

Trichantera, cheap feed...from page 15

branches. They also control soil erosion.

“As feedstuff, *Trichantera* is well-accepted by pigs in their diets. There is no report of any toxicity or any toxic substances,” she said. *Trichantera* has crude protein (19.26 percent), crude fiber (14.41 percent), calcium (6.19 percent), and phosphorous (0.25 percent).

Why native pig?

“The Philippine native pig maintains its niche in the demand for a Filipino delicacy called 'lechon' because of taste and crunchiness,” explained Dr. Etis. She added at

investment. The present volume of pork production is still insufficient so native pigs can supply part of the market demand for pork. Second, the Philippine native pigs are very rich sources of genetic materials for development of local breeds adapted to the local conditions



PHOTO COURTESY OF VETSIJRS

“Fodder plants like *Trichantera* are preferred feed source because they are cheap. They are easy to propagate and therefore readily-available and more sustainable. -Dr. Etis”

least three potentials of this industry and why farmers should start raising native pigs.

“For one, it is a source of additional income in a subsistence economy at a very low capital

of the country. Third, its meat is a good source of a healthy pork diet. Native pigs offer a great potential for producing organic meats if reared naturally and fed organic feeds such as *Trichantera*,” she said.

Results of studies

Overall conclusion of Dr. Etis' three studies which tested the feeding value of *Trichantera* on Philippine native pigs showed that “*Trichantera* can be fed to native pigs up to 30 percent of their diets whether as a replacement of commercial rations or as formulated diets. Utilization of *Trichantera* for native pigs can be maximized up to 45 percent but in combination of high-energy feeds like corn. ###

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BAR wins 2 BINHI awards



PHOTO: ABRION

as the Agricultural Newsletter of the Year. Written in this publication are news and feature articles about the activities and R&D-supported projects of the bureau and of the National Research and Development System for Agriculture and Fisheries (NaRDSAF) community. Also featured in the publication are technologies and breakthroughs that emanated from BAR-funded researches.

Meanwhile, Ms. Rita T. dela Cruz was hailed as the

Agricultural Photojournalist of the Year. Ms. dela Cruz, a photo hobbyist, is the head of the Publication Section of the Applied Communication Division and serves as the editor-in-chief of the bureau's regular publications, *BAR Chronicle* and *BAR R&D Digest*.

Three's a charm for both *BAR Chronicle* and Ms. dela Cruz as this year marked their third win under the same respective categories, and are now considered as Hall of Famers. Both won first in 2007, then in 2010.

Spearheaded by the Philippine Agricultural Journalists, Inc. (PAJ), the Binhi Awards is known as a prestigious and one of the most awaited agricultural journalism contests in the country which started in 1978. Established in 1976, PAJ is a non-stock, non-profit professional organization of agriculture sectors and reports from the print and broadcast media, as well as information writers from government and private agencies involved in agriculture. This year, PAJ partnered with San Miguel Corporation (SMC), offering bigger prizes and more attractive incentives to agricultural journalists.

Over 100 participants comprising editors, writers, and journalists covering agriculture and environmental beats coming from Luzon, Visayas, and Mindanao vied for recognition under 14 categories.

It was in 2007, under the leadership of its current director, Dr. Nicomedes P. Eleazar, when BAR started to join the contest. To date, it has already won 8 awards under different categories. ### (*Anne Camille B. Brion*)



BAR writers, led by Applied Communication Division Head Julia Lapitan (left photo, 3rd from left), accept the trophy for *BAR Chronicle* as Agricultural Newsletter of the Year; while Ms. Rita dela Cruz (right photo, 2nd from left) receives the award as Agricultural Photojournalist of the Year. PHOTOS: ADEJESUS

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BAR Director Nicomedes P. Eleazar (left photo, 4th from left) and PCAARRD Executive Director Patricio S. Faylon (right photo, 4th from left) receive special citations for the efforts of BAR and PCAARRD in promoting rainfed agriculture. PHOTOS: DDELEON&RDELACRUZ

PHILIPPINES and ICRISAT far-reaching partnership celebrated

To recognize the extensive and fruitful partnership between the Philippines and the International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT), the Bureau of Agricultural Research (BAR) held the “Celebration of ICRISAT-Philippines Partnership” on 15 December 2014.

The celebration was conducted to honor and to recognize the 45 agencies/organizations that became instrumental in supporting the various research and development (R&D) initiatives of ICRISAT into the country. Among them were: 8 from the Department of Agriculture-Regional Field Offices (DA-RFOs), 3 from DA-attached agencies and staff bureaus, 13 from the local government units (LGUs), and 19 from state universities

and colleges (SUCs). The awardees contributed to the success of bringing various technologies developed by ICRISAT to be implemented and used in the Philippines.

Two special citations were also awarded to Dr. Nicomedes P. Eleazar, director of BAR and the Dr. Patricio S. Faylon, executive director of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), in recognition of their conscientious efforts and determinations in promoting rainfed agriculture for smallholder farmers in the Philippines.

In a speech delivered by Dr. William D. Dar, director general of

ICRISAT, he reiterated the need for a holistic approach, which ICRISAT is doing, and that hopefully, he wanted for the Philippines, particularly the National Agricultural Research Centers (NARCs) to also try. “We need a very holistic way of tackling the very problem that is confronting the rainfed farming in the country. You can no longer depend on conventional approaches. We need to bring in newer and holistic approaches to bring the communities. At the end, it is the farmer who will sustain the interventions, the technologies, and the delivery system that we are trying to promote,” he said.

