

Reviving Bataan's kapis...from page 19



Ms. Gladys T. Resubal, an aquaculturist from the Office of the Provincial Agriculturist (OPA) in Balanga City, Bataan, discusses how to revive the kapis industry.

hand in ensuring that there is a steady production of *kapis* in Bataan, and at the same time securing that there will be jobs generated for the community. The proponents aim to use the findings of the study as a reference to craft a national program on *kapis* to help resuscitate the diminishing *kapis* industry and once again be a market leader on exporting *kapis*-based products. ###

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Promoting malunggay as feed...from page 8

The project, "Commercialization and Development of Malunggay (*Moringa oleifera*) for Dairy Goat," aims to utilize malunggay as goat feed for lactating goats. This is geared towards cutting the cost of feed concentrate and supplements needed in goat milk production, and towards increasing the farmer's income. According to the project's proponents, by commercializing malunggay as a feed for dairy goat production, milk production may increase while reducing production cost. This could be achieved by 1) development of malunggay for feed, 2) on-farm feeding of malunggay leaf meal and pellets, 3) cost-benefit evaluation, and 4) production and distribution of malunggay leaf meal and pellets.

In the project, the researchers promoted the use of malunggay as forage for goats raised for milk production. Its high nutrient content increased milk production by 134 percent. Quoting from their report, "daily supplementation per head with one tablespoon of malunggay powdered leaves produced the highest daily milk."

At the moment, however, there are no major producers of malunggay in the country, and therefore no stable supply, said Ms. Acasio during the seminar. This is one production issue that remains to be addressed and could be a viable new enterprise. ### (Zuellen B. Reynoso)

Promoting country drivenness...from page 17

programs on corn agriculture research and production; 2) engage in discussions with agricultural researchers, farmers, and processors from other countries in order to expose them to innovative cultural practices and farm management protocols; and 3) learn from the lessons and experiences of other countries in their implementation of corn agriculture programs that could be emulated, replicated, or modified under the Philippine setting.

The highlight of the program was the presentation of reports which stressed the comparison of the situation of corn production and industry in the Philippines versus Thailand, Vietnam, and Indonesia. It also provided an opportunity to reassess intermediate strategies and outcomes, and development goals of corn in our country. Most importantly, it became a venue for all participants to solicit recommendations on how to improve corn research and development in the Philippines.

With a wider perspective and increased engagement of researchers and implementers in corn R&D, the DA through its National Corn Program and BAR, continue to strengthen the country's collaboration with other country programs and international organizations to facilitate and intensify the development of the Philippine corn industry. ###

BAR embarks public-private partnership on coffee



PHOTOS: RBERNARDO

With the goal of expanding Arabica coffee plantation and enhancing its agribusiness enterprise, the Department of Agriculture (DA), through the Bureau of Agricultural Research (BAR) and partner agencies, is embarking into a public-private partnership (PPP) initiative through the project, *Mindoro Arabica Coffee for Agro-Forestry Enhancement (MACAFE) Project: A PPP in agribusiness, reforestation and poverty reduction*. The project is implemented by the Provincial Government of Oriental Mindoro in cooperation with the Earth Rights Peoples Rights (ERPR), MacNut Philippines, National Commission on Indigenous Peoples (NCIP), and

Indigenous Peoples (IPs)/Upland Farmers Organizations.

The two-year project covers the planting of 120,000 Arabica coffee seedlings to rehabilitate 60 hectares of open/barren areas and coconut areas. This is in support to the National Greening Program of the government. It also aims to create additional livelihood opportunities and to increase income, benefitting 75 farmers (IPs/upland/coconut farming families).

Project sites will include municipalities of Baco, Bongabong, and Victoria in Oriental Mindoro. For each site, farmer-beneficiaries, along with local government unit (LGU) personnel, will be trained on organic farming and farm

management; organic fertilizer production; harvest, postharvest and packaging; and coffee enterprise development and marketing.

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Tech Com project supports the budding rubber industry in Palawan

Increasing rubber production in the country by turning 200,000 hectares (ha) of land into rubber plantations by 2016 is what the government has in mind as the worldwide demand for natural rubber continues to increase unceasingly.

As of 2011, the country had an estimated 162,000 ha planted to rubber and the volume of production was 426,000 metric tons which are much lower compared to those of other rubber-producing Southeast Asian countries such as Thailand, Indonesia, Malaysia, and Vietnam (BAS, 2012).

Consequently, to be at par with these countries, the government has resolved to strengthen the rubber industry with the enactment of Republic Act 10089 or the Philippine Rubber Research Institute Act of 2010. Accordingly, the Department of Agriculture (DA) has prioritized rubber as one of the industrial crops under its High Value Crops Development Program (DA-HVCDP). Meanwhile, the Department of Trade and Industry (DTI) now includes the rubber industry as among the 32 industries that the DTI will develop in the next three or four years.

To achieve this goal, the expansion of rubber plantations outside the Mindanao region is a must. Mindanao is still the country's leading rubber producer but there are already emerging rubber plantations in some regions of Luzon and Visayas.



BAR Director Nicomedes P. Eleazar (2nd from left), together with Technology Commercialization Division Head Anthony Obligado (2nd from right) and Planning and Project Development Division Head Joell Lales (rightmost) during a visit at the Palawan Agricultural Experiment Station.

The Bureau of Agricultural Research (BAR) has been at the forefront in supporting rubber R&D projects for the further development of rubber in the non-traditional areas, one of which is Palawan.

Rubber clones commercialization in Palawan

Palawan is said to be conducive for the establishment of rubber plantations as it is located within the Mindanao latitude. To support the growing rubber industry in Palawan, the Palawan Agricultural Experiment Station (PAES) of DA-Regional Field Unit 4B proposed a five-year project to BAR on the propagation of rubber clones in the province. The project titled, *Techno-demo of recommended clones of rubber and nursery establishment toward*

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A technician from PAES demonstrates the process of rubber budding. PHOTO: DDELEON

Reviving Bataan's

KAPIS INDUSTRY

Story and photos by Diana Rose A. de Leon

Buhayin po ulit natin ang industriya (ng kapis)," said Ms. Gladys T. Resubal, an aquaculturist from the Office of the Provincial Agriculturist (OPA) in Balanga City, Bataan.

Windowpane oyster (*Placuna placenta* L.) or *kapis* is a mollusk that is endemic in 27 provinces of the Philippines. Its appearance is best described as a paper-thin, fan-shaped to rounded, translucent shell. It thrives on muddy or sandy substratum in shallow water up to 100 meters in depth. It is usually found in bays, coves, and estuaries.

Out of the many types of seashells such as mother-of-pearl, ark shells, script shells, giant clam, and others, *kapis* proved to be the most bankable raw material for the handicrafts and other souvenir items. It is known to be used as window pane. It can also be used as a raw material in making lampshades, chandeliers, vases, trays, glass covers, wind chimes, and wall panels, among others. The pounded *kapis* shells can be utilized as components for making glue, chalk, varnish, soldering lead, and paint.

Though *kapis* is mostly valued for its shell, its meat has its own merits. It is known to have higher protein content (23.29 per 100 grams of meat) as compared to oysters and mussels. It can be cooked as omelet, *adobo*, *kropek*, chips, *bagoong*, and can even be used as feeds for animals.

According to Ms. Resubal, *kapis* was once one of the top fishery export commodities of the country next to prawns, tuna, seaweeds, and octopus. From 1986 to 1991, the country exported a total of US\$ 36 million worth of *kapis* products; but because of indiscriminate harvesting of young and adult *kapis*, the once profitable industry faced a considerable downturn.

Undeniably, *kapis* proves to be a lucrative enterprise. To prevent the further worsening of the situation and the wipe out of the *kapis* industry in the country, the government has put through necessary steps to revive the *kapis* industry in the country.

BAR, in partnership with the Bureau of Fisheries and Aquatic Resources Regional Office 3 (BFAR RO3) and the Provincial Government of Bataan, funded two *kapis*-related projects geared in improving *kapis*

productivity, and commercialization of *kapis*-based products in Bataan. *Kapis* is one of the highly-priced commodities of Bataan. It is found endemic in the waters of Samal, Abucay, Balanga, Pilar, Orion, and Limay.

