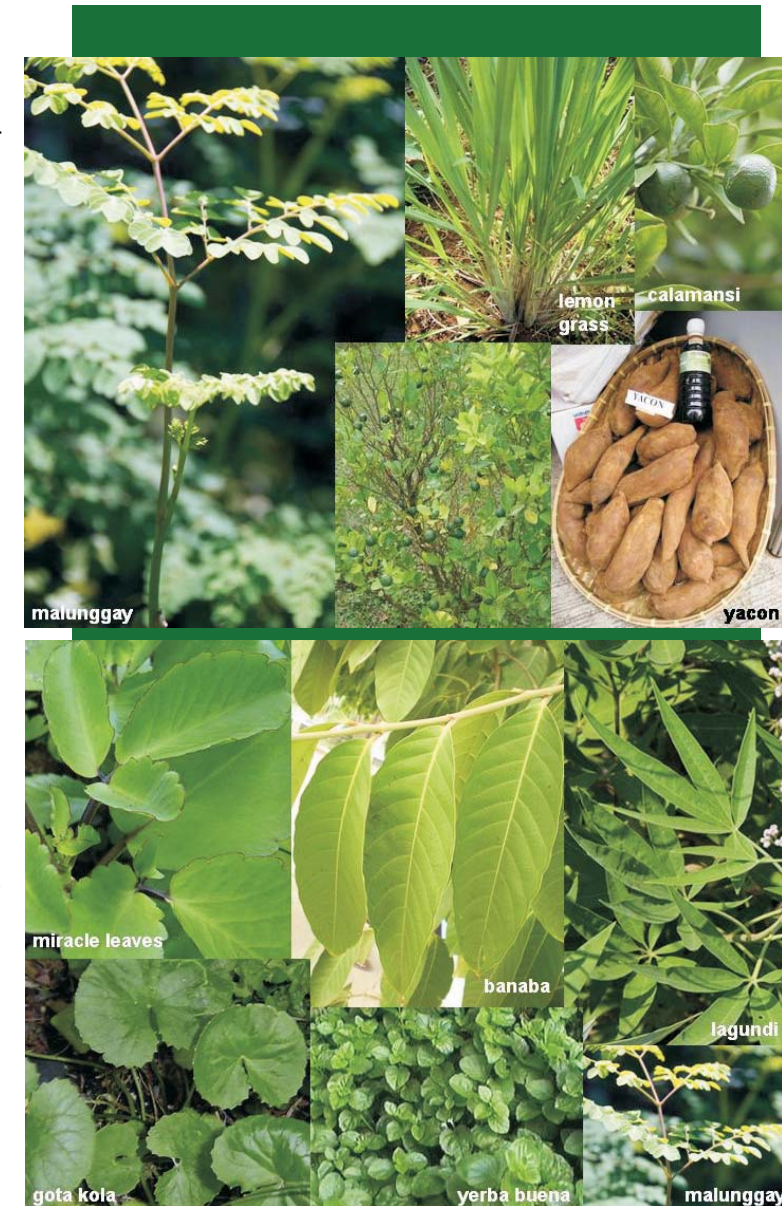
“We want to help farmers in the rural areas particularly the low-income earners who cannot afford to buy medicines,” said Erlinda G. Gadon, project leader. Gadon will soon conduct several training for farmers, their housewives, and out-of-school youth on botanical plants (plants that have herbal applications) utilization and processing (food and herbal medicine).

Part of the study includes preparing various juice concentrates utilizing botanical plants such as *malunggay* (leaves), *lemon grass*, *calamansi*, and *yacon*. Meanwhile, *yerba buena*, *miracle leaf*, *lagundi*, *gota kola*, *banaba*, and *malunggay* will be used for tea preparations. According to the project proponents, these plants have been scientifically-proven to possess medical and therapeutic properties aside from food value.

The study was funded under the project “Technology Management for Competitive Agriculture and Fisheries Sectors” of the Bureau of Agricultural Research (BAR) and the National Agriculture and Fisheries Council (NAFC), through the Japan Official Development Assistance's (ODA) - KR2 Program Grant Assistance for Underprivileged Farmers.

The BAR-NAFC project aims to speed up the transfer of mature technologies for farmers' and fishers' uses for increased productivity, and generation of income through commercialization of these technologies, thus, transforming agriculture and fisheries into market-driven sectors.

