CSC orients BAR on Omnibus Rules

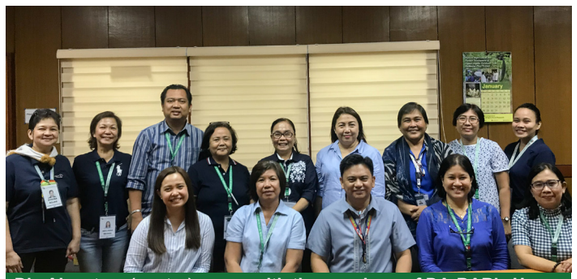
Director Hans R. Alcantara of the Civil Service Commission (CSC) conducted a talk at the Bureau of Agricultural Research (BAR) on the "2017 Omnibus Rules on Appointments and Other Human Resource Actions" (2017 ORA and OHRA) on 22-23 January 2018.

The 2017 ORA and OHRA is the revised and updated version of CSC MC. 40 s. 1998 dating back to December 14, 1998. The ORA-OHRA are guidelines for the preparation, submission of, and actions to be taken on appointments and other human resource movements that take place on first and second level positions within government agencies. "It is important that we keep ourselves updated with the changes on this new set of rules as it affects the way the [HRMPSB] conducts deliberations," said Dir. Alcantara.

The first part of the orientation held on January 22 was dedicated for all rank-and-file employees of the bureau. Dir. Alcantara discussed the new requirements and updated forms that applicants should be aware of as they seek for permanent positions in government office. Also discussed were common and specific qualification standards for applicants who are looking to be appointed or reassigned.

The second part was dedicated to head officials and members of the Human Resource Management Personnel Selection Board (HRMPSB). Dir. Alcantara reiterated the new role of the Human Resource Officer, who in the case of BAR is Ms. Ludivina Pelayo, as a member of the HRMPSB. During the orientation, Dir. Alcantara implored the members to maintain and even upgrade to maximum level. The bureau is currently on a Level 2 status of the Program to Institutionalize Meritocracy and Excellence in Human Resource Management (PRIME HRM). According to CSC, PRIME HRM is a mechanism that empowers government agencies by developing their human resource management competencies, systems, and practices towards greater engagement. Dir. Alcantara mentioned that aside from using PRIME HRM as reference for special awards and citation, it can also serve as grounds for the retention of the agency's status as an accredited agency.

During his closing remarks, Dir. Alcantara commends BAR's Human Resource staff for their continued partnership with CSC as well as the bureau's efforts to abide by the new guidelines mandated by the CSC. ### ***(Ephraim John J. Gestupa)***



Dir. Alcantara (center) poses with the members of DA-BAR's Human Resource Management Personnel Selection Board (left). PHOTO: EJGestupa

Indigenous vegetables...from page 11

Therefore, if we could learn to harness the full potential of indigenous vegetables then we could not only improve the nutritional problems of most Filipinos, but also improve and empower the lives of the resource-poor communities. ###

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PHOTO by BAR-RAO-PMCU

BAR REVIEWS 2017; PLANS FOR 2018

The Bureau of Agricultural Research (BAR) held its "CY 2018 Annual Review and Planning Workshop" on 16-19 January 2018 to review and assess the bureau's performance in 2017, and to plan and realign R&D programs and initiatives with the directives and priorities of the Department of Agriculture (DA) for 2018.

Organized by the Bureau's Program Development Division (PDD), the activity was led by BAR Director Nicomedes P. Eleazar and was attended by key officials and selected staff.

Director Eleazar presented some of the major accomplishments and milestones of the bureau for 2017 mentioning that it was "a year of remarkable accomplishments". He furthered that, "with the change in administration a year before, we have proved that we can adapt to the demands and changes." He likewise acknowledged the trust and confidence that Agriculture Secretary Emmanuel Piñol and other officials have bestowed on the bureau to perform its tasks excellently. He also laid down several of his marching orders for immediate action emphasizing on the recent statement of Secretary Piñol on "looking at implementing policy changes and re-planning of the farm sector to ensure the betterment of the sector amid challenges brought by climate change." In conclusion, Director Eleazar appreciated the countless effort and dedication of everyone and encouraged them to always strive to perform better not just for the organization but for the agriculture sector as a whole. "Where we are right now, is where we are all meant to be," he said.

The event included plenary presentations including DA salient policy thrust, "Ensuring Food Availability and Affordability for All: FY 2018 Plan and Budget Proposal of the Department of Agriculture and Fisheries" by Mr. Joell Lales, PDD chief; "DA-Special Area for Agricultural Development"

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282 CPAR, 596 NTCP projects funded

An agency that is tasked to coordinate the national agriculture and fisheries research and development (R&D) in the country, the Bureau of Agricultural Research (BAR) works to ensure that research-generated technologies are brought to the field to be productively used by the sector. The Community-based Participatory Research (CPAR) and the National Technology Commercialization Program (NTCP) — the Bureau's flagship programs are working on this end.

To date, BAR has funded and supported 282 CPAR projects since it started in 1998; and 596 NTCP projects it was initiated in 2006.

CPAR is a location-specific research cum extension activity that focuses on improving farming system technologies for micro agro-climatic environment within a municipality or provinces. It merges research initiatives and the involvement of farmer and fisherfolk cooperators in the implementation of projects in different regions of the country. The 282 CPAR

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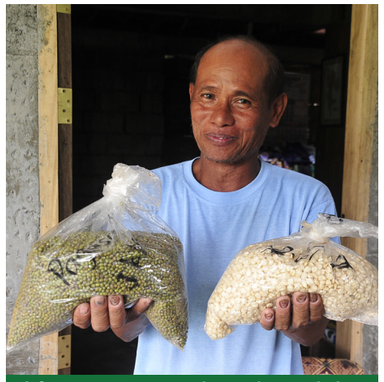

A farmer-cooperator shows the seeds he received from CVRC through the CPAR project in Enrile, Cagayan. PHOTO: RDelaCruz

CPAR, NTCP...from page 1

projects supported cover 613 barangay sites nationwide, involving 13,669 farmer-beneficiaries of which 6,907 are farmer-cooperators and 6,762 are adoptors.

One CPAR completed project that created significant findings was the "Corn-based Farming Systems in Kadingilan, Bukidnon" of the Department of Agriculture-Regional Field Office (DA-RFO) 10. The technology interventions included the use of organic + inorganic fertilizer application, Integrated Nutrient Management (INM), and Integrated Pest Management (IPM) using appropriate and improved corn varieties (Pioneer 30B80). The farmer cooperators positively responded to the technology introduced. The INM in combination with organic and inorganic fertilizer was highly appreciated by the farmers considering its results in crop yields while reducing the use of inorganic fertilizer and the benefit derived in using organic fertilizer.

Another CPAR project yielding substantial results was the "Enhancing White/Purple Corn Productivity under River Flood and Drought-Prone Areas of Enrile, Cagayan" implemented by the DA-RFO 2. The project attained a yield of 4,196 kg/ha and 2,933 kg/ha for dry season and wet season, respectively. During drought condition, the improved cropping pattern under white corn intercropped with mungbean provided better income of about Php 27,990 (corn) and Php 18,082 (mungbean) versus the farmer's practice of Php 19, 645 (corn) and Php 1,852 (mungbean). Another improved cropping pattern introduced under white corn and peanut intercropping also provided a higher income of Php 8,785 compared to farmer's practice of Php 362.50 during the dry season.

Meanwhile, NTCP serves as a vital tool for the development of agriculture and fisheries-related enterprises ensuring the proper transfer of mature technologies for adoption and utilization of farmers and fisherfolk. From the 596 NTCP projects, 97 were funded in 2017 of which 41 are new and 56 are on-going.

Among the newest commercialized technologies for crops include: development of chickpea-based food products; evaluation and development of nutraceutical and cosmeceutical products from saluyot and okra; and virgin coconut oil and herbal plant extract as raw materials for soap-making. For livestock, there are 9 new and 11 on-going projects including commercial production of free-range chicken; production of organic feeds for native chicken; and development and commercialization of selected strains of Philippine native pigs. There are also 3 new fishery and aquaculture projects under NTCP one of which is the development and promotion of squid pot-seaweed farming integration that focuses on improving income and resiliency of seaweed farmers in small island fishing communities. ### (***Leoveliza C. Fontanil***)

BAR Annual...from page 1

by Ms. Cynthia de Guia, PDD assistant head; and "2018 Strategic Performance Management System (SPMS) Implementation" by Ms. Desiree Ann Macahia of the Personnel Section.

All BAR divisions/unit presented their accomplishments and plans. Ms. Judith Maghanoy, head of Finance Division, presented finance-related concerns while Ms. Evelyn Juanillo, head of Administrative Division, delivered administrative concerns. Other presenters were: Mr. Joell Lales for PDD, Ms. Salvacion Ritual for the Program Monitoring and Evaluation Division, Mr. Anthony Obligado for the Technology Development Division, Ms. Digna Sandoval presents for the Institutional Development Division, Ms. Julia Lapitan for the Applied Communication Division, and Ms. Melissa Resma for the Information Management Unit.