Ms. Resubal, together with Ms. Lilian C. Garcia of BFAR RO3, served as the project proponent of the two BAR-funded projects.

The first project, which started in May of 2011, is about increasing and improving the natural stocks and growth of *kapis* in the coastal area of Samal, Bataan. Thus, a technology adaptation/verification trial on the pen culture of *kapis* has been implemented. The project has two components: breeding and grow-out components. For the project, the municipality of Samal has allotted 1.5 hectares for *kapis* sanctuary. This is where the pens for *kapis* natural breeding and grow-out culture had been put up. There are already three grow-out pens and one breeding pen constructed in the sanctuary.

After the project completion in 2013, the proponents will establish new breeding sites, replicate the activities done in other municipalities, and disseminate the technology to local fisherfolk.

In support to this project, an offshoot activity is funded by BAR under its National Technology Commercialization Program. The said project focuses on technology promotion and utilization of *kapis*-based products. Ms. Resubal shared in BAR seminar the initial activities they have done to jumpstart the project in Samal, Bataan. These include the signing of Memorandum of Agreement, and the awarding of processing equipment to three organizations who also serve as project beneficiaries, namely: Berting Shellcraft, Kaliwanagan-Rural Improvement Club, and Capili Sash Factory. The awarding was held on 12 April 2013 at Samal, Bataan.

The project covers the development of new *kapis* products, packaging and labeling, facilities improvement, and capability building of the beneficiaries on marketing and enterprise development.

The two projects go hand in

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CPAR helps Ifugao farmers go organic

Story by Daryl Lou A. Battad

“Go organic!”—This is how the province of Ifugao envisions its local agriculture and fisheries.

Having adopted the right advocacy that caters to both its people and the environment, the province of Ifugao continues to implement agriculture and fisheries (A&F) research and development (R&D) projects that prioritize organic farming in collaboration with various national and local government sectors.

In line with this, the provincial local government unit (PLGU) of Ifugao and the Bureau of Agricultural Research (BAR) tied up in implementing the project, *Community-based Participatory Action Research (CPAR) on Organic Vegetable Farming*, which aims to increase farm production and profitability through the efficient application of improved farming technologies, and the adoption of a sustainable, ecologically-sound, and economically-viable organic agriculture production system.

Along with promoting 'green agriculture', this project showcases sustainability and organic agriculture-capable farmer organizations in the province that are opening opportunities for the commercialization of organic vegetables.

Employing the CPAR approach

According to project leader and CPAR regional coordinator, Dr. Catherine Buenaventura, the

participatory approach of the project is what the farmers appreciate the most, since it elicits community engagement, organizational collaborations, and makes possible a joint process of knowledge production. “It makes them feel that they are a big part of the project,” Dr. Buenaventura said.

Through CPAR, the farmer cooperators underwent a series of capability-building activities which include workshops on the formulation of organic fertilizers and bio-pesticides, pest management practices, soil conservation and fertility management, and vermicomposting. These enabled the farmers to practice natural farming by producing their own organic pesticides and fertilizers.

Each of the farmer cooperators allocated at least 100 square meters as demonstration area to pilot test the viability of organic vegetable production. The encouraging results led the farmer cooperators to fully adopt the technology and expand their production. Seeds planted were broccoli, cauliflower, cabbage, snap beans, ampalaya, lettuce, pechay, tomato, eggplant, sweet pepper, and carrots.

To date, the technology introduced through the CPAR intervention has been benefitting the farmers. Mr. Florencio Dulnuan, one of the farmer cooperators, went from 100 to 400 square meters expansion of organic vegetable nursery. He is also producing his own

vermicompost fertilizer using rice straw as raw material. He credits this added skill and knowledge to the trainings he went through together with the rest of the cooperators. “Organic vegetable farming is simple, cost reducing, and a profitable technology,” he said.

Strong market support services have been established for the farmers' produce which ensures a sustainable organic vegetable production.

Joining the organic agriculture bandwagon

Being in the era of a more health-conscious generation, the demand for healthier, organically-grown food is being given emphasis more than ever. Not only does organic agriculture promote overall food and nutrition security of the country, but it also minimizes the health risks of farmers from exposure to toxic materials coming from conventional farming practices that involve harmful chemicals and pharmaceuticals.

As the country advances to healthier, safer, and more natural agricultural practices, Ifugao is one of the provinces that is at the forefront of promoting organic agriculture. In fact, its LGUs recently converged for province-wide organic agriculture certification as they envision the eventual recognition of organic agriculture as one of the mainstream A&F production strategy that will contribute to a more sustainable and ecologically-friendly, and safer Philippine agriculture. ###



The farmer cooperators use an organic fertilizer called IMO (indigenous microorganism) during land preparation and planting of pechay. PHOTOS:PCABRERA

BAR's initiative on aerobic rice shines during 8th ATWGARD meeting



Philippine delegates, BAR Asst. Director Teodoro S. Solsoloy (5th from left) and Mr. Jacob Anderson C. Sanchez (center, 2nd row) together with the participants from other ASEAN Member States. PHOTO:ATWGARD

The project proposal of the Bureau of Agricultural Research (BAR) titled, “Aerobic Rice R&D in the Philippines” took center stage in the recently concluded 8th Meeting of the ASEAN Technical Working Group on Agricultural Research and Development (ATWGARD) held on 13-14 May 2013 at the Rendezvous Grand Conference Hall, Singapore.

Considered as the mentor in rice research among the ASEAN region, the project of the Philippines got the attention of the seven other participating countries namely: Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand, and Vietnam.

The Philippine delegates were composed of Assistant Director Teodoro S. Solsoloy and Jacob Anderson C. Sanchez of BAR. The Philippines, particularly BAR, played host during the 7th ATWGARD Meeting held in Quezon City.

Prior to the customary meeting, an election of chairman and vice-chairman was led by ex-officio Dr. Solsoloy signifying the Philippines' turnover of chairmanship to the host country, Singapore. “We held the position for two consecutive years, and we have strong faith that Singapore (chair) and Thailand (vice-chair) will continue what we have all

started,” he said.

The Philippine project on aerobic rice is aligned with the ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security (SPA-FS). Generally, it seeks to increase rice production and farmers income up to 15 percent. It also aims to develop a sustainable rice-based farming system in water-scarce areas of Region III. The project is in coordination with one of the experts in Aerobic Rice Technology (ART), the Bulacan Agricultural State College.

With this, the interest of the ASEAN Member States was further recognized when they suggested to the Philippines to organize an ASEAN workshop on aerobic rice. Committed to uplifting the marginalized rice farmers, BAR accepted the challenge to take the lead for the project on aerobic rice.

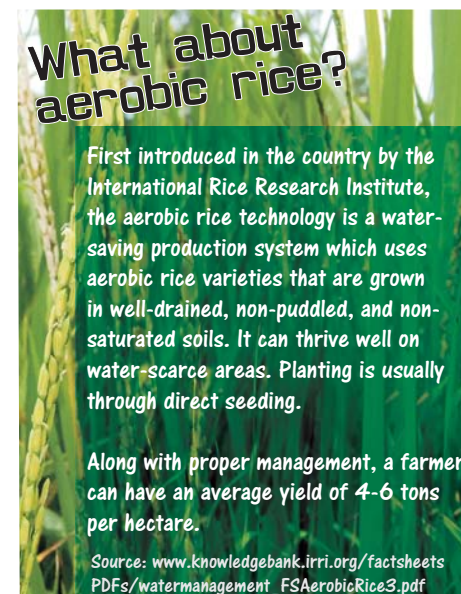
Aerobic rice, which may involve drought tolerant varieties, grows well in non-submerged and non-flooded soil in water scarce areas such as rainfed, uplands, and tail-end portion of irrigated areas. It has a huge potential to improve the conditions of economically-challenged families who rely on rice as source of income. In her welcoming message, Ms. Tan Poh Kong, chief executive officer of the Agri-Food and Veterinary

Authority of Singapore (AVA), underscored the importance of ATWGARD as a key contributor in enhancing regional coordination and cooperation to strengthen agricultural research.

