

# Bubalus

Quarterly Newsletter of the Philippine Carabao Center

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## FEATURES

### White revolution: The farmers' liberation from hopelessness

By Anselmo Roque

ABOUT a decade ago, the usual talk in pained tone by the farmers in a village in San Jose City, Nueva Ecija, was their unremitting bondage to hopelessness.

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### Country's move toward achieving milk self-sufficiency underscored in Dairy Congress in Bohol

By Ma. Cecilia Irang

Big developments are coming on the way of achieving higher milk production in the country which has been saddled with the problem of importing huge quantities of this commodity to supply the local demand.

Among these, according to the Dairy Confederation (DairyCon) of the

Philippines Chairman Isidro Albano, are augmenting the base herd, creating new market niches, and raising the productivity and incomes of the dairy farmers.

These, he said, are included in the

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# Editor's Word



Warm greetings to the avid readers of Bubalus! We are always happy to share with you interesting stories and novel initiatives related to the Carabao Development Program. In keeping with the PCC's mandate to promote, propagate, and conserve the carabaos or water buffalos as a multipurpose animal resource, we are featuring in this issue, current efforts of the agency in establishing a sanctuary for the native (swamp-type) carabaos in Calayan Island along with best practices in the areas of (1) bull farm management in Carranglan, Nueva Ecija where quality semen are processed for use in massive artificial insemination nationwide and (2) animal nutrition and feeding management. These two (improved genetics and nutrition) are important ingredients towards optimum animal performance and ensuing increased income particularly from milk-based enterprises. A feature story on "White Revolution", as it is happening in Nueva Ecija best summarized the gains derived by many farmers from such enterprises. We hope to inspire you more in the upcoming issues!

**Dr. Eric P. Palacpac**

## About the cover

Melchor Correa has not only established the future of his children through dairying. He has also contributed in building better future in big community.



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Veggie ice cream, anyone?

## Annual 'Gatas ng Kalabaw Festival' attests strong ties among farmers, public, others

By Ma. Cecilia Irang

“The continuous celebration of ‘Gatas ng Kalabaw Festival’ is an indication of our active partnership, collaboration, and unity.”

This was emphasized by PCC Executive Director Dr. Arnel N. Del Barrio in his message during the celebration of the 12th Gatas ng Kalabaw Festival held last May 9 in Talavera, Nueva Ecija.

He added that the reason for the sustainable celebration of “Gatas ng Kalabaw Festival” is due to the unified efforts of both public and private sectors, national agencies, local and provincial government units, and farmers.

The municipal government of Talavera was this year’s host of the festival. The celebration coincided with the observance of the feast of the town’s patron saint, San Isidro Labrador, and “Farmer’s Week”.

Dr. Del Barrio, in his address, gave a gist of the PCC’s program and efforts in sustaining carabao production and population in the country and in its pursuit of helping improve the lives of smallhold farming families.

He said the farmers can benefit in tending upgraded carabaos as these



Ceremonial slicing of the 80 x 112 x 4cm (LxWxH) kesong puti (white cottage cheese) prepared by PCC during the celebration of the 12th Gatas ng Kalabaw Festival in Talavera, Nueva Ecija.

are sturdier work animals, better milk providers and meatier sources of food than the native carabaos.

“Once they (the farmers) start milking their carabaos, they start earning daily income. This is what we want all of you to know that there is profit out of dairying. Hence, PCC will continue to sustain its program in order to help many more farmers,” he added.

As an affirmation of the benefits of carabao dairying, Michael Pascual, who once was a tricycle driver and now one of the progressive farmers in Talavera, shared his testimony on how the PCC’s program helped him and his family improve their daily living.

“I can say that carabao raising is indeed a beneficial venture and I think PCC has done its job well in implementing its program. I am one of the many lives that PCC has touched and changed,” Pascual declared.

He added that because of the income from the milk sales, he is now financially able to send his children to good schools, provide his family’s needs, and he even afforded to buy their own car.

In partnership with the Department of Trade and Industry (DTI), the annual “Gatas ng Kalabaw Festival” aims to promote carabao’s milk not only for its economic benefits but also for its important contributions to the health and nutrition of smallhold dairy farmers and their families as well as milk consumers in general.