Conducting the last day of the activity was a meeting/workshop attended by technical focals of BAR programs. The meeting was held to realign and harmonize all plans and programs according to the priorities and directions set by DA. The meeting also served as an assessment to ensure the smooth operations of all the programs being coordinated by the bureau.

Mr. Lales officially concluded the activity, acknowledging the efforts of everyone for making the activity a productive one. ### ***(Rita T. dela Cruz)***

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CPAR on SCoPSA...from page 14

Eight farmer-cooperators were qualified to be in the CPAR project. At the onset of the project, farm inputs such as seeds, planting materials, fertilizers, and herbicides were released directly to the farmers as capital inputs. However, as part of the CPAR guidelines on sustainability, the cooperators will pay back 100 percent of the inputs provided after the harvest season. Such payment will then be used as seed money of the farmer association for a wider adoption of the project.

Technology interventions through SCoPSA include the establishment of contour lines and hedgerows where other commodities were planted like banana, mandarin, pineapple, and pigeon pea. Through these hedgerows, the occurrence of soil erosion was minimized. It also served as a guide for the farmers in establishing a furrow for the next cropping season. Above all, these added commodities meant additional food and income for the farmers.

In addition, the use of double row at 1 seed per hill was established, allowing a planting distance of 80cm x 30cm x 20cm, which yielded to an increase in the plant population at 90,910/ha.

Also, to achieve uniform planting depth and distance and better germination, the farmers were introduced to jabber planting strategy. To ensure soil specific fertilization, soil analysis was conducted, promoting safety and proper nutrient management for the crops.

For total farm management, the farmers adopted farm waste management through indoor mushroom production and vermicomposting. Not only are these an added source of food and income for the farmers, but also an added organic fertilizer, which lessened their production cost as well.

Effective CPAR intervention

The results of the CPAR intervention reflected a positive increase both in yield and income. The CPAR farmers acquired higher yield compared to their old practice, with an increase from 4.45 mt to 4.65 mt translating from 8.18 to 104.49 percent per hectare of corn production. Nestor Ruaboro, one of the farmer cooperators, recorded an average yield of 4.45 mt/ha using farmer's practice. With CPAR SCoPSA, he was able to increase his yield to 9.10 mt/ha, which is 104 percent differential increase.

Given these results, increase in income is certain. The cooperators got a significant increase in income per hectare from 14 to 4,782 percent per hectare. Despite the increase in production cost due to additional inputs and labor, the returns were still comparably higher versus farmers' practice. Johny Ramos, a farmer cooperator, did not expect such a significant income by simply the adopting a technology. He recorded an income increase from P1,366.82/ha to P10,347.00/ha.

During the farmers' field day held in October 2017, the farmers were able to share their testimonies for the awareness of the community. They encouraged other farmers to adopt the technology set by CPAR. Their testimonies included not only the difference CPAR made in their lives, but more importantly, the deeper concern they developed to the environment, enabling them to preserve the resources available to them.

In the pursuit of sustainability even after project implementation, Mr. Sabado shared the plans of the project will focus on strengthening the farmers' organization to intensify their purchasing and marketing power. "This move will help them in linking with other institutions, and partnering with traders, to ensure the continuity of the project," he said. ###

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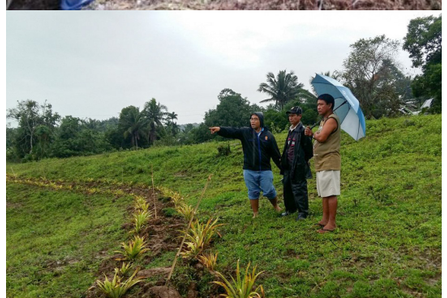
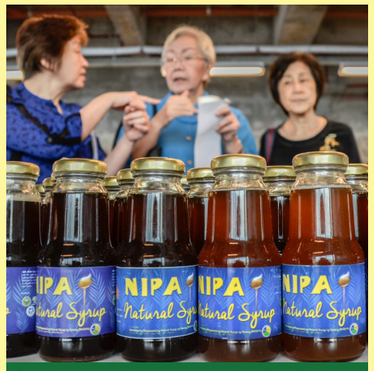


The project team conducts regular visits to the CPAR sites in Maddela, Quirino. PHOTOS: ASabado, DA-RFO 2

Nipa palm products...from page 7



Seminar participants sample Nipa Palm syrum. PHOTO: EJGestupa

Award" during BAR's Agriculture and Fisheries Technology Forum and Product Exhibition. In the second quarter of this year, FREEDOM is expecting to secure FDA accreditation which would further realize their goal of exporting Nipa Palm product internationally.

"*Tuloy tuloy parin yung nasimulan natin na project sa Lanuza*. Six months ago, we replicated the production process in Butuan and in Oriental Mindoro last December. So the BAR-assisted project is now in three areas," said FREEDOM director, Lope Santos III.

Antonio Peralta, FREEDOM executive director, also mentioned the success in Nipa Palm production in Butuan with the farmer partners in the community processing 20 kilos of Nipa sugar a day. In Oriental Mindoro, FREEDOM also produces Nipa Palm sweetener in syrup form. This was among the products showcased during Gina Lopez's health and wellness seminar.

In Lanuza, profits from the processed Nipa Palm products go to Sitio Ipil Wine Makers Association (SIWA); in Butuan, the Babag Farmers Association; and in Oriental Mindoro, the San Teodoro Ridge, River, and Reefs Institute Inc. (ST3RII).

Being an advocate for healthy living and chemical-free alternative medicine, Gina Lopez promotes Nipa Palm sugar as an alternative sweetener for commercially produced sugar. Nipa Palm products are ideal for consumers suffering from diabetes as Nipa Palm has a low glycemic index and is also grown organically. During her seminar, Gina Lopez expressed G Stuff's vision of re-engineering the Philippine economy to be inclusive as it continues to grow. G Stuff hopes to contribute to this vision by supporting products that not only healthy and safe but also supporting the livelihood of rural communities across the country. ### ***(Ephraim John J. Gestupa)***

Enhancing production, protecting soil through CPAR on SCoPSA

by Daryl Lou A. Battad

"Hindi lang napataas ng CPAR ang ani at kita naming magsasaka, kundi naturuan pa kaming alagaan ang yaman ng aming bayan."

These were the words of the farmer-cooperators in Region 2 on their involvement with the project on Community-based Participatory Action Research (CPAR) on Sustainable Corn Production in Sloping Areas (SCoPSA) implemented by the Department of Agriculture-Regional Field Office (DA-RFO) 2, resulting to an average of 51 percent increase in yield and 139 percent increase in income since project implementation in October 2016.

Corn production in region 2

Cagayan Valley is consistently the top corn-producing region in the country. It supplies the bulk of Metro Manila's demand on corn. According to the data from the Philippine Statistics Authority (PSA) in 2014, the total corn volume of production of the region is 1,856,715 metric tons in 2014. About 600,000 farm households depend on corn as a major source of livelihood.

The province of Quirino, the forest heartland of Cagayan Valley, contributes 9 percent of the total corn production in the region with its total corn production area of 21,167 hectares. Maddela, one of its municipalities is where CPAR was introduced and is being implemented. A first-class municipality, Maddela is the largest corn area of the province with a total area of 5,656 hectares, of which 2,770 hectares of hilly areas were devoted to corn farming.

CPAR and SCoPSA

Community-based participatory research proves to be an effective means in empowering farmers' productivity in general. This is the case of the project titled, "CPAR on SCoPSA in Corn-based Hilly Areas in Maddela, Quirino."

Mr. Archival Sabado, CPAR project leader, hoped to address issues on soil degradation while improving the municipality's existing farming system to optimize moisture availability thus increased production, particularly in the province's sloping areas.

Divisoria Sur and Divisoria Norte were the two barangays from the municipality which were selected as sites to represent the hilly corn areas where the CPAR intervention is deemed best to be introduced. With a total area of 249.35 hectares, these areas were basically mountainous and strongly sloping with steep terrain in various directions.

Results of the Participatory Rural Appraisal (PRA) showed that corn farming is the major source of income of the two barangays. Prior to CPAR, the farmers were using hybrid (GMO) corn in the hopes to increase their harvest. However, the average grain yield from both barangays is only 4.5 mt/ha during wet season and 4.8 mt/ha during dry season. This is below the optimum yield of 8 mt/ha for corn.

Further, income from two harvest seasons amounted to P5,411.5/ha and P8,161.5/ha during wet and dry seasons respectively. This income does not adequately support an average household with four members.

Such agricultural state of Maddela spurred the need for an intervention through research and development (R&D). Given its topography and current farming practices, the CPAR project targets to implement the SCoPSA technology to control erosion, as well as hedgerow planting to maximize farm resources.

With CPAR, farmers were taught not only to identify farming problems and needs, but more importantly, how to apply effective total farm productivity through integrated farming system to ensure better living for their families. CPAR paved a way for corn farmers to fully adopt a package of technologies (POTs) on corn from production to marketing.