On the other hand, Dr. Chew Hong Philip, director of Technology and Industry Development, served as chairperson of the meeting. Chair Philip lauded the efforts of the Philippines, chaired by ex-officio Dr. Nicomedes P. Eleazar, for pursuing the goals of the ATWGARD particularly in elating the ASEAN agri-fisheries sector using the technologies that were generated through collaborative R&D.

Dr. Solsoloy delivered his opening remarks and briefly discussed how the ATWGARD can help build the ASEAN Economic Community by 2015. “The blueprint draws on institutionalizing 1) free flow of goods, 2) free flow of capital, 3) food, agriculture and forestry, among others. Our constant consultation and meeting, collaborative R&D projects, and strength in R&D will help us sustain these,” he reiterated.

The 9th Meeting of ATWGARD will be hosted by Thailand tentatively on May 2014. ### (Jacob Anderson C. Sanchez)



First introduced in the country by the International Rice Research Institute, the aerobic rice technology is a water-saving production system which uses aerobic rice varieties that are grown in well-drained, non-puddled, and non-saturated soils. It can thrive well on water-scarce areas. Planting is usually through direct seeding.

Along with proper management, a farmer can have an average yield of 4-6 tons per hectare.

Source: www.knowledgebank.irri.org/factsheets/PDFs/watermanagement_FSAerobicRice3.pdf

Horti Asia 2013

showcases Philippine agricultural and fisheries products



Horti Asia 2013: International Tradeshow for Horticultural and Floricultural Production and Processing Technology concluded its second year of product exhibition at Bangkok International Trade and Exhibition Centre (BITEC), Bangkok, Thailand on 9-11 May 2013.

The Philippines, through the Department of Agriculture (DA), showcased an array of products from fresh produce (banana, pineapple, mango, papaya, and dragon fruit), processed fruit products including coconut, and fiber products.

The country's pavilion had seven exhibitors represented by both public and private sectors, namely: DA-Bureau of Agricultural Research (BAR), DA-Agribusiness and

Marketing Assistance Service, DA-International Relations Division, Fiber Industry Development Authority (FIDA), Pascioco Agri-Ventures, Pilipinas Ecofiber Corporation, Raspina Tropical Fruits, Inc., and REFMAD-V Enterprise.

BAR staff members, Evelyn H. Juanillo and Karla Marie D. Zapiter, brought with them tamarind balls, brewed and instant soybean coffee alternative, and veggie noodles. Funded by BAR and other agencies, sweetened and tamarind balls were packaged by Big-A Multi-Purpose Cooperative in Lobo, Batangas and are being marketed in the province and nearby towns. BAR assisted in the promotion and commercialization of these developed products along with tamarind wine.

The brewed and instant soybean coffee alternative and veggie noodles were developed and produced by Makabagong Gabay sa Kalusugan Foundation, Inc. (MGSKFI), a non-government organization (NGO) based in Nueva Vizcaya. MGSK has long been producing products from soybean and is one of the successful NGO-partners of DA. The bureau supported the product development aspect of soy coffee, *taho*, *tokwa* (tofu), soymilk, soy sauce, polvoron, and vegetable noodles, among others.

BAR, through one of its banner programs, the National Technology Commercialization Program (NTCP), has continuously supported research and technologies

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Various products showcased by the Philippines.
PHOTOS:KZAPITER

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Promoting country drivenness...from previous page



Participants of the capacity building program during a visit in Indonesia and Thailand.
PHOTOS:UPLB-CEMAFI

practices and farm management protocols to be at par with agricultural globalization in relation to Philippine corn production.

Empowering DA's corn researchers

The participants of the program were composed of corn regional program officers of the DA, regional research officers, DA-BAR technical staff, regional research station managers, resource persons from UPLB, and training coordinators. They visited Thailand, Vietnam, and Indonesia- countries which are among the top corn producers in Asia.

The major components of the capacity building program consisted of lectures, institutional visits, field visits, discussions, and exchange of ideas with fellow researchers, scientists, academicians, government officials, and representatives from various private sectors from countries in Southeast Asia where agricultural production of corn is most prominent. Specifically, this joint undertaking of the bureau and UPLB-CEMAFI enabled the participants to: 1) scale-up and improve their skills and capacity by introducing them to up-to-date agricultural technologies and

Expert heightens challenges...from page 13



Participants from various government agencies and state universities and colleges attend the seminar. PHOTO:LPADILLA

of extreme weather events. In fact, today's news and current events showed headlines and chronicles of droughts, floods, and extremes of temperatures occurring at more frequent intervals in different places all over the world.

Climate change, poverty and agriculture

"In the Philippines, poverty incidence continues to inflate affecting several areas in Visayas and Mindanao even where rich agriculture and fisheries industries are located. Without doing climate change adaptation and mitigation, the impact of climate disasters will be more severe [and] the investment required for managing climate disasters will be more expensive and cost for recovery will also increase significantly. This will create a spiral of debt burden for developing countries, exacerbating poverty incidence in poor developing countries and marginalizing the already marginalized population," stated Dr. Espaldon in her presentation.

Dr. Teodoro S. Solsoloy, assistant director of BAR, in his welcome message said, "Climate change is one of the most relevant issues in the Philippines today, especially as it directly affects the agriculture sector."

"With agriculture and fisheries (considering the whole agriculture value chain) accounting for about 35 percent of the gross domestic product (GDP) and about 50 percent of total national employment, the stakes for poverty alleviation due to climate change are high. Climate change in South and

Southeast Asia is expected to reduce agricultural productivity by as much as 50 percent over the next three decades," stated Dr. Espaldon as she tackled the challenges of climate change to human survival.

Opportunities amidst climate change

Climate change has always been viewed as an anomaly. But another way

of looking at it is as an avenue for more opportunities. Dr. Espaldon highlighted the opportunities to thrive amidst the climatic disturbances being experienced in the country.

One of these is smart agriculture which concentrates on crucial aspects such as efficient resource use, environment-friendly inputs, crop and land suitability, market demand and early forecasts of extreme weather events to either avoid or make the best use of such conditions, reduced habitat conversion, and attaining climate resilience.

Knowledge management (KM), a relatively new field of expertise that centers on managing the flow of information and knowledge within and outside communities of practice, can also be tapped as a tool to help farmers adapt to climate change and to empower groups and societies.

"A challenge for all of us," as Dr. Espaldon said, "is in organizing an integrative approach wherein various agencies will build on existing efforts and devise new approaches which can become an effective program for adapting to climate change."

The river basin approach, which focuses on the sustainable interrelation of all the ecosystems within a watershed, calls for orchestrated intergovernmental collaboration where agencies of different, yet interconnected fields such as the Department of Environment and Natural Resources (DENR), Department of Agriculture (DA), BAR, local government units (LGU), and Bureau of Fisheries and Aquatic Resources (BFAR), will be proactive constituents for protecting and managing a watershed from the upland to the water depths. ### (Leila Denisse E. Padilla)



Promoting country drivenness in corn R&D through capacity building program

Story by Daryl Lou A. Battad



To maximize opportunities and means to empower people and their aspirations - this has been the underlying principle of the project, "Capacity Building on Corn Research, Development, and Extension Program for the Department of Agriculture's Research Managers and Regional Field Researchers," a collaborating venture of the Department of Agriculture-Bureau of Agricultural Research (DA-BAR) and the University of the Philippines Los Baños-College of Economics and Management Alumni Foundation, Inc. (UPLB-CEMAFI).

In the realm of agriculture and fisheries, capacity building is considered as one of the strands of sustainable research and development sector. Enhancing capacities of individuals and organizations has taken the limelight in promoting and mainstreaming R&D programs in which attitude, behavior, and practice are expected to change to continuously strengthen a specific

network of expertise.

The success of the implementation of the project manifests a stronger, more engaging, and a more up-to-date corn programs and technologies for a more defined global positioning of Philippine agriculture in terms of corn research and production.