The project's products are now undergoing tests by the Department of Science and Technology (DOST) and the University of Philippines Diliman (UPD). ### (Ma. Eloisa H. Aquino)



Part of the study includes preparing various juice concentrates and tea preparations using these indigenous plants. These plants have been scientifically-proven to possess medical and therapeutic properties aside from food value according to study.

PHOTOS: BAR ALBUM

Funded under the project, “Technology Management for Competitive Agriculture and Fisheries Sectors” of the Bureau of Agricultural Research (BAR) and the National Agriculture and Fisheries Council (NAFC), through the Japan Official Development Assistance's (ODA) - KR2 Program Grant Assistance for Underprivileged Farmers, the project entails the assessment of the market potential and profitability of the products, and capability building in product promotion and responding to end-user expectations.

Project on quail raising shows promising results

The Bureau of Agricultural Research (BAR) funded a project on quail production titled, "The Economics and Impact Evaluation of Quail Raising", a 24-month undertaking conceptualized by the Bureau of Animal Industry-National Swine and Poultry Research and Development Center (BAI-NSPRDC) based in Tiaong, Quezon.

The project aims to institutionalize quail raising in a village-level setting that involves other members of the family in the production, and to provide community members with additional source of income.

In a research study conducted by BPI-NSPRDC, quail raising is one of the most promising livelihoods as the demand for cheap eggs and meat is high, with no compromise to health benefits. Quail eggs and meat are also good sources of protein.

According to NSPRDC, 100 ready-to-lay quails are enough for a family to earn an additional income of about PhP 1,000 a month from egg and meat production.

Raising quails is easy and less demanding than chicken. For instance, a quail hen is ready to lay eggs after 41 days with peak of laying on or about the 70th day with laying percentage declining on the 10th month. Its eggs hatch in 16 days. Quail are easy to raise and its housing requirement is not as complicated as that for chicken. A 4 x 8 x 1 foot high cage can already house 250-300 layers. And if one uses local materials like bamboo, the cost ranges from, P1,000 to P1,500 only.

Quail, locally known as *pugo*, is a small and tailless bird found in many parts of Asia. It belongs to the *Phasianides* family under the order of *Galliformes*. As commercial birds, quails require minimal space, time, and investment. Moreover, they are quick growers, fast multipliers, and very efficient in converting feeds to egg and meat (Capitan, 1995). Quails, unlike other fowl, are not delicate birds. These



Quail raising is one of the most promising sources of livelihood as the demand for cheap eggs and meat is high, with no compromise to health benefits.

birds do not easily contract fowl diseases common to poultry, especially chickens.

There is a demand for quail eggs and meat that marketing is not something to be worried about. In streets, stores, restaurants, hotels, and bars, quail eggs and meat are in great demand. Quail eggs can be sold fresh, boiled, salted, pickled, or as "*balut*". Quail meat can be served barbecued, fried, as *adobo*, *ginataan* or in the other ways that chicken is also cooked. Some reputable bakeries use quail eggs as an ingredient in baking and in making *leche flan*.

Quail raising in the country is promising. This can be started with a much lower capital investment as compared to chicken and ducks. It also offers quick financial cycles that lead to quicker returns. The average cost per chick ranges from PhP23 to PhP25.

The project at a glance

Recognizing the potential of quail farming in providing added income and opportunity for poultry farmers, BAR supported the objective

and concept of quail raising as proposed by BAI-NSPRDC. The benefits derived from raising quail has by far been impressive based on the testimonies of the farmer-cooperators.

The project started in 2009 and was piloted in barangays Pinagdanlayan and San Mateo in Dolores, Quezon and in some barangays of Tagkawayan, Quezon.

Each of 15 farmer-beneficiaries from the identified areas received 300 ready-to-lay quails. The recipients underwent a one-day seminar in quail management for better understanding and appreciation of the project. The other family members like the mothers and their children pitched in by providing extra labor like giving feeds, providing water to the layers, and selling the products.

Qualified recipients are selected in cooperation with the Municipal Agricultural Office (MAO). Each of the recipients were required to make a 4 feet x 8 feet x 1 ft. high cage that can house 250-300 layers. A one-time assistance of a 20 kg laying crumble was also given to each recipient

Davao mangoes to reach Australia soon



One of Philippines' export champions, Carabao mangoes.

Fresh mango from Davao del Sur will now be accepted by the Australian government, said in a report submitted to Department Agriculture (DA) Secretary Proceso J. Alcala in a report from Bureau of Plant Industry (BPI) Director Clarito M. Baron.

The Biosecurity Australia Advisory announced the extension of existing policy for the importation of fresh mango fruits from the Philippines and the inclusion of other additional

growing areas in Davao del Sur in the island of Mindanao.