The highlight of the celebration was the ceremonial slicing of the 180 x 112 x 4cm (LxWxH) kesong puti (white cottage cheese), which used 400kg of carabao’s milk prepared by PCC.

As a tradition in every “Gatas ng Kalabaw Festival”, representatives from different government agencies and LGUs led the symbolic “tagay pugay” (toast of salutation) with schoolchildren. This gesture was meant to symbolize the recognition of the importance of carabao’s milk in enhancing the health of people who partake of it and its contribution toward improving the economic well-being of the Filipino dairy farmers.

The yearly “Gatas ng Kalabaw Festival” is made possible through a technical working group

## Dairy buffalo farmers gain basic technical know-how on financial reporting

By Chrissalyn Marcelo



Joshua Villanueva of BDCU explains to the participants the importance of financial reporting on business operations.

Some 60 dairy buffalo farmers gained technical know-how on basic reporting and interpretation of their respective cooperatives' financial statement at the Philippine Carabao Center National Headquarters in the Science City of Muñoz, Nueva Ecija last June 7-8.

The seminar titled “Basic Financial Reporting and Interpretation” conducted by the PCC’s National Impact Zone (NIZ) Unit in partnership with the Business Development and Commercialization Unit (BDCU) equipped the farmers with basic financial reporting skills.

Wilma T. Del Rosario, head of the NIZ unit, added that the seminar was aimed at helping the farmers

fully understand their business operations, which is only possible if they are adept at understanding their own cooperatives' financial statements.

Meanwhile, Joshua Villanueva of BDCU said, “If the farmers can fully understand their own cooperatives' financial statement, then they would know when to invest or divest, sell or process, and accept or reject orders.” He added that a financial statement is an important tool for farmers to deliberately monitor the status of their business.

Villanueva and Christian Gonzales of the Internal Audit Section covered the topics on financial reporting and interpretation,

financial performance analysis, and cooperative internal control.

The participants were board directors and officers from the following cooperatives: Catalanacan Multi-Purpose Cooperative, Simula ng Panibagong Bukas Cooperative, Eastern Primary Multi-Purpose Cooperative, Parista Barangay Defense System Multi-Purpose Cooperative, Parcutella Multi-Purpose Cooperative, Gabay sa Bagong Pag-asa Bungo and Bongabon Dairy Producers Association, PAO Producers Cooperative, Aglipay Dairy Producers Cooperative, Nueva Ecija Federation of Dairy Carabao Cooperatives, and Caudillo Prutas at Gulay Producers Cooperative.

## Agencies gear up for GM Animals through Regulatory Training

By Marah Agaton-Arquero



Eduardo Nastor Jr., staff of Biosafety and Environment Section, demonstrates the proper handling and disposal of laboratory wastes.

In 2017, a breed of fast-growing Atlantic salmon became the first genetically modified (GM) animal to be sold to Canadian consumers. It is also the first transgenic animal to be approved by the US Food and Drug Administration (FDA) for human consumption after 25 years of regulatory lobbying. The said fish, a variety of Atlantic salmon (*Salmo salar*), is engineered to grow faster than its non-genetically modified counterpart.

In preparation for the eventual entry of GM salmon, animals and by-products to the Philippine market, the Biotechnology Program Office of the Department of Agriculture (DA-BPO), in collaboration with the Livestock Biotechnology Center, held a capability training on GM animals last April 11-13, 2018 at the Philippine Carabao Center National Headquarters and Gene Pool, Science City of Muñoz, Nueva Ecija.

Regulatory officers from DENR, DILG, DOST and DOH participated in lecture-discussions and laboratory hands-on training to refresh their knowledge on basic molecular biology techniques, be updated about the state-of-the-art GM animal development in foreign countries and presented with relevant domestic laws and policies pertinent to the use and regulation of GM animals.

“International trade will make it possible for GM salmon or similar products to reach Philippine shores, unfortunately, our system is not ready. This training is a step towards establishing a regulatory for GM animals,” said DA-Biotechnology Program Assistant Director Analyln L. Lopez in her opening address.