Dr. Dar suggested the Philippine-partners to strengthen the relationship with the international

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Trichantera: cheap feed source for organic native pig production

By Rita T. dela Cruz

High feed cost takes a huge portion of the cost in swine production. In fact, according to Dr. Virgie N. Callo-Etis, professor at the University Rizal System (URS) and project leader of native pig research funded by the Bureau of Agricultural Research (BAR), “about 70-80 percent of the total cost of production is spent on feeds if pure commercial feeds are used.”

Feed cost, however can be reduced if locally-grown feedstuffs are utilized for feeding native pigs. Hence, the group of Dr. Etis conducted a study that determined the economic potential of raising native pigs using *Trichantera* (*Trichantera gigantea*) as source.

The study specifically hoped to determine the feeding value of *Trichantera* for Philippine native pigs in terms of growth, meat quality, and economic performance. It looked into the three feeding value of *Trichantera* as: partial replacement to commercial diets (study 1), formulated rations in *gabi*-

based diets (study 2), and formulated rations in *gabi*-and corn-based diets (study 3).

What is *Trichantera*?

Trichantera, also known as “madre de agua” or “nacedero”, is a fodder plant introduced into the Philippines some years ago from Latin America, particularly in Colombia and Venezuela. According to Dr. Etis, this plant adapts well in local tropical conditions and grows well easily between plantation crops producing 12 tons of dry matter per hectare per year. It can grow up to three meter-high, but may be pruned for ease of harvesting and good herbage yield.

This plant has been known as a good feed source for swine. In fact, at the Southern Mindanao Integrated Agricultural Research Center (SMIARC) of the Department of Agriculture-Regional Field Office 11, a techno guide was developed that teaches swine raisers to use *Trichantera* as feed supplement. Its young leaves are offered fresh to pigs replacing about 20-30 percent of its

required commercial diet. It can also be processed into leaf meal and use as ingredients in mash. According to SMIARC, six kilograms of fresh leaves consumed by pigs per day is equivalent to one kilogram of mixed feeds saved.

Although proven effective for commercial swine production, Dr. Etis' study is looking into the feeding value of *Trichantera* as feeds on native pigs particularly, for the production of its organic meat.

“Fodder plants like *Trichantera* are preferred feed source because they are cheap. They are easy to propagate and therefore readily available and more sustainable,” she reported.

Dr. Etis cited that *Trichantera* leaves are good sources of proteins for poultry and livestock, while its trunks and branches are efficient substrate for gasification. Fodder plants are also good sinks for carbon dioxide (CO₂) and for methane (CH₄) particularly those coming from decaying organic matter from fallen leaves and unused

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with the assistance of Philippine Nuclear Research Institute (PNRI). In-vivo testing of the wound patches was also conducted in laboratory animals at UP College of Veterinary Medicine (UPVM) and preliminary testing also started in humans particularly in Philippine Nuclear Research Institute (PNRI) and at tertiary hospitals in Quezon City like East Avenue Medical Center (EAMC), National Kidney and Transplant Institute (NKTi) and Philippine Heart Center (PHC).

Based on the research results, it can be concluded that 30 percent EEBP from the Philippine stingless bee possesses antimicrobial property against certain bacteria and it promotes faster incisional wound healing in cats. Furthermore, propolis-alginate dressing promotes faster and better healing of sutured and incisional wounds in mouse. These results showed the potential of propolis-alginate dressing as an alternative product for wound healing management of animals and humans.



The clinical relevance and therapeutic application of honey (left) and propolis (right) from stingless bees were studied by researchers from UPLB for their effectiveness as healing agent. PHOTOS:RDELACRUZ

Due to the significant results, the project team conducted various commercialization activities through standardization of medical grade honey and propolis as well as the product development of wound patch. Market prospecting was also initiated by the researchers by scouting partner veterinary and human pharmaceutical companies who may show interest in using or even distributing the new alternative products.

This particular research breakthrough will definitely capture the attention of various institutions such as medical and veterinary community, private and government hospitals,

military, and pharmaceutical companies. As the advantages and benefits of the products were realized, there will be an increasing demand of bee products particularly the locally-produced propolis which will add commercial economic value and can further preserve and strengthen the Philippine apiculture industry.

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DA, BAR, PCAARRD...from page 3

research centers must be strengthened so as not to reinvent the wheel because the technologies are ready for adaptation in a country, at the regional, provincial and community levels.

"I am pleading to you the leaders of the national agricultural research centers to see to it that we bring systematically in this with the international research centers because they have advanced capacities in basic sciences and let us tap the knowledge that they have generated and convert that into technology and promote it in a big way," he said.

Also present during the activity were Bureau of Soils and Water Management Director Silvino Q. Tejada, University of the Philippines Los Baños Chancellor Fernando Sanchez, Jr., Pampanga Agricultural College President Honorio M. Soriano, Jr.; Mayor Edgar Florendo of Sta. Maria, Ilocos Sur; and ICRISAT experts, Dileepkumar Guntuku and Rajeev Varshney. ### (Rita T. dela Cruz)

Capacitating goat farmers...from page 12

which will command higher prices.

Planting of improved grasses and legumes have been planted in marginalized and underutilized lands of the barangays and in the boundaries of farms owned by the goat raisers as well.

Finally, Dr. Beltran placed the kicker by saying that goat is gold and raising these "natural lawn mowers" is a potent pathway out of poverty. ### (Patrick Raymund A. Lesaca)

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DA, BAR, PCAARRD are funding champions of R&D -Dar



Present during the "Celebration of ICRISAT-Philippines Partnership" are (L-R) BSWM Director Silvino Q. Tejada, ICRISAT Director General William D. Dar, BAR Director Nicomedes P. Eleazar, and PCAARRD Executive Director Patricio S. Faylon.