SCoPSA, a program developed by the DA, is part of its national advocacy to adopt soil and water conservation measures to address soil erosion, and to enhance productivity of corn farmers by the use of sustainable, adaptive corn technologies especially in sloping areas. It was in 2013 when the SCoPSA program was initiated through the Bureau of Soils and Water Management (BSWM).

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With DA-RFO 2 Research Manager Lovelyn Gaspar, the CPAR team closely monitors the progress of corn production using the SCoPSA technology. PHOTO: ASabado, DA-RFO 2

USEC. CAYANAN GRACES DA-FAO MEETING ON AGRO-BIODIVERSITY PROJECT

The Department of Agriculture (DA), through the Bureau of Agricultural Research (BAR), in partnership with the Food and Agriculture Organization (FAO) of the United Nations, held the 2nd Project Steering Committee (PSC) Meeting for project titled "Dynamic Conservation and Sustainable Use of Agrobiodiversity in Traditional Agro-Ecosystems of the Philippines (Rice Plus)" on 24 January 2018 in Quezon City. Gracing the event was DA Undersecretary for Operations and Agri-Fisheries Mechanization Ariel T. Cayanan who is also the PSC co-chairperson.

Usec. Cayanan, in his message, recognized the importance of strong collaboration among various government agencies as a significant instrument in ensuring sustainable development and implementation. He emphasized on the varying agricultural machinery needs of upland, and lowland farming communities and stressed that documentation of the project implementation, results, and outputs is important in creating a lasting impact on the society.

In response, Mr. Jose Luis Fernandez, FAO Representative in the Philippines, underscored the essence of the project in solving challenges in food production and accessibility in rural communities through innovative and traditional practices. He further acknowledged the timely implementation of the project in collaboration with BAR, Project Management and Coordination Unit (PMCU), national government agencies, and local government units. Likewise, he was counting on the continuous and active support of the PSC members in ensuring the success of the project.

Initiated in 2016, the DA-FAO partnership was initiated with BAR serving as the lead coordinating government agency for the project. Since its implementation, the team has coordinated and visited different sites to orient various stakeholders on the project. The orientation aimed to demonstrate the true value and importance of agro-biodiversity resources in the country. Provision of policy and capacity building support in the participatory conservation and sustainable use of agrobiodiversity resources were also accounted.

Usec. Ariel T. Cayanan delivers his Opening Remarks during the 2nd PSC meeting of Rice Plus project. PHOTO by BAR-FAO-PMCU

In attendance during the meeting were Mr. Joell Lales, head of the BAR-Program Development Division, representing BAR Director Nicomedes Eleazar; Governor Pedro Mayam-o of Ifugao; Gov. Daisy Fuentes of South Cotabato, and other members of PSC.

The PMCU team, led by the National Project Coordinator Virginia L. Agcopra, refreshed the PSC members on the overview of the project discussing the three major project components, namely: 1) mainstreaming of agro-biodiversity, 2) expansion and conservation activities, and 3) information and awareness. The outputs and workplan developed during the First Technical Working (TWG) meeting that was held a day before were also presented to the PSC for their approval.

The Rice Plus project aims to conserve globally-important crops like rice, mungbean, taro, yam, banana, abaca, among others, in traditional agro-ecosystems of the Philippines. Among its components include mainstreaming the agrobiodiversity conservation into policy and legal frameworks, enhancing and expanding dynamic conservation practices for agro-biodiversity in three pilot communities in Hungduan and Hingyon, Ifugao; and Lake Sebu, South Cotabato, enterprise development and consumer awareness program, and disseminating the documented good practices to other areas. ### ***(Ma. Eloisa H. Aquino and Ian Jomari C. Panaga)***

Usec. Ariel T. Cayanan, PSC co-chairperson (center) with the members and representatives of PSC. PHOTO by BAR-FAO-PMCU

BAR attends Newton-Agham reception

The Bureau of Agricultural Research (BAR), led by Director Nicomedes P. Eleazar, together with Ms. Cynthia de Guia and Mr. Ian Jomari Panaga of the bureau's Program Development Division attended the Newton-Agham Reception on 11 January 2018 at the British Embassy Manila.

Organized by the British Embassy, the event intends to give recognition to the awardees of the UK-Philippines Swine and Poultry Research Initiative and the participants for the Global Innovation Policy Accelerator (GIPA) Leader's Programme.

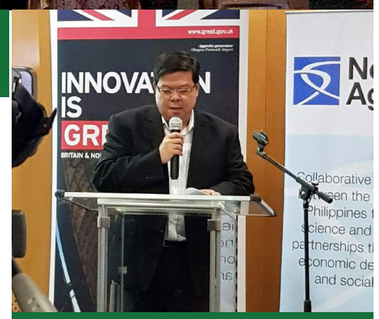
Under the programme, BAR provides research grant for two three-year projects approved by UK Biotechnology and Biological Sciences Research Council (BBSRC).

Among the Filipino awardees were Dr. Loinda Baldrias from the University of the Philippines Los Bańos who will be conducting a research on rapid diagnostics and control strategies for enteric bacterial pathogens in Philippine poultry production; and Dr. Clarissa Yvonne Domingo and Dr. Virginia Venturina from the Central Luzon State University who will be exploring on a strategic approach to identifying and combating porcine reproductive and respiratory syndrome virus outbreaks and other porcine viral diseases.

BAR Director Eleazar, in his message on behalf of the Department of Agriculture (DA), said that "we are grateful for the Newton Fund and its goal of building research and innovation partnerships with partner countries to support economic development and social welfare, as well as develop research and innovation capacity for long-term sustainable growth." Furthermore, he encouraged to continuously work together in coming up with transformative and catalytic steps that would guide our path towards competitive, sustainable and resilient agriculture and fishery sector.

BAR's very own Ms. Cynthia de Guia was one of the participants in the GIPA Leader's Programme that aims to accelerate the effective formulation and delivery of national innovation policies. These initiatives and programs were participated by BAR as part of its commitment to provide the needed technologies for the Philippine swine and poultry industry, and enhance its human resource to effectively achieve competitive, sustainable and resilient agriculture and fishery sector as aligned with the thrusts and priorities of DA.

The awardees of the BBSRC-DA Swine and Poultry Research Initiative with Dir. Nicomedes Eleazar of DA-BAR and Dir. Vivencio Mamaril of DA-BPO. PHOTO: JJumalon



Director Eleazar delivering a message on behalf of the DA with a main theme on continuously working together towards a more competitive, sustainable and resilient agriculture and fishery sector. PHOTO: JJumalon

Key outputs from these research and development projects include the creation of low cost detection kits for important diseases in the swine and poultry industry. Ultimately, these initiatives will pave the way for an improved animal health management in the Philippines wherein not only commercial farms will benefit but also the majority of the backyard farms to realize inclusive growth. ### ***(Ian Jomari C. Panaga)***

Eleazar is guest of honor in MNCCI meeting

Director Nicomedes P. Eleazar of the Bureau of Agricultural Research (BAR) was guest of honor during the Metro Naga Chamber of Commerce and Industry (MNCCI) 1st Quarter General Membership Meeting on 27 January 2018 in Naga City.

Addressing the officers and members of the MNCCI, Dr. Eleazar recognized the important role of research and development (R&D) in the advancement of agriculture and fisheries sector and how the bureau continuously coordinates and supports researches and technologies to address both production and profitability.

He also discussed the National Technology Commercialization Program (NTCP), one of the flagship programs of the BAR, wherein specific attention is being given to strengthening a market-driven approach, benefitting all stakeholders of the value chain. He also shared various commodities that are abundant in Region 5, which BAR has supported. These include *pili*, Queen pineapple, Spanish red pineapple, *abaca*, rimas, coffee, cacao, carabao mango, jute sack, soybean, mungbean garlic, *batuan*, coconut, sesame, *gabi*, *siling labuyo*, Stevia, sweet sorghum, pigeon pea, agroforestry, and edible landscaping technology. For fisheries and livestock, among the BAR-supported technologies are seaweeds, squid, mudcrab, *tamban*, fish canning and value-added fishery products, native pig, native chicken, goat, and bee among others.

The bureau chief also stressed the importance of Public-Private Partnership as a key strategy in building a strong, sustainable, and progressive agri-business enterprise resulting to job generation and augmenting family's income. Furthermore, he acknowledged the complementation and convergence initiatives that BAR and MNCCI can start and build on.

One of the highlights of the event was the induction and oath-taking of the 2018 MNCCI Executive Officers

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Adlay in Region 10...from page 12


A farmer from Bukidnon inspects the maturity of Adlay (Kibuwa variety) PHOTO: RDelaCruz

areas that were not favorable so it has a lower yield of two tons," she added.

Enhancement of adlay production

Another project that Region 10 has been implementing is the enhancement of the production of adlay which focuses on expanding planting areas for commercial cum seed production.