The said activity aims to capacitate representatives of the agencies previously involved in the Joint Department Circular 1, series of

2016 on the “Rules and Regulations for the Research and Development, Handling and Use, Transboundary Movement, Release into the Environment, and Management of Genetically-Modified Plant and Plant Products Derived from the Use of Modern Biotechnology” to help the Philippine government to put in place animal biotechnology regulatory mechanisms for the possible arrival of GM animals in the country.

The recently concluded training is tagged as a build-up activity of the upcoming 14th National Biotechnology Week (NBW) celebration, with the theme, “Bioteknolohiya: Pambansang Hamon, Pambansang Solusyon”.

The National Biotechnology Week is celebrated every last week of November by virtue of Presidential Proclamation No. 1414, s. 2007.

## Country's move toward achieving milk self-sufficiency underscored in Dairy Congress in Bohol

strategic plans and programs for the development of the local dairy industry, which were discussed in depth in the recently concluded 21st Dairy Congress and Expo held at the Bohol Cultural Center in Tagbilaran City, Bohol on May 23-25.

Other than that, strategic plans also include contributing to the Department of Agriculture's (DA) goal of increasing milk sufficiency in the country by 10%, and accelerating the realization of a self-reliant countryside.

Albano acknowledged that through the years, milk self-sufficiency has been one of the key challenges of the local dairy industry. Thus, this year's congress focused on this major issue.

The country continues to import 99% of its milk requirements. However, as per reports released by the National Dairy Authority (NDA), the imports of milk and dairy products in 2017 declined by 8% (from 452.99 million kg. to 417.07 million kg.).

In terms of value, it went up to 12% (from total dairy import bill of US\$807.72 million to US\$903.10 million) indicating an increase in unit import cost of 21% and 29% in dollar terms and in pesos

respectively.

Senator Cynthia Villar, chair of the Senate Committee on Agriculture and Food, on the other hand, stated the Senate Policy Directions on Local Dairy Development and assured that bigger funds are coming to boost further performance of the livestock, poultry and dairy in the country.

In her keynote speech read by her representative and Chief-of-Staff, Atty. Rheagee Tamaña, Sen. Villar said she strongly endorsed the allotment of a higher budget for livestock and poultry during the Senate deliberations on the 2018 budget of the DA.

According to her, for a sector which is contributing 33% production, it is not fair for the livestock program to only get 2.7% of the DA's entire budget which is Php1.2 billion.

In her speech, she cited the DA's efforts to increase the local dairy production such as building multiplier farms in at least 1,000 communities in the country and crafting a five-year roadmap for livestock and dairy development which aims to increase the national cattle population from 2.5 million to 5 million, and raise milk production from one percent

to 10 percent of the national requirement.

She also noted that each player in the livestock and dairy industries has to work together and implement the 2018 action plan in order to realize the common goal of milk self-sufficiency. She is hoping that the dairy sector will be the first to reach self-sufficiency among the agricultural sectors.

The dairy congress which adopted the theme "Moving towards Milk Self Sufficiency," also bared for the Bohol farmers, the strategic road map that the agriculture sector adopted to realize the dream of transforming Bohol into becoming the "dairy capital of the country."

Meanwhile, PCC Executive Director Dr. Arnel del Barrio accentuated the contribution of carabao's milk in the dairy industry. He stressed that prior to the creation of the Philippine Carabao Center (PCC), there were no so-called dairy carabaos nor was there a significant carabao's milk production in the country.

"In 2017, based on the Philippine Statistics Authority, carabao's milk contributed 35% to the local dairy production. It was an outcome of our efforts for 25



(l-r) DairyCon National Chairman Isidro Albano, National Dairy Authority Administrator Marilyn Mabale, PCC Executive Director Dr. Arnel N. Del Barrio, and other dignitaries during the ribbon cutting ceremony of the 21st Dairy Congress and Expo.

years,” he voiced out.

Dr. Del Barrio also posted a challenge to the DairyCon to open their arms and include the emerging and independent players of the dairy industry.