According to Dir. Baron, Australia has existing policy for the importation of grouch mango fruit from the Philippine which only allows imports from Guimaras Island. The country has likewise, requested the extension of the market access for fresh mangoes fruits from Davao del Sur as additional growing area.

BPI head said Biosecurity Australia has prepared a report drawing

from the existing policies for fresh mango fruits from India, Haiti, Mexico, the Philippines (principally Guimaras Island in Visayas) and Taiwan taking also into considerations the pests.

The report added the consideration of existing commercial mango production practices in Davao del Sur in conjunction with existing policies, assessment of the potential for entry, establishment, spread and consequences association with quarantine pests and diseases of mango fruits and recommended the quarantine measures being implemented at Guimaras Island.

This, according to Barron, is a product of long-term cleanliness policy and quarantine practices that BPI is implementing coupled with stringent crop management measures which is now being done in Davao del Sur.

Before the start of the trade, Biosecurity Services Group (BSG) will visit mango production areas in the Davao del Sur to audit the operational procedures, treatment facilities, and area freedom protocols before mangoes can be exported to Australia.

Quarantine measures recommended for mangoes include: 1) recognition and maintenance of pest-free areas, 2) pre-export phytosanitary certification by BPI and on-arrival inspection by BSG, 3) pre-export vapor heat treatment, and 4) operational systems to maintain and verify phytosanitary status. ### (DA Press Release)

MAKE VISAYAS...from page 12

cabbage, cauliflower, carrots and sweet pea (chicharo) — collectively known as 'chopsuey' vegetables — in cool, hilly areas in Cebu, and other parts in the region.

Traditionally, Cebu farmers raise eggplant, tomato, bitter melon or ampalaya, string beans and squash or also known as 'pinakbet' vegetables.

He said diversifying into semi-temperate vegetables could be done, as shown successfully by farmers in Quezon province.

Further, he suggested that should practice and adopt a progressive planting schedule so as to avoid oversupply during harvest, and thus enable them to get better

prices for their vegetables. This is done by planting on a weekly basis a portion of the total farm area, say, one-fourth to one-half hectare. Harvest would then be done every other week, too.

He said DA will also assist them in marketing their products, with the setting up of farm trading centers in strategic areas in the country.

Among those who attended the forum were Cebu Vice-Governor Vicente Sanchez, Jr., Msgr. Rommel Kintanar of the Archdiocese of Cebu, CCFS Chair Francisco Fernandez, Cebu City Councilor Hilario Davide III, DA Region 7 Dir. Ricardo Oblena, and DA-BFAR 7 Dir. Andres Bojos. ### (DA-Info Service)

BAR, BPI...from page 11

NSPRDC for demonstration purposes to farmers. This type of pig pen used locally-available materials such as bamboo, nipa, coco-lumber, and coconut husk and coir dust as bedding. One module of pig pen requires a floor area of roughly 4 x 4 sq.m.

A team from BAR's Technology Commercialization Unit (TCU) conducted project reconnaissance in May 2010 to validate and ascertain the development of the project and visited the farmer-cooperators in their respective areas to determine the progress of the project.

Recently, BAR Director Nicomedes P. Eleazar also visited the project site with Ms. Teresa Perez-Saniano, head of the Earthkeepers, one of the recipients of the project.

Earthkeepers is a non-government organization based in Tiaong, Quezon.

Dr. Santiago narrated to the monitoring team that the identification of collaborating municipalities is dependent on the need of the locality for the project, environmental considerations and willingness of the LGUs. These criteria are of paramount importance to the



Dr. Nicomedes P. Eleazar of BAR (3rd from left) and Ms. Teresa Perez-Saniano (2nd from right) of Earthkeepers during BAR's visit at the project site of native swine in Tiaong, Quezon. PHOTO: AVELASCO

success of the project. The farmer cooperators, on the other hand, were chosen based on their capability and knowledge in swine raising in general.

The monitoring team noted the good relationship between the project proponents and farmer-cooperators. Native swine cages were well maintained. Feeds and alternate sources

of livestock were available. More importantly, the conservation of native pigs be already achieved. It is expected that the project will boost the needed stocks of native pigs which would be made available for multiplication and livelihood production. ###(Patrick Raymund A. Lesaca)

Make Visayas self-sufficient in corn ~ Alcalá

“Let's forge stronger partnerships to make Central Visayas self-sufficient in food, particularly in white corn,” hence the challenge tossed by Agriculture Secretary Proceso J. Alcalá to about 650 participants at a forum organized by the Cebu Coalition for Food Security (CCFS), held at the College of Technological Sciences, in Cebu City.

