PCC Newsletter

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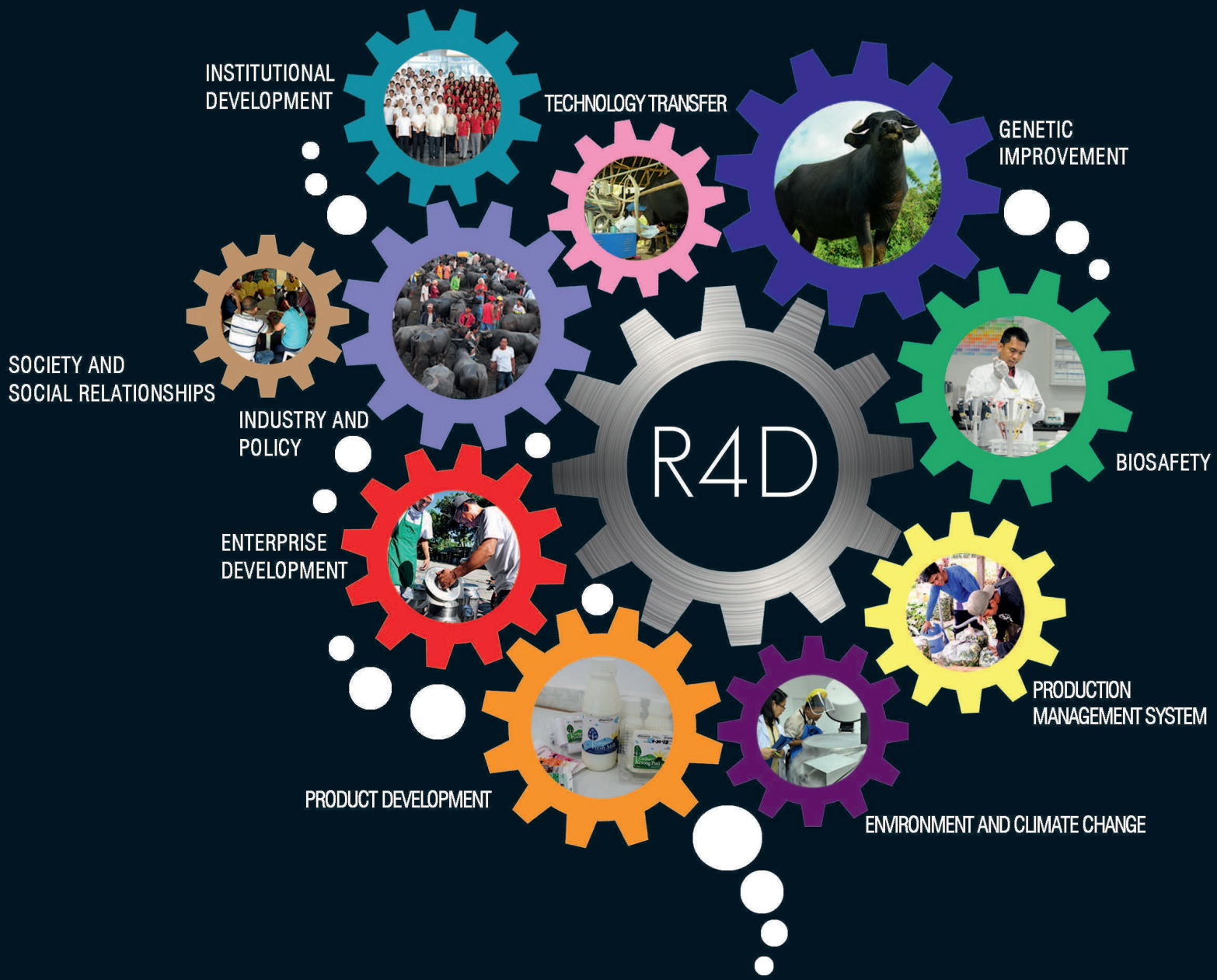

PCC shifts gears

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Contributors are welcome!

The PCC Newsletter welcomes industry-related articles not exceeding 800 words, with photo(s), and corresponding caption.

Success stories of farmers, cooperatives, and other beneficiaries and stakeholders of the Carabao Development Program are preferred.

PCC encourages reproduction of articles from this publication with proper acknowledgment.

Topic suggestions and comments are also welcome.

Please send your articles or comments to pccnewslettereic@gmail.com or mail them to:

THE EDITOR-IN-CHIEF
PCC Newsletter
Applied Communication Section
Knowledge Resource Management Division
Philippine Carabao Center
National Headquarters and Gene Pool
CLSU Cmpd., Science City of Muñoz
3120 Nueva Ecija
or call Tel. No.: 044-456-0731 (loc) 479

www.pcc.gov.ph

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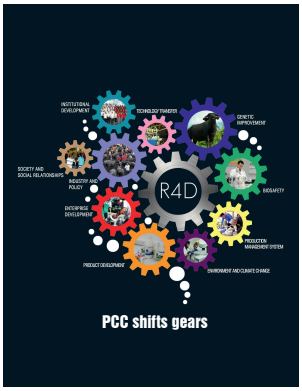

PCC shifts gears

Transitioning into a genuine research for development (R4D). The shift now emphasizes on identifying relevant researches that will contribute significantly to the attainment of the agency's final outputs. Ten areas were pinpointed to set the PCC's R4D in motion. These are (1) genetic improvement; (2) biosafety; (3) production management systems; (4) environment and climate change; (5) product development; (6) enterprise development; (7) industry and policy; (8) technology transfer; (9) socio-economic dimensions of the Carabao Development Program(CDP) implementation; and (10) institutional development.

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PCC holds 1st Visayas AI Tech Congress; participants from 3 regions in attendance

The Philippine Carabao Center at Ubay Stock Farm (PCC at USF) convened the first Artificial Insemination (AI) Technicians Congress on December 28-31 at the Dohera Hotel, Mandaue City, Cebu.

The congress aimed to "define the roles and standards of an AI Technician in relation to the national livestock genetic improvement and enterprise development programs" of PCC.

The three-day event consisted of a series of plenary sessions, lectures, and sharing of success stories in the field of AI in Luzon and Visayas. A forum followed each session.

Several issues and concerns surfaced during the event. These include the standardization of the AI incentives provided separately by the PCC and the National Dairy Authority (NDA); challenges in improving efficiency, such as success rates of AI and AI target accomplishments; setting up of breeding program for genetic improvement; mobility; insufficient feed or forage supply; and inadequate information on AI in remote areas.

"Although the matters discussed were not totally resolved during the congress, these were recorded and would be transmitted and included in the management meetings and planning sessions," assured Dr. Caro B. Salces, the center director of the host agency.

Participants in the congress included 10 village-based AI technicians, 29 LGU-employed technicians, representatives of 15 provincial local government units in the Visayas, and 44 personnel from national agencies in regions VI, VII and VIII.

Serving as resource persons were Dr. Jose Arceo Bautista, a university professor in animal science from the University of the Philippines – Los Baños (UPLB); Director Grace Marjorie M. Recta of PCC at Mariano Marcos State University (PCC at MMSU); Mr. Jose Canaria of PCC at UPLB; Dr. Annabelle S. Sarabia, chief of operations of PCC National Headquarters; Dr. Ester Flores, genetic improvement program coordinator of PCC; Dr. Salces, Dr. Editha Bajenting (manager of NDA-Visayas), Vicente Belarmino (Cebu provincial AI coordinator), Nestor Villaflores, Negros Oriental provincial AI coordinator, and Joel Elumba (regional technical director of the Department of Agriculture of Region 7).

Meanwhile, several AI technicians shared their techniques and success stories in giving AI services.

Other PCC centers at the West Visayas State University (PCC at WVSU), La Carlota Stock Farm (PCC at LCSF), and Visayas State University (PCC at VSU) backstopped the success of the congress. | **LEINEFE LIBRES**

PCC to use real-time integrated database for its recording system

The Philippine Carabao Center (PCC) is using the Buffalo Integrated Database System (BIDS) to centralize the recording of all the pertinent data gathered from its operations on the national and regional levels.

"We want to put into one database all the data on the different services of PCC such as artificial insemination, genetic improvement, bull loan and carabao-based enterprise development," Dr. Annabelle Sarabia, PCC Chief of Operations, said.

The BIDS was developed through the joint efforts of the operations group and the Genetic Improvement Program (GIP) unit of the PCC.

"The BIDS is essentially a real-time integrated database system which captures all the necessary records from the institutional and cooperative herds at the national and regional centers of the agency," Dr. Ester Flores, head of the GIP unit, explained.

The information in the database, she added, includes artificial insemination and bull loan services, inventory of the animals, list of institutional herds, list of dairy farmers in the cooperatives and the ID numbers of their animals, the milk production of each animal, and breeding records such as mating services.

The different coordinators of each program from the 12 regional networks of the agency will be able to update the records of their respective centers using their own local server, she said. The central database will be managed by the Operations group.

The first step toward the development of a centralized database began in 2009 as the different programs of the agency being implemented throughout the country grew. An initial spreadsheet-based database was established covering the data on the AI, bull loan and CBED services of the agency.

The software, however, cannot contain a huge amount of data, thus, the need for the development of a specific software dedicated entirely for the information gathered from the various aspects of the Carabao Development Program was felt.

The training for the use of the software has already been conducted for the program coordinators from the regional centers who will be managing the database.

"There are still many improvements needed for the database. For now, we are feeding data in it while we are still validating them," Dr. Flores said.

She added that the next step would be the development of a module for management information system to evaluate the performance of the individual buffaloes and the herds as a whole.

Through this, she explained, the farm managers will be able to see the status of the herd and the individual animal and will be guided on what proper interventions to take when needed.

Dr. Sarabia said that the BIDS is expected to be fully operational by 2016.

| **ALMIRA P. BENTADAN**

Reproductive physiology expert discusses bull fertility study with PCC researchers

Dr. John Parrish (in light blue shirt) a professor and researcher from the University of Wisconsin-Madison, USA, demonstrates to PCC researchers how to use the software he developed in analyzing the fertility level of semen.

A professor from the Animal Sciences Department of the University of Wisconsin-Madison, USA, met with researchers of the Philippine Carabao Center (PCC) in a technical caucus held December 22 at the PCC national headquarters during which he discussed his paper on the predictability of bull fertility using Fourier Harmonic Analysis.

Dr. John Parrish, who completed his post-doctoral degree on reproductive physiology at UW-Madison, presented his study titled, "Quantifying Sperm Nuclear Shape with Fourier Harmonic Analysis and Relationship to Spermatogenesis and Fertility" in which the fertility levels of cattle bull, boar and stallion were determined by studying the shape of the sperm DNA.

As a result of the study, Parrish developed a software specifically programmed to analyze semen of each of the three species using established parameters.

According to Dr. Danilda H. Duran, Scientist I from PCC's reproductive biotechnology unit, the agency is collaborating with Parrish to adopt the technology and develop parameters specifically for buffaloes.

"There are certain differences among the species. Some parameters used in cattle may not be applicable to buffaloes," Duran said.

She added that the study will greatly help PCC in the ongoing implementation of its artificial insemination project, which is part of its genetic improvement program covering dairy buffaloes, since only bulls with high fertility level will be used in the undertaking.

"The conventional sperm quality analysis we are currently using cannot predict the fertility rate of the bulls. It can only address the issues on the compensable aspects of the semen such as motility and concentration rate. Dr. Parrish's study can detect the uncompensable issues such as DNA-based defects," she explained.

Bulls that are found to be of lower fertility level may be treated and may later be used in the program, she added.

Some 30 PCC researchers participated in the technical caucus.

|ALMIRA P. BENTADAN

PCC studies, conducts extension methods thru 'farmer livestock school'

A research cum development project titled "Extension Methods for Adoption of Dairy Buffalo Technology in Selected Barangays in Nueva Ecija and Ilocos Norte" is being conducted by the Philippine Carabao Center (PCC).

The project aims to develop training modules to help the dairy farmers in their dairy buffalo production endeavors especially on expediting the technology adoption in, increasing the breeding efficiency of buffaloes from 25%-55% and in increasing the percentage contribution of buffalo dairying to household income by 2017.

The strategy involves capacitating a core group of PCC staff members that will develop the said training modules which will be employed during the conduct of Farmers Livestock School (FLS) sessions. The core group had already undergone their first and second workshops last September 3-5 and December 17-19 in Tagaytay City and PCC National Headquarters and Gene Pool, respectively.

The core group is from the PCC National Headquarters and Gene Pool in the Science City of Muñoz, Nueva Ecija, PCC at Mariano Marcos State University (PCC at MMSU) in Batac, Ilocos Norte and PCC at Central Luzon State University in the Science City of Muñoz, Nueva Ecija.

They are composed of Dr. Eric Palacpac, Dr. Edwin C. Atabay, Dr. Grace Marjorie Recta, Mr. Moses Gil F. Honorio, Ms. Rovelyn T. Jacang, Mr. Erwin M. Valiente, Dr. Anabelle S. Sarabia, Dr. Peregrino Duran, Dr. Ester Flores, Dr. Daniel Aquino, Dr. Nancy S. Abes, Dr. Cyril P. Baltazar, Ms. Wilma T. Del Rosario, Ms. Phoebe Lyndia T. Llantada, Ms. Chrissalyn L. Marcelo, Ms. Khrizie Evert M. Padre, Ms. Meriam Cabling and Mr. Florencio Malicad.

An outline of the module was already developed through the help of Ms. Marie Alo, an FLS expert from the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD). The topics to be discussed and some lesson plans were also developed.

The outline was established through the use of fish bone technique in which the core group discussed the major concerns that they need to address in buffalo production during their training. Specific topics for the module were also identified.

The major topics identified were increasing the: breeding efficiency (Goal I) and percentage contribution of buffalo dairying to household (Goal II) income by 2017. Under each major topic, outlined were the specific topics.

The FLS Goal I is composed of topics related to improving the body condition score of the carabaos from the score of 2.5 to 4.0, 50% decrease in mortality in breedable animals, improving the breeding management of carabaos through improved efficiency of mating system, improved recording among coops and improved practice on selection and culling.

The FLS Goal II, on the other hand, includes topics on increasing meat production, increasing milk production efficiency, improving the personal entrepreneurial competencies of stakeholders, and increasing the number of

(Continued on page 6)

Javier, Leyte is site of PH 1st dairy buffalo multiplier farm

The town of Javier in Leyte province, about 73 kilometers south of Tacloban City, now holds the distinction of having the country's first ever dairy buffalo multiplier farm (DBMF). In a simple ceremony held November 8 in Sitio Mapula, Zone II of the municipality, Dr. Arnel del Barrio, acting executive director of the Philippine Carabao Center (PCC), formally turned over to JDBMF proponent-operator Michael Javier 50 Italian Murrah heifers that serve as the farm's nucleus herd.

Dr. Arnel N. Del Barrio (6th from left), acting executive director of the Philippine Carabao Center (PCC), presents a mock-up model of a dairy buffalo to Michael Javier as the proponent-operator of the first dairy buffalo multiplier farm in the Philippines in a ceremony held November 8 in Javier, Leyte.

Present during the occasion, which coincided with the 1st anniversary of the occurrence of Supertyphoon "Yolanda", were Javier Mayor Leonardo Javier Jr., Dr. Jose Bacusmo, Visayas State University (VSU) president; Dr. Othelo Capuno, VSU vice president for research and extension; Dr. Julius Abela, PCC at VSU center director, Vice Mayor Emma M. Abueva, Regional Director Cynthia Nierras of the Department of Trade and Industry (DTI); and members of the Javier sangguniang bayan.