“The challenge is to increase more our local dairy production with the help of others as we cannot do it alone. We have to include everyone, everybody, and every partner which we think would be of help for us to develop the dairy industry,” he stressed.

The DairyConEx, through its plenary sessions, served as a platform for the exchange of strategies and insights on how to better address the pressing issues

that the industry is facing as well as the needs of farmers, especially the smallholders, in terms of knowledge sharing, technology-transfer, post-harvest handling and market development.

Topics presented by PCC officials during the gathering were the “Best Practices on Carabao-based Dairy Enterprise in the Province of Bohol” by PCC at Ubay Stock Farm Center Director Dr. Caro Salces and dairy farmers and entrepreneurs Marilou Rojo, Grace Boyles, and Jesusa Danila; “Advances in Livestock Reproduction and their Potentials in Enhancing Dairy Production” by Dr. Eufrocina Atabay, PCC Scientist I; and “The Use of Non-Conventional Feedstuffs as Alternative Ingredients

in the Preparation of Total Mixed Ration (TMR) for Dairy Animals” by PCC at Central Luzon State University Center Director Dr. Daniel Aquino.

Organized and held annually by the DairyCon of the Philippines, the congress was aimed at encouraging people to go into dairying to create wealth, livelihood and share the benefits of economic development nationwide. The ultimate goal is to create a permanent sector for dairy with globally competitive professional dairymen and farm workers.

Co-organizer of the event was the DA through the NDA with the PCC as co-sponsor.

# PCC conducts another round of facilitator's workshop on Farmer Livestock School

By Ma. Cecilia Irang



A participant shares his learnings during the workshop.

Twenty-five participants completed an 11-day learning event for facilitators under the Farmer Livestock School on Dairy Buffalo Production (FLS-DBP) project conducted by the Philippine Carabao Center (PCC) last April 16-30, 2018.

Eight of them were PCC regional centers' staff members, seven were Local Government Unit officials, and 10 were progressive farmers from South and North Cotabato, Zamboanga del Norte, Zamboanga Sibugay, Bukidnon, La Union, Pangasinan, and Ilocos Norte.

The learning event was aimed at enhancing the delivery of extension support, education, and training services (ESETS) of PCC towards participatory technology development and eventual adoption or utilization by village-based dairy buffalo farmers.

"A series of lectures with actual demonstration, workshops, field exposure and hands-on activities aimed at equipping of participants with knowledge and skills as facilitators on FLS-DBP were featured in the learning event," Dr. Eric Palacpac, Information Officer V and FLS-DBP project leader, said.

The FLS-DBP project adopted a platform for trainers and participants to learn interactively by exchanging ideas and breaking the teacher-student barrier.

The participants underwent six training courses, as prepared by the module developers from the PCC. These courses were: (1) Preparing Facilitators for FLS Implementation; (2) Mobilizing Communities for FLS; (3) Raising Healthy and Productive Dairy Buffalo; (4) Building Enterprises from Buffalo; (5) Participatory Technology Development; and (6) Participatory Tools to Measure FLS Effects and Impacts.

"As one of the expected outputs of this training, LGU-partners will be the lead implementers of this learning platform in their respective areas with the village-based dairy buffalo farmers as participants," Dr. Palacpac emphasized.

He added that the good thing about this training is that "we do not impose on the farmers to adopt the technologies, instead, they will learn about various technology options and choose and adopt which is(are) appropriate or suitable to their local conditions."

The learning event was organized by the PCC's Knowledge Management Division under Dr. Palacpac. FLS-DBP module developers from the PCC National Headquarters and PCC at Central Luzon State University served as facilitators. Project staff members Ms. Rovelyn T. Jacang and Mr. Erwin M. Valiente, served as members of the secretariat cum facilitators.

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## Annual 'Gatas ng Kalabaw Festival'...

participated in by DTI, PCC, Department of Agrarian Reform (DAR), Department of Agriculture (DA) as well as the provincial and local government units.

Meanwhile, the municipality of Talavera, thru the initiative of Mayor Nerivi Martinez, is planning to apply to set a record next year in the "Guinness World Records"

for the title "Biggest Kesong Puti in the Philippines".