PHOTO:RDELACRUZ

"There are many things that we introduce in many ways here in the Philippines with the funding support of BAR, DA, or PCAARRD—they are the three major funding champions as we call them, because R&D work is supported by the investments coming from these three agencies," said Dr. William D. Dar in his speech during the "Celebration of ICRISAT-Philippines Partnership" held on 15 December 2014 at the Bureau of Agricultural Research (BAR). The celebration was held in recognition of the established partnership between the Philippines and the International Crops Research Institute for the Semi-Arid-Tropics (ICRISAT) that, as Dr. Dar put it, "has withstood the test of time".

Present during the celebration were Dr. Nicomedes P. Eleazar, director of BAR; and Dr. Patricio S. Faylon, executive director of the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), who were both given special awards for their continued and unwavering

support to the R&D initiatives of ICRISAT in the country. The awards were also in recognition of their conscientious efforts and determinations in promoting rainfed agriculture for smallholder farmers in the Philippines.

Dr. Dar will finish his term as ICRISAT Director General in December 2014 after 15 years of transformative leadership in agricultural research. Thus, he mentioned his appreciation to BAR for initiating such event and dedicated the celebration to the farmers whom the sector continues to serve. "It is not us, benefiting the work we do together, but it is the smallholder farmers in the rainfed areas of the Philippines," he underscored.

"ICRISAT cannot do the work alone and that is why in every country we develop and nurture this partnership like what we have here in the Philippines. The Philippines is a special partner of ICRISAT because I am a Filipino. Every opportunity that we can learn in ICRISAT, every technology, every methodology that we have, we always present it to the Philippines through these three funding agencies.

And that is why a good number of these ideas are now being implemented here in various ways," Dr. Dar explained.

He mentioned the four major crops of ICRISAT that were introduced in the country through its partnership with the Philippines. Among them included sweet sorghum, peanut, pigeonpea, and chickpea. "Majority of the parental lines are coming from advanced lines of ICRISAT. Every line that we bring to the country, for any of the four crops that we have, and we have already introduced 1,000 lines of sweet sorghum, every line we invest through fund sourcing, half a million dollars worth before we bring the advanced lines to any country like the Philippines. So that is the level of investment that ICRISAT gives, and of course, the Philippine government through the three funding agencies and all of you, as part and behind the R&D network, that do the adaptation until it is ready for commercialization," he shared.

Dr. Dar hoped that the varieties that were introduced and tested in the country would eventually undergo the accreditation process and be registered. "Once registered the DA-Regional Field Offices and the state universities and colleges (SUCs) in the country will take the liberty to commercialize and upscale this, not only hundreds of hectares but thousands and thousands of hectares. That is the upscaling that we desire. We need to create a big impact into the lives of the communities of the rainfed areas of this country," he added.

Addressed to major funding supporters of ICRISAT, BAR and PCAARRD, Dr. Dar suggested that these two agencies nurture further their relationship with the international agricultural research centers because according to him, "these are global research centers in their sphere of competence or engagement and mostly basic science plus strategic science and you can harness the power of what they already have and finetune it at the country's regional or provincial levels." He said that such partnership with international agricultural

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BENEFITS FROM BEE

highlighted during apiculture workshop

In an effort to assess the progress of the BAR-funded projects on apiculture, a review and planning workshop was conducted on 9-12 December 2014 at the Widus Hotel in Clark, Pampanga. The event, "Project Review and Planning Workshop on Apiculture in Support to Organic Agriculture" sought to determine the status of the projects and to formulate the 2015 strategic action plan in support to organic agriculture.



Beekeepers, scientists, researchers, and technical staff attend and participate in the "Project Review and Planning Workshop on Apiculture in Support to Organic Agriculture". PHOTO: PLESACA

On behalf of Director Nicomedes P. Eleazar, Mr. Anthony B. Obligado, chief of the Technology Commercialization Division, welcomed the participants. In his address, he mentioned the need to assess what has been accomplished and to plan on what to do next. He added that apiculture or beekeeping is a promising enterprise and has a huge potential in providing additional source of income to farmers and entrepreneurs. "Bees are considered an important component in organic agriculture for they help in the cross-pollination process of organic crops, which can effectively improve and increase crop yields. It is for this reason that we should capitalize on the bee benefits in agriculture and push the multiple benefits to farmers and consumers," he underscored.

Dr. Eleazar later joined in the event and welcomed the participants and acknowledged the support of all the agencies for making beekeeping a major part of agricultural production. He urged stakeholders to increase the production of honey bees as this can be translated into viable and marketable bee-based products. He also shared that Secretary Proceso J. Alcala is promoting bee products as gifts whenever he goes abroad.

Sixteen projects (5 completed, 8 on-going, and 3 new) were reviewed.