Under this project, a 100-hectare area for expansion was allotted constituting a five-hectare techno demo area in the provinces and some commercial demo cum seed production with other municipalities in each province. "The harvest of the techno-demo varies from area to area. But the average yield is 1-1.5 tons in the municipalities. There were municipalities that got 2- 2.5 tons," reported Salvani.

We also have the "Plant Now, Pay Later" which is another strategy under the enhancement program providing seed capital for adlay to interested farmers. An 18-hectare area has been allotted for this program.

Technology transfer of Adlay

"One primary strategy that we implement in transferring the technologies to the farmer is through technology demonstrations. We reinforce this with technology briefings and conduct hands-on training subjecting the participants on how to plant adlay on the ground and do value-adding. We believe that hands-on training is the fastest way to transfer the technology, they will learn better rather than just conduct mere lectures," said Salvani.

Another method of transferring technology, according to her, is through the conduct of farmers' field days and joining technology and R&D forums.

"The promotion and advocacy is simultaneous with our efforts in implementing on the ground the commercial production of adlay in Region 10. Our region is the zonal center in Mindanao for research development extension, so we also advocate the adoption of adlay in Mindanao to maximize the productivity. Mindanao region has vast areas which are potentially suited for the commercial production of adlay because truly Mindanao is the Land of Promise," she concluded. ###

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An Adlay farmer dries adlay using NOMIARC's portable bubble dryer. PHOTO: RDelaCruz

Sustainable land...from page 9

on WOCAT tools and methodologies. Subsequently, SLM and climate change adaptation best practices using the WOCAT principle were documented, resulting in the knowledge tool titled, "Guidelines on the Identification, Selection, and Documentation of Sustainable Land Management (SLM) Best Practices." These set of guidelines were tailored fit to the Philippine setting, with the intent to provide protocol, present principles, and analyze promising SLM practices as references in the documentation and upscaling of SLM.

To date, the project was able to develop 33 SLM technologies such as alternate wetting and drying; compact farming for vegetable production; composting using indigenous microorganism (IMO); conservation tillage practices for corn production; contour farming; ecological engineering for irrigated lowland rice ecosystem; multi-storey cropping; Natural Vegetative Strips (NVS); rockwall terracing; Small Water Impounding Project (SWIP); and windbreaks to name a few.

Nine SLM approaches were also accomplished which include community-based forest management; assisted natural regeneration (ANR); conservation farming village; integrated soil and water conservation approach; climate change adaptation strategy for lowland ecosystem; soil conservation guided farm system; vegetative approach in controlling wind and water erosion in sand dune areas; LANDCARE - Claveria Landcare Association (CLCA); and Woodlot.

These SLM practices present details the specifications and main features of the technology; where it was used with respect to natural and human environment; and how it has impacted the ecosystem as a whole.

The case of Palayamanan

One of the SLM practices documented and established through the project was the "*Palayamanan"*, implemented by the Philippine Rice Research Institute (PhilRice) in Nueva Ecija. *Palayamanan*, a term coined from *palayan* (rice field) and *kayamanan* (wealth), is a rice-based farming system that strengthens the understanding of the science of diversification and cropping systems to increase farm productivity and address food security.

Providing actual research results, this SLM practice reflects the objectives, methods, stages of implementation, and role of stakeholders.

Further, the approach introduced a systematized method of farm management involving technologies and practices to utilize available resources without compromising human health and environment. Some of the technologies incorporated under this approach are the following: crop rotation, aquaculture, waste recycling, diversified cropping, alternate wetting and drying, nutrient management, and integrated pest management.

The impacts of the approach are among the highlights presented, and of which is also true to all SLM practices. This project targets to gauge the impact of SLM through improved land management, adoption of technology, improved livelihoods, poverty alleviation, improved situation of disadvantaged groups, and long-term impact of subsidies.

In essence, such practices are bound by three guiding principles – increased land productivity, improved livelihoods, and improved ecosystem – which are now highly accessible and available for all stakeholders through the PhilCAT-SLM and WOCAT websites. ###

Reference:
Bswm.da.gov.ph. (2018). *PhilCAT-SLM Landing Page*. [online] Available at: http://www.bswm.da.gov.ph/philcat-slm [Accessed 2 Feb. 2018].

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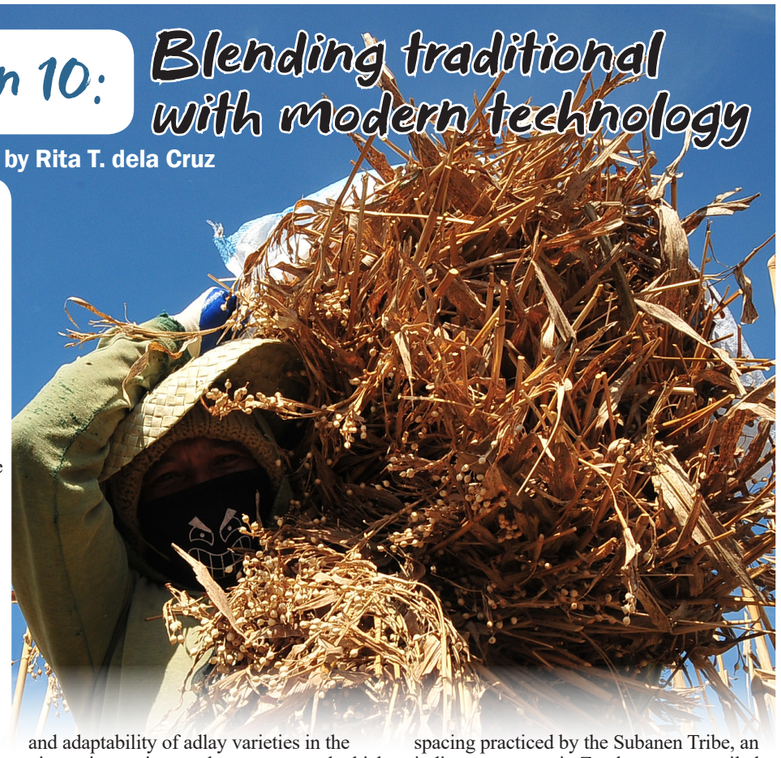
Adlay in Region 10: Blending traditional with modern technology

by Rita T. dela Cruz



The choice between traditional versus modern technology is never an "either-or" issue. Experience shows that blending traditional and modern technologies can transform subsistence farmers to large-scale commercial producers. Traditional knowledge and practices, when given due consideration in introducing new technology or intervention, have a higher chance of producing successful generation and adoption at the farm level.

This particularly applies with the case of adlay (*Croix lacrima jobi*), a tall grain-bearing perennial tropical plant of the family Poaceae (grass) that recently, has been gaining popularity due to its health benefits.

Adlay is an indigenous crop that is being cultivated by the local people in Bukidnon long before it became the talk of the town. Recently, adlay rose to fame after an intense promotion of its health benefits reaching well-known celebrities to personally prefer it as part of their daily diets and endorsing it to the public. Adlay is gluten-free, has low glycemic-index, and a great source of protein making it a healthier choice for rice especially for the health-conscious.

Pioneering research on adlay

"Adlay is native in Bukidnon. We have a barangay in Malaybalay called "Aglayan" because there were a lot of adlay growing in the area, so the name of the place was coined after the crop which is adlay," recalled Juanita Salvani, chief, Research Division based at the Northern Mindanao Agricultural Crops and Livestock Research Complex (formerly NOMIARC), Department of Agriculture-Regional Field Office (DA-RFO) 10.

Due to its suitability in the area, it was prioritized as one of the major commodities in our region for promotion under the DA- High Value Crops Development Program (HVCDP).

DA-RFO 10 was one of the pioneering regions that conducted research and development (R&D) initiatives since it was first introduced in 2010 as an alternative to rice and corn under the Food Sufficiency Program of the government. The other regions were: 10, 2, 9, 4A and 5 –all of which implemented the adaptability yield trial (AYT) for adlay varieties funded by the Bureau of Agricultural Research (BAR) through HVCDP. The prime objective of the AYT was to identify suitability and adaptability of adlay varieties in the pioneering regions and to recommend which varieties are to be grown for commercial production.

For DA-RFO 10, aside from conducting AYT, it also initiated the identification and fine-tuning of a package of technology (POT) for adlay that can be immediately used by the farmers and producers.

Package of Technology for adlay

"We have finetuned the POT for adlay. This includes specific recommendations for growing adlay on a commercial scale, what varieties to plant, recommended spacing and distance, fertilization, and even the appropriate crops to combine with adlay," said Salvani.

Results of the AYT in Region 10 showed that the leading recommended varieties are "Kibuwa" followed by "Gulian" and "Kinampay". Other varieties such as "Pulot" and "Tapol" (glutinous) are not recommended as they were found not suited to the agro-climatic condition of the region.

Prior to the result of the AYT, the indigenous people of Bukidnon has been planting the "Kibuwa" variety proving that traditional practices should never be disregarded in introducing a package of technology as they prove not only beneficial but effective.

"Also part of the recommendation is the spacing or planting distance. We found that the traditional method of spacing practiced by the Subanen Tribe, an indigenous group in Zamboanga, prevailed as the most recommended," revealed Salvani.