“If we could increase the harvest of white corn, the region's major staple, to an average of three tons per hectare, then you would be more than sufficient,” Alcalá told the participants, composed of farmers, local government officials, non-government organization, leaders, organic farming advocates, members of the clergy, and agri-fishery industry stakeholders.

“When achieved, we could ease the pressure on rice supply, and lessen our imports,” the DA chief added.

The current average yield of corn in Central Visayas is less than one ton per hectare, according to the DA Region 7 corn program group.

Some 164,770 hectares are planted to corn in Central Visayas, composed of the four provinces of Bohol, Cebu, Negros Oriental, and Siquijor.

Of the total, 95 percent or 157,110 hectares are devoted to white corn for food, and the rest (5 percent or 7,660 hectares) is planted to yellow corn for feed.

Some of the corn areas are irrigated, and thus planted twice a year. Hence, in 2009 the region's total corn area harvested reached 231,473 hectares, producing a harvest of 186,479 tons of both white and yellow corn, for a measly average of 806 kilos per hectare.

On the demand side, Central Visayas has a total population of 6.61 million as of 2009, with a per capita

consumption of roughly 44.8 kilograms of white corn, for a total demand of 296,128 tons.

With a three-ton average yield from a little over 230,000 hectares, Central Visayas could produce at least 690,000 tons yearly, which is more than twice the current corn consumption. The region could then ship their surplus to other regions in the Visayas and Mindanao.

Secretary Alcalá said the three-ton average harvest could be achieved by providing farmers the right farm inputs such as high-yielding and pest-resistant white corn varieties, and adoption of modern technologies, combined with organic farming.

During the forum, he also encouraged vegetable farmers to diversify into planting semi-temperate crops such as lettuce,

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once the animals were received.

As a repayment, the recipients must pay the producers of quail layers after six months.

Based on estimates, and assuming that there is no mortality, a quail farmer can augment his income with an additional PhP4,800 for every 300 quails that he raises.

Personal testimonies

Siblings, Petronilo Manalo and Patricia Manalo, combined their layers and saved their earnings, and after five months, they bought a second-hand vehicle. Now the vehicle is being used to deliver the harvested eggs and as transportation service for school children. The amount paid to buy the vehicle came from the earnings of eggs that they sold over five months alone.

Virginia Bautista of San Mateo, Dolores, Quezon delivers her harvested fresh eggs to her neighbors. Everyday, she earns PhP130-PhP150. Eight hundred (800) ready-to-lay quails



Petronilo Manalo and the second-hand vehicle he bought from raising quails.

PHOTO: PRLESACA

have been added to the current breeders to replace the unwanted females or culls. If the trend of income continues, she will eventually reach a daily income of PhP800.

Cristopher Baliza of Tagkawayan, Quezon lives near the coastal area and he constructed his all-bamboo quail cage above the water.

His layers have already reached the peak of 280 eggs in a day. Currently, his record of production ranges from 250 to 260 eggs daily. The quail cage has no foul smell because sea water washes the underneath of the cage. The quails have never contracted a disease and looked very healthy.

Edgardo Villanueva of Lagalag, Tiaong in Quezon was awarded 300 ready-to-lay quails on 11 September 2009. Today, the layers produce 140 to 160 eggs a day. His wife sells the boiled eggs to school children and sometimes cooks the quail eggs as *kwek-kwek*. The earnings are set aside by his wife as savings. ###(Patrick Raymund A. Lesaca)

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Virginia Bautista of Dolores, Quezon shows her double layer quail cage that she built.

PHOTO: PRLESACA

Based on estimates, and assuming that there is no mortality, a quail farmer can augment his income with an additional PhP4,800 for every 300 quails that he raises.



Ensuring year-round, high-value vegetables with container gardening under protective cultivation

Before, the idea of growing vegetables in urban setting seemed unrealistic. The lack of available space, immense pollution, and extremes weather have daunted potential vegetable growers to go into this kind of production system.

But with the advent of urban agriculture, specifically the production of vegetables in containers under protective structures, optimization of land-use and production using climate-controlled techniques can now be opportunistically addressed. And with the scientific advances, urban agriculture is now able to address the challenge of supplying nutritionally adequate and safe food (even) to city dwellers.