Eight projects were presented by the proponents who shared the results of their respective apiculture endeavors. Among the presentations included: 1) "Genetic Variation in Natural Populations of *Trigona* spp. from Selected Areas in Mainland Luzon Based on Mitochondrial DNA Analysis" by Dr. Ma. Carmina Manuel of the University of the Philippines Los Baños (UPLB); 2) "Apitherapy in Animals: Clinical Testing and Therapeutic Application of Formulated Bee Products as Antimicrobial and Wound Healing Enhancing Agent Using Animal Models" by Dr. Amie Estacio of UPLB; 3) "Diversity of Native Species of Bees in Mt. Banahaw-San Cristobal Protected Landscape" by Dr. Amalia Almazol of the Southern Luzon State University (SLSU); 4) "Production and Management of Multi-Bee Species for Livelihood and Pollination of High Value Commercial Crops" by Ms. Merryline Gappi of LGU-Batac, Ilocos Norte; 5) "Integration of Beekeeping to Coconut Farming System" by Dr. Froilan Pacris, Cagayan State University (CSU); 6) "Enhancement of Lipa-LGU Bee Program for

Livelihood, Agricultural Productivity and Biodiversity" by Mr. Aldrin Pagcaliwangan, LGU-Lipa, Batangas; 7) "Packaging of Apiculture Food-Based and Non-Food Based Products" by Prof. Shirley Lopez of the Don Mariano Marcos Memorial State University (DMMMSU); and 8) "Promotion of Beekeeping and Bee Product and By-product Development" by Dr. Estrella Zabala and Mr. Emmanuel Pangalanan of the Pampanga Agricultural College (PAC).

The panel of evaluators were Dr. Cleofas Cervancia of the UPLB Bee Program and president of Apimondia Asia; Dr. Lita Colting, professor, Benguet State University; Dr. Jaime C. Dangle, director, National Apiculture Research, Training, and Development Institute (NARTDI); and Ms. Virginia Agcopra, BAR technical adviser. Ms. Evelyn Juanillo of BAR served as the moderator.

Prior to the review, Ms. Agcopra discussed the workshop mechanics, while Dr. Cervancia presented the "Status of the Bee Industry in the Philippines".

Ms. Fe Bien Garcia of the

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Gamma-radiated honey (left) and propolis-alginate (right) wound patches developed by UPLB

The newest, certified WOUND-HEALING AGENT comes from bees

By Liza Angelica D. Barral

Bees are famous for its huge contribution to the ecosystem as they are excellent pollinators of crops and wild plants. Aside from the environment, bees are also beneficial to humans and animals because they are good sources of food and medicine. The most common among bee products is honey which is composed of more than 200 substances like fructose, glucose, amino acids, vitamins and minerals, flavonoids and phenolic acids, and enzymes which are good energy and immune booster, anti-inflammatory agents and certified natural home remedy to treat various ailments such as sore throat, wound, burns and cuts.

Another wonder bee product that people are unfamiliar with is the propolis or bee glue. It is a resinous substance composed of gummy and balsamic material collected by bees from sprouts, flower buds, trees, and other vegetal-tissue resinous exudates which are being used by the worker bees to repair their comb. The color appearance depends on the

type of vegetation where it was collected by soldier bees and is usually ochre, red, brown, light brown or green in color (Park et al., 1998).

But do you know that propolis has an exceptional use to both animals and humans?

Since the time of Hippocrates, propolis has been widely considered as a therapeutic agent. Historical accounts showed that propolis was also used by Egyptian priests for medicine, mummification and chemistry. It was proven by various researches that the ethanol extracts of propolis (EEP) exhibits some pharmacological activities such as cytostatic properties, anti-fungal, antiviral, anti-inflammatory, anesthetic and anti-bacterial properties (Marcucci, 1995 and Kujumgiev et al., 1999). In Eastern European countries, propolis from *Apis* sp. Lin. was used as antiseptic and anti-inflammatory agents in healing wounds and burns (Bankova, et al., 1992). The efficacy of ethanol propolis extract as topical treatment was also tested and it was found out that it is almost effective as

the commercial anti-biotic, Nystatin against *Candida albicans* (Santos, et al., 2005).

Despite the numerous scientific reports pertaining to the huge healing potential of honey and propolis, there were no local studies conducted to test and verify its therapeutic application.

Groundbreaking research

To investigate the clinical relevance and therapeutic application of local bee propolis as a rapid and effective healing agent, the College of Veterinary Medicine of the University of the Philippines Los Baños (UPLB) headed by Dr. Ma. Amelita C.

Estacio, implemented a project titled "Apitherapy in Animals: Clinical Testing and Therapeutic Application of Formulated Bee Products as Anti-Microbial and Wound Healing Enhancing Agent Using Animal Models". The Bureau of Agricultural Research (BAR) supported the research project in 2012 which aimed to: 1) compare the efficacy of ethanol extracted propolis (EEP) with the conventional antibiotic dressing in incisional wound healing, 2) compare the efficacy of newly developed gamma-radiated propolis-alginate patch with the antibiotic-laden patch in incisional and sutured wounds, and 3) compare the efficacy of newly developed gamma-radiated honey-alginate patch with the antibiotic-laden patch in incisional and sutured wounds.

From verification to future application

During the research proper, the project team was able to obtain fresh bee propolis with the help of the UPLB Bee Program. The team was able to establish the minimum effective concentration of propolis for wound management and antimicrobial and wound healing activities of 30 percent ethanol extracted bee propolis (30 percent EEBP).

As one of the project components, the researchers were able to produce and develop wound patches and evaluated the healing properties of gamma-radiated honey and propolis-alginate wound patches

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CAPACITATING GOAT FARMERS THROUGH FLS-IGM

Goat is an important component of the livestock sector. Raising goat provides employment both for backyard and commercial operations. The chevon (goat's meat) is also a good source of protein among Filipinos, and its milk and dairy production continue to boost the development of the goat industry.

In a report presented by Dr. Ma. Asuncion G. Beltran of the Tarlac College of Agriculture (TCA) during a seminar organized by the Bureau of Agricultural Research (BAR), she mentioned that the country's total goat inventory as of 2013 stood at more than 3 million heads. In terms of farm type, only 2-3 percent is devoted to commercial scale, while roughly 97 percent is geographically raised in backyards.