The JDBMF will be supervised and monitored by PCC at VSU, which covers Region 8 or the Eastern Visayas region.

"This multiplier farm is the newest program of PCC. We at PCC are always willing to collaborate and participate to the development of our program in the department of agriculture. I hope we will still continue this good collaboration and PCC will always help in terms of breeding, technical services, capability building and many more. That is our promise, we will be of help in any way we can. Let's help this project to prosper for this will be the stepping stone for a bigger project and to create more opportunities like this," Del Barrio declared in remarks during the awarding rite.

In his response, Mayor Javier expressed optimism that the dairy buffalo multiplier farm will result in economic benefits for his constituents.

"What does this multiplier farm mean to the town? It means, we will have milk so we will have income. We will have organic fertilizers from their manure. We will benefit a lot. I will prove, in front of everybody here, it is not impossible to make farmers rich and we will achieve that. I will remember this day not only because of (super typhoon) 'Yolanda' but because this day marks the first time ever in the history of the Philippines that a multiplier farm is installed in a small town like Javier, Leyte," he proudly stated.

The PCC's DBMF program is aimed at improving efficiency in the multiplication and propagation of good quality dairy buffalo genetics that can be utilized in establishing a viable commercial buffalo-based dairy farm. In this manner, buffalo genetic sources may be widely spread and not limited to PCC.

Those interested in applying as an operator of a dairy buffalo multiplier farmer must meet specific qualification-requirements that include the following: a recent business permit or mayor's permit; a co-maker like legal spouse, parents or children with age of not less than 18 years old; dairy production and management capabilities; willing to be trained on the technical aspects of a DBMF; a titled/long-term leased land with developed pasture area; the means to provide for feed and mineral supplementation; available production facility (animal shed, milking parlor, feed storage, animal treatment and isolation area) and equipment; the capacity to provide ad libitum supply of potable water; and must be able to shoulder the cost of transporting the animals from PCC to the DBMF site.

Those who can apply for the DBMF program include farm owners, corporation, company or cooperative that are already engaged in dairy-related activities and livestock production. Applicants will be subjected to evaluation by the PCC DBMF team.

There is a memorandum of agreement (MOA) which should be signed and agreed upon by both parties (PCC and DBMF) indicating also the requirements mentioned above. The contract generally aims to adopt and pursue rural-based development strategies, and recognize the urgency of developing and strengthening the Philippine carabao industry in relevance to the agency's mandate.

Moreover, it aims to recognize the importance of DBMF as an appropriate strategy in developing buffalo-based dairy enterprises providing viable opportunities that lead to increased income, higher nutritional status and improved general well-being among participating rural farming families.

"The Department of Agriculture has a P10 million budget to support livestock multiplier farms. One important factor also is the forage development so we, the DA, will deliver 10 sacks of Pakchong 1, an imported variety of Napier coming from Thailand, to this province (Leyte)," Dr. Wilson Cerbito, DA technical director for research and regulations in Eastern Visayas, said.

Meanwhile, Abela, as the first PCC regional center director to supervise and monitor the first dairy buffalo multiplier farm, expressed his gratitude for and readiness to meet the challenges involved in the project.

"Starting this day, you should have massive pasture development. To all farmers, this will serve as challenge to you. I have mixed emotions toward this project, I am glad at the same time grateful because of the undeniable trust that the management gave to me. I am also overwhelmed because this also serves as another challenge to us. We will do our best to make this first chapter of the Javier multiplier farm a success," he declared. **| MA.CECILIA C. IRANG**

PCC studies, conducts extension methods...

(From page 4)

farmers pursuing allied enterprises.

The topics have been classified and divided into various modules or lesson plans for the farmers. Each lesson plan has specific exercises which are in the form of a game, as much as possible, that can impart a lesson related to the topics.

Alo emphasized that it is better to create exercises in the form of games because it is easier to be understood by the farmers.

According to Dr. Palacpac, head researcher of the study, the modules and lesson plans are scheduled to be presented in their next training. Co-researcher Mr. Moses Gil F. Honorio said that the development of the module is a continuous process in order to achieve perfection in their work.

Honorio added that their schedules and plans are in line with the development of FLS session guides and technical handouts for dairy buffalo production.

Scheduled for five phases, they include a step-by-step process of selection of module developers and national facilitators; workshop on module development; training on the FLS-Dairy Buffalo Production (FLS-DBP) Course Curriculum; establishment of model farms; training on the use of FLS-DBP facilitators guide book and selection of pilot classes for Phase I.

Phase II involves implementation of FLS pilot classes, conduct of regular sessions, field days, exchange visits and graduation of the selected farmer participants.

Phase III, is about the FLS post-graduation activities which includes follow-up session for FLS; establishment of FLS networks and setting-up of regional core team training.

Phase IV involves conduct of research on the adoption of technologies or innovation prior to and after the FLS-DBP.

Phase V, is impact assessment to be conducted after two years of implementing the pilot classes of farmers in Nueva Ecija and Ilocos Norte.

Meanwhile, Palacpac said that the FLS-DBP is the first FLS study on dairy buffalo production in the Philippines. It is modeled after the successful FLS in integrated goat management (FLS-IGM) facilitated by PCAARRD in 2001.

|CHRISSALYN L. MARCELO

The PCC awardees (3rd to 5th) received their certificate of recognition as "Best Poster" winner during the 51st Scientific Seminar and Annual Convention of the Philippine Society of Animal Science (PSAS) held on October 21-25 in Lapasan, Cagayan De Oro City. Their winning entry was a research titled "Molecular Characterization of Gal-9 and TIM-3 Genes of Swamp-type and Riverine-type Water Buffaloes". With the awardees are Dr. Geronima G. Ludan, Dr. Rosalina M. Lapitan, Dr. Joseph S. Masangay and Dr. Jezie A. Acorda.

PCC researchers honored in 51st PSAS scientific convention

Several researchers from the Philippine Carabao Center (PCC) received awards during the 51st Scientific Seminar and Annual Convention of the Philippine Society of Animal Science (PSAS) held on October 21-25 in Lapasan, Cagayan de Oro City.

Dr. Danilda H. Duran, Scientist I at PCC's Reproductive Biotechnology Unit, was bestowed the "PSAS Bounty Agro Ventures Inc. Distinguished Researcher in Animal Science" award for her various works on livestock biotechnology development.

Two papers from the PCC also won the "Best Paper" award under separate categories.

Dr. Eric P. Palacpac's study "To Milk or Not to Milk: Understanding Characteristics and Behavioral Intentions of Crossbred Buffalo Owners in San Agustin, Isabela" was chosen "Best Paper" under the socio-economic category.

On the other hand, the study "Genetic Screening of Scrotal Hernia in Domesticated Swine using PCR-Restriction Fragment Length Polymorphism" done by Jessica G. Manalaysay, researcher at the PCC Animal Health Unit (AHU), bagged the same award under the breeding and genetics category.

Meanwhile, the work of Ryan Bismark C. Padiernos, also from AHU, titled "Molecular Characterization of Gal-9 and TIM-3 Genes of Swamp-type and Riverine-type Water Buffaloes" was chosen as "Best Poster".

The PSAS is a professional non-profit organization that comprises veterinarians, animal scientists and practitioners in related fields across the country conducting researches related to the animal industry. Its annual scientific seminar and convention serve as a venue for knowledge-sharing between and among its members through presentations of scientific papers and posters as well as plenary sessions tackling issues and challenges confronting the industry.

This year's gathering revolved around the theme, "Equipping Veterinarians and Animal Scientists for ASEAN 2015."

According to Dr. Rosalina M. Lapitan, incumbent PSAS president and officer-in-charge of PCC's regional center at the University of the Philippines-Los Baños (UPLB), the theme reflects the concerted efforts of its members in responding to the various challenges posed by the impending integration of member- countries of the Association of Southeast Asian Nations (ASEAN) into one community.

The event featured paper and poster presentations under different disciplines as well as plenary sessions tackling the present and future challenges confronting the industry relative to the ASEAN integration.

A farmers' forum regarding the issues faced by the stakeholders of the dairy industry in Mindanao was also spearheaded by the PCC's regional center at the Central Mindanao University (PCC at CMU).

|ALMIRA P. BENTADAN

Dr. Daniel L. Aquino, (wearing a blue jumpsuit) while explaining to the trainees the different kinds of forage for silage production during their practicum on the second day of the workshop.

PCC holds consultation-workshop on animal nutrition concerns

The Philippine Carabao Center (PCC) conducted a one-week consultation-workshop aimed at harnessing livestock extension services to enhance animal nutrition, forage production, conservation, and pasture development.

Initiated and funded by the Bureau of Animal Industry (BAI), the consultation-workshop was conducted on October 5-11 at the PCC national headquarters in the Science City of Muñoz, Nueva Ecija and organized by the PCC's animal nutrition unit.

Some 40 staff members from the regional field units of the Department of Agriculture as well as other government and private entities involved in agriculture, agribusiness, animal husbandry or veterinary science participated in the worshop.

In his welcome remarks, Dr. Arnel del Barrio, acting PCC executive director, said that in his 30 years of work in the carabao industry, this was the first consultation-workshop focusing on feeding and forage conservation that he encountered.

"We will continue to train and disseminate different technologies related to feeding, forage and pasture so that our livestock productivity will increase. As an animal nutritionist, I see this activity as very significant in light of our program here in Nueva Ecija, which is our National Impact Zone (NIZ), to scale-up our forage production by continuously providing appropriate feeding technologies to our farmers. Let's be united in this training and after this, the most important thing is how you are going to transfer the knowledge, skills and right attitude to your clients," Del Barrio declared.

For his part, DA Undersecretary for Livestock Jose Reaño, who served as the guest speaker, emphasized the purpose and importance of the workshop.

"The purpose of this workshop is the proper utilization of the resources available in your respective regions, how you are going to utilize and use them to your advantage and at the same time lower the cost of production of the livestock industry here in the Philippines," Reaño stated.

Meanwhile, Dr. Rubina Cresencio, BAI executive director, declared in her inspirational message that the workshop "will be our starting point to work together and integrate all our efforts to harness all the feed resources available in the country and increase livestock productivity."

The workshop covered three teaching-learning phases. The first phase covered best practices in animal management and extension strategies; second, practical animal nutrition management and technical service advisory; and third, experiential learning on forage and pasture development, conservation, and feed formulation.

As an integral component of the workshop, the participants went on a field visitation of existing development models and some developed pastures or forage stand in Pampanga and Bulacan.

The workshop's resource persons included, among others, Dr. Daniel Aquino, animal nutrition unit head; Dr. Eric Palacpac, PCC national R&D coordinator; Dr. Edgar Orden, CLSU professor VI; Prof. Tsutomu Fujihara, PCC nutrition consultant; Prof. Francisco Gabunada, Visayas State University assistant professor; and Nomer Garcia, PCC senior science research specialist.

"Karamihan sa mga nakilahok ay unang beses pa lang nilang naranasang gumawa ng urea-treated rice straw (UTRS) at pagbuburo ng damo noong praktikal sa ikalawang araw ng pagsasanay. Nakita namin 'yong pananabik nilang matuto at malaman 'yong paggawa noon (Most of the participants experienced doing urea-treated rice straws (UTRS) and silage for the first time during our practicum on the second day of workshop. We saw their eagerness to learn and know how to practically prepare and make UTRS and silage)," Aquino pointed out.

"They were also asked to write down their action plans after the workshop and they will be evaluated after 3-6 months for the post-training evaluation that will be conducted by BAI," he added. **| MA.CECILIA C. IRANG**

Dairy forum tackles challenges in dairy buffalo production

Dairy farmers in the National Impact Zone (NIZ) of the Philippine Carabao Center (PCC) need to enhance the milk production performance of their dairy buffaloes in order to further improve their income from their respective buffalo-based enterprises.

This was the focal point of the dairy forum conducted on September 30 by PCC's Dairy Herd Improvement (DHI) team at the NIZ at the PCC national headquarters in the Science City of Muñoz, Nueva Ecija.

Some 50 officials from the different PCC-assisted dairy cooperatives in Nueva Ecija, which is the NIZ of the PCC's Carabao Development Program, participated in the one-day activity.

They interacted with the forum panel that comprised Dr. Arnel N. Del Barrio, acting executive director of PCC; Dr. Daniel Aquino and Dr. Tsutomo Fujihara, nutrition experts; Dr. Peregrino Duran, breeding expert, and Patricia Saturno, plant manager of PCC's Central Milk Processing Plant.

"You may already be earning income from dairying now but we have yet to reach the optimized level of productivity of the dairy buffaloes. This may be due to some challenges that beset the different aspects of production and management," Dr. Del Barrio said in his opening remarks.

"This forum is therefore an opportunity for us to identify these issues and analyze their root causes, discuss these and recommend solutions so that we can improve the present condition of our dairy enterprises," he explained.

Data from DHI team show that as of August, 2014, there are about 3,000 purebred dairy buffaloes in the hands of small-hold dairy farmers in the NIZ. About 33% of these are cows, 32% of which are in the milking line. Of the more than 2,000 breedable females, 24% are pregnant.

As part of the activity, the participants identified the various gaps in the different aspects of carabao and milk production, such as breeding, health and nutrition, and milk handling that are inhibiting the buffaloes from attaining their full dairy potential.

Some of the issues that came up were low pregnancy rate among heifers and cows resulting in long calving intervals. Problems related to milk production also surfaced.

On the health aspect of the animals, the farmers are confronted with incidence of diseases, such as parasitism and mastitis.

The participants were encouraged to share their insights and to suggest possible courses of action to address each of the issues.

"Over the past 20 years, PCC has developed various technologies on different areas of buffalo management which may help in increasing milk production. We are sharing them to you and we encourage you to adopt and apply them," Del Barrio said.

The panelists stressed the importance of proper feeding management in relation to milk production.

"When you give the right amount of balanced food to your animals, they will give you back the desired amount of milk," Aquino stressed.

He urged the participants to practice the "challenged feeding" technique.

"Immediately after the cow gives birth, add two kilos of dairy concentrate to the food of the cow daily. For every kilo of milk added to milk production, add another half kilo on top of the two kilos of concentrate. The challenge lasts for 70-90 days from calving or until the cow has reached its production peak," Aquino added.

Regarding buffalo health concerns, the panelists pointed out that the incidence of diseases may be avoided by proper care and management of the animals, such as the practice of cut-and-carry feeding scheme instead of grazing. This will minimize the chance that the buffalo contracts parasites that cause diseases, such as liverfluke.

For her part, Saturno emphasized the importance of proper milk handling in order to ensure the quality of milk.

In his closing remarks, Dr. Del Barrio urged the farmers to double their milk production by next year.

"I believe that we can achieve this when we work together. We already have the knowledge, we know the solution. All we need is action," Dr. Del Barrio stressed. **| ALMIRA P. BENTADAN**

PCC, Ubay LGU launch 'Pangnegosyong Gatasan ni Juan'

"Pangnegosyong Gatasan ni Juan (Juan's Dairy Business)", a project of the local government of Ubay in Bohol province is now underway.

The undertaking was officially launched during the town's 167th foundation day celebration on September 1 in cooperation with the Philippine Carabao Center at Ubay Stock Farm (PCC at USF).

It is being implemented in the context of PCC's national Carabao Development Program (CDP), which aims to help in efforts to address concerns involving poverty alleviation, food security, improved nutrition, and employment opportunities by harnessing the potentials of the water buffalo, commonly known as carabao, for milk and meat.

The Ubay project bears the slogan "Aron adunay trabaho, dugang kita ug garbo ang lungsod sa Ubay [so that there will be jobs, additional income and pride for the town of Ubay]".