Dr. Renato C. Mabesa, professor at the Department of Horticulture of the Crop Science Cluster of the College of Agriculture, University of the Philippines Los Baños (UPLB), leads a project titled, “Protective Structures for High-Value Vegetable Production in Containers as an Approach to Urban Agriculture”, with funding support from the Department of Agriculture-High Value Commercial Crops (DA-HVCC) Program and the DA-Bureau of Agricultural Research (DA-BAR).

The project aims to provide growing urban populations with year-round access to nutritious food by growing high-value vegetable crops in containers using protective structures and covers right in the towns and cities.



A project demonstration of container gardening of high-value vegetable crops under protective cultivation using a fine agricultural nylon net.

PHOTO: RDELACRUZ

Production of vegetables in containers as an approach to urban gardening is not entirely a new concept for this has been practiced before. “This is like backyard gardening but vegetable crops are exclusively grown in containers instead of planting them in the ground. Vegetable container gardening can be considered a viable sustainable production method since it promotes the re-use of materials that are abundant and considered as waste including old rubber tires, styropor, plastic bags and bottles, tin cans, and scrap metal,” said Dr. Mabesa.

Protective cultivation is a

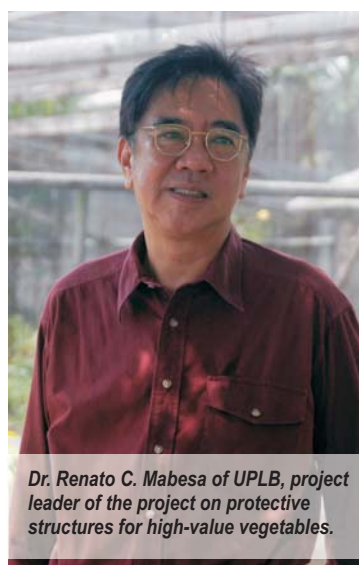
cropping technique wherein the micro-climate surrounding the plant body is controlled partially or fully according to the requirement of the plant species during their period of growth. Using productive structures and covers such as polyethylene plastic and fine agricultural nylon net helps in improving the quality of vegetables grown in containers.

According to Dr. Mabesa, “this cropping technique is very appropriate in the Philippines because our extreme weathers easily affect the outcome of our vegetable produce. Protective structures and covers serve as physical safeguards against extreme environmental conditions such as excessive rain and high temperatures.”

The first phase of the project demonstrated the production of different kinds of vegetable salads, particularly lettuce, in containers under protective structures. This was conducted in various sites of the CALABARZON (Cavite, Laguna, Batangas, Rizal and Quezon) area.

Phase two of the project studied the performance of various *Brassicacae* (also called *Cruciferae*) such as cabbage, cauliflower, broccoli, and kale also in CALABARZON and selected areas of Metro Manila.”

The project is now on its third phase focusing on the performance of



Dr. Renato C. Mabesa of UPLB, project leader of the project on protective structures for high-value vegetables.



DA-BAR-UPLB PROJECT
Protective structures for high value vegetable crops in containers as an approach to urban agriculture



BAR, BPI look into commercial profit of raising native pigs

Characteristically small, usually black in color, spotted, and are resistant to parasites and diseases, native pigs can adapt to local conditions and can tolerate heat and cold environments better than the imported breeds. They can thrive well on locally-available feeds, including kitchen and farm refuse, and can cope with low quality feeds and maintenance. The usual farm practice, especially in the far flung villages, is the “bahala na” system—allowing pigs to scavenge for their own survival.

Philippine native pigs are traditionally known as best for “*lechon*” or roasted pig. This *Pinoy* delicacy, prepared the roasted way, commands good price and is highly preferred by food connoisseurs during special occasions. Philippine’s *lechon* is tastier, with crispier skin and leaner meat, compared to the imported ones.

To conserve and maximize the potential of expanding the *lechon* market, the Bureau of Animal Industry-National Swine and Poultry Research and Development Center (BAI-NSPRDC) based in Tiaong, Quezon conducted a study on the “Conservation, Evaluation and Commercialization of the Philippine Native Pigs”. This was funded and supported by the Bureau of Agricultural Research (BAR) under its banner program, the National Technology Commercialization Program (NTCP).