Boosting the Philippine corn industry

In 2011, the Food and Agriculture Organization (FAO) of the United Nations reported that corn is the second largest cereal crop grown in the Philippines next to rice. China is the largest producer of corn in Asia registering 193 million metric tons (mt), followed by India with 22 million mt and Indonesia with 18 million mt. The Philippines ranked fourth in the Asian production of corn with seven million mt, followed by Thailand and Vietnam, both producing five million mt.

Meanwhile, the Bureau of Agricultural Statistics (BAS) revealed in

2012 that the growth in production had reached 20 percent in 1999 and records showed that it had been fluctuating widely since then. This growth in the industry strongly suggests an increased intensity in the country's corn production and management.

In line with this, DA through its National Corn Program has been coordinating efforts and collaborating with other organizations and concerned groups in obtaining self-sufficiency in corn production. In order to acquire a broader perspective regarding corn production technologies, UPLB-CEMAFI's initiative provided research managers and field researchers the opportunity to experience study visits where consultations, field exposures, and exchange of ideas and experiences can pave way to innovating cultural

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Horti Asia 2013 showcases...from previous page



(L-R) BAR staff Karla Marie Zapiter, Special Agriculture Representative Ana GM B. Abejuela, Consul General Edgar B. Badajos, and Ms. Evelyn Juanillo during a photo opportunity.

generated by R&D institutions in the country for adoption and utilization of the country's farmers, fisherfolk, and other clients who need them the most. Attendance to such exhibitions is an important venue to promote Philippine products developed from its renowned commodities, hence, establish linkages and introduce them in the export market.

The whole exhibit area was filled with 140 exhibitors from 15 participating countries including Germany, China, USA, Netherlands, Turkey, New Zealand, Italy, Thailand, India, Philippines, Korea, Taiwan, Malaysia, Australia, and Myanmar.

Organized by VNU Exhibitions Asia Pacific Co., Ltd. (VNUEAP), the three-day event aimed to support and to create awareness on the current fast growing horticulture and floriculture industries and technologies in Southeast Asia.

Consul General Edgar B. Badajos, Special Agriculture Representative Ana GM B. Abejuela, and representatives from the Department of Agricultural Extension in Thailand visited the BAR booth. The soybean products captured the attention of many visitors and considered the tamarind balls different in taste and texture from those produced in their country. ### (Ma. Eloisa H. Aquino)

BAR participates in IFEX 2013



BAR features different R&D technologies derived under its banner programs such as adlai, sweet sorghum, sapinit, and soybean, among others. PHOTO:LBARRA

Food, fun, and facts—these encompass the IFEX 2013 experience. IFEX, or Asia's Ethnic Food and Ingredients Show, is now a biennial international event that showcases and promotes organic ethnic Asian food ingredients.

Exhibitors and guests from all regions of the Philippines, ASEAN countries, and other countries like the United States, gathered to attend the event held on 16-19 May 2013 at SMX Convention Center in Pasay City.

Department of Agriculture (DA) Secretary Proceso J. Alcala, Department of Trade and Industry (DTI) Secretary Gregory C. Domingo, DTI Undersecretary Ponciano C. Manalo, DA-Agribusiness and Marketing Assistance Service (AMAS) Director Leandro H. Gazmin, and Center for International Trade Expositions and Missions (CITEM) Executive Director Rosvi C. Gaetos graced the event. They were joined in by foreign and local grocers and buyers in formally opening the show.

DA Sec. Alcala commended how IFEX has become the "most comprehensive and most distinguished food show in the Philippines" in less than a decade. He also pointed out that IFEX is a place where one can instantly search for innovations, is a good venue for agriculture promotion, and adopts the world's best food show practices.

The show is the culmination not just of culture, but also of the best practices in processing and producing food.

DTI Sec. Domingo on one hand stressed on strengthening the production of the Philippines in terms of agriculture commercialization, establishment of marketing linkages,

and expansion of agriculture exports through providing consistent support to private sectors, employing a holistic approach, and improving the production system of the country.

DTI-CITEM and DA-AMAS aim to increase the profits of and make more globally active the Filipino producers and retailers, thus the Philippines' hosting of the IFEX. Dubbed as the biggest and most distinguished hub for trading and exporting Asian food and produce, IFEX this year featured sections like the International Hall, Retail Hall, and the best of FoodPhilippines.

The best of FoodPhilippines included the DA Pavilion that showcased fresh fruits and vegetables which were offered for sale, Grocer's Exchange which gathered top food exporters and top Asian retail chains to assess possible ventures and future partnerships with producers from the Philippines, and Partner Province and City Program which helps small- and medium-scale enterprises to promote products and services offered by their constituents.

Other highlights were the live cooking demonstration of professional Filipino chefs in Chefs-at-Work, Culinary Craft Spots, City Tour, IFEX After Hours, and Food Industry Seminars that extensively provided the trends and recent developments on food industry. BAR's partner institutions including BAPAMIN Enterprises, Masaganang Gabay sa Kalusugan, and Tropical Fruit Winery were also in attendance.

The next IFEX will be held in India in 2015. ### (Noreen DS. Alazada)

Initiatives to intensify cacao industry discussed

In an effort to inform the farmers, cooperatives, processors and traders, and other stakeholders on the status and opportunities in the cacao industry, the Department of Agriculture-Agribusiness Marketing Assistance Service (DA-AMAS) and the Cocoa Foundation of the Philippines (CocoaPhil) teamed up to organize and conduct a symposium titled, "Philippine Cacao: Beyond Tablea", during the International Food Exhibition on 16 May 2013 at the SMX Convention Center.

The Bureau of Agricultural Research (BAR) joined the event along with some of the well-known cacao companies including Ralfe Gourmet, Valmarce, CocoaPhil, Antonio Pueo, and TB Foods Inc.

Mr. Yeong Chye, managing director of Archer Daniels Midland Co. (ADM) Cocoa Asia Singapore, discussed the global situation of the cacao industry. As far as the chocolate consumption is concerned, Mr. Chye explained that the global supply and demand of cacao is guided by two key elements: 1) economic growth or Gross Domestic Product (GDP) of the country; and 2) disposable income of the people. He reported that for the last seven years, the global supply of cacao had increased to five percent on the average. On the other hand, the demand for cacao had increased to 14 percent. Thus, global demand for cacao had been exceeding the global supply in the last seven years.

As for the continental supply and demand basis, Mr. Chye further explained that the supply of cacao in Asia has decreased by 16 percent while the demand has increased by 20 percent. Asia used to be a net importer but lost its standing due to the decrease in cacao supply. "If the demand for cacao or the consumption growth for cacao increases, you need so much of cacao to support this demand," Mr. Chye added. At present, the demand for cocoa is growing fast especially in Asia and Latin America.

The food sector is noted as having the biggest demand for cacao, specifically for processing chocolates and other food items such as pastries, cakes, and desserts. In the Philippines, private companies like Universal Robina Corporation and Monde Nissin have commercialized 16 new products that are mainly chocolate food products.

In order for industry to succeed in the Philippines, Mr. Chye emphasized two key aspects in cacao production, "make sure you have the lowest cost or you are the lowest cost cacao producer in the country, and you emphasize on the quality, where you produce something the customer wants."

Mr. Edward F. David, president of CocoaPhil, discussed the current situation of the cocoa industry in Philippines. The unstable state of the industry was brought about by the low application of the fermentation process for beans resulting to the production of low quality of



Mr. Yeong Chye, managing director of ADM Cocoa Asia Singapore (above) and CocoaPhil President Mr. Edward F. David discuss on the global and Philippine situation of the cacao industry, respectively. PHOTOS:DA-AFIS

cacao for the local and export markets.