Given its bright perspective, there is so much to be done.

While it is true that majority of goat farmers dominated the backyard industry, farmers still need to be re-oriented on the proper production and management of small ruminant as observed and studied by Dr. Beltran. She is also the project leader a BAR-funded project, "Enhancing Goat Productivity thru Adaptation of Technologies on Farmers' Livestock School on Integrated Goat Management (FLS-IGM)," which aimed to enhance goat productivity through the FLS-IGM approach.

In her presentation, Dr. Beltran articulated that, based on a benchmark survey conducted among goat farmers, it was found that majority of them are still traditional breeders and backyard raisers. It was also documented during that study that farmers still practice conventional approaches such as tethering in communal pastures with mix parasitic infections is very common, there were no proper housing facilities, they lack appropriate technologies, no market support, and mortalities during rainy season increased.

"We can capacitate our farmers and maximize the benefits of goat

raising through the FLS-IGM," revealed Dr. Beltran.

The FLS-IGM is a training course, which runs for a total duration of 28-weeks. It is also a discovery-based scientific approach to agricultural extension adapting the Farmer Field School (FFS) methodology. The first field school in the country that tackles integrated goat management looking at goat worm management on a holistic perspective including feeding, breeding, husbandry, economics, and allied enterprise management. The course uses the community-based participatory approach wherein farmers are provided with first hand skills and knowledge about goat production and management. The system allows continuous dialogue among farmers on a rotational basis conducted in different farmer sites to encourage self-awareness, realization and empowerment.

Dr. Beltran, in a way of encouraging the participants, shared the many advantages of goat raising such as that it only requires small amount of initial investment; it can be integrated with crop-based farming system; provides meat, milk and skin for processing into high-value products; it has a shorter ROI (return on investment); the manure can be used as fertilizer; goat thrives in marginal vegetation; capable of multiple births; have shorter gestation period; and can be milked for seven months, among others.

Since the project had already been completed, the project leader enumerated the accomplishments of the training program and revealed that



Buck loaning to FLS-IGM graduates to improve their native stocks

there was a 15 percent significant increased in goat production. There are now 20 commercial goat farms (with more than 100 heads and 210 new goat raisers) in Tarlac. Farmers learned to develop ways to lower mortality thru FLS-IGM technologies like teaching farmers on housing provision, late grazing, stall feeding with leaves with anthelmintic qualities, strategic deworming. With these technologies, 40 percent decreased in mortality was achieved.

The conduct of FLS-IGM also increased women participation by 32.6 percent. The involvement of children and other household members were also observed. Goats were preferred more than cattle because they are docile and smaller, and easier to handle.

Looking at the economic side, the initial budgetary requirement for raising a five-doe level is PhP 43,769 and the total expected income is PhP 82,000 as derived from sales of breeders, culled animals, and milk. This generated an earning of PhP 38,231 with an ROI of 87.34 percent. Within two years of operation, five does can produce 22 goats and will dramatically improve during the succeeding years of operation due to increase bloodline of the animals,

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Small Hive Beetle poses threat to bee industry -Cervancia



SHB adults and their size (inset photo) when compared to a worker bee
PHOTOS from: www.ars.usda.gov

Small hive beetle (SHB) is a major threat to the beekeeping industry as it affects the conservation of indigenous bees and consequently extends to the agriculture and environment sectors by disrupting pollination services," revealed Dr. Cleofas Cervancia, professor emeritus at the University of the Philippines Los Baños (UPLB) and president of the APIMONDIA Regional Commission for Asia, an international federation of beekeepers' associations.

The concern on SHB, particularly its potential threat to the Philippine bee industry, was one of the issues raised during the conduct of the "Project Review and Planning Workshop on Apiculture in Support to Organic Agriculture" held on 9-12 December 2014 in Clark, Pampanga. The event was spearheaded by the Bureau of Agricultural Research (BAR), being apiculture as one of its priority programs.

Dr. Cervancia substantiated that the decrease in the bee population will surely affect food production considering that pollination helps in the reproduction of nearly 85 percent of the world's flowering plants and 35 percent of the global crop production.

"SHB eats everything in the colony including pollen, brood, honey, dead adult bees, and combs. This causes honey to ferment in the process, thereby rendering the honey foul and considered unfit for human consumption," Dr. Cervancia explained.

Small hive beetle (*Aethina tumida* Murray) can easily be detected as it is visible to the naked eye. Adult beetles measure about 5 mm long and 3 mm wide and are dark brown in color.

They can be seen on the bottom board, frames and top covers of the honey comb. Larval infestations are commonly associated with foul odor which is caused by the death of bee brood.

SHB is reported to be native to sub-Saharan Africa.

Reported cases of

SHB incursion were in some parts of the United States, Australia, Portugal, and Italy. "Now, it is in the Philippines," reported Dr. Cervancia.

An SHB case reported in the country happened in Lupon, Davao Oriental in June 2014 through Mr. Epifanio C. Loyola, Jr. of Beenet Philippines. Samples of the beetles found in the area were sent to UPLB and was confirmed to be *Aethina tumida*. "The infestation was severe, and majority of the bee colonies collapsed. Through UPLB and DA-BAR initiatives, the UPLB Bee Program Team together with Mr. Loyola and other beekeepers inspected the apiaries in Lupon, Davao Oriental, Bukidnon, and General Santos in November 2014. Except for apiaries in Bukidnon, all the colonies were severely infested by the SHB. The team managed the colonies by collecting all SHB, cleaning the hives, and installing SHB traps with baits," Dr. Cervancia elaborated.