"Pinaka target nato nga by year 2020, mamahimo ta'ng milk capital sa whole Visayas area [our target is that by year 2020, we will be hailed as the milk capital in the whole Visayas area]", says Ubay Mayor Galicano E. Atup.

"Ubay has been very supportive of the agency's undertakings. That is why it was chosen as one of PCC's impact areas where our operations are being modelled," Dr. Caro B. Salces, PCC at USF director, explained.

Data gathered by the center show that Ubay had produced 76,678.90 liters of milk since 2010 up to August 2014 from 176 dairy farmers. Moreover, 271 Ubayanons had availed of PCC's bull loan program since 1998, while not less than 35,000 AI services have been rendered with the town since 2004, and counting.

The Ubay LGU and PCC at USF, along with other partner-agencies have set modest goals for its dairy-related project. It aims to conduct the 1st Milk Festival by 2014 which will mark attainment of the targeted production of 1,000 liters of milk per day, including those produced from cows and goats. By 2016, it aims to conduct the 3rd Milk Festival and achieve the distinction of being hailed as the "Milk Capital of Central Visayas", and eventually be recognized as the "Milk Capital of the Visayas Islands" by year 2020. **| LEINEFE LIBRES**

PCC hosts DA livestock biotechnology center

The "center", named Department of Agriculture Livestock Biotechnology Center (DA-LBC) was operationalized last August 26.

According to Dr. Claro N. Mingala, PCC Scientist II who serves as the center's coordinator, the DA-LBC is put up by the DA to administer all biotechnology researches in carabaos, cattle, goat, sheep, swine and others.

The two other centers are on crops biotechnology (DA-CBC) and fisheries biotechnology (DA-FBC).

The Philippine Rice Research Institute (PhilRice) hosts the DA-CBC while the National Fisheries Research and Development Institute (NFRDI) the DA-FBC.

Dr. Antonio A. Alfonso of PhilRice and Dr. Melchor M. Tayamen of NFRDI serve as the center chiefs of DA-CBC and DA-FBC, respectively.

Mingala said the primary functions of the three centers are to provide efficient supervision, documentation, monitoring and evaluation of all biotechnology researches or studies hosted by the respective centers.

"They are centers within a particular center. They were institutionalized to provide a more organized system of submission, processing, endorsing, monitoring and evaluation of specific biotechnology studies," Mingala said.

For the PCC's part, Mingala explained, it is more concerned on administering all biotechnology researches that will help spur livestock development in the country. He added that the DA-LBC, like the other biotechnology centers, now calls for proposal on livestock biotechnology researches.

Mingala said the DA-LBC provides funds for research and development projects that prioritize on the following:

*improvement of livestock production and competitiveness through reproductive biotechnologies, Marker Assisted Selection (MAS) and other biotechniques

*developed and/or improved reproductive biotechnologies in livestock for more meat and or milk

* developed and/or improved animal feed stuff, antibiotic vaccines production and waste utilization and management; and

*those that provide viable solution to pressing problems in livestock production and sustainability.

He said the proponents or researchers should submit proposals that will cover the following particular topics to the DA-LBC:

*conservation, improvement and utilization of animal genetic resource

*reproductive biotechniques for the production of genetically superior animals and livestock production improvement,

* issues concerning food safety and food quality, animal health/public health,

*products development

Mingala emphasized that the mission of the DA-LBC is to empower livestock biotechnology stakeholder toward the production of research and development programs for the improvement of livestock industry in the Philippines. **| CHRISSALYN L. MARCELO**

> A "center" that caters and administers all researches involved in improving the livestock industry through biotechnology is being hosted at the Philippine Carabao Center (PCC).

4 PCC researchers conferred Scientist I rank

Another four researchers from the Philippine Carabao Center (PCC) have been conferred the rank of Scientist I under the Scientific Career System (SCS) by the Department of Science and Technology (DOST) and the Civil Service Commission (CSC) effective March 5, 2014.

This brings to seven the current number of career scientists at PCC, which is an attached agency of the Department of Agriculture (DA).

The new career scientists are Dr. Arnel N. del Barrio, Dr. Edwin C. Atabay, Dr. Eufrocina P. Atabay and Dr. Rosalina M. Lapitan. They were granted the Scientist I rank by the Scientific Career Council (SCC), which is the governing body of the SCS.

They took their oaths during a ceremony held on June 30 at Eastwood Richmonde Hotel, Quezon City, with Dr. Francisco T. Duque III, CSC chairman, and Fortunato T. Dela Peña, DOST undersecretary, as administering officials.

The SCS is "a system of recruitment, career progression, recognition and reward of scientists in the public service as a means of developing a pool of highly qualified and productive scientific personnel." The SCS program is currently being administered by the National Academy of Science and Technology (NAST).

"Indeed, Filipino scientists have a lot to offer to this country, but as career scientist, the nature of your work is special because you are wearing two hats. You are not only a champion of science but at the same time a public servant. Your published works, experiments, and researches are not intended to benefit some corporations or private entity but must have a direct positive impact of the public resource. Public service is the fitting career to make a difference in people's lives," Chairman Duque emphasized in his message.

"I believe that as public servants, the best reward and recognition we can get despite the work we do is the expression of gratitude and satisfaction from the people we serve. Thus, we should always aim for excellence and transition for being a Lingkod Bayan to a worthy Lingkod Bayani," he added.

The significant contributions and professional expertise in research and development of the four PCC researchers made them qualified and eligible to the rank of Scientist I.

Dr. A.N. Del Barrio, who has been appointed as acting PCC executive director, is an animal nutritionist and a productive researcher in his field of specialization and discipline. In 2000, the NAST bestowed on him an Outstanding Young Scientist award. His contributions include a better understanding of the rumen function, determination of nutritive values of different feed ingredients, development of appropriate feed supplementation strategies and formulation of practical feeding systems for smallholder and commercial production of buffaloes. His researches on determining the potential of buffalo for milk and meat production also generated a substantial number of technologies and information for the buffalo industry. He is also recognized for modeling dairy buffalo-based enterprises and promoting buffalo as input to a profitable social enterprise for farmers.

Dr. E.C. Atabay, who is center director of PCC at Central Luzon State University (CLSU), contributed significantly to the development of somatic cell nuclear transfer procedure in buffalo and produced clone embryos for embryo transfer and cryobanking. His contributions likewise to improving the efficiency of other important reproductive technologies, such as artificial insemination, multiple ovulation and embryo transfer, in-vitro embryo production and transfer, and cryopreservation of oocytes and embryos of buffalo, cattle and goat for genetic improvement in livestock, are well documented.

Dr. E.P. Atabay contributed significantly in establishing the current in vitro reproductive techniques, such as in vitro production of buffalo, cattle and goat embryos, and the cryopreservation of oocytes, embryos, somatic cells, and semen for reproduction and cryobanking purposes. She also took the lead in R&D for optimizing other reproductive biotechnologies, such as ovulation and estrus synchronization, fixed time artificial insemination, multiple ovulation and embryo transfer, through better understanding of the ovarian function and follicular dynamics, and to enhance the efficiency of assisted-reproductive technologies in livestock production.

Dr. R.M.Lapitan is an active and prolific researcher as shown in a number of local and international researches in which she was the senior author and/or co-author. She has been a supervising science research specialist of PCC at UPLB since 1996. She is an animal nutritionist by profession but also specializes in milk and meat processing. She contributed

(Continued on page 35)

Editor's Note

ERIC P. PALACPAC

In the more than two decades of existence of the Philippine Carabao Center (PCC), so much has been accomplished in the areas of genetic improvement, research, and enterprise development. The once fledgling agency under the wings of the Department of Agriculture (DA) has now fluorished into a formidable scientific livestock development institution not only in the Philippines but in Southeast Asia as well.

The PCC should be proud of such a stature. However, it should not be complacent, and instead, continuously find ways on how to remain relevant, effective, and competent in the face of ever changing socio-economic landscape and accompanying challenges.

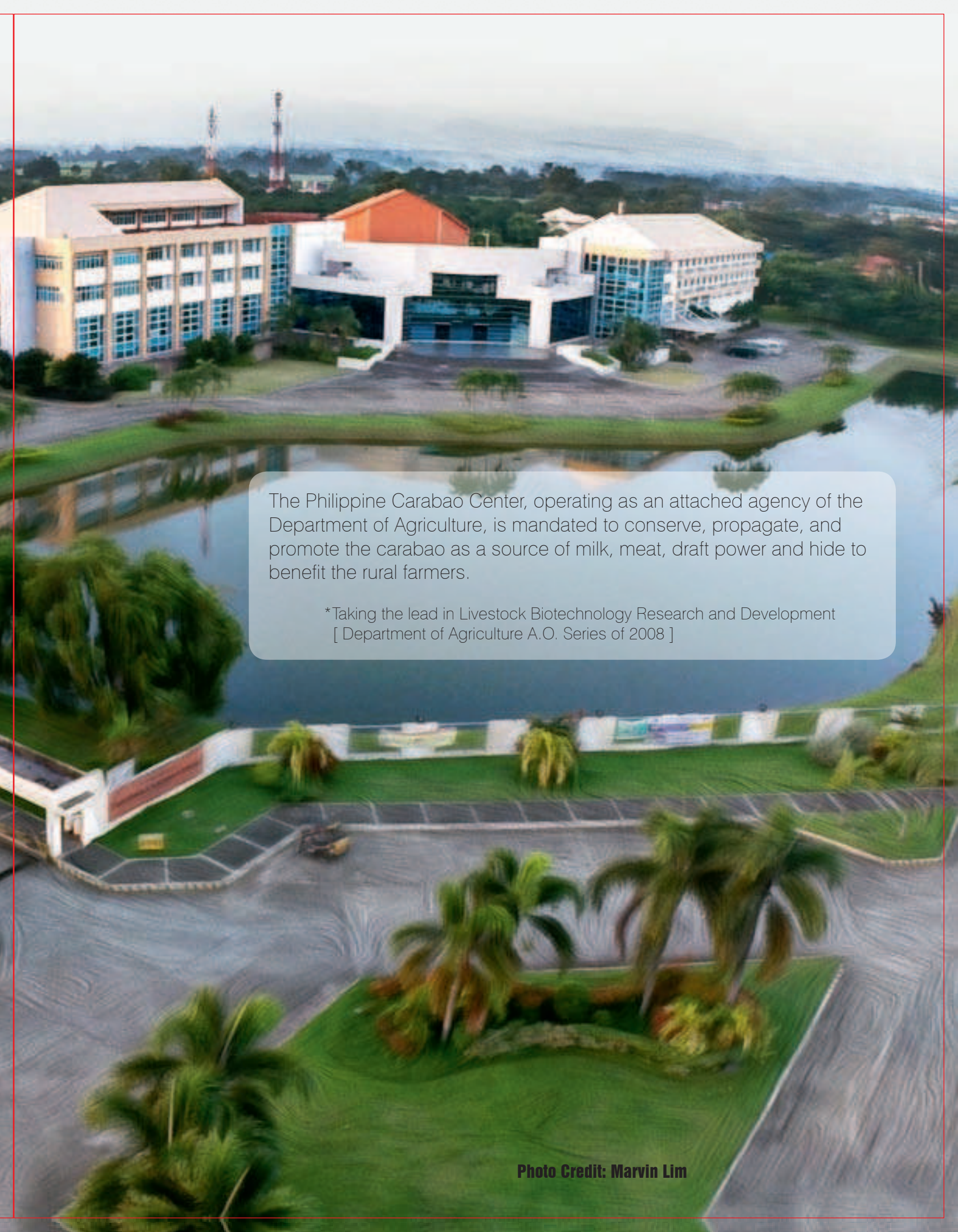
Much of these challenges are being manifested in the course of implementing the Carabao Development Program (CDP), PCC's flagship undertaking as mandated by RA 7307. While the PCC through its regional network, has diligently carried out specific CDP activities on the ground, much of the earlier efforts were focused on performing the "rowing" functions, e.g., actual conduct or delivery of artificial insemination and health services in water buffaloes in the villages, training of farmers, and the like. Such functions are considered necessary especially at the onset of a development intervention.

But now that the PCC is formally positioning or presenting itself as a research institution of the DA with relevant and specific performance (i.e., "major final output") indicators as identified by the Department of Budget and Management, the PCC is undergoing a strategic shift in its CDP implementation.

In this issue of the PCC Newsletter, we articulated on such strategic shift with emphasis on a new paradigm in conducting research, i.e., "R4D" or Research for Development, which aims for production of more socially robust knowledge and more practical and meaningful research endeavors.

We also featured stories that best demonstrate current efforts in the CDP implementation. First relates to genetic evaluation models that make use of "Total Merit Index" in the ranking of buffaloes. To complement the genetic merits of buffaloes, we feature an article about the upscaling of forage production and proper feeding management. Likewise, we highlighted some innovative dairy products enterprises. Take the case of Aying's Homemade Pastillas, Milka Krem, or PCC at CLSU's myriad of product lines whose main ingredient (raw milk) comes from the produce of dairy buffalo farmers. Theirs are stories that embody the prime objective of increasing the income of CDP's primary stakeholders. The Q&A interview with the PCC's new Executive Director, Dr. Arnel N. Del Barrio, reverberates this very same message.

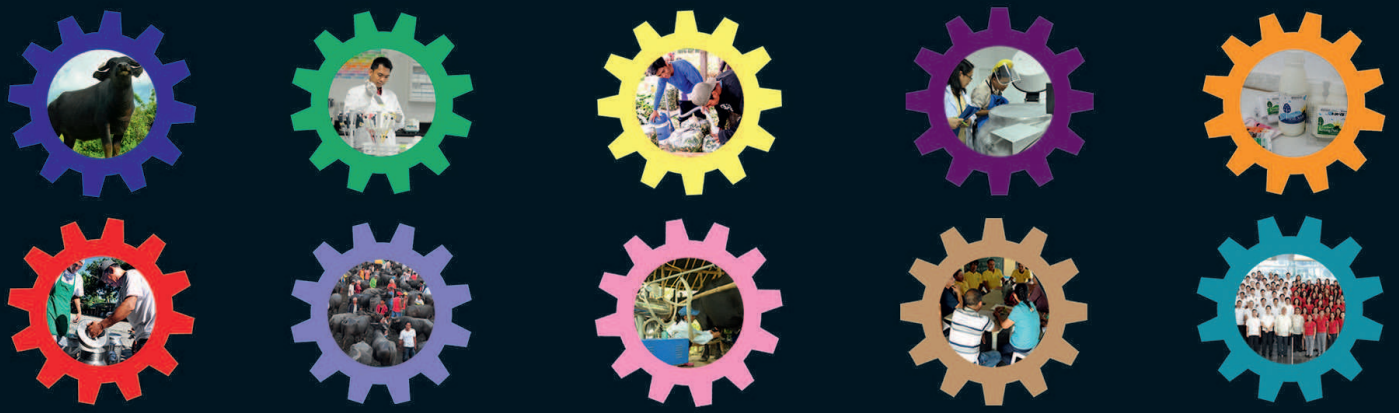
The CDP remains as it was originally designed. The PCC is just "shifting gears", employing novel approaches on how it is to be implemented.



The Philippine Carabao Center, operating as an attached agency of the Department of Agriculture, is mandated to conserve, propagate, and promote the carabao as a source of milk, meat, draft power and hide to benefit the rural farmers.