To revive the industry, CocoaPhil developed a Cacao Roadmap. As emphasized in the roadmap, the target production is 100,000 metric tons of cacao for one cropping season. Ten percent of the 1.6 million hectares of coconut land is the target area for cocoa production. Roughly only 160,000 hectares of the total coconut land area will be needed for cacao production. They are recommending intercropping since coconut is already well established, it will entail less labor cost and can provide additional income to coconut farmers. Since cacao falls as a high value crop under the High Value Crops Development Program (HVCDP) of DA, skills enhancement programs are offered to interested farmers. Successful implementation of the roadmap includes the use of selected cacao varieties, establishment of nurseries, its actual planting up to its post-harvest stage.

Through CocoaPhil, postharvest centers were established to process the wet beans. Also, through a BAR-funded research, 24-ton capacity fermentation boxes were established for the use of cocoa producers. Furthermore, from the financial assistance given by the DA, CocoaPhil developed and fabricated Filipino-designed equipment such as solar dryers, hybrid solar dryers, and mechanical dryers for use in drying cacao wet beans. Another significant accomplishment was the development of by-products such as vinegar and renewable fuel from the cacao pods. For their on-going projects, they have established farms which are practicing Integrated Pest Management (IPM).

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Addressing the challenge...from page 12

Agriculture and Fisheries that will serve as the agency's blueprint for the implementation of R&D priority projects in agriculture and fisheries in addressing the effects of climate change in the country.

The components of the program are focused on short- and long-term adaptation strategies and mitigation options that would strategically address the potential damage, take advantage of opportunities, and cope with both the current and future consequences of climate change. Moreover, BAR views these strategies as a direct response to the DA's call for the implementation of AMIA.

Priority will be given to short-term adaptation strategies including technology generation, development of forecasting tools, climate risk assessment, biodiversity conservation, watershed protection and management, and water resources studies. Long-term strategies will include studies like development of climate-resilient crop varieties and animal breeds, promotion of soil microbial diversity, and crop quality assessment, among others. These strategies are imperative to address the potential threats and possible consequences of climate change on agricultural and fisheries commodities, and to farming and fishing communities.

To date, there are 17 short-term and 11 long-term adaptation strategies, and one climate change mitigation BAR-funded projects. These projects are considered priorities according to the DA-Policy and Implementation Program on Climate Change (PIPCC).

BAR serves as one of the DA's front liners in addressing climate change that actively collaborates with other agencies of the government for the successful implementation of policies and programs related to climate change. ### (Patrick Raymund A. Lesaca)

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Southeast by Southeast...from page 11

agriculture, project proposals considered by the meeting include: 1) ASEAN-India Fellowships for higher education in the field of agriculture and allied science in India-India; 2) Training on IT Application for Agricultural Extension (e-Extension)-Thailand; 3) Training on Organic Certification for Fruits and Vegetables-Malaysia; 4) Training on Organizing and Implementing an Effective National Seed Quality Control System-Malaysia; 5) Training on Conventional and Molecular Techniques for Diagnosis of Transboundary Animal Diseases-India; and 6) Managing Food Security and Price Volatility-India.

Future R&D Cooperation

The current Chair of the Senior Officers' Meeting (Lao PDR) of the ASEAN Ministers of Agriculture and Forestry (SOM-AMAF) has identified agricultural research and development as one of the important aspects in addressing food security. "Promotion of joint research for development of technologies for increasing production and productivity in agricultural systems, and efficient management of natural resources; and the exchange of technologies and expertise in the region" are among the activities for consideration by the two regions.

In the Inaugural Session of the 3rd AIWGAF Meeting, Ms. Renu Pall, joint secretary of the ASEAN-MER under the Ministry of External Affairs of India, noted the shared desire between the ASEAN countries and India of "formulating demand-driven projects with collective-ownership and in facilitating the co-steering of research initiatives, eventually establishing an institutional network in the two regions".

Mentioned by ICAR Director General S. Ayyappan for possible joint work over the long run are: hybrid rice technology, breeding for biotic and abiotic stress tolerance (submergence, drought, salinity, diseases and insect pests), resource conservation technologies, gene and allele mining, quality enhancement of agricultural produce, nutrient and water use

efficiency management, climate resilient agriculture, demonstration and exchange of farm implements and machinery, and agroforestry systems.

Dr. Ayyappan also noted that a proposed series of research projects under the cooperation could include: "Evaluation of Post-Harvest Losses in Fish Industry"; "Training on Geo-Informatics Application for Fishery and Marine Resource Management"; "Buffalo Production using Reproductive Biotechnology"; "Empowerment of ASEAN-Indian Women through Cooperatives"; "Development of Knowledge Model for Organizing Agriculture Content"; "Biological Control of Papaya Dieback Disease using Beneficial Bacteria"; "Utilization of the Predatory Mite, *Phytoseiulus persimilis*, for Controlling Herbivorous Mites under Protective Structures"; and "Biological Control of Golden Apple Snail in Irrigated Rice Cultivation". ### (Victoriano B. Guiam)

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ISU adopts technologies to address climate change



Heavily dependent on climate, the agriculture sector is at the receiving end of the detrimental impacts of climate change. Its wide-ranging effects, including wholesale crop loss and destruction of productive lands, deeply affect national productivity in various agricultural commodities.

Recognizing the importance of adaptation and mitigation initiatives in countering the threats posed by climate change, the Bureau of Agricultural Research (BAR), through its Climate Change RDE Program, has given support for the implementation of the project titled, "Climate Change Adaptation Strategies for Agriculture in Community Watersheds of Cagayan River Basin" proposed by the Isabela State University (ISU).

As part of the documentation of BAR-funded projects in CAR and Region 2, a group from BAR together with PTV 4's *Mag-Agri Tayo* visited ISU on 27 May 2013 to monitor and document the project. According to Dr. Orlando Balderama, project leader and a professor at ISU, upland and rainfed farmers comprise almost 70

percent of farmers in the country. They are the ones who are vulnerable and are greatly affected by climate change. "The main objective of this project is to give our farmers solutions to combat the effects of climate change. Since it already exists, we just have to adapt to it. We cannot change it, we cannot revert it. We have to live with it because this is what adaptation means," he said.

Currently halfway through its implementation, the project aims to: 1) conduct climate change impact assessment using simulation models; 2) develop an information system in pilot community watersheds within the Cagayan River Basin; and 3) introduce adaptation strategies and approaches for improved livelihood, soil conservation, and community mobilization in drought-prone areas.

At the same time that the project adopted various technologies and tools for improved crop production in Cagayan Valley, adaptation to climate change is also being studied through less physical means. For instance, Dr. Balderama mentioned the cultural management of drought-tolerant crops such as groundnut,

pigeonpea, and sweet sorghum which were introduced in the country by the India-based International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Through the use of cropping system models, simulation analysis for groundnut was implemented. The technology allows the prediction of crop yield in relation to weather and soil conditions, and crop management scenarios by comparing simulated outcomes with observed results. Using this innovation provides valuable information to farmers especially on improving crop management, increasing yield, and assessing suitable crops and technologies for adoption in lesser amounts of time. Currently, simulations for sweet sorghum and corn are on-going.

Water conservation strategies are also given focus in this project as drought and shortfalls in water are perceived to be the major effects of climate change in the region. As such, water harvesting facilities have been constructed to collect and store surface runoff to be used for

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Second leg of BAR Seminar Series held in Bicol



Participants of the regional seminar series are mostly from the region's DA-Regional Field Units and Local Government Units. PHOTO:ACD

The Bureau of Agricultural Research (BAR), in collaboration with the University of the Philippines Los Baños (UPLB)-Crop Science Cluster, Asian Food Agriculture Cooperation Initiative (AFACI), and the Department of Agriculture-Regional Field Unit 5 (DA-RFU 5), conducted its second Regional Seminar Series on Edible Landscaping and SNAP Hydroponics on 8-9 May 2013 at DA-Bicol Integrated Agricultural Research Center (BIARC) in Pili, Camarines Sur.

Ms. Luz Marcelino, BIARC manager, officially opened the activity with her welcome remarks and extended her appreciation to the Edible Landscaping (EL) Team led by Dr. Fernando Sanchez and to the DA-BAR Team as well. Mr. Patrick Raymund Lesaca from the Applied Communications Division (ACD) of BAR gave a brief overview on the Regional Seminar Series and a short background on AFACI.