Other activities included in the celebration were ecumenical service, trade fair, colorful street dances performed by high school students in Talavera and a special dance number from PCC mascots "Kalaboy" and "Kalagirl".



# PCC BizTalk enables CBED frontliners toward managing sustainable dairy enterprises

By Charlene Joanino



Gina Gabuyo of Information Communication and Technology Section discusses iREB Client Dashboard. *Photo by Jocel Dam Dolfo*

Twenty-nine PCC frontline officers on Carabao-Based Enterprise Development (CBED) have gained additional knowledge on business concepts in a recently conducted business talk or BizTalk last June 13 and 14 at Mila's Hill Inland Resort in New Lucena, Iloilo.

The two-day BizTalk that carried the theme "FIT (Future in IT) for business" is part of an advocacy program initiated by the PCC's Business Development and Commercialization Unit (BDCU), which pushes for a broadened literacy among PCC's business units in ably handling their business functions. The program started in 2015 with an initial three-year plan and is expected to be reaping positive results by 2018.

The program was intended for PCC directors, farm managers of institutional gene pools within the PCC network, managers and personnel of Processing and Marketing Outlets (PMO), and CBED coordinators.

The BizTalk also highlighted Practices,

Information and Novelty for Sharing (PINS) and Intensified Research-Based Enterprise Build-Up (iREB) Client Dashboard. The PINS are observations made in monitoring the business such as causes of problems encountered. The iREB Client Dashboard, on the other hand, provides an overview of the progress of the business. This ushers the focus of PCC to "organized and wide-scale genetic improvement program, systematic extension and technology delivery, and the creation of favorable environment for enterprise development." Both PINS and iREB help in the creation and execution of business plans that propel sustainable enterprises.

The iREB Client Dashboard was launched in 2017 as a tool that shows the performance of dairy farming business. The Dashboard provides the overall business status and contains data such as Return on Investment (ROI) that is vital in the creation of business plans and entice future investors.

Zadieshar Sanchez, Administrative

Officer V and one of the organizers, said the BizTalk is one of the strategies planned out by the BDCU for business units to meet "the requirement to at least breakeven or to hit a specific ROI."

Meanwhile, Joshua Villanueva, BizTalk lecturer and BDCU financial analyst, enumerated a learning continuum that served as the basis of lectures at BizTalk sessions such as the following: knowing the basic business concepts, increasing ROI, creating and application of PINS, using the iREB Client Dashboard, and increasing farmers' income.

In attendance to the BizTalk in Iloilo we're CBED coordinators, officers and staff of PCC regional centers at University of the Philippines-Los Baños, Visayas State University, Mariano Marcos State University, West Visayas State University, and University of Southern Mindanao.

Another BizTalk is set to be held in either July or August this year.

## PCC strengthens carabao sanctuary in Calayan Island, Cagayan

By Lilian Villamor

A Calayano buffalo farmer with his carabaos. Photo by LPVillamor



Revisiting the carabao sanctuary in Calayan Island, a 15-hour travel by land from the Philippine Carabao Center headquarters in the Science City of Muñoz, Nueva Ecija, one would immediately feel relieved of the long haul because of the raw beauty that is awaiting to be revealed! A warm greeting from a Calayano even makes the long trip worthwhile.

A team of PCC researchers had this firsthand experience

during the “Calayan Kalabawan: Pagbabalik Tanaw” which was held in the island last April 22-24. The team included PCC at Cagayan State University (PCC at CSU) Center Director and Senior Science Research Specialist Franklin Rellin and Edelina Rellin, respectively and PCC national headquarters science researchers for DABIOTECHR1506 (DA-BAR & DA-Biotechnology Program) Lilian Villamor, Aivhie Jhoy Escudero, and Therese Patrickka Cailipan.

The revisit was part of PCC’s continuing effort to support the local farmers and local government units (LGUs) since the island was first explored as a sanctuary for swamp buffaloes

in 2015. Among the important matters that were tackled with key stakeholders included the carabao-based program, species identification of a distinct Calayan swamp population, and overseeing the construction of the PCC communal animal facility in the island.