"The SHB presents a threat to the bee industry. We should streamline government policies on quarantine and biosecurity measures, such as prohibiting the inter-island movement of bees," Dr. Cervancia furthered.

As of now, the UPLB Bee Program has started studying the distribution patterns of SHB in Visayas and Mindanao, and plans on embarking a project in collaboration with DA-BAR and DA-High Value Crops Development Program on integrated control measures for the insect pest. ### (Anne Camille B. Brion)

YAGO, SORIANO TAKE HOME

Dr. Jonar I. Yago of the Nueva Vizcaya State University (NVSU) and Ms. Emily A. Soriano of the Central Luzon Integrated Agricultural Research Center (CLIARC), Department of Agriculture-Regional Field Office (DA-RFO) 3, bested a list of seasoned and prolific R&D practitioners in winning the highly-acclaimed 2014 Gawad Saka Outstanding Agricultural Scientist and Outstanding Researcher, respectively.

The awarding of winners was led by Agriculture Secretary Proceso J. Alcala, representing President Benigno Simeon Aquino III, to honor outstanding individuals, groups, and organizations that have excelled and made outstanding accomplishments in enhancing the agriculture and fishery sectors. The event was held on 18 December 2014 at the Philippine International Convention Center, CCP Complex, Roxas Blvd., Manila.

The Bureau of Agricultural Research (BAR), as the research arm of the DA, chaired the selection for this year's Search for the Gawad Saka Outstanding Agricultural Scientist (OAS) and the Outstanding Agricultural Researcher (OAR). The Search was revitalized by BAR Director Nicomedes P. Eleazar as a tribute to well-deserving researchers from the department. The winners in the two categories received a Php 1M research grant from BAR.

Gawad Saka is an annual contest organized by the DA, in partnership with local government units, academe, and private sector including farmers and fisherfolk, to recognize individual and group efforts and contributions to overall agricultural growth and development.

Dr. Jonar I. Yago, expert on citrus

Surrounded by a plantation of perante, lemon, satsuma, and *dalanghita*, Dr. Yago can easily tell between a freshly picked sweet or



Dr. Jonar Yago (left) of NVSU and Ms. Emily Soriano (right) of DA-RFO III-CLIARC receive their respective awards from DA Secretary Proceso Alcala as 2014 Gawad Saka Outstanding Agricultural Scientist and Outstanding Researcher, respectively. PHOTOS COURTESY OF JYAGO&ESORIANO

acidic citrus. When asked why he has chosen citrus as his R&D interest, he would often say that, "these fruits are more than just cash crops but a trademark that tourists will look for whenever they visit his home town, Nueva Vizcaya."

Currently a full-fledged professor at NVSU, Dr. Yago gained his BS Agriculture at the Mariano Marcos State University, MS Agriculture and PhD in Molecular Plant Pathology at the University of the Philippines Los Baños. As a US Senate Fulbright Scholar, he earned his post doctorate in fungal genetics from the University of Florida. He has published his researches in prestigious journals including The Journal of Plant Diseases, a leading international refereed journal for new report of plant diseases.

Plant doctors as they are often called, Dr. Yago wasted no time when he learned about the decline in harvest of citrus. This incident was the turning point for Dr. Yago, driving him to research on the causative agent of leaf mottling which happens when leaves become yellow to yellow green, branches and twigs turn dry and pink (particularly during wet season), until the tree loses its ability to bear fruits – a serious threat that can potentially wipe-out citrus. This disease is known as twig blight



disease (TBD) a.k.a. pink disease.

Dr. Yago found out that the fungus, *Corticium salmonicolor*, previously identified as the causative agent, was not really the microorganism that causes pink disease. Instead, it was *Haematonectria haematococca* which has a biological cycle of 15 days anamorph (asexual reproductive stage) and 27 days teleomorph (sexual reproductive stage). This information is important in designing spraying schedule and identifying which spray will be most effective.

After discovering the correct identity of the causative agent of twig blight disease, he submitted his samples to the National Center for Biotechnology Information (NCBI) in Maryland, USA for international reference. The NCBI said that the sequence is a first record of TBD in citrus and that it is endemic in the Philippines.

Today, Dr. Yago continues to demonstrate the impact of his technology in Bagabag, Quezon, Solano, and Malabing Valley, Nueva Vizcaya.

Emily A. Soriano, researcher on mushroom

It wasn't easy for Soriano to barge into the Gawad Saka OAR regional level and attempt for another chance in the national level. In fact,

Climate Change R&D projects reviewed

Climate change research and development (R&D) remains one of the key priority areas for interventions if the country wants to continuously pursue the path towards a resilient and sustainable agriculture and fisheries sector. This is why the Department of Agriculture (DA) through its Systems-Wide Climate Change Office (DA-SWCCO) came up with a holistic and systematic approach in mainstreaming and institutionalizing the adaptation and mitigation strategies of the DA known as Adaptation and Mitigation Initiative in Agriculture (AMIA). R&D, together with the regulations and extensions, is identified as one of the three major policy instruments under AMIA.

In this regard, the Bureau of Agricultural Research (BAR), as the national body for coordination and funding for R&D of the DA, conducted a four-day Climate Change R&D Agenda Review and Planning Workshop to align its own Climate Change Program with the implementation of AMIA; and to review the bureau's initiatives and accomplishments in implementing its own Climate Change Program. The event was held on 2-5 December 2014 at Bellevue Hotel, Alabang, Muntinlupa City.

The participants were composed of climate change pool of experts and focal person/s coming from the various partner institutions of BAR that include DA's bureaus, attached agencies, and regional field offices (RFOs), Department of Science and Technology (DOST), WorldFish, and the academe.