Dr. Sanchez, professor and vice chancellor for Planning and Development of UPLB, discussed the principles and elements of EL. The resource speaker also showed different edible landscaping ideas in order for the participants to understand the concept of the

technology. Dr. Sanchez emphasized that EL can be merged to agritourism. Further, agritourism not only brings a steady flow of income in the community but also provides education and recreation to local and foreign tourists.

Mr. Bryan Apacionado, instructor from UPLB-Crop Science Cluster, facilitated the hands-on training on the application of the elements and principles of design, as well as the creation of base map. The participants conducted site orientation and evaluation at BIARC quadrangle, where EL will be applied, followed by the conceptualization and creation of a base map and master plan. Dr. Sanchez and Ms. Norma Medina from UPLB-Crop Science Cluster evaluated the participants' outputs and gave necessary recommendations for the improvement of their master plan.

On the other hand, Mr. Ricardo Bernardo from BAR's ACD discussed the concept of Simple Nutrient Addition Program (SNAP) Hydroponics. He conducted a demonstration on how to prepare the medium and liquid solution. Some of the participants had the chance of preparing the medium using different containers such as styrofoam and polyvinyl chloride (PVC) coke bottle.

In attendance were 51 participants, mostly from DA-Regional Field Units and Local Government Units in Region 5. The final stretch of the Regional Seminar Series on EL and SNAP Hydroponics will be conducted in Region 8. ###
(Liza Angelica D. Barral)



Dr. Fernando Sanchez of UPLB explains the concept, principles, and elements of Edible Landscaping. PHOTO:ACD



Mr. Ricardo Bernardo of BAR lectures on SNAP Hydroponics. PHOTO:BAPACIONADO

Promoting malunggay as feed for dairy goats

Malunggay (*Moringa oleifera*) finds use as food and as traditional medicine, especially in the Philippines, in treating blackheads, diarrhea, eye and ear infection, fever, sprain, and pimples—in preparations as varied as its uses. High in Vitamin A and other essential amino acids and nutrients, there are but a few culinary uses of malunggay save for as soup ingredient or as a salad. Modern use however has extended this to processing of dried malunggay leaves into powdered form in making special bread, noodles, and delicacies like pastries (*puto*, *polvoron*), for making it into herbal teas, or even as a cleaning agent. However, the reach of malunggay does not end here.

During the Department of Agriculture–Bureau of Agricultural Research (DA-BAR) seminar series for the month of May, the Applied Communications Division (ACD) featured a topic on the utilization of malunggay as goat feed for milk production. Attended by about 40 participants from various sectors, the seminar, “Malunggay as Goat Feed,” was conducted by Ms. Remedios Acasio of the DA-Bureau of Animal Industry (DA-BAI), wherein she explained the increasing demand for goat milk and the challenges in meeting the demand.

Although goat is one of the livestock used in dairy production, it remains one of the lesser producers—with only a 9.3 percent increase in heads per year. It falls last



Ms. Remedios Acasio talks on the advantages of utilizing malunggay as feed for dairy goat production. PHOTO:LPADILLA

compared to cows and buffalos. In order to meet the increasing demand, a big improvement in quality for local goat milk to be able to compete with cheaper imported products is needed. Farmers also need to be encouraged to go into dairy goat enterprises to increase their profits and be provided with continuous training on cultural practices for milk production.

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BAR embarks public-private...from page 1



Representatives from the Provincial Government of Oriental Mindoro and farmer-beneficiaries during the meeting. PHOTO:GESPIRITU

Based on the project documents presented to BAR, the Philippines is importing 40,000-65,000 metric tons of coffee every year. In order to be self-sufficient in coffee production, the country requires an estimated 50,000 hectares additional areas planted with coffee. The Provincial Government of Oriental Mindoro will start at 60 hectares, geared towards establishing 10,000 hectares of coffee plantations.

As the lead agency, the Provincial Government of Oriental Mindoro will provide the overall project management, providing technical and administrative assistance. In return, the municipal

government will provide the extension services to the project beneficiaries, ensuring that appropriate organic farming technologies are adopted.

MacNut Philippines, the private company partner, will supply and co-finance the seedlings of Arabica Typica variety for the project. Likewise, the conduct of farmers' training on farming systems and technologies on Arabica coffee, and assist in linking the produced coffee to the market.

NCIP and ERPR will guide the IP organizations in various aspects, and assist in social preparation and capacity building

activities, respectively.

The project is funded under the National Technology Commercialization Program (NTCP), one of the flagship programs of BAR.

To date, six projects have been supported by the bureau in support to the coffee industry. These are in partnership with various agencies including: DA-Northern Mindanao Integrated Agricultural Research Center (NOMIARC), DA-Quezon Agricultural Experiment Station (QAES), Cavite State University (CaVSU), Municipal Government of San Teodoro, Oriental Mindoro, and Ka Tribu, a non-government organization. ### (Ma. Eloisa H. Aquino)

Expert heightens challenges, opportunities amidst climate change

Dr. Espaldon's seminar presentation titled, “Climate Change, Food Security and Human Survival: Some Challenges,” covered essential matters such as global climate change updates, climate change implications in the Philippines, UPLB's research and development efforts on adaptation and mitigation, and smarter agriculture as a strategy for adaptation.

In attendance were partners from the DA such as Agriculture and Fisheries Information Services (AFIS), Agricultural Training Institute (ATI), Bureau of Animal Industry (BAI), Bureau of Plant Industry (BPI), Bureau of Soils and Water Management (BSWM), Bureau of Fisheries and Aquatic Resources-Regional Field Unit II, and DA-RFU IV-A and IV-B; and various state universities and colleges such as Camarines Norte State College (CNSC), Batangas State University (BatSU), Central Luzon State University (CLSU), Nueva Vizcaya State University (NVSU), Pampanga Agricultural College (PAC), Bataan Peninsula State University (BPSU),

University of Rizal System (URS), Mindoro State College of Agriculture and Technology (MinSCAT), Cavite State University (CavSU), Central Bicol State University of Agriculture (CBSUA), and Mariano Marcos State University (MMSU). Judging by the attendance alone, one can tell the level of interest in climate change now and how seriously it is being taken.

Climate change: On a global scale

According to the presentation, global temperature has constantly been rising in varying degrees in different regions of the world in the last 50-100 years. “The global mean temperature is continually increasing even if there are cooling periods,” Dr. Espaldon explained.

In a research conducted by various international organizations, it was found that climate anomalies were caused by massive emissions of greenhouse gases (GHG) which result to continuous warming. Not only are climate patterns altered drastically through time, but also the frequency

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Dr. Maria Victoria O. Espaldon, chancellor for Research and Extension of UPLB and climate change expert PHOTO:LPADILLA

“Climate change exacerbates poverty problems.” Thus, articulated by Dr. Maria Victoria O. Espaldon, vice chancellor for Research and Extension of the University of the Philippines Los Baños (UPLB), in a seminar sponsored by the Bureau of Agricultural Research (BAR) on 23 May 2013 at the bureau's office in Quezon City.

ISU adopts technologies...from page 14

irrigation purposes in agricultural production during times of water deficit.

As part of the development of an information system, ISU also adopted the Geographic Information System (GIS) mapping technology which maps and identifies critical community watersheds in Cagayan Valley which will need specific interventions. GIS mapping profiles the type of soil and determines the type of crops or interventions suitable to the areas identified. In addition, Automatic Weather Stations (AWS) were installed to record and analyze data on rainfall, temperature, radiation, wind, and other climatic variables. The generated data shall be useful to farmers as forecasting tools that will help them make informed decisions regarding their farming activities.