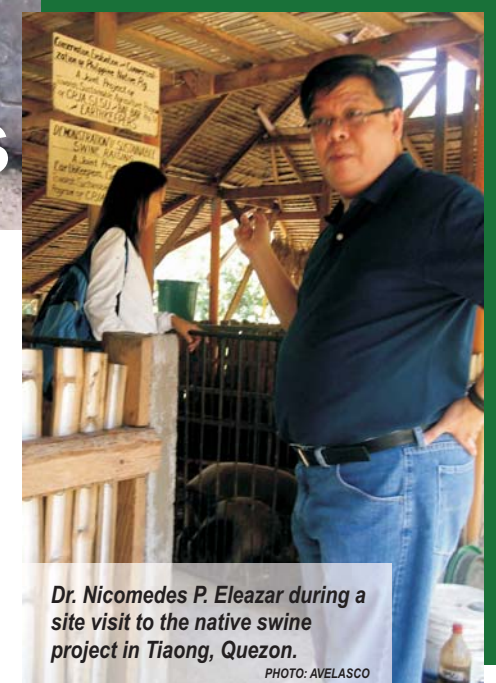
The two-year project is led by Dr. Rene C. Santiago, DVM, also the

agricultural center chief of BAI-NSPRDC. Project implementation called for collaborations with the local government units (LGUs) of Quezon and selected farmer-cooperators in Laguna and Quezon.

The objective of the project is to establish a production system involving raising native pigs under farmers’ management and propagate such on a commercial scale and improve the antiquated system of swine raising resulting in better production. The socio-economic importance of production and commercialization is a crucial aspect of the project.

Production of native pigs can be a viable alternative for swine producers who cannot cope with the high price of commercial swine feeds and for those who do not have enough capital for housing and feeding. This animal can be raised without the use of chemical inputs and, as a breed, has high economic potential for those engaged in organic swine production. In addition, native pigs are very rich sources of genetic materials for local breed development and improvement programs, hence it is a necessity to conserve and preserve this breed.

BAI-NSPRDC started the project where production of breeder native pigs was carried out which were subsequently distributed to selected farmer-cooperators in some municipalities in the second and fourth districts of Quezon province and in the



Dr. Nicomedes P. Eleazar during a site visit to the native swine project in Tiaong, Quezon.

PHOTO: AVELASCO

fourth district of Laguna.

The BAI-NSPRDC selected 20 heads of breeder sows with two boars from their stock farm in Tiaong, Quezon for use in the production of breeders to be distributed to the cooperators of the project. The breeders produced piglets that were raised, selected, and distributed.

Nine beneficiaries were identified based on their capability, willingness, and cooperation. The farmer-cooperators and technicians attended training and seminars on the production and management of native pigs. After the training, each farmer-cooperator was provided with a set of 5 female and 1 male native pigs as breeder stocks. Each farmer was also provided with a one-time subsidy for housing in the amount of PhP10,000 and feeds worth PhP1,000.

A prototype pig pen was also constructed inside the compound of BAI-

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NAST focuses on achieving Millennium Development Goals



Dr. Emil Q. Javier (2nd from left) leads the ribbon-cutting ceremony during the opening of NAST exhibit.



Dr. Nicomedes P. Eleazar (right) discusses with Ms. Melody Aguiba (left) of the Manila Bulletin on the current initiatives of BAR. At the background is BAR's exhibit featuring its two flagship programs: CPAR and NTCP.

PHOTOS: NDELROSARIO III

With only five years left until the 2015 deadline to achieve the Millennium Development Goals (MDGs), the scientific community in the country puts social concerns on center stage as it holds the 32nd Annual Scientific Meeting with the theme "MDGs and beyond: Are we making progress?" on 14-15 July 2010, Manila Hotel, One Rizal Park, Roxas Blvd., Manila.

With Dr. Emil Q. Javier at the helm, the National Academy of Science and Technology (NAST) organized the scientific meeting to highlight the roles of scientists, researchers, professionals, policymakers, and students in the achievement of the MDGs which the Philippines is bound to adhere to as part of the United Nations.

The MDGs represent human needs and basic rights that every individual around the world should be able to enjoy—freedom from extreme poverty and hunger; quality education, productive and decent employment, good health and shelter; the right of women to give birth without risking their lives; and a world where environmental sustainability is a priority, and women and men live in equality.

As the leading forum for the presentation of new findings, researches, and scientific information, leaders and experts from the different government, academic, and private institutions

gathered in the scientific meeting to focus the discussions on the assessment and monitoring of the progress toward the achievements of the MDG.

The paper presentations in the plenary sessions included "Achieving Universal Education in 2015: An Impossible Dream? (A Synthesis of the NAST Social Science RTD and other MDG-related Documents)" which highlighted the erosion of the Philippine education advantage but presented hope in the country's getting close to or even meeting the MDG targets by 2015.