*Taking the lead in Livestock Biotechnology Research and Development [Department of Agriculture A.O. Series of 2008]

Photo Credit: Marvin Lim



Paradigm shift
for inclusive growth, bigger help to competitiveness drive

ANSELMO S. ROQUE and ERIC P. PALACPAC

NOT THAT the previous development theme of the Philippine Carabao Center (PCC) was not so effective. On the contrary, looking back, the PCC more than achieved what it laid as achievement goals in its two decades of operations.

But it needed a strategic shift now to go beyond boundaries to pursue its determined drive towards inclusive growth and enhance its mettle to be of better help to the competitiveness of the livestock industry and agricultural development.

In keeping with the change occasioned by the rationalization program of the Department of Agriculture, PCC needed to contrive a new development theme. Precisely, the theme "making PCC an effective R&D agency contributing to the competitiveness of the livestock and agriculture sectors". was developed recently to be the guidepost in the strategic shift which is programmed to be carried out and achieve the goals within ten years.

Presided by PCC Executive Director Dr. Arnel del Barrio, the top leaders of the agency confined themselves in a series of meetings last year that culminated in the coming out of a new developmental theme. It underscored the major programs of the PCC and set the shift from what had been carried out in the past with new directions. The directions are expressed in goals, yearly output of studies, targets or outputs, structures or methodology to be followed and the lead persons and collaborating centers.

Former executive director Dr. Libertado Cruz was on hand to lend his expertise in crafting the development theme of the agency.

Central to the development theme is a veering away from the usual research and development (R&D) concept, in which research is just for the sake of producing basic or foundational knowledge without any immediate application. Worse, in many cases, outputs of traditional R&D just gather dust in library shelves. Now, it is "research for development" or R4D. Simply put, it gives more emphasis to development but without disregard to the basic science.

R4D itself requires a paradigmatic shift on how a researcher views or approaches a research topic. It is problem-driven, not research-initiated. It addresses a particular concern that besets the carabao industry stakeholders particularly the farmers. It entails interdisciplinary (or better yet transdisciplinary) approaches that aim to evolve a more robust knowledge system.

Inclusive to this R4D initiative is the "intensified research-based enterprise build-up" (IREB, as coined by Dr. Cruz) in rural communities. Therefore, carabao-based enterprises, backed up by continuing research are seen to be flourishing in rural areas in the new developmental efforts of PCC.

Although this new development theme is set to be formally launched starting in 2016,

energizing initiatives toward its implementation begin early this year. Therefore, harmonization of the activities of PCC toward the ten-year plan is seen to be starting now.

Thematic, priority areas

Ten areas were pinpointed as agenda to be the subjects of the R4D initiatives.

These are (1) genetic improvement; (2) production management system; (3) biosafety; (4) environment and climate change; (5) enterprise development; (6) product development; (7) industry and policy; (8) technology transfer; (9) socio-economic dimensions of the Carabao Development Program (CDP) implementation; and (10) institutional development.

Two very important end-goals are emphasized as products of the development theme. These are the production of the Philippine dairy buffalo breed and the best buffalo-derived products.

In the past years of the PCC's undertakings, the development of the Philippine dairy buffalo breed was not much emphasized although many believed that thru years of crossing and back-crossing, the ideal breed may have already been produced in the Philippines. Nevertheless, strict protocols – like determining the histories and pertinent data in so far as breeding of the crossed and backcrossed animals are concerned and the exact records of performances are meticulously taken.

The developed dairy buffalo is one with an average milk yield of 3,000 liters with 7.4% fat and 4.4% protein in 305 lactation period.

For buffalo-derived products, not only milk and milk products are emphasized but also meat and other by-products, like hide, horns, bones and others are considered for development of their respective industries.

The tools for these products are the appropriate human resource, appropriate laboratories, knowledge management that include information dissemination and technology transfer, business development unit, and proactive fund generation unit.

Program emphasis is a shift from what used to have been carried to another dimension, which is considered as strategic priorities.

In extension, the shift is from direct provision of production-related services like artificial insemination (AI), deworming, and vaccination to communication for improved technology adoption.

As for AI privatization, which used the subsidized "rowing approach", it will be full privatization with improved efficiency at reduced government cost. For enterprise development, it will slowly do away or gradually phase-out the implemented animal loan program to establishment of dairy hubs.

"The PCC will take the problems of the dairy farmers as subjects of researches with the end-goal of solving the farmers' problem thru the results of the researches."

- Dr. Arnel N. Del Barrio

The hub, as explained by Dr. del Barrio, involves the development of a facility that is the center of a network of activities in buffalo dairying. This network includes those actors or entities involved in providing AI services, feedstuff, milk, milk products and other buffalo-derived products, marketing, promotions, credit, and others. These, he said, would see the development and operationalization of specific buffalo-based enterprises which, taken as a whole, would enliven the dairy-buffalo industry in the country. *(See Q&A story about this in this issue.)*

On the aspect of impact zones development, however, in addition to the previous goal of establishing viable buffalo-based enterprises, the zones will be developed to serve as media for breed development and venues for the actualization of the R4D program. As Dr. del Barrio said, the PCC would take the problems of the dairy farmers as subjects of researches with the end-goal of solving the farmers' problem thru the results of the researches.

Goals to Pursue

Between five and ten years, the PCC sets certain goals to be achieved in consonance with the overarching goals of its development theme.

Goal One is development of a Philippine Dairy Buffalo. It involves the evaluation and selection of purebred riverine buffaloes and crossbred buffaloes which will serve as parents for the eventual development of the Philippine Dairy Buffalo Breed which can equal, if not surpass, the developed breeds of dairy buffalos in some other parts of the world.

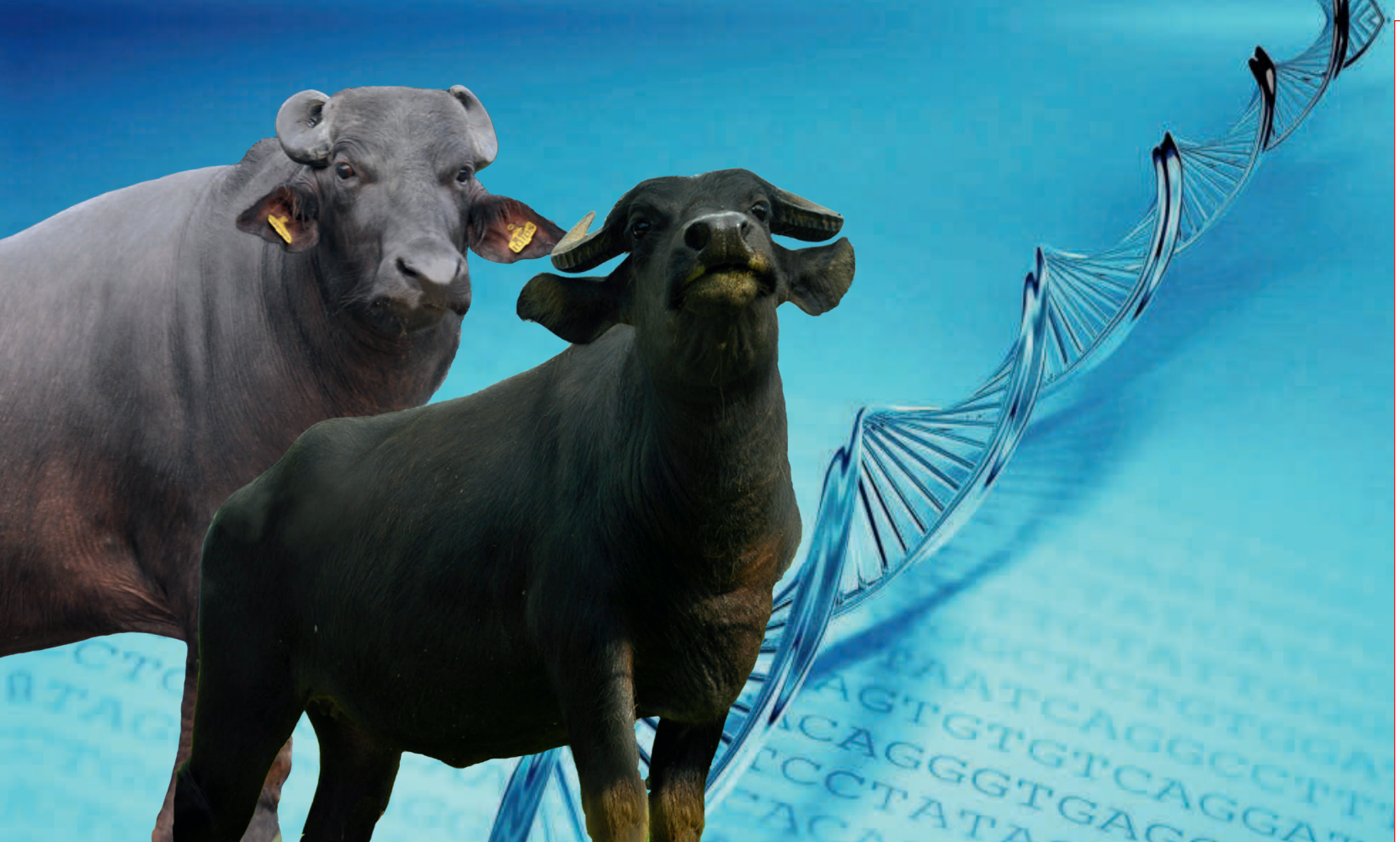
The studies, which are expected to come out with yearly outputs include the set objectives and parameters, development of animal recording and data collection system, performance and progeny testing for the cows and sires, respectively; performance evaluation and breeding value estimation, and studies on new traits. Specific numbers of bulls and female crossbreds will eventually be identified and enlisted in a Philippine Dairy Buffalo registry.

Goal Two is the improvement of the meat production and meat quality traits of the Philippine Swamp Buffalo breed. It involves the breeding of the desired buffalo bulls that will be nominated for field validation with village-based cows.

Goal Three is to increase the rate of genetic gain thru the application of molecular genetics and reproductive biotechniques. It involves the use of microsatellite markers for pedigree verification, use of single nucleotide polymorphism (SNP) in traits selection, use of medium density SNP panel in breeding program, biotechniques that will harness the application of OVU/IVEF/ET in the production of purebred animals and fertility assay of semen for semen from bull donors for AI.

Goal Four is the conservation and utilization of water buffalo genetic resource. In it, at least 25 animals in various islands that are perceived to be distinct populations will be identified.

The shift in the PCC's implementation strategies are expected to impact on the realization of these goals. In the years ahead, the PCC is poised to strengthen its position in the society as a highly relevant and competent scientific institution that partners closely with all key actors in the water buffalo supply or value chain. Such a broad-based participation of actors is seen to eventually promote inclusive growth and development of the water buffalo industry and ultimately contribute to uplift the well-being of the rural populace.



Programs on genetic improvement heads toward more improved genetic merits of buffalos, Philippine Murrah Buffalo breed

CHRISSALYN L. MARCELO

In terms of improving the genes of both swamp (the native type) and riverine type (the dairy type) of buffaloes, the Genetic Improvement Program (GIP) of the Philippine Carabao Center (PCC), through its relentless effort in the field of research for development studies, has already gone far toward achieving its goal.

As everybody says, "development can't happen in a dash but it takes couple of years to achieve it", the GIP takes a gradual but steady progress in providing development in the country that will eventually redound to the best interest of thousands of Filipino dairy farmers.

GIP is the core program of PCC in the implementation of the agency's Carabao Development Program (CDP). Its primary goal is to improve the genetic merit of both the swamp and riverine type of buffaloes to produce better buffalo sires.

It conducts research for development studies in carabao development, carabao upgrading, and genomics, among others, to acquire additional information and parameters for breeding program.

Furthermore, it makes use of planning, predicting and selecting of buffaloes with high quality genetics to improve and increase the genetic value of the animals all over the country for future generation.

Functions of GIP

GIP's major function and role in the CDP are lumped up in the planning for the improvement of the next generations of buffaloes. This means that exerting crucial endeavors in research for development studies and working in the field are very vital for GIP to attain its goal.

Over the years since the establishment of PCC in 1993, the GIP's role to improve the genetic merit of both the swamp type and the riverine type of buffaloes is non-stop. It carries out researches for development studies and continuous backcrossing of buffalo breeds.

The GIP's accomplishments, so far, has seen thousands of the dairy farmers in the country availing and using the technologies in artificial insemination (AI) and the use of riverine bulls for natural mating to produce quality crossbreds.

Thus, GIP's researches, selection and ranking processes for the animals that have superior genetics have become of great help to

"The new genetic evaluation model, which we are going to use, is our newly developed model to evaluate the performance of the buffaloes based on the identified three traits. We developed it after our conduct of three separate researches on the evaluation of the buffaloes' performance relative to the three traits. From the data gathered, we are now going to combine them into a single index which we call "Total Merit Index. It is the total computation of the single ranking of buffaloes in terms of their three traits such as its milk yield, milk fat and milk protein. This index gives optimum response for the buffaloes' increasing milk yield, milk fat and milk protein without necessarily sacrificing the response of the animal into its milk yield."

-Dr. Ester Flores, GIP Unit head

the farmers.

GIP's selection and ranking process

According to Dr. Ester Flores, head of the PCC's GIP unit, the selection and ranking of buffaloes are being carried out by their unit twice a year.

Flores explained that they rank and select bulls based on its breeding value (genetic value) and then subject it to physical examinations and evaluations to determine which among the animals are top performing and can pass to the set parameters in selection and ranking.

Flores said that they screen the buffaloes based on its physical conformation, breeding performance and semen quality evaluation.

She added that young bulls are also tested and ranked along with the senior bulls. She emphasized that young bulls are selected and ranked by estimating first their breeding value based on progeny parent average (EBVPA) and are subjected for screening using the established parameters.

She went on to say that once they have selected and ranked the animals accordingly, they distributed the top 2% ranked animals to the bull farm in Barangay Joson in Carranglan, Nueva Ecija and to the PCC at the University of the Philippine station in Los Banos (PCC at UPLB) in Laguna, to serve as semen donor. The animals found to be below the top 2% ranking, on the other hand, are used by the PCC in its bull loan program and crossbreeding activities, she said.

GIP researches

In the last two decades, the GIP's researches had acquired more information regarding the individual performances of the buffaloes in the country, especially the dairy type, as regards their deeper pedigree, heritability traits, milk yield, milk fat, and milk protein. It also developed a genetic evaluation model, among other research studies that they worked on.

These studies helped the GIP to improve its current breeding program system, mating plans for buffalo's herds and developed genetic evaluation models to better predict higher accuracy of buffaloes having superior genetics.

Flores said that they are continuously conducting this kind of researches to acquire more and more gainful results and information.

She said that they are also conducting new researches to provide additional parameters and information in the selection and ranking process of the buffalo's herds.

She said that among the new researches they are conducting , are titled "Using random regression test day models to estimate genetic parameters for milk yield and milk components in Philippine Dairy Buffalo", and "Genotyping the Philippine water buffaloes using the medium density 90k buffalo Single Nucleotide Polymorphisms (SNP) panel".

These studies, according to Flores, are about the use of their newly developed genetic evaluation testing model called the "multi-trait random regression testing model" and the use of "90K SNP chip that help identify a group of markers of different genes", respectively.

Flores said that the first of the two research studies is about the evaluation of the buffaloes' performance based on three traits which are their milk yield, milk fat and milk protein using the multi-trait random regression model. She added that this research is expected to result in new progress in this field.

"The new genetic evaluation model, which we are going to use, is our newly developed model to evaluate the performance of the buffaloes based on the identified three traits. We developed it after our conduct of three separate researches on the evaluation of the buffaloes' performance relative to the three traits. From the data gathered, we are now going to combine them into a single index which we call "Total Merit Index", Flores said.