"On fertilization, there is a treatment that is best in combination with inorganic specifically, for seed production. However, if we venture into an organic adlay production, we can substitute the inorganic recommendation with organic. If we're going into commercial production, inorganic environment; but for seed production we still recommend for research stations, like ours, to have the combination of organic and inorganic to be able to achieve quality of seeds, quality kernels of adlay," she added.

Since it is not recommended to grow adlay as a monocrop in prime areas, part of the POT is to recommend the crop that if combined with adlay will reap high return for farmers. "Among those that we have studied, adlay is best combined with sweet potato, soybean, or peanut. Sweet potato is the best combination that's why we had set up a technology demo here at the station for our farmers to copy and adapt," explained Salvani.

"We're proud to say that with the technology, with the proper management that we used in most of our adlay trials at the center, we're getting higher yields compared with the techno-demo in the provinces which is a little bit lower due to different climate and different management. Here at the station, it's a researcher-managed that's why we are able to get more excellent results. In the farmers' field, it is between 2-2.5 tons per hectare and there are even

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Researchable areas on ORGANIC DAIRY CATTLE identified

In an effort to finalize the Organic Agriculture Research and Development, and Extension Agenda Program (OA RDEAP), the Bureau of Agricultural Research (BAR), through its Program Development Division (PDD), spearheaded a "Reassessment Workshop for Researchable Areas on Dairy Cattle for the OA RDE Agenda 2017-2023" on 4 January 2018 at BAR.

The workshop aimed to prioritize and finetune the harmonization of the OA agenda pertaining to livestock sector *vis-a-vis* the current thrusts of DA, specifically on: 1) making food available and affordable; 2) increasing the income of farmers and fishers; and 3) increasing the resilience of agriculture to climate change risks.

BAR, realizing the importance of large ruminants, deliberately calibrated its OA program to include these animals into the OA mainstream.

Since the OA RDEAP is on a national scope, and dairy cattle and buffalo, having been identified as regional priority commodities, the workshop was guided by experts from the dairy industry, led by Dr. Annabelle Sarabia and Dr. Daniel Aquino of the Philippine Carabao Center; Mr. Menandro Loresco of the Dairy Training Research Institute of the University of the Philippines Los Baños (UPLB); and Mr. Dominador Salvacion of the National Dairy Administration. They expounded on the identification of researchable areas for producing the target products: organic beef and organic dairy products; as well as the identification of possible resolutions on the matter. The recommendations of the technical evaluators, in support to the dairy industry, were incorporated into the agenda.

Participants who joined the Reassessment Workshop for Researchable Areas on Dairy Cattle for the Organic Agriculture Research and Development, and Extension Agenda Program. PHOTO: PRLesaca

Among the highlights of the workshop was the presentation of Mr. Ronald John Lamano of the National Organic Agriculture Program (NOAP) who presented the current thrusts and priorities. He also highlighted "Component 2: Research and Development", which is on strengthening R&D through the active collaboration with government agencies, private sector, and indigenous groups for the continuous upgrading and innovation of relevant and appropriate technologies.

Serving as project evaluators were Dr. Blesilda Calub of UPLB, NOAP representatives, and BAR OA focals.

The rankings of the researchable areas on a per sub-system basis were identified, and according to the value chain approach. The identification of the lead agency and co-lead, and timeline of implementation within the medium-term (2018-2023) were also discussed.

The OA RDEAP Livestock Program 2018-2023 will now serve as basis and reference for the funding prioritization of OA projects.### ***(Patrick Raymund A. Lesaca)***

MNCCI Meeting...from page 4

and Board of Directors led by its MNCCI President Ferdinand D. Sia. In his inaugural address, President Sia said that "MNCCI will be working towards strengthening agri-entrepreneurship that will at the same time empower the farmers and fishermen as productive members of the community."

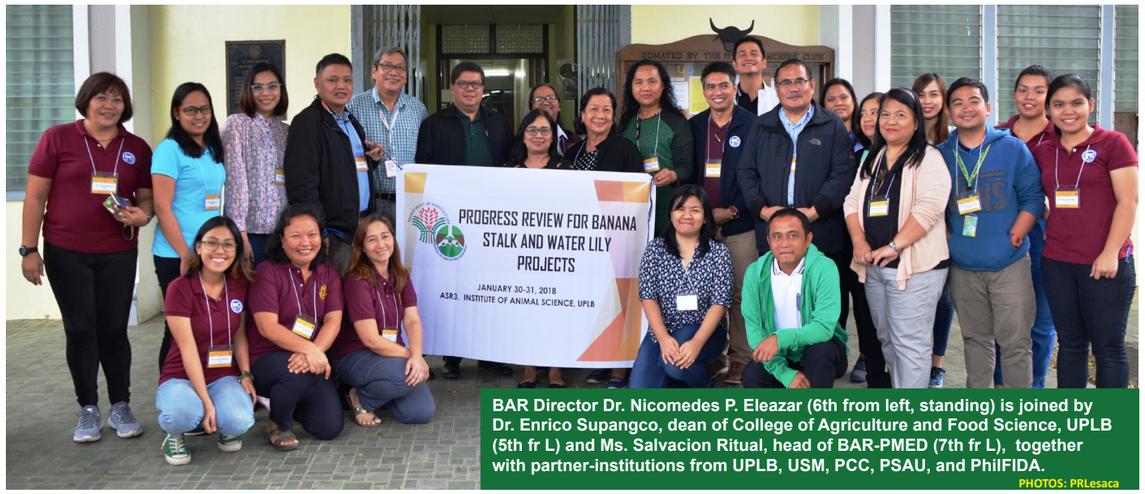
According to MNCCI, they are eyeing to put up an incubation center for marketing, packaging and promotion, technology transfer, and training of stakeholders in both the agriculture and fishery sectors and with possible collaboration with BAR and DA.

A non-partisan voluntary business organization, MNCCI is composed of business units representing the agricultural, commercial, industrial, and services sector within the first to the third congressional districts of Camarines Sur (loosely called as Metro Naga). One of its aims is to serve as the working arm of business in social development.

Also present in the event was Dr. Josephine F. Cruz, vice president for Research, Extension Production and Entrepreneurial Development of the Central Bicol State University of Agriculture who likewise serves as project leader to various BAR-supported projects. ### ***(Ma. Eloisa H. Aquino)***

(above) MNCCI Vice-President Engr. Jaime M. Kalaw, Jr. and President Ferdinand D. Sia award the Certificate of Appreciation to Dir. Eleazar for serving as Guest and Honor. (right) BAR Dir. Eleazar with Dr. Josephine F. Cruz, vice president for Research, Extension Production and Entrepreneurial Development of Central Bicol State University of Agriculture. PHOTOS: FGretchin

PROJECTS ON BANANA STALK, WATERLILY, AND JUTE REVIEWED



BAR Director Dr. Nicomedes P. Eleazar (6th from left, standing) is joined by Dr. Enrico Supangco, dean of College of Agriculture and Food Science, UPLB (5th fr L) and Ms. Salvacion Ritual, head of BAR-PMED (7th fr L), together with partner-institutions from UPLB, USM, PCC, PSAU, and PhilFIDA. PHOTOS: PRLesaca

An on-site progress review and monitoring of the Bureau of Agricultural Research (BAR)-funded project on the utilization of dehydrated banana stalks and waterlily as extender for ruminant feeds to be mixed with commercial feed ingredients, and jute as source of fiber for the textile industry, were conducted on 30-31 January 2018 at the University of the Philippines Los Baños (UPLB), College, Laguna. The activity aimed to assess and evaluate the progress of the projects; and polish the planned activities for the succeeding quarters.

The review was necessary to keep Agriculture Secretary Emmanuel Piñol abreast on the latest development about the project specifically on the use banana stalks and waterlily, both of which are treated wastes that can be used as feed extender for small and large ruminants. The conceptualization of this R&D project came as an instruction of Secretary Piñol to conduct R&D studies on banana stalks and waterlily.

Present during the review was BAR Director Nicomedes P. Eleazar who acknowledged the efforts of the team and extended the Secretary's commendation on the progress of the project. He also expressed his full support to the project as this will contribute to the livestock and fiber industries in general.

The partner-institutions involved in the project are UPLB, Pampanga

(L-R) Dr. Remedios VJ. Abgona of PhilFIDA and Dr. Ernesto Supan of PSAU

(L-R) Dr. Arnel del Barrio, PCC Executive Director and Dr. Norman de Jesus of PSAU

(L-R) Dr. Josephine Migalbin of USM and Dr. Amado A. Angeles, DTRI Director

State Agricultural University (PSAU), University of Southern Mindanao (USM), Philippine Carabao Center (PCC), and Philippine Fiber Industry Development Authority (PhilFIDA). PSAU and USM are focused on goats in Luzon and Mindanao, respectively. Meanwhile, UPLB and PCC are looking into dairy cattle and buffaloes, respectively while PhilFIDA studies on the use of banana stalk and waterlily as sources of fiber.