The paper, "MDGs and beyond are we making progress?" by Dr. Jaime Galvez Tan, UP College of Medicine presented the challenges and roles of the different sectors in the achievement of MDGs as well as the study on the regions and provinces least likely to achieve the MDGs.

Raul V. Fabella of the UP School of Economics meanwhile presented the paper titled, "MDGs, economic growth, and governance" which gave observations on global poverty across space and time, the decomposition of poverty reduction in terms of growth vs. equity, cross-country evidence on poverty incidence and infant mortality, and social protection as a means of good governance.

Moreover, the paper titled, "Population growth and its implications on the realization of MDGs" by Nimfa

B. Ogena of the Population Institute, College of Social Sciences and Philosophy, UP Diliman stressed that the Philippine population will continue to grow through the middle of the 21st century and identified its implications in the MDGs. Other paper presentations in the plenary sessions tackled a specific MDG.

The two-day scientific meeting culminated in the formulation of policy recommendations on appropriate interventions for the Philippine government and the private sector to hasten or improve the achievement of the goals for legislative and executive actions and for consideration of other concerned agencies and institutions.

The resolution was packaged into a document titled, "Resolutions on the imperatives to heighten the progress of the Philippines in meeting the Millennium Development Goals (MDGs)". The document, along with the papers presented in the plenary sessions, are available for download through the NAST website, <http://www.nast.ph>.

The 2010 Outstanding Young Scientists of the country and the scientific posters session were also held on the sidelines of the scientific meeting. The Bureau of Agricultural Research (BAR) likewise provided sponsorship for the event and participated in the exhibit. ### (Miko Jazmine J. Mojica)



A modified version of the protective structure, which is smaller in size (10 sqm) to accommodate limited spaces making it more cost-effective.

PHOTO: RDELACRUZ

"pinakbet" crops including tomato, eggplant, lady's finger, stringbeans, bitter melon, and squash. Results from the first two phases have been incorporated in the third phase particularly in the use of protective structures and containers.

"For the protective structures, we used protective high tunnels and iron stands for durability and sustainability. Also, instead of plastic pots we have metal shelves with bamboos for planting area due to the immediate availability of the material," Dr. Mabesa expounded. Another modification is on the structure itself making it smaller (10 sq.m) to accommodate limited spaces making the technology more cost-effective.

In Phase 3, the project concentrated on the Gawad Kalinga and Bahay ni Juan areas with informal settlers. "We need to teach them the technology of making available home-produced food and be able to sell them through informal markets thus providing them an additional source of income."



PHOTOS: RDELACRUZ

"...given the projected increase of populations in urban areas in the next 25 years and its consequential effects on urban poverty and food insecurity, protective cultivation technology can play an important part in addressing these issues." ~ Mabesa

NEW DA CHIEF...from page 1

agriculture in Quezon and launched the *Procesong Gulay Para sa Masaganang Buhay* which aimed to promote alternative farming technologies among elementary and secondary students in Quezon.

In his stints at congress, Alcala also served as vice chairman of the Department of Public Works and Highways (DPWH); member of the House Committees on Accounts, Agrarian Reform, Appropriations, Food Security, Natural Resources, Overseas Workers Affairs, Oversight, Transportation, and Southern Tagalog Development.

In 2003, Alcala was awarded the Quezon's *Medalya ng Karangalan* for Environmental Protection and Ten Most Outstanding Public Servants – Special Award as Environmentalist.

Born on July 2, 1955 in Lucena City, Alcala is a licensed civil engineer. He is married to the former Corazon Asuncion Maaño, executive vice president of the Cotta Realty and Development Corporation based in Lucena City and chief finance officer of the Pueblo Por La Playa in Pagbilao, Quezon. They have three children: Ingrid, Irvin, and Ivy. ### (Rita T. dela Cruz)

Adlai: seen as an alternative to RICE and CORN

Story and Photos by:
AMAVEL A. VELASCO

In the not-so-far-away land of Mindanao, with its vast plantations of pineapple, banana and durian, hides a plant not known to many but which is being cultivated in idle lands in parts of Bukidnon. This certain plant comes by the name of *Adlai*.

The plant has also been seen in other parts of the Philippines. There are even claims of it being common throughout the country but not to the same extent as other crops like rice, corn, coconut, *malunggay*, etc. with which one can easily identify.

Adlai is considered a weed in some places but it is prized as a source of raw materials for necklace and bracelets in others. In Bukidnon, it is made into *kakanin* and wine by some of the local tribes. It is also cultivated or domesticated in other parts of the country and may have other uses aside from food but these are yet to be documented.