She added that a software called the "Average Information Restricted Maximum Likelihood software (ASReml) was used.

The ASReml , she explained, is a software that is able to make the best linear unbiased prediction (BLUP) evaluation in terms of balancing the three traits of the buffaloes, computing their breeding value and heritability traits, among others.

"Total Merit Index, on the other hand, is the total computation of the single ranking of buffaloes in terms of their three traits such as its milk yield, milk fat and milk protein. This index gives optimum response for the buffaloes'

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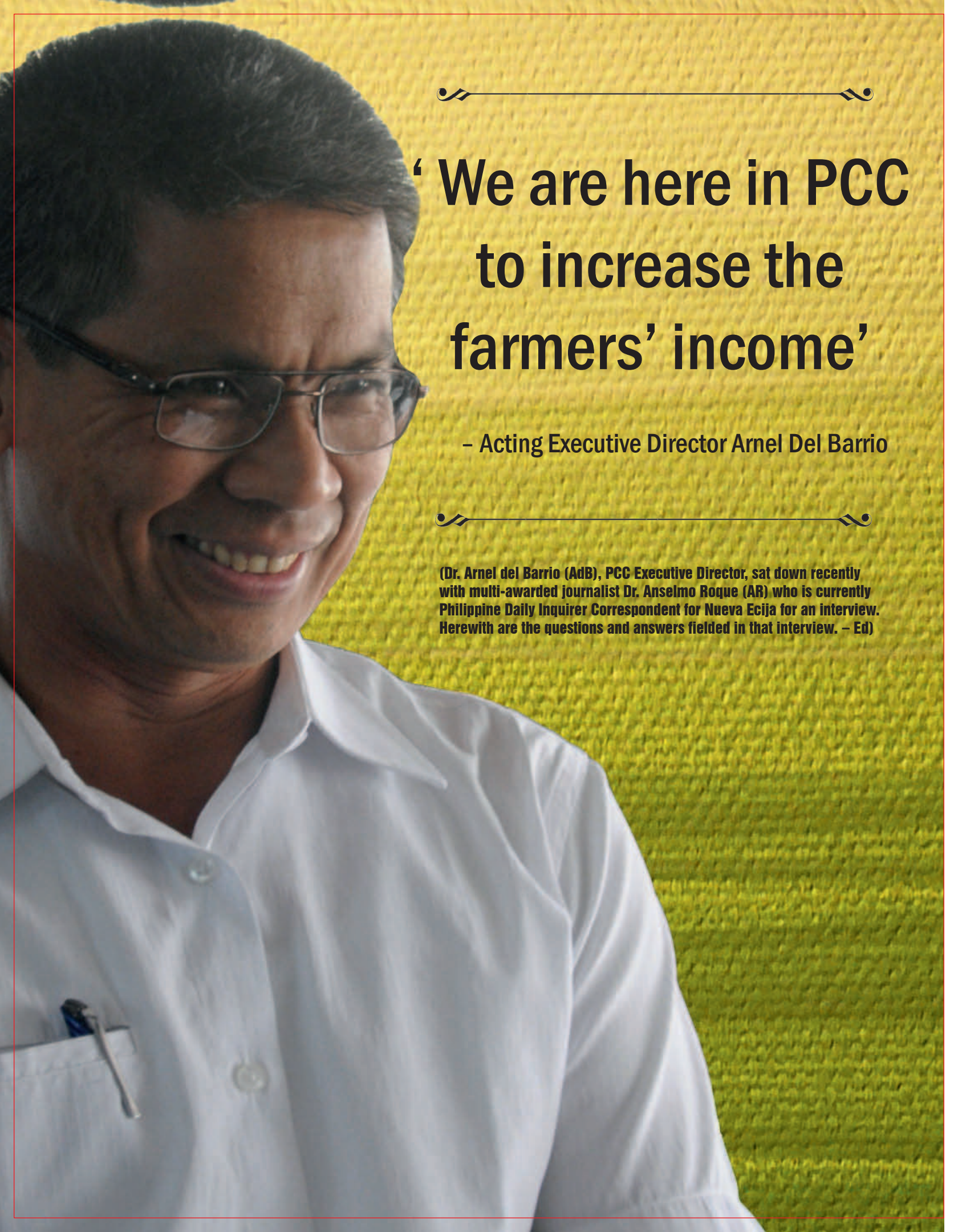

‘ We are here in PCC to increase the farmers’ income’

– Acting Executive Director Arnel Del Barrio

(Dr. Arnel del Barrio (AdB), PCC Executive Director, sat down recently with multi-awarded journalist Dr. Anselmo Roque (AR) who is currently Philippine Daily Inquirer Correspondent for Nueva Ecija for an interview. Herewith are the questions and answers fielded in that interview. – Ed)

AR – Do you have a special liking or love for the carabao?

AdB – Well, I am always touched by the history of the carabao. I always take picture whenever I see one.

AR - You must have a deep sense for the carabao then?

AdB- Let us say my love for the carabao is ingrained in me. When I was young, my father had 16 carabaos. I always rode then on the carabaos especially when I was grazing them.

AR – Where were you staying then?

AdB – I was born in Lag-on, Daet, Camarines Norte. I am 3rd in a brood of three boys and four girls.

My father was a tenant working on a four-hectare rice land with the use of our carabaos. All of us finished college but I was the only one who took up agriculture. Maybe that was because I took up my secondary education at the Camarines Norte National agricultural school.

AR - You were a stay-in student in that school?

AdB – Yes. Our place was 17 kilometers away from the school. I went home Sunday afternoon and left for school the following morning. I was an independent student-farmer raising rice crops, cassava and chicken. We had our income then. We sell our produce in order to have income.

AR - Did that awaken your liking to take up agriculture in college?

AdB – I believed that was my turning point in life to have a particular liking to agriculture. I took up BSA at UPLB with animal science as my specialization. Then I went on to finish my masteral degree in animal nutrition and my Ph. D. in animal science major in animal nutrition.

AR - Did you go back to your village after your graduation?

AdB – Yes. I went into farming while waiting for my documents from school. Then I went back to UPLB to wait for my documents as I graduated in October. Then I saw an announcement that Dr. Vicente Mamoñgan needed a research assistant for his work at the PCRDC (Philippine Carabao Reseach and Development Center). I applied and was accepted as a science research specialist. That was in January 1983. Later, I was promoted to the post of agricultural center chief and then was designated as center director of PCC at UPLB.

AR - So you would say, Sir, that you were prepared to be the head of PCC as you have the necessary academic preparations and the trainings?

AdB - Well, as to the term prepared, it comes from many considerations. Academically, in 1992, I am already a Ph. D. degree holder. I also had trainings abroad. I was never thinking that I would someday become a center director. But the opportunity came. I was recommended to the chancellor of UPLB but Dr. (Libertado) Cruz asked that I be sent first to Kansas State University for a seven-month post-doctoral research thru PCAARRD DOST to widen my horizons.

AR -Did you meet your wife in UPLB?

AdB - Yes. She is from San Pablo, Laguna working in the Institute of Animal Science at UPLB. Later, she transferred to PCRDC and we were married in 1987 and established residence in UPLB.

AR - But you did not opt to work abroad?

AdB -I was given the chance when I was in the US. I was offered to work in several projects as a research fellow. But I said I have to go back to the Philippines.

AR - When were you appointed executive director of PCC?

AdB - June 11, 2014 and I took my oath of office before (Agriculture) Secretary (Proceso) Alcala in Laoag City.

AR - What ran through your mind when you were appointed executive director of PCC?

AdB -Well, I didn't believe at first that I was appointed executive director of PCC. You know, I am not politically connected and I am not known in the department (of agriculture). But probably I am known by our partners outside, like the regional offices because I was very active in several organizations. I became president of the Association of Professionals in Livestock Production, Philippine Society of Animal Nutritionists, and the Philippine Society of Animal Science. I am a member and had been a regular speaker in the dairy congress.

AR - But after you received your appointment, did you have an overwhelming feeling considering the enormity of the responsibility heaped on your shoulders?

AdB – Well, to tell you the truth,that I quivered when I was informed about it by (Agriculture) Undersecretary Jose Reaño. There was a search committee last December and I was interviewed last January. Then I received the call informing me of my selection (as executive director) after I was nominated to the President.

AR -Director, you already visited the PCC regional centers. What's your initial assessment about them?

AdB -We seem to be different from other government institutions. Our centers are beautiful and vibrant because Director Cruz really prepared them well. For the last twenty years, there was full of enthusiasm; the talks were high level and we were always inspired to meet our targets. Our center in UPLB was small but in terms of geographical assignment, we covered three regions and we supposed we did well.

AR -Would you say that all centers are already touching lives?

AdB – Probably some of them need to work double time. I told them that in reading the law that created PCC to select the words to describe what we want to happen, the easiest to remember is "to increase income of farmers." So we are here to contribute for the increased income of farmers.

AR - So you consider it as the first and the premium gauge of the effectiveness of PCC and the men and women of PCC?

AdB -Yes. If you have not helped the farmers, then the implementation of the law is sadly lacking. We should not be content only with the production of crossbreds but also the increased incomes of farmers. So, what I am saying is that all the centers must have strong (carabao-based) enterprise development program.

AR - What do you want to see in the future in your term as regards the centers ?

AdB – I want to see dairy hubs working well in the regional impact zones as well as in the National Impact Zone. The dairy hub is a simple manifestation of a successful dairy operation in which it is not only producing and selling milk but also producing grasses, selling supplies, having a bank that makes credit available, with organized collectors of milk and efficient delivery system to the market, among others.

AR -Are you thinking of the centers establishing a sort of one-stop shop for this activity?

AdB – For me, the one-stop shop center is just a component of the dairy hub. In it, only the resources needed by the farmers and processors are there. They are only inputs. But there should be serious considerations for marketing and others. In other words, the dairy hub must be concerned about the needs of farmers, the aspect of businessing, the needs of the carabaos, the people involved in the program, the public and others. There should be regular supply of feed that's why I am an advocate of silage production which must be commercialized.

(Continued on page 18)

Continuation...(From page 17)

AR –I went to a meeting of the farmer-leaders in Muñoz and there came a representative of a government agency which complained that the ordinance about the burning of rice straw is not being followed by the farmers. In my view, the farmers will continue burning the heaps of rice straws in the field when it is about time for another cropping. Are you not coming out with a system to teach farmers to bale the rice straw in order for them to earn from it?

AdB - Actually, I started that already in General Trias (Cavite). I talked with the coop officers and told them that their problem is about their animal's feedstuff. I taught them how to use the baler machine given by PCC, about the costing, and how to market them. They were able to bale about 50 tons of rice straw and they were able to sell them to the farmers. The commercialization of rice straw, that's the solution to avoid its burning. But if there is no sector that will handle the baling and the marketing, the problem will persist.

AR – If there is no baler machine, can we not teach the farmers to use simple a way of baling the rice straw and of selling them?

AdB - Yes, we can. We have manual wooden baler machine. It is easy to contrive it and probably it will not cost P200. For the baling twine, we may use ordinary plastic rope. But the simplest really is the use of the sack as container for the rice straw. I saw that in Kenya. The children put the rice straw in sacks and they sell them in the sidewalks.

AR - And do you think that with the developments in our carabao-based enterprises, we can turn the rice straw into gold?

AdB – It should really turn into money and it will help our livestock production grow. Our problem really is the feed stuff. Our livestock industry is not expanding much. In our case, if we take care of three or four animals and our land is limited, how can you think of adding more to your animal stock? You can only increase your inventory if you have outside sources of the feed stuff. The only way is to buy it, anyway you are earning. The feed sector must also earn in order to flourish.

AR – Is the PCC buying the baled rice straws?

AdB – The PCC will buy them, the coops will buy them. We know that the livestock raisers are already saddled with the works in managing their animals; they don't have much time to do the baling of the rice straw. That's what I am saying, we need the services of other sectors. That's an input to production. In a value chain, the feed stuff is one limiting factor in the expansion of the livestock industry especially as far as ruminants' feeds are concerned. If we are saying that the burning of the straw isn't halted, it's because nobody is packing and selling it.

AR - So if we can start this job of baling the rice straws, we can change this habit of burning the rice straw in the field?

AdB - We saw it being done in Thailand and in China. It is a commercialized system. The workers will earn from it and it will make the livestock raisers also earn from it.

AR - I understand that the essence of PCC is upgrading the native carabao, not necessarily importing purebreds. How far has PCC gotten into this?

AdB – The manifestation of that is what we are seeing nowadays. We have more than 500 technicians collectively all over the Philippines. In reality, their potential is doing more than 120,000 AI services in one year. Assuming we get 25% pregnancy rate, that's the number of CB we are producing annually. But it is not that fast because the smallhold farmers are scattered unlike in a highly commercialized system wherein the animals are confined. So the issue is how we can encourage the farmers to bring or call the technicians for the AI services.

AR – Are you saying that we can have more crossbreds or purebreds if we can have bigger number of confined animals?

"We want to have multiplier farms which is a new program in which we can entrust on certain conditions more carabaos to the farmers. In the past, it's the "paiwi" system wherein we entrusted up to five carabaos. So we aren't able to demonstrate fully the profitability of it because of many limitations. In the multiplier farm system, we're talking of an entrepreneur who may be entrusted 20, 50 or 75 head of carabaos. He has the capability, the capital, and therefore will be there in reproduction and even in the production of more milk because all the production inputs are available."

- Dr. Arnel N. Del Barrio

AR – Is it also for multiplying offspring for distribution to others?

AdB – Eventually it will happen because the concept is that we will lend 20-25 heads and specific number of reproduced female carabaos will be returned to be given to the farmers for cascading effects. Instead of PCC raising the animals, the private groups will do it to produce the offspring. They will collect the milk, sell it and earn from it and they will give back the number of offspring to PCC for distribution to the farmers.

AdB -Are you thinking of forming groups of entrepreneurs to put up a multiplier farm or a corporation that will invite other investors like OFWs who will chip in money for putting more carabaos in the farm?

AdB –Actually, we have now some models on that in Leyte and in Nueva Ecija. It can be done on a company, group or individual bases depending on their capabilities.

AR - Is this something new in the PCC?

AdB – Yes. It's for the first time that we are implementing it.

AR - How many are you foreseeing involving in it?

AdB – Our initial target is 500 pure Italian buffaloes. This is our project to increase the efficiency in the reproduction of the animals and for greater profitability.

AR – Are you employing other programs to hasten the crossbreeding of native carabaos? I read somewhere that the number of carabaos are not improving but is declining?

AdB - The inventory (of the animal) is a product of many factors. One is slaughter rate, then importation of carabeef from India, then growth rate, and mortalities. Those are the equations in it. In terms of carabao slaughter rate, it's higher now. Formerly, it was 11-12% but it has gone up to 16% on the industry level. And the importation is almost flat, not increasing, while the human population is increasing and the demand for animal protein is increasing so our local stocks are slaughtered. It's possible that the carabao population has not changed but the type of animal has improved because we now have many crossbreds which are utilized for dairying and for other purposes. For many years, we didn't see the contribution of the carabaos in the local dairy production. But now, we are seeing the contribution of 34% of local dairy production or about 6.2 million liters of milk from the carabaos. It has been increasing yearly and if equated and translated for the farmer's welfare, that's big. That's the contribution of PCC to the dairy industry.

> “Based on the law, the only mention is to help the farmers increase their income. We really need to organize the farmers because if we do not pool their efforts and production, they wouldn’t have that capability to produce quality products and to market them. If we help them form their own groups or associations or coops, they can have their collection system, they can create their small processing system and later have partners in marketing. Then you will see that we are creating village-based enterprises that can be connected to the right market.”