One of the promising technologies that is part of the project does not only address climate change, but also supports the Department of Agriculture's National Year of Rice thrust. ISU also included as one of the project interventions the aerobic rice technology, one of the water-saving technologies for rice production which was introduced by the International Rice Research Institute (IRRI). According to Dr. Balderama, “the traditional rice farming system consumes almost 5,000 liters of water to produce a kilogram of rice. But with aerobic rice, only 1,000 liters of water are needed to produce the same amount of rice.” Mr. Jaime dela Peña, the first adopter of the technology in Echague, Isabela, said that aerobic rice is indeed helpful to small-scale farmers like him because of its suitability in water-scarce areas and its ability to thrive well in

both upland and lowland situations. From his experience, planting aerobic rice requires less inputs and labor, and, therefore leads to more income. In almost five years of planting aerobic rice, he was able to send his children to school and purchase his own equipment for his farming endeavors.

Ultimately, the project wants to empower farmers by equipping them with knowledge on the best technologies with which to overcome the obstacles brought about by climate change. As it is foreseen to be a long-term challenge for the agriculture and fisheries sector, adaptation and mitigation strategies should be given utmost importance to serve as the sector's shield in withstanding the devastating effects of this worldwide phenomenon. ### (Anne Camille B. Brion)

Addressing the challenge of CLIMATE CHANGE through responsive R&D

Climate change is now considered a major threat, not only to agriculture and industry, but to the long-term survival of human civilization. The issues and concerns of unnatural and man-made weather patterns were not so serious or controversial 50-500 years ago. But today, climate change is seen as bringing serious environmental hazards and is poised to counter the productivity developed by the farming and fishing sector.

The Inter-governmental Panel on Climate Change (IPCC) refers to climate change as any change in climate over time, whether due to natural variability or as a result of human activity.

Climate change is inevitable and one must not take things for granted. Otherwise, we will all suffer the consequences. Thus, the Republic of the Philippines promulgated Republic Act 9729, "An Act Mainstreaming Climate Change into Government Policy, Formulations, Establishing the Framework Strategy and Programs on Climate Change, Creating for this Purpose the Climate Change Commission, and for other Purposes," also known as the Climate Change Act of 2009.

In 2010, Republic Act 10121, "An Act Strengthening the Philippine Disaster Risk Reduction and Institutionalization of the National Disaster Risk Reduction and Management Plan," was also enacted into law to fortify further our position in the fight against climate change.

The State adopts the principle of protecting the climate system for the benefit of humankind, on the basis of climate justice, or common but differentiated responsibilities, and invokes the precautionary principle to

guide decision-making in climate risk. The Law seeks the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human interference with the climate system which should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to enable economic development to proceed in a sustainable manner and, more importantly, to ensure that food production is not threatened.

To capitalize on the strength of the laws and ensure successful implementation of all climate change-driven programs and strategies, Secretary Proceso J. Alcala of the Department of Agriculture has issued a Memorandum to all officials of the Department to mainstream climate change in the DA programs, plans and budget. The Secretary likewise approved the Department's Seven-Wide Programs on Climate Change (DA-SWPCC) as follows: 1) Mainstream Climate Change Adaptation and Mitigation Initiatives in Agriculture (AMIA), 2) Climate Information System, 3) Philippine Adaptation and Mitigation in Agriculture Knowledge Toolbox, 4) Climate-Smart Agriculture Infrastructure, 5) Financing and Risk Transfer Instruments on Climate Change, 6) Climate-Smart Agriculture and Fisheries Regulation, and 7) Climate-Smart Agriculture Extension System.

The strategic objectives of the wide-ranging order are to: 1) increase the adaptive capacity and productivity potentials of agriculture and fisheries livelihood by modifying commodity combinations to better meet weather issues, and the standing natural resource endowments; 2) redefine or remap Strategic Agricultural Fisheries

Development Zones (SAFDZs) by including climate change vulnerabilities as part of mapping variables; 3) redefine the agriculture development planning framework as basis for agricultural planning by including key factors/variables associated with climate change; and 4) develop a new framework and plan for the provision of "new" government agriculture services towards the accelerated development of climate-smart agriculture and fisheries industries.

In pursuit of these strategic objectives, the DA agencies are directed to take the necessary steps to migrate from the usual planning framework in the preparation of their respective programs and project plans and incorporate the use of agro-ecological zones, as the overarching planning domain, with due consideration to their watersheds and the corresponding climate change risks, both current and projected. Moreover, the marching orders of the secretary call for all plans and programs of the Department to be climate change-compliant. Essentially, the programs are to be crafted into the key regional strategic plans for the agro-ecological zones before they are translated or contextualized into provincial or LGU plans.

BAR's Response

Climate change research and development is seen as a huge task. The challenge in this endeavor is identifying a common and holistic approach for climate change mitigation and adaptation measures. In response, the Bureau of Agricultural Research (BAR) crafted the DA-BAR's Climate Change Program for

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Tech Com project supports...from page 2



The five recommended rubber clones at the PAC tech-demo farm which is part of the project component.

commercialization in Palawan, officially commenced in 2008 and is now in its fifth year of implementation.

Prior to project implementation, there were already in existence sporadic rubber plantations in the province. A project inventory showed that there were already 380 ha of rubber plantation, of which 345 ha were newly planted areas while the remaining 35 ha have already matured and are productive rubber trees. According to the report, the potential area for rubber expansion in the province is about 112,500 ha.

Puerto Princesa, El Nido, Española, and Coron are the identified locations for project sites in Palawan. Six farmer cooperators were tapped for each project site, with each cooperator planting five of the recommended rubber clones at 100 seedlings for each clone. In a hectare of land, 500 rubber trees can be planted for propagation purposes. The recommended rubber clones are: RRIM 600, PB 260, USM 1, PB 311, and PB 330. "In this research, our objective is to promote rubber clones that are adaptable to Palawan climate," said Elmer T. Ferry, project leader and PAES center chief.

To ensure that there will be a steady supply of planting materials, nursery and budwood garden establishment is included as a project component. The nurseries were placed at Aboabo Rural Agricultural Center and the Palawan Agricultural Center (PAC) of PAES. As of 2012, these two research satellites had produced 56,200 sexually propagated rubber seedlings and a total of 29,502 budded rubber seedlings. The budwood gardens in Aboabo, PAC and Española have a total of 1,000 trees for the five rubber clones. These budwood gardens have been the source of quality budsticks for the production of budded rubber seedlings since 2010.

Expanding rubber plantations

As the goal of the province is to establish Palawan as one of the leading rubber producers in the country, Ms. Teresita Guian, provincial agriculturist of Palawan, said that the provincial government pioneered the "plant now, pay later" program that assists local farmers and interested rubber growers in venturing into rubber production. In this program, the farmer can loan seedlings good for a hectare of land and pay the dues once the rubber trees are already realizing profit. The program also provides support for the establishment of nurseries and budwood gardens.

Ms. Guian also emphasized the harmonious relationship between the provincial government and DA-PAES in providing support for the rubber growers. This statement was reaffirmed by Engr. Ferry who added that the province is very enthusiastic and supportive in strengthening the rubber industry in Palawan.

On the side of PAES, the PAC currently has 7,000 seedlings ready for dispersal to the farmer cooperators. The PAES is still expanding the rubber plantations and they are targeting to produce 60,000 seedlings within the year to be distributed to interested rubber growers.

According to Engr. Ferry, this rubber project was awarded a five million pesos grant for a five-year duration. He added that fund utilization has reached 60-70 percent. The remaining 30 percent will be used for further expansion of rubber plantations in the province, establishment of nurseries and budwood gardens, and the conduct of training activities on tapping management.

In an interview, Ms. Thelma

Kilan of Española, one of the project's farmer cooperators said that among the five recommended clones, the USM 1 and PB 311 performed best. Since the dispersal of seedlings to the farmer cooperators started in 2009, her rubber trees are now in their 4th year. In two more years, she will be able to commence "tapping". She is quite optimistic that she will profit from her venture once she starts to harvest rubber. After all, she does not worry about marketing her produce because of the large demand for rubber products. In preparation for the expected harvest, she and her husband plan to attend trainings on rubber tapping management.

In terms of problems encountered, the proponents reported no major setbacks with rubber propagation. However, they still have the problem of sourcing out the rubber seeds. The seed producers in Palawan cannot cope with the demand so they still need to buy seeds from Mindanao.