Presenting the updates and salient accomplishments were: Dr. Remedios Abgona of PhilFIDA; Dr. Arnel del Barrio, executive director of PCC; Dr. Norman de Jesus and Dr. Ernesto Supan of PSAU; Dr. Josephine Migalbin of USM; and Dr. Amado A. Angeles, director of Dairy Training and Research Institute-UPLB. On PhilFIDA's jute presentation, Dr. Eleazar mentioned to Dr. Abgona that the agency can upscale the jute project through BAR's Technology Commercialization Division.

The evaluators during the review were Dr. Enrico Supangco, dean of College of Agriculture, UPLB; Ms. Salvacion Ritual, head of BAR's Program Monitoring and Evaluation Division (PMED), who earlier gave the workshop mechanics and activities to be undertaken during the plenary session. Also joining as co-evaluators were Ms. Rhea Desalesa and other BAR technical staff. Ms. Marnelie G. Subong of PMED served as review coordinator and facilitator.

Capping the activity was a tour at DTRI's farm where Dr. Angeles showed how fresh water lilies were being processed and fed to animals.

(Patrick Raymund A. Lesaca)

INDIGENOUS VEGETABLES:
More than just healthy eating

by Rena S. Hermoso

ISU research staff with ampalaya treated with chemical-free pesticide. PHOTO: PRaymundo

A healthy lifestyle starts with what you eat. According to the United Nations' Food and Agriculture Organization, vegetables and fruits are important sources of micronutrients and dietary fiber. The Department of Science and Technology-Food and Nutrition Institute suggests that a healthy meal should be composed of 33 percent rice, 33 percent vegetables, 17 percent meat, and 17 percent fruit. Likewise, the World Health Organization (WHO) recommends eating at least 400 grams of fruits and vegetables a day. However, "the increased production of processed food, rapid urbanization and changing lifestyles has led to a shift in dietary patterns. People are now consuming more foods high in energy, fats, free sugars or salt/sodium, and many do not eat enough fruit, vegetables and dietary fiber," according to WHO.

Indigenous vegetables are vegetables native to or originating from a particular environment which are often easier to grow, resistant to pests and diseases, and generally acceptable to local taste.

Cagayan Valley's indigenous vegetables

The Cagayan Valley region is "endowed with 56 different indigenous vegetables excluding the rare or underutilized vegetables used by the rural people living near Sierra Madre," said Dr. Perlita P. Raymundo, Isabela State University (ISU) Echague Campus. However, she also said that there is a growing concern on the decline in the production, consumption, and conservation of these vegetables in the region.

To maximize, therefore, the full potential of indigenous vegetables in the Cagayan Valley region, Dr. Reynaldo L. Raymundo together with Dr. Perlita P. Raymundo from the ISU Echague Campus conducted a research project titled, *Conservation and Utilization of Indigenous Vegetables in Region 2*.

Funded by the Bureau of Agricultural Research and implemented by ISU, Echague Campus, the project focused on the collection, multiplication, evaluation, and conservation of indigenous vegetables to ensure the availability of good quality seeds for the sustainable supply of planting materials needed in the conduct of R&D and/or stakeholders. It was aimed to: 1) establish nursery and budwood garden following certain R&D components; 2) establish 1,000 square meter on-farm research to pilot test the adaptability of the identified indigenous vegetables executing the good agricultural practices on production and postproduction; 3) conduct a benchmark study on the existing production, post production practices, and utilization of indigenous vegetables in the region; and 4) promote the utilization of indigenous vegetables through conduct of field days and dissemination of research.

The project has identified nine priority indigenous vegetable, namely: *alugbati*, *ampalayang ligaw*, *bagbagkong*, *kuchai*, *himbabao*, *lasuna*, *patani*, *siling labuyo*, and *talinum*. These vegetables contain high percentage of antioxidants and can adapt to local growing conditions. The identification of the priority indigenous vegetables was done while considering the following: nutritional and medicinal value, income generation, suitability for low-input system, and local agro-climatic conditions where these vegetables are planted.

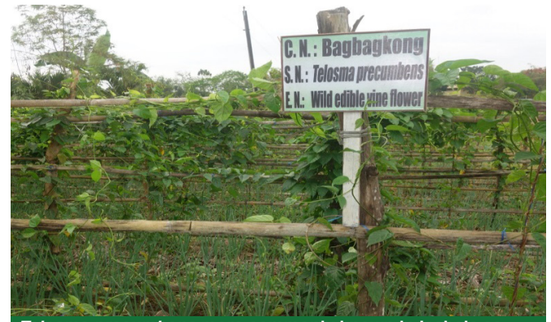
They also learned that among these vegetables some are on their way to extinction including *bagbagkong*, *himbabao*, *patani*, *kuchai*, and native *lasuna*. To conserve these indigenous vegetables, ISU continuously gives planting materials to walk-in farmers. They also collaborated with other stakeholders to help in the conservation and promotion of indigenous vegetables.

More so, technologies that were generated through this project were disseminated to different stakeholders through fora, seminars, training, extension activities, and distribution of information, education and communication materials.

Benefits in consuming indigenous vegetables

According to Dr. Perlita P. Raymundo, "consumption of indigenous vegetables is the most sustainable way of reducing and controlling micronutrient deficiencies in resource-poor communities." She also added that the "utilization and increased production of indigenous vegetables can promote economic opportunities" which can empower the poor and enhance their social security.

Moreover, indigenous vegetables can adapt to harsh growing conditions and disease infestation. Thus, cultivation of indigenous vegetables "means a better adaptation to the ecosystem and reduction in the need for pesticides," said Dr. Raymundo. She also mentioned that planting indigenous vegetables could help in mitigating the effects of climate change because the use of pesticides is prohibitive. According to Capuno et. al. (2015), indigenous vegetables' "adaptability, plasticity and resilience to stresses provide farmers with the needed coping strategies to confront climate change."



Telosma precumbens more commonly known in Isabela as "Bagbagkong" is a vegetable with a consistency and taste similar to string beans. PHOTO: PRaymundo

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Promoting indigenous cultures in agro-biodiversity conservation

Members of Lake Sebu Indigenous Women and Farmers Association (LASIWFA) attend a training on product processing. PHOTO: JPDimacali

by John Paul II Dimacali

As the demand for food, land, and other resources for human development continues to increase, humans also face environmental degradation, deforestation, unregulated land use and urbanization, and climate change. Governments down to the communities are under pressure to produce more, using fewer resources in the midst of man-made and climate-related disasters. More than ever, traditional agro-ecosystems need to evolve and the role of agro-biodiversity in providing solutions to many complex development issues, including food security and nutrition can no longer be underestimated.

The Philippines is one of the few mega-diverse countries in the world being home to thousands of globally-significant agricultural species. There are more than 5,500 traditional rice varieties in the country, along with a broad array of indigenous and endemic varieties of crops such as eggplants, mungbean, *taro*, yam, banana, and *abaca*, among many others.

This remarkable wealth of agro-biodiversity was one of the highlights of the Helobung Festival, celebrated every November in Lake Sebu, South Cotabato. A town feast that features the culture and livelihood of T'boli and B'laan tribes, the Helobung Festival is also a thanksgiving celebration for a bountiful harvest and abundance.

Lake Sebu is one of the three pilot sites (along with Hungduan and Hingyon in Ifugao) of the "Dynamic conservation and sustainable use of agro-biodiversity in traditional ago-ecosystems of the Philippines" a project of the Food and Agriculture Organization (FAO) of the United Nations and the Department of Agriculture's Bureau of Agricultural Research (DA-BAR). The project, which is financed through the Global Environment Facility, aims to enhance and expand the dynamic conservation practices that sustain globally significant agro-biodiversity in traditional agro-ecosystems of the Philippines. The pilot sites were selected for their rich crop diversity and indigenous conservation initiatives and farming practices.

Free, Prior and Informed Consent (FPIC)

The core principles of the FAO Policy on Indigenous and Tribal Peoples are self-determination; the respect for indigenous knowledge, cultures and traditional practices that contribute to sustainable and equitable development; and Free, Prior and Informed Consent (FPIC).

As the project works with indigenous cultural communities, FAO in partnership with the National Commission on Indigenous Peoples (NCIP) has conducted series of dialogues and sessions on FPIC in all project areas. These also included the detailed presentation of project activities and consultation on the proposed technical design of a community-based seed/gene bank. FPIC is mandated by Indigenous Peoples Rights Acts (IPRA) law passed in 1997.

As of December 2017, community leaders have agreed to the implementation of the project in their areas and have committed to sign the FPIC Memorandum of Agreement between community-designated representatives and DA-BAR.

Socio-economic benefits

Under this partnership, IP communities will be provided with socio-economic benefits such as market-based incentive systems that reward the production of traditional varieties, detailed market-valuation analyses to assess the marketability of indigenous varieties as premium products, and stronger capacities for product development, value-addition, marketing, business and financial planning. These efforts will be achieved in close collaboration with various government agencies, private sector, and farming communities which conserve and sustain the agro-biodiversity.