AR – Do we have other ways for the production of CBs?

AdB – It’s the pushing and the pulling - pushing for production and for pulling the demand for dairy. The demand for milk will push production. We always say that the market is weak, but the demand for the milk is very high. What we can do is to make production and demand meet squarely.

AR – Can we not ask the institution of a system in which, according to what Dr. Surendra Ranjan is happening in India, we can ask the companies in the country dealing with milk to buy first 10% of our milk before they are allowed to import?

AdB - Dr. Cruz always said that we have many laws in the dairy industry. Every time we buy milk from abroad, there should be a share for the local industry. But the money is not used for the industry, otherwise the industry should already be very big by now. I learned from Vietnam that in increasing their milk production, they bought close to 5,000 dairy cows to start the dairy. In our case, we only import a few just to serve as models for demonstration.

AR - How different are the Vietnamese compared to the Filipinos in terms of liking for milk?

AdB – We are the same. They are saying that we are not used to drinking of fresh milk except that of India and Pakistan. We need more promotion. In television, what we are seeing mostly is advertising for imported milk. We already have products from our milk that are exportable, like our mozzarella cheese and other products.

AR – Are you certain that if we have high production of milk, many will buy it?

AdB – Yes, that’s the pulling aspect. We know that we have a big population but only a few are demanding for our milk. There should be a real matching of production and marketing. We have a lot of things to do to match production and marketing.

AR – Based on what you told us, the carabao-based industry is closest to your heart. Which aspect of it that you want to improve some more?

AdB – Based on the law, the only mention is to help the farmers increase their income. We really need to organize the farmers because if we do not pool their efforts and production, they wouldn’t have that capability to produce quality products and to market them. If we help them form their own groups or associations or coops, they can have their collection system, they can create their small processing system and later have partners in marketing. Then you will see that we are creating village-based enterprises that can be connected to the right market.

AR – Can we really make our farmers market their own produce? Or should it be a job of those who are experts in marketing?

AdB – The value chain is long. But if you observe, NEFEDCCO (the federation in Nueva Ecija), at the moment, is a consolidator of milk. It is selling raw milk, producing milk products, and selling them to their developed market.

AR -But they hired professional manager.

AdB – The hiring (of a professional manager) is dependent on the production level. If you can collect 1, 000 liters of milk a day, you can hire a marketing manager. But if you are producing only 200 liters of milk a day, you can’t afford it so the officers of the coop will be the one to do it. If you increase production, you will already need experts to tackle the complex works involved.

AR - How about the business of meat? What’s your view about it?

AdB – We are knowledgeable about meat processing but the marketing (of the meat products) in the country is still traditional in nature. The traders buy the excess animal of the farmers and bring them to the auction market

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Up-scaled forage production is seen as means for increasing milk production

ALMIRA P. BENTADAN

A napier grass plantation.

Ka Marcelino Mislang with newly-cut grass for his carabaos.

A Technomart project member prepares forage corn for silage-making.

It takes superior genetics and the institution of proper feeding management for a dairy buffalo to be able to unleash its full dairy potential. The animal's capacity to produce high milk yield is a result of its feed intakes as much as its genetic attributes.

Thus, it is imperative in every dairy production that there is an abundant source of feeds for the animal such as forages to ensure a copious flow of milk, experts from the Philippine Carabao Center (PCC) said.

Over the years, the number of smallhold dairy buffalo production in the country has increased as the PCC continuously implemented its intensified Carabao Development Program (CDP). The CDP aims to harness the potential of the native carabaos as dairy animals by improving their breeds to provide a viable additional source of income to the Filipino farmers.

The PCC's efforts have resulted in the increase of the population of high-quality milking animals in the hands of rural dairy farmers throughout the country.

With this development, however, the dairy farmers, who are also mostly rice farmers, are challenged by the pressing need to provide enough and proper food for the animals to ensure their higher milk yields.

In a survey conducted by the agency among the chairpersons of the different dairy cooperatives in Nueva Ecija, one of the major problems that surfaced was the lack of enough feed to meet the requirement of the animals. The survey was meant to assess feed-related aspects of livestock production.

The same issue was also identified during a separate dairy forum. The problem, it was pointed out, is exacerbated by the reluctance of some farmers to devote a part of their land for forage plantation.

This limitation prevents farmers from expanding their herd size and hinders them from providing the right amount of dairy feeds for their dairy buffaloes, thereby not reaching the optimized milking capacity of their animals and in consequence, an optimized income.

Rising to the challenge

To address the problem, the PCC has taken steps to improve and scale up the local forage production in the country.

"We need to help farmers establish their own pasture areas and plant improved grasses and legumes," Dr. Arnel del Barrio, PCC executive director, said.

The PCC is putting in place a national forage program through the establishment of forage nurseries across the PCC network and in the different regional impact zones.

"The national nursery will contain different forages that will be acquired from various sources. These will be tested and evaluated according to their yield and compositions," Dr. Del Barrio, said.

The PCC regional centers, he added, will also develop their own nurseries with tested forages taken from the national nursery. The extent of the nurseries in the regional centers, as to forage growing, will vary depending on the suitability of the materials to the environmental conditions of their respective regions.

When the institutional nurseries are developed, smaller ones will be established at the cooperative level to be managed by the farmers and will be accessed by them for a certain fee.

"These nurseries will ensure the continuous propagation of high quality grasses and legumes and the availability of planting materials for our farmers," Dr. Del Barrio stated.

After ensuring the availability of planting materials, the next step would be the promotion of the utilization of the improved grasses to the farmers. An expert will be hired to spearhead the development and implementation of tools or modalities on how to effectively transfer the forage technology to the farmers, the PCC executive director said.

With the availability of planting materials and an efficient tool in cascading the technology, it is assured that the farmers will be able to feed their animals with quality foods, he added.

Enhanced feeds

Aside from fresh forages, the PCC is also pushing for the use of other feeding materials for the dairy buffalo to complement the forages especially during the lean months for forage production.

Currently, it is collaborating with the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD) in several projects to produce sustainable supply of conserved forages for feeding of the dairy buffaloes.

One such project is the community-based production and marketing of silage. A group of farmers in Lupao, Nueva Ecija is engaged in the project, promoting and marketing silage as a nutritive feed for the dairy buffaloes while demonstrating its potential as a viable source of income for farmers.

Another project is the use of urea-treated rice straw (UTRS), an enriched rice straw, as another feed resource for buffaloes.

According to Dr. Daniel L. Aquino, project leader and head of PCC's Animal Nutrition Unit, the treatment of rice straw with urea and/or molasses increases its crude protein content. The improvement in its nutritive value leads to the enhancement of its palatability and digestibility, thus, helps increase the feed intake and the overall productivity of the buffaloes, he added.

The project is currently piloted among selected farmer cooperatives in Llanera and General Natividad, Nueva Ecija.

Continuing research for development

The PCC is conducting various researches to further develop technologies that will help improve the nutritional aspect of dairy buffalo production.

The Animal Nutrition Unit is currently studying the composition of Pakchong, an improved variety of napier grass, and studying its utilization aspect as feed for the dairy buffaloes.

Developed in Thailand, the Pakchong is being touted as the "super napier grass" due to its high yield and high crude protein content. It also grows faster and taller than the native grass.

The grass is being propagated and planting materials will be distributed among the dairy farmers, PCC officials said.

Meanwhile, the team is studying the use of bypass fat as feed supplement to supply the needed energy of a lactating carabao, enhancing its ability to produce more milk.

Another study geared towards optimizing the milking potential of dairy buffaloes is the use of feed microbial to improve the overall functions of the rumen, thereby increasing the feed nutrient utilization of the animals.

As the PCC continues to pave headways in the carabao industry, it is always conscious of its mandate to use the carabao as a tool in the betterment of the lives of local dairy farmers. All its efforts are directed at providing and creating a sustainable livelihood to usher in development to their lives.

"The bottomline will always be how to best help the dairy farmers," Dr. del Barrio said.

CBED paves way for farmers to chalk-up additional income

MA. CECILIA C. IRANG

Farming families, which only see the color of money at the end of every harvest season, are now enjoying the opportunities of having access to cash money on a daily basis, thanks to the carabao-based enterprise development (CBED) program of the Philippine Carabao Center (PCC) which made them available.

The continuing efforts of PCC in upgrading the breed of native buffaloes by transforming them from being mere inputs in farming activities into major sources of income, opened the windows of livelihood opportunities for the farmers.

CBED is one of the major components of the PCC's carabao development program (CDP). It showcases dairy carabao-based livelihood opportunities designed to address the ever-growing concerns of poverty alleviation, nutritional improvement and farmers' empowerment.

Furthermore, it is a program implemented to promote the other benefits that the buffaloes offer such as its milk, meat and hide. The milk, particularly, contributes significantly to the improvement of the nutritional status of the farming families and at the same time creates ready market for the growth of the dairy enterprise.

CBED program

According to Ericson Dela Cruz, national CBED coordinator, the program is aimed at helping participating carabao owners, farmers' cooperatives, and their federation in creating additional sources of income to ensure >25% increase in farm income per year; helping mobilize or build up a critical mass of Philippine carabaos, crossbreds, and murrah buffaloes for commercial scale carabao-based enterprises in communities within the identified dairy zones.

It also establishes or helps put up appropriate models for CBED; spearheads

Eastern Primary Multi-Purpose Cooperative was awarded as the 2013 Best Dairy Buffalo Farmer Cooperative during the 21st PCC anniversary celebration.

formation of development partnerships among smallhold carabao owners, support service providers, technology holders, processors, marketers, and consumers; and provides or facilitates provision of support services for capacity development of primary stakeholders including development "conduits" relative to their effective implementation.

In order to implement it, other than the partnerships formed, key actors are involved that included the 13 regional centers of PCC, partner-LGUs, partner-farmers, non-government organizations, farmers' cooperatives and associations.

Dela Cruz added that when a farmers' cooperative or association applies for the program, it has to undergo and meet certain qualifications or requirements. They must fully understand and appreciate the program's vision, mission, goal, and objectives; must have the ability to function actively as stipulated in its cooperation document and by-laws; and be able to come up with a coop level carabao-based enterprise (CBE).

Moreover, the farmers' cooperative or association should not be remiss in collecting from the members the agreed membership dues for the coop's Herd Build Up Trust Fund and in depositing them in a bank with the PCC as co-signatory; be able to collect, consolidate, and submit the members' monthly record of their respective CBEs to the PCC; participate in monitoring and evaluating the members of the CBEs; ensure that all required counterpart contribution from farmer-members are in place or secured; collect milk produce of its members and sell (through the Federation) as raw milk or as processed milk products, and should be a member of good standing of a federation, if there is any.

The small-hold farmers are encouraged to join or establish an accredited cooperative, association and federation to strengthen their position in a complex market system.

When everything has been put in place, they are guaranteed to enjoy greater benefits as they already understood the essentials for quality products, competitive prices, good packaging, efficient distribution system, and capitalizing on the highly urbanized areas populated by high-income families.

Similarly, support to the establishment of processing facilities for the production and marketing quality and competitive products are crucial factors. Thus, enterprise development models are established in impact zones to showcase production, postharvest, processing, and marketing and distribution of various products.

Enterprise models

The PCC, in its 21 years of service, has now gained wider grounds as it already has a number of enterprise development models.

A dairy buffalo farmer cooperative in Sibut San Jose City named Eastern Primary Multi-Purpose Cooperative (EPMPC), as an example, succeeded and gained admiration on its pursuit of dairy enterprises development. It became a cooperator for the 25-Cow Dairy Module Program of PCC in 2000.

In 2001, the EPMPC started to produce milk. It became the major supplier of carabao's milk in San Jose City starting in 2004 and continuing up to the present time. It is also supporting the milk for the "Alay sa Bata" feeding program of the local government unit in areas with malnutrition incidence.

Currently, EPMPC has a total herd of more than 200 dairy buffaloes and counts a membership of 48 active farmer-trustees. As of 2012, it had a total accumulated share capital of P255,413.50, total assets of P2,295,782.04 and collected animal mortuary (guarantee) fund of P349,680.00. It collected a total milk production of 332,515.9 liters from 2002 to 2014 with corresponding sales value of P15,155,777.04. In 2013, it was considered as the top milk producing cooperative in Nueva Ecija as it registered 176 liters of daily milk production. In 2014, it has a total gross sale of P256,628.5 in processed milk while P4,993,450.66 in raw milk breaking the record of its last year's and previous years' gross sales.

The EPMPC has its own milk collection center and micro processing plant with facilities that enable it to process its daily milk produce into different milk products which are sold in their city. Based on the audited financial statements, this coop was able to generate a cumulative total of P748,086.92 from 2000 to 2013 which it used in the operation of its micro processing plant.

In view of its unwavering efforts to promote the local dairy industry and score successes in this kind of venture, the cooperative was recognized as the best dairy buffalo farmer cooperative in the whole country.

Like EPMPC, the General Trias Dairy Raisers Multi-Purpose Cooperative (GTDRMPC) in General Trias, Cavite is also considered as one of the cooperative-based enterprise development models which is supervised by the PCC at University of the Los Banos, Laguna. The coop

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Development of improved products 'with a twist' Is what dairy products' producers aim to achieve

MA. CECILIA C. IRANG

Products' developers, including those in the dairy industry, are aware that consumers nowadays are always looking for something new in the market. Thus, they become more explorative striving to try something new, never settling to just one variant.

Product development means developing new products but also improving the quality of the existing ones.

In this regard, the Philippine Carabao Center (PCC) develops the technologies and promotes the products to show dairy farmers that there is really money out of milk and more profit if they process it into different milk products. From the technologies, the more creative and enterprising ones improvise.

Dairy products producers, such as those at the PCC at Central Luzon State University (PCC at CLSU) dairy products outlet, central milk processing plant of Milka Krem, PCC at University of Los Banos (PCC at UPLB) and some other private entrepreneurs, take into considerations different factors in developing products.

PCC at CLSU products' development

The PCC at CLSU used to consult an adept chef who used to be a distributor of products from PCC. The chef told them to do some other products that are commercially available in Manila but were actually imported from other countries.

"She asked us to develop products similar to the products sold in Manila that are made out of carabao's milk. We asked a sample and did experiments and trials on how to develop them. We requested her to do the sensory evaluation since she knew the quality of the products and the high-end market. We tried to revisit our trials and did some modifications. It was a series of 5-6 trials for the table-type mozzarella, bocconcini, greek-style yogurt or plain yogurt, ricotta cheese that we tried to develop," Mina Abella, officer-in-charge (OIC) of PCC at CLSU products outlet, said.

Abella added: "We came up with products that are acceptable to her and to the market or the market-driven products. In terms of pricing, we made our price relatively cheaper than the existing commercial ones."

Eventually, PCC at CLSU also came out with different flavors of pastillas that have more health benefits like lacing them with malunggay, tanglad, and herbs.

Inputs from others taken in

In developing the products, the PCC at CLSU considers suggestions of the staff and researchers plus the resources, process, protocols and qualities of the products. They develop them using as input the customers' satisfaction survey results, customers' suggestions and their positioning in the market.

The PCC at CLSU facility processed an average of 60-70 liters of milk a day in the last quarter of 2014. For the previous quarters it used to process an average of 100 liters of milk a day.

Out of the volume of milk, among the products developed were mozzarella cheese, ricotta cheese, bocconcini, quark cheese, seven different flavors of yogurt milk, iced-yogurt, a yogurt packed in an iced-candy sachet which was developed in summer of 2013; coffee milk, a milk-based coffee with a very affordable price; yogurt with jelly on top, milkaroons and rice milk.