Welcoming the participants was BAR Director Nicomedes P. Eleazar who reckoned that in able to progress the efforts of the R&D institutions in addressing the challenges brought upon by climate change, there should be harmonization and complementation on the activities being done by the concerned stakeholders. "The bureau takes advantage of your presence as our crucial working partners in the

R&D and scientific community as we jointly assess the accomplishments and milestones of this program and thereafter identify challenges and opportunities that will help us to strategically and realistically position and align the DA-BAR's Climate Change R&D Program with what is needed by our sector," Dir. Eleazar said.

Also, the outputs of the planning workshop are valuable inputs for the Philippine Adaptation and Mitigation in Agriculture Knowledge Toolbox which is one the seven systems-wide mainstreaming programs of the DA. This initiative focuses on the inventory, generation, and dissemination of adaptive tools, technologies, and practices for the utilization of concerned stakeholders; and BAR was identified to spearhead this mainstreaming program.

The first half of the planning workshop focused on plenary sessions which discussed BAR's climate change mainstreaming initiatives and milestones, the logical framework, and the proposed climate change checklist to be filled-out by the project proponents and be attached to the detailed project proposal. On the part of DA-SWCCO, Mr. Lev Nikko Macalintal presented an overview of the thrusts and priorities of the AMIA. Furthermore, three completed BAR-funded climate change projects were presented for the reference of the participants.



Following the plenary session was the workshop proper wherein the participants were divided into three groups representing 1) crops; 2) poultry, livestock and feedstock; and 3) fisheries and aquaculture. Each sector was expected to identify the following: problems concerning their respective sectors, researchable areas for the identified problems, expected outputs of the researchable areas, and support to R&D, among others. Dr. Luis Rey Velasco of the University of the Philippines Los Baños (UPLB), Dr. Enrico Supangco of UPLB, and Dr. Maripaz Perez, WorldFish, regional director for Asia, served as moderators for crops, livestock, and fisheries, respectively.

The output of the workshop will be used for updating the BAR's Climate Change R&D Agenda and Action Plan. ### (Diana Rose A. de Leon)

Eleazar leads inaugural ceremonies of BAR-supported CLIARC R&D facilities



Assisted by key officials and staff members from CLIARC and BAR, DA-RFU III Executive Director Andrew Villacorta (right photo, 2nd from left) and BAR Director Nicomedes Eleazar (right photo, 3rd from left) lead the groundbreaking ceremonies of the Organic Agriculture Technology Center (left photo) and ribbon-cutting of the Mushroom R&D Technology Center (right photo). PHOTOS: MVALDEABELLA&ROBIAS

“Time and again, you have proven your diligence in delivering what are expected of us as a research institution, and I am certain that with modern and up-to-date facilities, you could be of service to more clientele who wish to know more about the practice of organic agriculture.” Thus, said Dr. Nicomedes P. Eleazar, director of the Bureau of Agricultural Research (BAR), as he formally awarded one and inaugurated another BAR-supported R&D facility to the Central Luzon Integrated Agricultural Research Center (CLIARC) of the Department of Agriculture-Regional Field Office (DA-RFO) 3.

Held at CLIARC in Paraiso, Tarlac City on 9 December 2014, the ceremony featured the groundbreaking of the project “Establishment of Organic Agriculture Research and Development Center” and the ribbon cutting of the “Mushroom R&D Technology Center.”

Funded under the bureau's Institutional Development Grant (IDG), the Organic Agriculture Research (OA) and Development Center seeks to cater not only to the implementation of OA program in the region but also to the dissemination of necessary information to all stakeholders, providing them with livelihood opportunities through OA technologies and interventions.

Aside from developing technologies that promote and utilize OA goals and principles, the facility addresses the efforts of the national government and its stakeholders to ensure food security and self-sufficiency.

Aimed at supporting Organic Agriculture in the region, the Mushroom R&D Technology Center, on the other hand, is both BAR's and CLIARC's responses to the challenge of continuously improving the mushroom industry through state-of-

the-art laboratories. With the facility seen to enhance not only the quantity but the quality of mushroom products, the facility paves the way in creating employment opportunities and livelihood options.

With Region 3 serving as the National Center for Mushroom Development, as regarded by DA Secretary Proceso Alcala himself, the center is seen to further enhance its services to deliver and continuously improve the mushroom R&D for the region and beyond.

Conducted as part of DA-RFO 3's “Grand Organic Week” that featured the station's accomplishments and initiatives as regards the agriculture department's OA Program, the event was attended by enthusiasts, students, members of the local government units (LGUs), and private sector, among others. ### (Mara Shyn M. Valdeabella)

GAWAD SAKA AWARDS

she was outshone by another researcher when she first qualified for the national's in 2012. But if there's someone who isn't quick to give up, it's Ms. Soriano – a researcher dressed in rugged jeans and polo shirt yet has a strong competitive spirit.

“Losing in 2012 motivated me to improve my craft,” said Soriano. After being caught off-guard with raw outputs; this time, she has proven that her R&D results and credentials are sufficient and exceptional, and her deep passion in helping rural communities will be an x-factor in winning the Gawad Saka Outstanding Agricultural Researcher.

“Whenever I see the simple life of farmers and their families, I remember my childhood because I also grew up in that environment. Knowing that my researches will be of little use in bookshelves, I decided to promote low-cost technologies in mushroom farming to increase their income,” she added.

A holder of BS Biology major in Microbiology, MS Rural Development, and PhD in Rural Development (on-going) at the Central Luzon State University, Soriano has poured in all the knowledge she acquired and contributed it to the country's efforts of addressing food security and safety particularly in mushroom R&D and technology commercialization.