The Helobung Festival provided an opportunity for project partners and beneficiaries to promote the benefits that can be derived from the conservation and sustainable use of agro-biodiversity.

Among those showcased during the festival were products developed from traditional varieties of yam, taro, banana, and rice. Indigenous women were also trained on processing, packaging and labeling, including market linkages for these products with economic potentials.

The project will continue to work with different stakeholders to open opportunities for scaling-up IP communities' unique and traditional agricultural knowledge and practices.###

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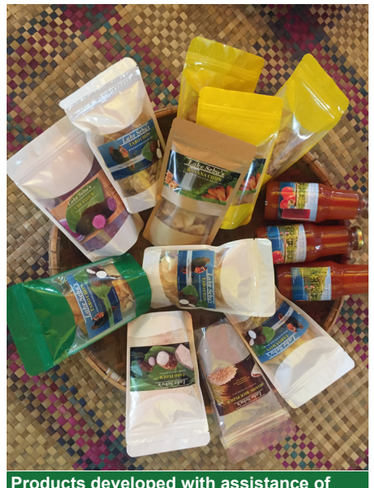


Products developed with assistance of the project being implemented by FAO and BAR PHOTO: JPDimacali

BAR seminar series features agri-fisheries credit programs

The Bureau of Agricultural Research (BAR), through its Applied Communication Division, conducted an in-house seminar featuring agricultural and fisheries credit programs of the Agricultural Credit Policy Council (ACPC) and Land Bank of the Philippines (LANDBANK) on 25 January 2018. Serving as the resource speakers were Ms. Emmalyn Guinto, chief of ACPC's Information Systems Management Division and Ms. Lara Tiphanie Daquioag, program officer of LANDBANK's Program Management Department.

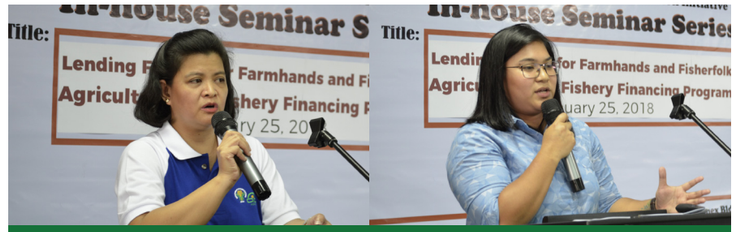
Ms. Guinto discussed the ACPC's Production Loan Easy Access (PLEA) Program and Survival and Recovery (SURE) Assistance Program. Launched in June 2017, the PLEA Program is "*mabilis, madali at abot-kayang pautang para sa maliliit na magsasaka at mangingisda*," said Ms. Guinto. It features easy and convenient credit access, low interest rate at six percent per annum, expanded credit delivery channels, instills credit discipline, and focused on the marginal farmers/fishers. The PLEA Program is designed to finance the production of crops, livestock and the requirements in fishing activity. Marginal/small farmers/fishers who are registered with the Registry System for Basic Sectors in Agriculture (RSBSA) or enrolled in the *Juan Magsasaka't Mangingisda* National Database System are eligible to borrow from this program.

On the other hand, the SURE Assistance Program is a grant and loan assistance for calamity-affected small farmers and fishers and their households extended thru existing partner-financial institutions and/or lending conduits to be tapped by the Department of Agriculture/ACPC. There are two types of loan assistance: 1) Survival Assistance for emergency and immediate needs of the borrowers, and 2) Recovery Assistance for rehabilitation of farming/fishing or livelihood activities. Small farmers and fishers whose livelihoods were affected by the calamity are eligible to borrow from this program. SURE Assistance Program has 0% interest charge but conduits may charge service fee of up to three percent.

Moreover, Ms. Daquioag talked about LANDBANK's General Lending Guidelines for Cooperatives and then she briefly discussed their credit programs for small farmers and fishers/cooperatives. These credit programs are: Integrated Support for the Development of Aquaculture (ISDA) Program, Seaweed Financing program, Masustansyang Inumin sa Likas na Kalusugan (MILK) Program, Credit Assistance for Cacao Agri-Business and Organizations (CACAO) 100 Financing Program, Coffee 100 Financing Program, Coconut Production and Processing Financing Program, ***KA****likasang Kabuhayan para sa* ***WA****stong Pama****YAN****an* (KAWAYAN) Program, Enhanced Sugarcane Financing Program, Oil Palm Financing, Onion Financing Program, LBP-SMC Corn and Cassava Assembles/Consolidators Financing Program, Agri-Mechanization Financing program, Climate Resilient Agriculture, Banana Financing Program, Poultry Lending Program, Rubber Financing program, and LANDBANK CAlamity REhabilitation Support (CARES) Program.

Aside from these credit programs, she also mentioned that LANDBANK in partnership with the Department of Agriculture, ACPC, and Department of Agrarian Reform offers special credit programs. These are the Agrarian Production Credit Program (APCP), Sikat Saka I and II Program (SSP) and Agricultural and Fisheries Financing Program (AFFP). ###

(Rena S. Hermoso)



(left) Ms. Emmalyn Guinto from ACPC talks about PLEA Program and SURE Assistance Program; (right) Ms. Lara Tiphanie Daquioag from LANDBANK talks about the General Lending Guidelines for Cooperatives and their credit programs for small farmers and fishers/cooperatives. PHOTO: RHermoso

HEALTH & WELLNESS SEMINAR FEATURES NIPA PALM PRODUCTS

Former DENR Secretary Gina Lopez promoted Nipa Palm products during her health and wellness seminar at the Rockwell Center, Makati on 20 January 2018. The processing of Nipa Palm products began as a funded research project of the Bureau of Agricultural Research (BAR) in Lanuza, Surigao del Sur. It is implemented by the Foundation for Rural Enterprise and Ecology Development of Mindanao Incorporated (FREEDOM).

Lopez came to discover Nipa Palm sugar and syrup after they were brought to her by a close friend from Mindoro who recommended that she try it. Today, FREEDOM's Nipa Palm products are being sold at G Stuff, a health and wellness store founded by Gina Lopez five years ago.

Much similar to G Stuff's advocacy for a cleaner environment and for empowering communities, FREEDOM's project encourages Mindanao coastal communities in utilizing Nipa Palm plantations in the production of food products and not just for raw materials for construction. They provide farmer associations with the technical assistance needed to turn their livelihood of harvesting Nipa sap into a profitable enterprise worthy of international recognition.

In 2015, FREDOM's Nipa Palm sugar bagged the "Best Product

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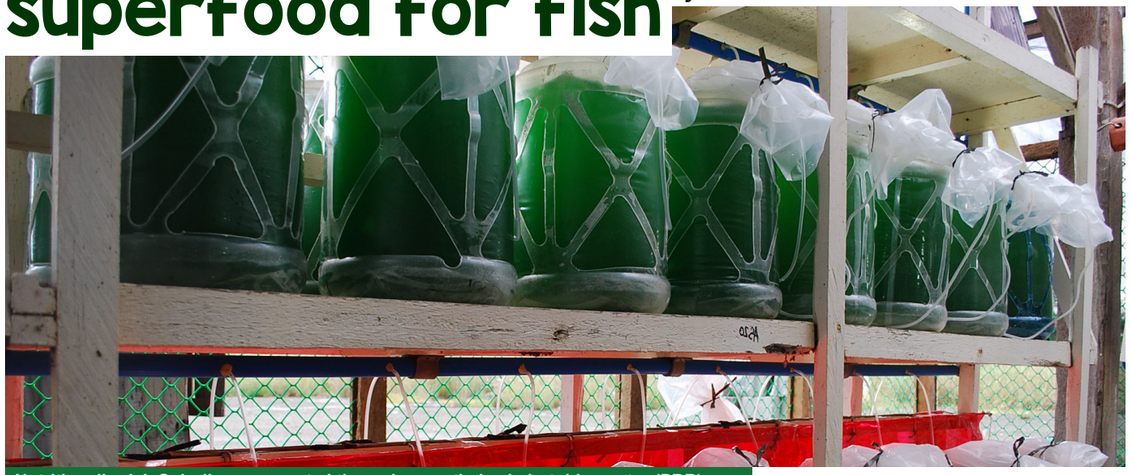
Ms. Gina Lopez talks to seminar participants about the benefits of Nipa Palm products. PHOTO: EJGestupa

MICROALGAE: A natural green superfood for fish

by Leoveliza C. Fontanil



Nutritionally-rich Spirulina propagated through an optimized photobioreactor (PBR) system. PHOTO: LFontanil

One of the most important inputs in aquaculture is feed, and the most significant criteria of it are price, quality, quantity, availability, and efficient feeding system. The natural foods of fish are algae and plankton. However, under contained cultivation condition, the quality of the farmed fish depends mainly on the quality of the food that is being provided.