The rice milk was initially a project by Philippine Rice Research Institute (PhilRice), until a staff from PCC suggested to use carabao's milk to blend it as a nutririce milk. Therefore, PCC and PhilRice collaborated to come up with a formulation that utilizes germinated brown rice and carabao's milk.

PhilRice, at first, used either powdered milk or cow's milk until it finally settled to the use of carabao's milk as ingredient. Brown rice, expert said, is already healthy but germinating it and adding carabao's milk it becomes even a healthier drink.

"The experiment on the use of the germinated brown rice (GBR) started in the third quarter of 2014 and was soon perfected with use of the carabao's milk. PhilRice provides us the GBR and we're processing it into nutrice milk. The product is now sold in their cafeteria, in our outlet, and other places and being served in seminars," Abella said.

As for developing the iced-yogurt, Abella pointed out: "There are students who want yogurt but couldn't afford the price. That's the time we thought of developing an iced-yogurt with a very affordable price and it became very saleable. Actually, it is an iced-candy with a twist."

Developing a product also takes into consideration the product's shelf life. Thus, producers make interventions on how to prolong its shelf life and improve its quality.

The PCC at CLSU processing facility also considered room temperature in the incubation of yogurt to cater to the needs of small-hold farmers in creating their own products.

"If you don't have high-end processing facility, it doesn't mean that you can no longer develop products. Just explore using whatever resources you have," Abella advised.

"Product development is important, you should always be ahead of your competitor.

PCC Dairy's Mozzarella di Bufala


PCC Dairy's Bocconcini


Aying's Special Pastillas

PCC Dairy's Coffee Milk

Don't just settle with the products you have, develop something new or else you'll be left behind by your competitor. In the market, what comes first, gets the best," she added.

Products in-line

Currently, the PCC at CLSU processing facility focuses on the utilization of whey products. It is a by-product of cheese making in which about 50-60% of the milk's volume goes to whey which is actually not a waste matter. As it is a nutritious liquid, it can be developed into more valuable products like whey beverages, whey yogurt and whey vinegar.

One example of a whey product is Ricotta cheese.

The development of whey vinegar and whey sports drink has been as subject of the theses of food technology students of CLSU. The experiment for whey vinegar starts in January 2015 while that of the whey sports drink is currently in progress. If the research proposal for the whey sports drink is approved, then the PCC will provide the budget for the study and will be conducted for one semester. It includes profitability analysis, sensory evaluation, and consumer's acceptability.

Usually a new product development is done in comparison with the sensory qualities of those already available commercially.

"Whey is a very good beverage for the athletes and for those people who exercise in the gym because it contains certain amino acid that is good in developing muscle tissues. Until now, many people don't realize the nutritional value of whey products. That's why we are developing them to be acceptable to the children," Abella stated.

The CLSU dairy products outlet also considers the unavailability of some products developed and sold at the PCC-managed Milka Krem. They included products like milkaroons, ricotta cheese, coffee milk and others.

"We also plan to develop products that contain less sugar for the diabetics, like the pastillas (milk candy). We also plan to produce non-food products like soap, lotion, and shampoo using the carabao's milk as ingredient someday," Abella said.

Central Milk Processing Plant (CMPP) strategies

In the CMPP of Milka Krem, products' development depends on customers' satisfaction surveys. From then, they knew what the general public want to be developed for the market.

"We conduct the survey, research about the product suggested in survey results, make formulation trials, do a lot of treatments for comparison, sensory evaluation, and analysis of the results. From the results, we know which one to develop," Patrizia Saturno, CMPP manager, explained.

For Saturno, their biggest challenge lies on the different preferences of consumers when it comes to the products. Therefore, they consider the product that garnered the most number of preferences in surveys and sales in the selection on the product to be developed commercially.

Private entrepreneur's innovative ideas

The innovative ideas and persistent determination for a high quality product of Ariel 'Aying' Viñas, a private entrepreneur in Cabiao Nueva Ecija, have resulted happily in the steady stream of customers who made the entrepreneur's business boom.

The creation of entrepreneur Viñas, the Aying's Homemade Pastillas, has become a much-sought commodity from many customers from different places. They like very much the firm's famous creamy pastillas products that are packed in colorful wrappers.

Aying's first three flavored pastillas were pastillas de leche, ube and yema. It eventually ballooned to eight distinct flavors.

"Each time I see food products when I go

(Continued on next page)

out with my family, I always think of how I can incorporate those items with our pastillas. I conduct experiments until I develop a new recipe for the product," he said.

He developed his own version of frappe, a variation of the ever-popular Filipino dessert, Halo-halo, with pastillas as additional ingredient, lumpia (spring rolls) wrapped in fried pastillas. He will soon offer dessert pizza filled with pastillas and currently exploring the possibility of baking bread with pastillas as filling.

Undeniably, Aying recognizes the stiff competition among the established and new pastillas-makers. But he said the solution for survival in the business is always to be creative in creating new products that will be different and saleable.

PCC at UPLB novelty products

All the products of PCC at University of Los Banos, like PCC at CLSU, also pass through the sensory evaluation of its panel –consumers. It uses a sensory evaluation form to get the feedback of consumer.

"Before we develop and launch a product, it has to pass through a panel. It is our standard procedure in developing products to consider those that will have higher demand from the consumers," Dr. Rosalina Lapitan, OIC of PCC at UPLB, said.

After a series of sensory evaluation, she said, the producers invite the staff members of the center and animal scientists from the dairy sciences cluster of UPLB for the products' taste-test.

Then the developed products are brought to the center's assisted-dairy cooperatives for commercial production. It is up to the coops to make some adjustments and modifications to meet their consumers' preference. The center makes visits to see the progress of the coops' endeavours in product production and marketing.

They also conduct an end-product quality testing for each dairy coop they assisted. All of their products should have its standard ingredients.

"Milk is very perishable and as such it cannot be stored for long. It needs to be processed immediately and at the same time all of its ingredients should be ready. There is much spoilage when we run out of ingredients and stock. Among the challenges we met are the scarcity of resources and the availability of ripening room for the development of different variants of cheese," Dr. Lapitan explained.

PCC at UPLB is conducting one-week training on milk processing and mozzarella cheese making. The training also includes good manufacturing processes.

"We market our products by promoting and having a free tasting. After the taste-test, we give them the sensory evaluation form for their comments and feedbacks," Dr. Lapitan said.

Meat products

PCC at UPLB is the only regional center of PCC that initiates the processing of meat products. In 2007, it started to offer carabeef sausages.

"We had a consultant back then whom we asked on what we can do with the carabao's meat. He suggested products that will use carabeef as the base meat. We develop sausages which we continue on processing," Dr. Lapitan said.

Labeled as "Carabest Premium Carabeef Sausages," they are processed by the Animal Products Development Center (APDC) of the Bureau of Animal Industry in Marulas, Valenzuela City, which was commissioned by PCC at UPLB for the purpose.

The meat used for processing variants of "Carabest" premium gourmet sausages is derived from culled animals from the PCC at UPLB institutional herd. These are animals that are either no longer productive or are male crossbreds.

However, due to the limited supply of carabao's meat, PCC at UPLB couldn't sustain frequent processing of such meat products.

"Even if we want to satisfy the growing demand from our customers, we don't want to sacrifice the quality of the meat that we process by outsourcing it from other suppliers," Dr. Lapitan said. "We will soon solve this problem," she added.

As can be deduced, based on the experiences of the products producers, they don't come up with just one and say that it is enough. They do continuous improvement and make use of innovative ideas. Thinking out-of-the-box is what makes them develop various products, especially products "with a twist" that really sell.

Carabest Premium Carabeef Sausages

Ecija's pastillas-maker attains 'kingly' triumphs

ALMIRA P. BENTADAN

The rapid proliferation of food establishments almost everywhere has heightened competitions between and among entrepreneurs who wrestle for the expected loyalty of customers specially when the banner product is similar.

For Ariel 'Aying' Viñas, his innovative ideas and continuous drive for high quality products catapulted his pastillas business into a big success and made many patrons out of thousands of pastillas lovers not only in Nueva Ecija but in other places.

He is the proprietor of his brainchild business venture "Aying's Homemade Pastillas", a thriving pastillas production and selling hub of the delicacy in Cabiao, Nueva Ecija. His firm is now known for its creamy pastillas variants that come in colorful wrappers. Its popularity among customers reaches even as far as Metro Manila.

Fifteen years since its inception, it has carved its own name in the pastillas industry despite the emergence of other pastillas brands and its proximity to San Miguel, Bulacan, where the traditional milk candy originated.

Humble origins

Aying's Homemade Pastillas started as a one-man operation, tracing its roots to a few packs of pastillas de leche in rectangular display rack sold alongside with "chicharon" (pork cracklets) in Gapan, Nueva Ecija. Pastillas was one-half of the establishment then called "Aying's Homemade Chicharon and Pastillas".

"I started my pastillas business in 1995 with the usual eight bottles of native carabao's milk I bought daily from the farmers," Mang Aying recalled.

His capital then was part of a small sum of money being sent by his wife who was working abroad. Hard work and diligence fired up by the will and the determination to rise from an almost hand-to-mouth existence goaded him to make his limited business capital flourish.

"I was scared then because I had very little capital but I tried to conquer my fears because I knew I had nowhere else to go but to succeed in with my business plan," he shared.

He disclosed that his family was recovering from bankruptcy from previous endeavors. It was a blessing that his wife landed a job as overseas worker, he added.

Drawing from his 11-year experience before as an employed processor in a pastillas business, he started to process the milk for his own enterprise using only borrowed stove and cauldron. With the finished product, he opened a small outlet along the Gapan-Olongapo highway.

"My first concern was how to make the passersby notice and buy my products. Since I was also selling chicharon, I used it as my main attraction in my business. I let customers choose the chicharon they want and gave away pastillas for free to let them taste and like them," Mang Aying remembered fondly.

To further draw more customers to his stall, he placed big signages bearing the name of his business and the products that he sells in conspicuous areas.

He also used the word "homemade" to define his products instead of the word "especial" which was then the commonly used name.

His ingenuous efforts paid off as word started to circulate and customers gradually learned of his pastillas products. He eventually dropped the chicharon products and he focused on processing and selling pastillas.

By the following year, his business experienced a surge as demands for his products increased. It was no longer tenable for a one-man team to handle it. His wife, Nancy, decided to go home and assisted him in the operation of the business.

Each year saw an addition of display racks in his expanded outlet. They were filled with pastillas, a concrete testament to the unstoppable burgeoning of his business venture.

Continued on next page...

Ecija's pastillas maker... *(From previous page)*

Mang Aying's homemade pastillas

Mang Aying's business now boasts of his main plant and outlet in Cabiao where he and his family reside and a branch in nearby Gapan City. The latter is being managed by his wife.

Product innovation

From the very beginning, Mang Aying has been a passionate, strategic innovator. His out-of-the-box approaches from production to marketing made Aying's Homemade Pastillas stand out from other brands.

"When I decided to start my own pastillas business, I wanted to make something that is distinctly different, to be 'Aying's', that is. I improved the recipe I learned from my former employer and created my own version of pastillas with distinct flavors," Mang Aying shared.

The three initial flavors of pastillas de leche, ube and yema grew to eight with variances of tastes.

"The wrappers of the pastillas correspond to their flavors. I can say that I started this trend because back then, pastillas were packed only in plain plastic sheets," he related.

Mang Aying constantly dabbles in developing new recipes to come up with new pastillas-based products for his clients.

"Everytime I saw products during my family's outings, I always perceive how I can incorporate to my products the differences that I observed. I always carry out experimentations until I eventually develop a new recipe for the products that I calculate would be saleable to the buying public," he said.

For one, he developed his own version of frappe, an idea he got when his kids brought him to a famous coffee establishment. He also created a variation of the popular Filipino dessert halo-halo with pastillas as additional ingredient. He also came up with a lumpia wrapped in fried pastillas products. They added more customers and prestige to his establishment.

Soon, Mang Aying will offer dessert pizza filled with pastillas. He is also currently exploring the possibility of baking bread with pastillas as fillings.

"I have no prior experience with baking but I am determined to try it. I'll probably use several bags of flour before I will be able to master it," Mang Aying confessed with the tinge of his characteristic eagerness to learn and discover something new.

Meanwhile, he recognized that competition among established and new pastillas makers is inevitable especially with the increasing volume of milk being produced by local dairy farmers in the province. The key to survive it, he said, is the continuous development of the products and services offered and the courage to be different.

Beyond monetary gains

The success of Aying's Homemade Pastillas meant more than the material wealth it has brought to Mang Aying's family.

It is an affirmation of his victories over the challenges that he had to weather as he cooked his pastillas to perfection.

As he takes a trip down memory lane to his life before his romance with pastillas began, he can't help but get emotional.

"I couldn't even afford to bring my sick son to the hospital then because I literally had no money. Nobody trusted me enough to lend me money. That's how poor I was then," teary-eyed, he said.

Now, the business has given him the security he has always wanted for his family. It allowed his children to take quality education

(Continued on page 35)

Programs on genetic improvement... *(From page 17)*

increasing milk yield, milk fat and milk protein without necessarily sacrificing the response of the animal into its milk yield," Flores said.

She emphasized that the research is significant as it is about balancing the three traits of the buffaloes using the newly-developed model to know which among the animals are having high genetic merit.

Meanwhile, as regards to their second research study, Flores said that the 90K SNP chip research is about the use of dense Deoxyribonucleic acid (DNA) markers associated with the milk production traits of the buffaloes to predict the genetic value or total genetic merit of the animals.

Flores said that the research will help them determine which among the animals are carrying a favorable allele on their genes using the 90,000 DNA markers that are in the SNP chip.

She elaborated that the SNP chip is a type of DNA microarray that is being used to detect polymorphisms (occurrence of two or more clearly different phenotypes in the same population of a species) in the population of the buffalo's genes. It will be used to identify a set of DNA markers in the buffaloes that will be able to explain a large part of its milk yield, milk fat and milk protein, she said.

She added that allele is one of the two or more versions of a buffalo's gene that undergo mutations and create effects in the milk production traits of the animals. Thus, it is helpful in providing data of the favorable gene that is good to use in the GIP's breeding program.

Directions of buffalo breeds

In so far as where the GIP's research endeavors' are destined to go is concerned, the direction is toward the development of a total picture of buffaloes' breed.

Flores said that the following are the destination of the buffalo's breeds in the country:

First, the swamp -type or the native buffaloes are for meat production. The buffaloes will be selected and ranked following the selection and ranking system for the best dairy type of animals as to their performances, exceptional growth rates and good body conformation.

Flores added that, they will focus more on improving the meat quality traits of the native carabaos and later on establish data on computing the breeding value of the native carabaos in terms of meat production.

But, right now, aside from the conservation effort of the GIP to the native breeds of buffaloes, Flores said that they are currently recording the growth rates of the native carabaos for use in breeding purposes.

She added that, they now have four selected native carabaos in the bull farm in Barangay Joson in Digdig, Carranglan, Nueva Ecija. The selected carabaos, she said, are being used as semen donor for the use of the PCC's trained Village-Based Artificial Insemination Technician (VBAIT's) in providing services to the farmers or to the farmers themselves who want to carry or use the native semen for impregnating their female native carabaos in the field.

Second, is toward the genetic improvement program of the dairy type for more milk production and the improvement of their milk quality traits.

Flores said they are enhancing the nutritional value of the buffalo's milk for the benefit of the farmers and of the processors' in the industry.