Soriano developed and introduced low-cost and innovative interventions, which encouraged farmer-cooperators to venture into mushroom production. The identified interventions made use of the following materials: 1) rice-wash agar in place of expensive Potato Dextrose Agar (PDA) as mushroom culture media, 2) recycled stainless drum instead of an autoclave for sterilization of rice straw, and 3) black plastic covering sheets to reduce light penetration inside the growth chamber of mushrooms thus shortening mushroom production

cycle from 30 to 14 days.

With Soriano's initiatives on mushroom R&D causing high positive impact, DA empowered 30 mushroom laboratories in the regional field offices, and 90 community-based mushroom production enterprises nationwide.

These facilities are now instrumental in the dissemination of the low-cost mushroom production technology to various communities, including Indigenous People; and training and strengthening of mushroom enterprises.

Soriano also serves as DA's resource person for mushroom enterprise training among overseas Filipino workers and *balikbayan* as well as the national technical and enterprise development coordinator for Community-based Mushroom Project under the Rice Program of DA.

The winning formula, tips from the winners

“You need to have a system, your R&D initiatives properly documented, and your outputs should bring a significant impact to the farmers, after all that is what research is all about – providing solutions to the immediate problems of the community,” advised Soriano.

“It starts with a strong motivation and passion, a mind-conditioning that will remind you to aim high and to always give your best. Being down-to-earth is also important. I am proud of winning at the national level, but that does not mean that farmers can no longer reach me,” she added.

Meanwhile, Dr. Yago advised that applicants for OAS should have a number of international refereed (ISI) publications indexed in Thomson Reuters, Science Direct, or Elsevier. “I encourage the future applicants to submit their researches in journals with high impact factor,” he said.

Having said those tips and advices, what counts is that the R&D outputs are translated into

Philippines and ICRISAT...from page 2

agricultural research centers to bring in technologies that will be beneficial to the Filipino farming communities. He also urged them to continue advocating for increase in investment in research for development because “no nation can succeed if we only invest so little for research and development.” And while a good number of technologies have been promoted and commercialized in the country, scientific farming is not yet a common way of life in countryside according to Dr. Dar.

Another highlight of the celebration was the launching of the book, “Greening the Grey: Expanding the Green Revolution” authored by Dr. William D. Dar and Dr. Arun K. Tiwari, a technology manager from India. The book is a much anticipated follow-up to the “Feeding the Forgotten Poor” also by Dr. Dar and Prof Tiwari, published in 2011 and was also launched at BAR in April 2012

“Greening the Grey” narrates the pioneering efforts of ICRISAT and the wide array of its partners that work hand-in-hand with the dryland farming poor. The book also hopes to impart a renewed understanding and recommitment to the fundamental role of agriculture in the development process in helping to transform the grey world of dryland poverty and food insecurity, into a green one of food security, health and prosperity. ### (Rita T. dela Cruz)

technologies or breakthroughs that people, including farmers and fishers can actually, adopt and use leading to greater productivity and improved lives. ### (Jacob Anderson C. Sanchez)

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BAR Christmas Party: #OneTeamOneBAR

With the official hashtag “OneTeamOneBAR,” the staff of the Bureau of Agricultural Research (BAR) has proven once more that even though they belong under different divisions or units, they can come as one team that works together to achieve a common goal.

As capsulated in an audio-visual presentation (AVP) shown during the BAR Employees Christmas Party held on 18 December 2014, “we are grateful for what has been and what will still be; we look forward to more wonderful years

together, BAR Team.” The AVP highlighted the bureau's major accomplishments and activities including the men and women who worked behind the scene showing an enjoyment amidst the load of work.

Providing further inspirations to the staff were Director Nicomedes P. Eleazar and Assistant Director Teodoro S. Solsoloy who both thanked everyone for their unwavering support to the management, and contributions to the success of the bureau's tasks and activities.

Divisional and unit dance presentations highlighted the BAR Employees Christmas Party which were enthusiastically practiced and grooved by its respective technical and support staff. The security and janitorial services also joined in.

Now on their third year, the Information Management Unit (IMU) was still hailed the First Place in their reindeer costumes. The Applied Communication Division (ACD) and the Project Monitoring and Evaluation Division (PMED) bagged the second and third place, respectively.

Lanterns and belen are symbols of Filipino Christmas celebration. BAR adopts the tradition to feel the Christmas even while at work. To make it more exciting, divisions and units were tasked to make their own lanterns and belen. Institutional Development Division (IDD), utilizing glass bottles, paper, cloth, seeds, and straw, won the Belen-making competition followed by the Applied Communication Division (ACD), and Planning and Project Development Division (PPDD). Lantern made from cloth,

newspaper, bamboo, and shredded boxes designed by the security services won in the said competition. This was followed by the lanterns from the group of the Office of the Director, Office of the Assistant Director, and Legal with PPDD in third place.

More than just being a competition, the activity promoted team effort, showed the value of working together and that when a team worked, tasks will be accomplished towards achieving a common goal.

In the spirit of the season, it

has also become a tradition to hold a Thanksgiving Mass. This year's mass was officiated by Rev. Father Marco Bitor of Mt. Carmel Parish. Prior to the employees' Christmas party, the bureau hosted a Children's Party specifically for the children of BAR employees. Mascots, games, surprises and special gifts were prepared to the delight of the children and their companions.

The Technology Commercialization Division (TCD) headed by Mr. Anthony B. Obligado spearheaded the preparations and conduct of the two-day activity. ###
(Ma. Eloisa H. Aquino)