Everyone agrees that the real impact of the project will be felt after two-three years when the farmer cooperators start to harvest the rubber latex. With the unmet demand for rubber, not only in the international market but in the domestic market as well, the proponents, the provincial government, and the farmer cooperators as well are confident that rubber will be well worth the wait. ###
(Diana Rose A. de Leon)

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Farmer-cooperators identified, field established



Project leader Dr. Agustin Molina (2nd from left), with local project partners, hands over a GCTCV 219 seedling to Puyod Farm's Manager, Emil Diamante, to symbolically mark the start of planting under this collaborative project. PHOTO: BIOVERSITY

Bioversity International and the Department of Agriculture-Bureau of Agricultural Research (DA-BAR), Philippines have rolled out a collaborative project that sets to offer immediate alternative solution to the Fusarium wilt problem in the country.

By way of a Memorandum of Agreement that was signed in April 2012, the partner institutions, together with local line agencies and private entities, have started working with smallholder Cavendish banana growers in Davao Province, Mindanao, south of Philippines.

The recent Fusarium wilt (causal agent: *Fusariumoxysporum* f. sp. *cubense* - Foc) disease outbreak in this major banana-growing region has rendered small-scale independent growers vulnerable, destroying hundreds of hectares of banana plantations. From an area of 80,000 ha, independent growers produce 30-40 percent of the country's Cavendish bananas for export.

Yet, unlike the multinational companies, they are the ones who do not have the capability to address this disease problem, hence, the urgent need to back them up with helpful options.

This project would make use of GCTCV (Giant Cavendish Tissue Culture Variant) 218 and 219 varieties, which have high resistance

against Foc Tropical Race 4 (TR4), the very race that attacks the Cavendish, *Lakatan* and *Latundan* varieties. These cultivars are products of years-long intensive selection and research by the Taiwan Banana Research Institute (TBRI).

In the 1970s, the booming banana industry of Taiwan had a major breakdown due to Fusarium wilt infestation which wiped out hectares of plantations, hence, the development of varieties that can survive disease onslaught.

GCTCV 218 and 219 (a selection of 119) varieties have some relatively inferior traits compared with the commercial varieties such as longer maturity period, higher plant height and distinctly different hand formation. But they are highly resistant to TR4, taste sweeter than the usual Cavendish, and are acceptable in the export market. These cultivars have been field evaluated in Davao City, Philippines by Bioversity International with Lapanday Foods Corporation.

This project would heavily involve farmer-cooperators who own at least a hectare of field heavily infested with FocTR4. They should be willing to self-conduct the gathering of data, under the supervision of local government partner agencies and Bioversity.

So far, of the 20 target farmer-cooperators, 15 have been identified and agreed to participate in the project. Project locations cover the Calinan and Tugbok Districts, Davao City, Davao del Norte and Compostela Valley.

Field evaluation plots have been established in the identified farms and approximately 26,000 GCTCV 219 seedlings have been planted in the fields, along with Gran Naine to serve as control. At least 14,000 more of these seedlings will be planted in the coming months. A participatory rapid appraisal (PRA) is currently being conducted among the farmer-cooperators.

Complementary capability-building activities for the farmer-cooperators and local researchers and extensionists, particularly on disease diagnosis, management tactics, and field selection of improved Cavendish resistant varieties, are in the pipeline.

Bioversity International is a research-for-development organization working with partners worldwide to use and conserve agricultural and tree biodiversity for improved livelihoods, nutrition, sustainability and productive and resilient ecosystems. With base in Los Baños, Laguna, Bioversity is a member of the CGIAR consortium, a global research partnership for a food secure future. ###

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Initiatives to intensify cacao...from page 6

Mr. David also stated that there are studies being conducted by our local scientists and researchers specifically in the areas of drying, fermentation, equipment and processing. That is why the speaker also emphasized the importance of financial assistance from other local institutions. Related to this, CocoaPhil is now ready to build cacao centers in areas adjacent to where cacao plantations will be established like in Tiaong, Quezon and Naga City, Camarines Sur. To expand project coverage nationwide, CocoaPhil is also planning to establish cacao plantations in selected sites in Visayas and Mindanao. ### (Liza Angelica D. Barral and Karla Marie D. Zapiter)

Southeast by Southeast: India partners with ASEAN on agricultural R&D

India started as a dialogue partner of ASEAN in 1992. Since then, the relationship has progressed and the extent of development cooperation activities/areas has grown. ASEAN-India cooperation now covers the following sectors: trade and investment, science and technology (S&T), human resources development, tourism, transport and infrastructure, health, small & medium-scale enterprise, and people-to-people contact. Significantly, S&T has been one of the mutually beneficial areas. In the 5th Meeting of the ASEAN-India Joint Cooperation Committee in 2003, India proposed a new sector of co-operation: agriculture.

The ASEAN-India Working Group on Agriculture and Forestry

India, with her Look East Policy, reaffirmed the importance of East Asia, including ASEAN, in the context of global geopolitical and geo-economic development. Complementarity and synergy are seen as the order of the day. Towards these ends, the Ministers of Agriculture of the ASEAN member-countries agreed to the establishment of the ASEAN-India Working Group on Agriculture and Forestry (AIWGAF) on 8 October 2011 with the view to promote and intensify cooperation in the agriculture & forestry sector between ASEAN and India.

The Medium-Term Plan of Action drawn up for ASEAN-India Cooperation in Agriculture for 2011-2015 places emphasis on: 1) enhancement of productivity of agricultural products and meet the challenges of food security, as well as their accessibility to global markets; 2) promoting networking between government authorities concerned as well as between agriculture experts/scientists and the agriculture-related academic institutions of ASEAN Member Countries and India;

3) promoting capacity building, technology transfer and R&D as may be mutually agreed upon for global competence in agriculture; and 4) information sharing to enhance farming practices and management skills of ASEAN and Indian farmers.

Thus far, six projects have been completed, majority of which are for experience-sharing and for building capacity. These include:

- Training on Advances in Agricultural Equipment for Productivity Enhancement including Precision Farming, 23 April – 5 May 2012, in Bhopal, India
- Training on Processing and Value Addition of Soy Products and Coarse Cereals, 7 - 19 May 2012, in Bhopal, India
- Training on Production and Processing Technology for Value Addition of Horticultural Products, 30 April – 12 May 2012, in Ludhiana, India
- Two Exchange Visits for Young Farmers between ASEAN and India on 19-30 December 2012 in India and participated in by 27 farmers and agricultural officers from ASEAN Member States (AMSs), and on 14-23 April 2013 in Malaysia for Indian farmers and agricultural officers
- Publication of the ASEAN-India Newsletter on Agriculture and Forestry, produced through the Indian Council of Agricultural Research (ICAR) as a semi-annual publication (March/October)
- Conduct of the ASEAN-India Agri-Expo on 17-19 October 2012 in New Delhi in which DA-ATI represented the Philippines

In addition, a Conference of Heads of Agricultural Universities was held in New Delhi on 19-20 February 2013. Among the items discussed was



Participants of the 3rd AIWGAF Meeting PHOTO COURTESY OF VGUIAM

the establishment of a networking among the agricultural research, education and extension institutions of the AMSs and India, as well as the exchange of scientists from agricultural research institutions of both AMSs and India.

A "Workshop on Climate Change Adaptation and Mitigation in Agriculture Sector in India and ASEAN Countries," conducted on 23-25 August 2012 in New Delhi, tackled research networking projects on climate change assessment, mitigation and adaptation; technology transfer, HRD programmes; and institutional support.

The 3rd AIWGAF Meeting

The 3rd AIWGAF Meeting held on 6-8 May 2013 in New Delhi, in which Director Asterio Salio of the Agricultural Training Institute (ATI) and Mr. Victoriano Guiam of the Bureau of Agricultural Research (BAR) represented the country as delegation head and member, respectively, discussed the linking of agriculture experts/scientists, and identified academic institutions in India and ASEAN as espoused by the proposal, exchange of scientists between agricultural education, research and extension institutions of ASEAN Member Countries and India, by India.

To promote capacity building, technology transfer and R&D to develop global competence in

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