She added that the dairy-type, especially the male buffaloes, is also both for breeding purposes and meat.

Third and last, is the reproduction of the crossbred buffaloes or "mestisang kalabaw".

Flores said that the study on crossbred buffaloes, which are a product of continuous backcrossing of the native type and the dairy type, is headed toward the emergence of "Philippine Murrah buffalo".

Flores said that as part of the effort of the PCC to create or produce the "Philippne Murrah Buffalo", the GIP will later on standardize the data and recording system connected to the performance of the crossbreds. Thru this, she added, it can be concretely said by the PCC without doubt that the produced breed is truly a Philippine Murrah buffalo".

But, right now, since records are not that yet formal and final yet compared to the dairy type, the GIP, Flores said, is planning to partner with different dairy cooperatives which have crossbred animals for the purpose of conducting researches related to the evaluation and selection of crossbred buffaloes to be recorded for their performances to improve their genetic merits.

Plans

GIP's plans involve the continuous improvement of the buffalo breeds through the conduct of crucial research for development endeavors generation after generation. As part of it, research after research studies will be conducted by the GIP to improve the buffalo breeds.

Their lined-up researches as of now, Flores said, include studies on somatic cell count, meat quality traits and the creation of fertility index, among others, which are considered vital in accomplishing their goals.

Pool of native carabaos in Peñablanca, Cagayan

> “I am only a few months in my new responsibility. But I am happy and inspired working. We don’t see much changes yet but once we implement the changes in structure, big changes will happen. If we really want to succeed, let’s make the competent people ride on the same bus to do our job. Those who you think are not competent, ask them to step out. We will capacitate only deserving people.”

‘ We are here in PCC... *(from page 22)*

and sell them to different slaughterhouses. But we talked recently with the Federation of Cattle Raisers Association of the Philippines and we will study the fattening of the carabaos by private groups. We will provide them 20 head (of buffaloes) to fatten them like the cows and sell them. Let’s see if the system will work. Also the excess or male CBs of the farmers will be asked to be brought to the private groups which will fatten them, slaughter them, and sell them to the high-end market. We know that the cold cuts have higher values.

AR - Are you pushing for this system?

AdB -Yes, it will start soon and we will have models for that. The initial herd will come from Mindanao and will be brought to Canlubang, Laguna, for three to four months fattening, slaughter them later and sell to the high-end market.

AR - How about the other by-products of carabao like the hide, horn, the nails?

Adb - These are the under-utilized by-products of the buffalo. We will partner with private groups which have the facilities to produce various products out of them.

AR – Do you think the finished products from the by-products of carabaos will be saleable?

AdB – The hide of the carabaos has many uses – for making bags, belts, key chains, and others. We haven’t really made the right connections to the industry. It is of big value to tanneries which make it for car seats.

AR – You developed sausages at UPLB, why isn’t this being produced commercially in many areas? Also, we have collections of carabao meat recipes and many restaurants are also serving delicious food from carabao’s meat. Why don’t we consolidate them and showcase them to the people in different places?

AdB – We really need takers of technology and producers who will produce them on a sustainable basis. As of today, we are still demonstrating the potentials of the carabaos. It is not yet in private sector’s hands. If we can make collaborations work, we will see lots of things happening for the carabaos.

AR - So instead of PCC doing the efforts, it will help private groups to model them and make them work?

AdB – Ours is the demonstration of the enterprises. It is the private group that will be encouraged to commercialize them. There are others who are asking if PCC is engage in business. We always say no, we are just developing enterprises that will work and transfer them to the private sector later.

AR– I understand that PCC as a rationalized agency has new theme or direction under your charge. What is this all about?

AdB – It is the iREB concept. It is the story in the years to come. (Explain i-REB a bit). The DBM (Department of Budget and Management) wants to maintain PCC as an R&D agency. We just added the program that will make the different sectors that indeed we are really helping the farmers. The approach is the R4D (research for development). We have to focus on the problems of the farmers, research on them, then transfer the findings to the farmers to ease or solve their problems. We know that the real problems that should be worked on are those coming from the farmers. They should be looked at, analyzed, find the root causes, and do the research works to solve the problem. That’s the essence of R4D. That’s difficult to do because we were taught a different approach. We just go on researching but without the transfer of the research results.

AR - So in essence, the R4D will reflect the success of the various activities of PCC?

AdB –The real manifestation of the PCC is the increased income of the farmers. All that should be done should be toward increasing the farmers’ income. This is the indicator that can be easily gauged and the manifestation of the intent of the law. The farmers’ will be happier if their income will be improved because of their livelihood activities.

AR – In your term of office, what will be your battle cry or banner undertakings?

AdB –The carabao-based enterprise development program. The regional impact zones must evolve as dairy hubs because it means the completeness of the players involved. It is necessary that all the elements needed by the industry will be present

AR - In doing it, are you not forgetting other concerns, like environment, transcending boundaries?

AdB – If there is scaling up of operations, somehow, you are affecting or damaging the environment. But we are urged to research or employ innovations on how to take care of the environment. We really need programs to address environmental problems. We have collaboration with Philrice, like on using the carabao's manure as organic fertilizer for rice growing and the use of rice straw for feed. I am pushing for a national forage program and this will be parallel to the Genetic Improvement Program so that the productivity of the animal will improve. We have started it. All we need are the documents to scale up the forage program and to come up with a national forage program for ruminant.

AR - How about your people?

ADB – Like what I said then, the people should be first. We have to capacitate them and harmonize their skills and capabilities to implement the programs of PCC. It is good to have many experts. If we can harmonize them, we will have a very good set of people that will work for PCC. Compared to other agencies, we have the most scientists here in PCC and you can feel their presence in terms of their research capabilities. We really have the right blend of people in PCC and very good facilities. The only big challenge is how to make an effective R&D in a sense that we can be of help in solving the problems of the farmers.

AR – What is your message to the farmers?

AdB – We want you to be our real partners for development because I believe that partnership is the key in the implementation of the carabao development program. We also want to be real partners with other sectors, like the local government units, because we believe that without a healthy level of partnerships it will be difficult to implement and make our programs succeed.

AR – Are you happy in your new job?

ADB – I am only a few months in my new responsibility. But I am happy and inspired working. We don't see much changes yet but once we implement the changes in structure, big changes will happen. If we really want to succeed, let's make the competent people ride on the same bus to do our job. Those who you think are not competent, ask them to step out. We will capacitate only deserving people.

CBED paves way... *(from page 25)*

Arnold A. Cunanan of Simula ng Panibagong Bukas Primary Multi Purpose Cooperative was 'Best Dairy Buffalo Farmer' awardee under the Family Module Category during the PCC 21st Anniversary observance in 2014.

has already set a high bar in terms of carabao-based dairy production for other emerging dairy cooperatives.

As the GTDRMPC continues to prosper, many residents of the town have been given additional livelihood opportunities. Its membership has grown to almost 200 from its original members of 44.

The coop currently collects at least 250 liters of carabao's milk daily from its members who have a combined animal holding of almost 250 head, of which close to 80% are crossbreds. The collected fresh milk is processed into different dairy products.

The GTDRMPC's performance has gained many recognitions and awards, among them was the DA's "Gawad Saka Award", a proof to its consistent successes.

On the other hand, as there are top coop-based enterprise models like EPMPC and GTDRMPC, there also exist dairy farmers who are considered models for their laudable achievements. Three dairy farmers from different categories were chosen and awarded best dairy buffalo farmers of PCC nationwide last March 2014.

First was Arnold Cunanan of "Simula ng Panibagong Bukas Primary Multi-Purpose Cooperative" in Barangay Porais, San Jose City. He was cited as the best dairy buffalo farmer under the family module category. He has been a partner of PCC on buffalo dairying since 2009. Cunanan has exhibited his ability in taking good care of his dairy buffaloes. He converted his piggery farm into another venture and delved into carabao-based enterprise. His wife and children help him in the delivery of milk, assist him in record-keeping, in feeding the buffaloes and in cleaning the barns. Cunanan is one of the growing numbers of buffalo farmers who have an increasing herd size thru the adoption of new technologies and serving as a model dairy buffalo farmer to others.

Second was Romeo Araña, a farmer-partner of PCC at Western Visayas State University in Iloilo. He was chosen as the best dairy buffalo farmer under the smallhold category. He started backyard dairying in 2012 with a crossbred carabao, a cross between an albino carabao and a riverine buffalo. He enlisted in the carabao dairy enterprise with his crossbred as his

(Continued on next page)

Romeo Araña of Brgy. Cabudian Dueñas, Iloilo is holder of 'Best Dairy Buffalo Farmer' award under the Smallhold Category during the PCC 21st Anniversary celebration in 2014.

CBED paves way... *(From previous page)*

partner.

Araña began milking his carabao after realizing there is money out of the milk produce. The income he derived out of the sales of milk from the first lactation of his crossbred afforded him to renovate his house. On the second lactation of his crossbred, he was earning more than what he earned before delving into that enterprise and afforded him to support his son's needs for his whole year tuition fees and weekly allowances. He was able to reconstruct his house's roofing.

For the semi-commercial category, Carlito Alfonso of the Eastern Primary Multi-Purpose Cooperative in San Jose City nailed the top award. He has more than 15 head of dairy buffaloes and earning more than P60,000 from the sales of milk and by selling his male calves. Aside from being a productive dairy farmer, he also adopts the other technologies promoted by PCC.

Strategic shift

One of the novel approaches of PCC in CBED is the dairy buffalo multiplier farm (DBMF).

Carlito Alfonso of Eastern Primary Multi Purpose Cooperative, together with his wife is holder of 'Best Dairy Buffalo Farmer' under the Semi-Commercial Category during the PCC's 21st Anniversary celebration in 2014.

Javier farm in Javier, Leyte is the country's First Dairy Buffalo Multiplier farm.

The town of Javier in Leyte province holds the distinction of having the country's first ever DBMF. It is supervised and monitored by PCC at Visayas State University, which covers Region 8 or the Eastern Visayas region.

The PCC's DBMF program is aimed at improving efficiency in the multiplication and propagation of good quality dairy buffalo genetics that can be utilized in establishing a viable commercial buffalo-based dairy farm. In this manner, buffalo genetic sources may be widely spread and not limited to PCC.

"What does this multiplier farm mean to the town? It means, we will have milk so we will have income. We will have organic fertilizers from their manure. We will benefit a lot. I will prove, in front of everybody here, that it is not impossible to make farmers rich and we will achieve that," Mayor Leonardo Javier Jr. emphatically said in his remarks during the awarding rites for the module held last November 8 at Sitio Mapula, Zone II of the municipality.

Undeniably, the CBED program of PCC has now gone far and wide in terms of providing livelihood opportunities to farmers involved in it and in showing the way to the aspiring ones who want to share in the bounty offered by the program. Happily, they contribute to the advancement in upping the rate of employment in the Philippines.

According to the reports of the National Statistics Office (NSO), the employment rate in the country is estimated at 94% in October of 2014, up from 93.6% a year earlier. From the total of these 38.8 million employed people, 53.7% worked in the services sector, 30.8% in agriculture and 15.6% in the industry sector.

"Employment generation during the period was broad-based, led by services and agriculture," said Socioeconomic Planning Secretary Arsenio Balisacan.

In agriculture, Balisacan said, the problem has to do with the quality of employment which is both seasonal and low-paying. He said this can be addressed by introducing nonfarm employment opportunities during the off-season, such as value-adding activities, community-based employment program. The PCC's CBED program is consistent with this pronouncement.

As the stride for a sounder economic development in the country goes on, the PCC vows to continue its efforts to unfold unbounded opportunities for farmers through its buffalo-based enterprises. In them, PCC have that altruistic sense of providing a very productive resource in their lifetime's venture.

Ecija's pastillas ... *(From page 30)*

from reputable schools and finish courses of their liking, something that he and his wife have always aspired for.

Aside from his family, he credits his former employer as his other source of motivation and inspiration for the business.

"For 11 years, I saw how his business grew and attained success. He was like me; he did not finish education and was also poor. Now, he has sent several children to school and has helped other people in countless ways," Mang Aying shared.

Drawing from his own experiences, he encourages those who want to start their own businesses to believe in their capability and pursue their dreams.

"Most of the businesses started small. A person must first recognize his potential and believe that he can start a business even with a small capital. Others made it, I have no doubt you can do it also so long as you use whatever talent you have," Mang Aying said.

With the way things are going in his business, Mang Aying is expected to attain more heights in the line of business he choose and doggedly nurture to success.

4 PCC researchers...*(From page 10)*

to the development of appropriate feed supplementation strategies that increased the feeding value of crop residues, resulting in improved growth and productivity of buffaloes. She established appropriate fattening technologies for crossbreds and pioneered the development of high-end gourmet sausages from carabeef which creates industry breakthrough. She is also an extentionist, translating her researches into technologies and extending them to PCC target partners: technicians and farmers.

Under the SCS, career scientists are entitled to automatic increase in salary grade corresponding to the rank, benefits and entitlements under the R.A. 8439 or the "Magna Carta for Scientists, Engineers, Researchers and Other Science and Technology Personnel in Government".

Furthermore, their performance and productivity are evaluated yearly and their standing is used as basis for awarding additional incentives and grants.

The three other PCC researchers earlier conferred the rank of Scientist I were Dr. Claro N. Mingala, Dr. Danilda H. Duran and Dr. Peregrino G. Duran. **| MA.CECILIA C. IRANG**

Call for PROPOSALS

Livestock Biotechnology Center

Priority Research & Development Areas on Livestock:

Funds are provided for R&D projects addressing the following identified priority research areas that:

- Improve livestock production and competitiveness through reproductive biotechnologies, Marker Assisted Selection (MAS) and other biotechniques
- Develop and/or improve reproductive biotechnologies in livestock for more meat and/or milk
- Develop and/or improve animal feed stuff, vaccines, antibiotic production and waste utilization and management; and,
- Provide viable solution to pressing problems in livestock production and sustainability

Particular Topics

1. Animal Genetic Resource
   - a. Conservation
     - •Genes
     - •Tissue
     - •Live Animal
   - b. Improvement
     - • Characterization: genetic and phenotypic
   - c. Utilization
     - •Breed improvement and development(climate change resiliency)

2. Reproductive Biotechnologies for the production of genetically superior animals and livestock production improvement

3. Food Safety and Quality
   - a. Food-borne pathogens
   - b. Food traceability (farm-market-fork)
   - c. Residues
   - d. Adulterants

4. Animal Health/Public Health
   - a. Vaccines
   - b. Diagnostic methods
   - c. AMR (anti-microbial resistance)
   - d. Feed additive residues

5. Nutrition
   - a.Feeding system

6. Product Development
   - a. Prebiotics
   - b. Probiotics
   - c. Synbiotics

How to submit research proposals?

DA Biotech has a customized internet-based database application called ESMES (Electronic Submission, Monitoring and Evaluation System) developed by the Program as a tool in proposal submission, monitoring and evaluation of supported projects of the DA Biotechnology Program.
ESMES is a cost effective and time-efficient system since it allows paperless web-based transactions for timely review, approval, monitoring and evaluation of projects. ESMES can be accessed at http://www.dabiotechnet.net.

Contact Details:
Livestock Biotechnology Center, Philippine Carabao Center National Headquarters and Genepool,
Science City of Muñoz, 3120 Nueva Ecija
Tel. No.: +63 044.456.0731 Fax. No.: +63 044.456.0730 eMail: livestock.biotech@gmail.com/biotechpiu@yahoo.com
Official Website: www.dabiotechnet.net