Today, defatted soybean meal is the most common, low-cost food for fish. However, soybean meal is not the natural diet of fish because it lacks in key compounds required for proper fish nutrition. Thus, the use of soybean meal presents a major limitation in providing healthy growth conditions in Philippine aquaculture. The challenge, therefore, is to provide the ideal natural foods for fish such as microalgae at a competitive price, high quality, and adequate quantity.

To address this, the Bureau of Agricultural Research (BAR), funded a project titled, "Development of Technology for Efficient Microalgae Production: Photobioreactor Design, Feed and High-value Metabolites" that aimed to provide superior fish food through the development of local microalgae. Under the leadership of phycologist and chemist professor, Dr. Fabian M. Dayrit of the Ateneo de Manila (ADMU), he developed a technology that is simple, reliable and efficient photobioreactor (PBR) design system to maximize the yield and optimized culture conditions for microalgae production of Spirulina.

Spirulina (*Arthrospira platensis)* or the blue-green photosynthetic microalgae, known as the highest natural protein source, contains about 55-70 percent essential protein profile with a complete set of key compounds such as amino acids, polyunsaturated fatty-acids (PUFA's), carotenoids, and vitamins A, C, D, E, B12 or *cobalamin* that boost the required nutritional diet of fish. One of the characteristics of this quality feed is the presence of natural constituents that has high value of nutraceuticals. These compounds include omega-3 fatty acids, carbohydrates, dietary minerals, and phycobiliproteins.

Due to its boundless nutrient contents, Dr. Dayrit highlighted the main benefits of feeding Spirulina for aquaculture purposes. Among the benefits include: 1) increase and give a more uniform growth rate for fish; 2) improve the digestion; as a result of more nutrition are extracted from the food and there are no indigestible components; 3) boost the immune system and aid prevention of swollen abdomens due to blocked intestinal passages; and 4) enhance production of special enzymes that break down digested fats into energy rather than letting them build up in the fishes body.

Seeing its importance, Dr. Dayrit and his team fabricated an optimized PBR system and culture condition for the production of Spirulina. Unlike other PBR designs for algae growth, the features of developed enhance PBR are inexpensive, easy to clean, and reuse, subject in efficient illumination, and the materials are readily available so that the fabrication is easy and scalable.

Using the transparent polyethylene bag with cut-out plastic jug for its support are the inventive technology developed by the team as the PBR housing or the culturarium for algae. Part of their worked on photobioreactor systems is the involvement of prototypes designed to probe the effects of various parameters on microalgae growth in terms of the modification of culture media, light configuration and its culture process. As a result, the alpha PBR prototype showed a significant increase in growth rates in terms of cell count and cell size of Spirulina. The cost of power used for lighting system was low; the culture time was decreased and created as highest biomass yield improvement with approximately 70 percent increase in microalgae production.

The developed PBR system is now being undertaken by the Alsons Aquaculture Corporation, an industry partner based in Sarangani, Province, and one of the major aquaculture companies in the Philippines. The optimized PBR system and culture condition of Spirulina are transferred to Alsons where it will be scaled-up, further optimized and pilot tested to make the product market-ready.

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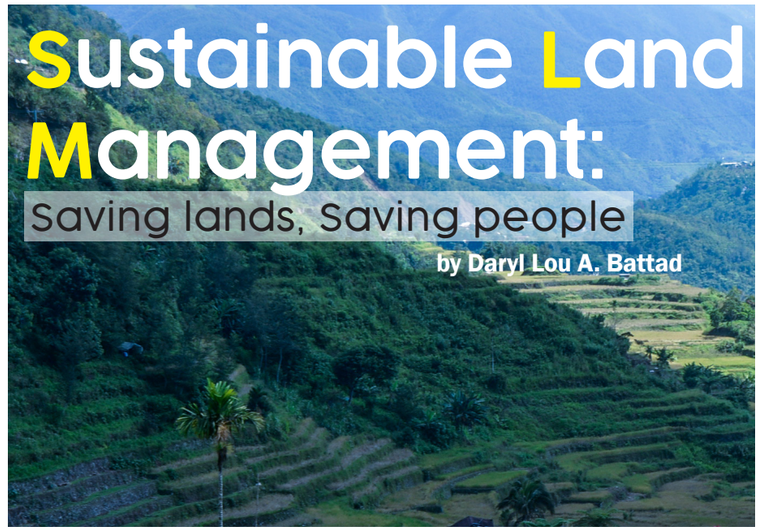
Spirulina harvested from the Alson Aquaculture Corporation Phil. PHOTO: FDayrit

Sustainable Land Management:

Saving lands, Saving people

by Daryl Lou A. Battad



Land is described as the "original source of all material wealth." True enough, land is a natural resource from which all elements function together providing survival and sustenance to mankind from the air we breathe, the water we drink, the food we eat, the house we live in, to the clothes we wear –since the beginning of time.

In the words of an English economist, Dr. Alfred Marshall, "Land is defined as the materials and the forces which nature gives freely for man's aid, in land and water, in air and light and heat." This means that land is an indispensable asset that not only provides for, but prospers a nation.

However, this tremendous dependence of man to the land resource elicits drastic effects that can impact the present and future generations. And since land is non-reproducible, man is left with the moral responsibility to care for it, much more preserve it.

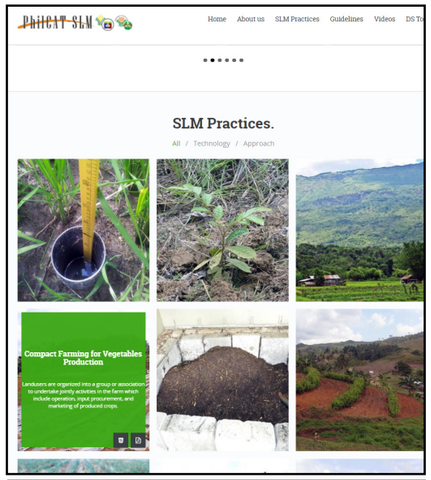
Synergy of land and agriculture

The country boasts of its vast natural resources that are home to a wide array of ecosystems and biodiversity. The Philippine economy relies heavily on its natural resources. In fact, with a land area of 30 million hectares, 47 percent is devoted to agriculture.

Given this, the agricultural labor force remains strong accounting to about 36 percent of the total employed population, the second largest share of employment in the country. Moreover, the 2015 data from the Philippine Statistics Authority (PSA) shows that the Gross Value Added (GVA) in agriculture and fisheries accounted for 9.4 percent of the Gross Domestic Product (GDP), with which a 0.34 percent increment was recorded.

The rapid growth of the population however, has put a major strain on the land resource, having to consequently intensify agricultural production in order to meet basic human needs. These agricultural activities were observed to be carried out at the expense of naturally sustaining healthy ecosystems. As a result, land has consistently exhibited low production potential, as well as many cases of soil and water erosion, nutrient degradation, and loss of valuable land to desertification.

The concerted efforts of both land and agriculture should be taken seriously, as one cannot go without the other. Land is the most essential part of all life-sustaining production on the earth, thus it deserves a comprehensive, potent, and sustainable measures to enhance production, while lowering – if not eliminating – the risks of further deterioration.



The PhilCAT-SLM webpage offers a wide array of SLM tools and practices using the WOCAT technology. Screen grab from www.bswm.da.gov.ph/philcat-slm/

The SLM project

Sustainable Land Management (SLM) is defined as the use of land and water resources, including soils, water, animals, and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions.

SLM is among the solutions seen to address land degradation and climate change issues. However, a pressing question persists: "Why are such measures not used, applied, or promoted?"

Driven by the urgent need for knowledge management and decision support tools to facilitate broader adoption of SLM to address issues and threats of climate change and land degradation, the Department of Agriculture-Bureau of Soils and Water Management (DA-BSWM) came up with a research project titled, "Development of Decision Support Tools on Sustainable Land Management (SLM) as a Key to Address Abiotic Stresses in Areas Vulnerable to Climate Change."

Led by Soil Conservation and Management Division Chief Engr. Samuel Contreras, the project partnered with various government and non-government agencies and state college and universities (SUCs). With funding support from the DA-Bureau of Agricultural Research (BAR), the project aimed to develop SLM decision support tools to combat land degradation and diminish the effects of climate change.

How is this done?

SLM has been around for quite some time but the knowledge gaps mostly in terms of area covered, impacts, and economics of SLM have become the limiting factor for these technologies to be fully utilized. With the alarming rate of land degradation and climate change repercussions, Engr. Contreras and his team resolved to document SLM knowledge and practices, put them into a database, and process them into knowledge products that can be used as decision support tools.

The project focused on different ecosystems in the country with varying climate types and topography which include the Cordillera Administrative Region (CAR), Central Luzon, Southern Luzon, Eastern Visayas, and the Northern Mindanao region.

There were six components involved in the implementation of the project. It follows the principles set by the World Overview of Conservation Approaches and Technologies (WOCAT), an established global network of sustainable land management specialists. WOCAT provides methodological tools and guidelines to national and regional institutions in carrying out initiatives to scale up SLM among all stakeholders.

As in any research project, it is imperative to conduct awareness raising, education, and training particularly,

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