One could have seen it in



Grains from *Adlai*, also known as Job's Tears (*Coix lacryma-jobi* L.)

his/her own hometown or in the rural areas but didn't think it significant and considered it just like any other weed growing around the house. Or someone could have seen it already or has worn it as bracelets or necklace without knowing that the beads used were from *Adlai* grains. Or this could be fed to fighting cocks as feed and no one is even aware that it is *Adlai*.

What is *Adlai*?

Adlai, also known as Job's Tears (*Coix lacryma-jobi* L.), comes from the family *Poaceae* or the grasses, the same family that wheat, corn, and rice belonged.

The grains, which come in white or brown, in some instances, are spherical in shape and have a groove at one end. It is said to have originated in Southeast Asia. It is a freely branching

upright herb that can grow as tall as three feet and propagates through seeds.

According to the Bureau of Plant Industry, the leaves are 10-40 cm long, 2.5-4 cm wide, with the base broad and cordate. The spikes are 6-10 cm long, erect and peduncled, while the male spikelets are about 8 mm long.

Grains are usually harvested 4-5 months after sowing. Grains are separated from the stalks through threshing and, like rice, seeds are first sun dried before milling.

Adlai is said to be at least 50 percent starch, 14 percent protein, and 6 percent fat.

As food and drink

In South Asia, at the time when corn was still not that popular, *Adlai* was already being widely cultivated as a cereal. In India, it was pounded,



BAR Dir. Nicomedes P. Eleazar (2nd from right) attends a preparatory meeting held at Earthkeepers which is based in Tiaong, Quezon. Earthkeepers is a non-government organization headed by Ms. Teresa Perez-Saniano (3rd from left).

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threshed and winnowed as a cereal. The pounded *Adlai* is sometimes mixed with water like barley when making barley water; some turned it into a sweet dish by frying and coating it with sugar. It is also boiled and eaten in the same manner as that of rice.

Adlai grains are also used in soups and broths. In fact, in Southern Vietnam, *sam bo luong*, a sweet and cold soup, has *Adlai* as its main ingredient.

Fermented grains, on the other hand, are also made into beers and wines. Aged vinegar is also made out of *Adlai* in Japan.

Yulmu cha, or Job's Tears tea, is a thick drink in Korea which is made from powdered *Adlai*. Another liquor, which is made from *Adlai* together with rice in Korea, is called *okroju*.

Folk medicine

Adlai is said to be a folk remedy for a wide range of ailments. It is used as a remedy for various tumors like the abdominal tumors, esophageal and gastrointestinal, as well as warts. It also finds use in treating abscess, anodyne, anthrax, appendicitis, arthritis, beriberi, bronchitis, catarrh, diabetes, dysentery, dysuria, edema,

fever, goiter, halitosis, headache, hydrothorax, metrorrhagia, phthisis, pleurisy, pneumonia, puerperium, rheumatism, small-pox, splenitis, strangury, tenesmus, and worms. Some of these claims though still need to be scientifically-verified to warrant an "approved therapeutic claim" in labelled containers as herbal medicine advertisements are saying these days.

Pharmacological effects

Some studies indicated that *Adlai* has anti-allergic, anti-mutagenic, hypolipemic, and anti-diabetic effects.

It is also said to exhibit anti-cancer activity. In a study by Hung et. al., in 2003, *Adlai* seeds were found to exert an antiproliferative effect on human lung cancer cells *in vitro* and *in vivo* and might also prevent the development of tobacco carcinogen-induced tumors. The anti-cancer activity of *Adlai* was further proven by the study of Lee et. al., (2008), who isolated five active compounds from *Adlai* bran that inhibit cancer cells.

In traditional Chinese medicine, *Adlai* hull extract is used to treat dysmenorrhea and was proven in a recent study that, indeed, it is a feasible alternative therapeutic agent.

Introducing *Adlai* to mainstream agriculture

The Department of Agriculture (DA), through the Bureau of Agricultural Research (BAR), in collaboration with non-government organizations (NGOs), namely: Earthkeepers and Masipag, has been looking into the potential of *Adlai* as an alternative crop to rice and corn. Masipag, a farmer-led network of people's organizations, has already done initial research endeavors on the crop.

BAR, together with Earthkeepers and Masipag, is currently crafting training and planning workshop on *Adlai* production tentatively scheduled in September 2010.

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Adlai plant growing the wild.

...at the time when corn was still not that popular, *Adlai* was already being widely cultivated as a cereal.