Officials and representatives from LGUs and carabao owners in nine barangays including Balatubat, Cabudadan, Centro 2, Dadao, Dibay, Dilam, Magsidel, Minabel, and Poblacion participated in the activity.

The goal was for PCC to select and buy at least 31 bulls from the local farmers for use as initial stocks for



The communal animal facility intended for the conservation of the native swamp buffalo is currently being built on 100 hectares of land donated by the LGU of Calayan and is expected to be completed by the end of this year. The facility can accommodate at least 40 native carabaos, which will be the initial stocks for breeding and conservation. Complementing this animal facility is an office that will host PCC researchers and technical personnel who will be visiting the island from time to time to oversee the development of the sanctuary.

conservation.

The on-site inventory for bull selection was based on genetically identified animals as swamp buffaloes and according to morphologic traits such as height at withers, heart girth, and body length.

With the aim of the project to identify and discriminate breeds of native carabaos in the Philippines, Calayan swamp buffaloes in the area were previously included to establish the morphological traits and to collect blood samples for molecular characterization. Preliminary results of the analysis identify the Calayan swamp buffalo as a significantly distinct breed

in Luzon. This provides baseline information to understand the genetic diversity of the species in the country toward a strategic breed conservation, management, and utilization.

Lino Llopis, the Municipal Agriculture Officer of Calayan, said, “This new information about native carabaos will continue to motivate farmers to protect and strengthen the health, nutrition, and propagation of their animals.”

“After five years, we will have a known breed or Calayan native carabao produced from the young bulls. We can collect fresh semen from these bulls so that artificial insemination can be done

simultaneously with the selection,” Director Rellin shared his vision about the program.

He added that calves that will not be selected for breeding will be fattened for draft purposes or for meat processing. Trainings and other development interventions will be conducted in support of the program.

While it takes a long trip to get to the island, the vision to transform Calayan into a vibrant community of progressive native carabao owners is not far-fetched with the locals’ positive outlook of the Carabao Development Program. With PCC at the helm, this vision is sure to come into fruition.

## Excellent nutrition plus good feeding system: they work wonders in abundant milk flow

By Ma. Cecilia Irang



There's really no big, hidden secret if one is bent on chalking up in record books about the high milk production capacity among dairy buffaloes.

Take it up from the experts. And one of the factors is the big letter “N”, which stands for “Nutrients”. Dairy buffaloes must partake sufficient nutrients to reach their optimum milk production capacity. What must be borne in mind always by the dairy farmer, not just an appendage, but also a part of his being is the aphorism, “They (the dairy animals) are what they eat.”

“The feedstuff that the buffaloes eat alter the nutrients in their body thus it is important to partake of feedstuff that will have a positive and beneficial impact on their body and their overall health,” experts emphasized.

In the program “Enhancing Milk Production of Water Buffaloes Through S&T Interventions” of the Philippine Carabao Center (PCC) and the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD), nutrition is one of the more important aspects underscored.

In the program, one of the

components emphasized is the project “Development of Feeding Protocols and Practices to Support the Nutritional Requirement of Dairy Buffaloes”. It is spearheaded by Dr. Daniel Aquino, center director of PCC at Central Luzon State University (PCC@CLSU).

According to Dr. Aquino, the three-year project is aimed at increasing milk production of dairy buffaloes, more specifically their average daily milk production from 4.5 kg to 7kg through the establishment of a year-round practical feeding system using nutritionally complete homegrown forages.

The project is in line with the



“Poor feeding management and nutrition will result in low body condition score, low milk production, increased susceptibility to diseases or high mortality rate, lower income, and poor profitability of the dairy farmers. It is really that important to practice proper feeding system of buffaloes.”

- Dr. Daniel Aquino

program’s goal of increasing the milk production of purebred dairy buffaloes in Nueva Ecija, as the National Impact Zone of the PCC’s Carabao Development Program, from 500,000 kg to 2,000,000 kg and of crossbred buffaloes in San Agustin, Isabela from 17,000 kg to 190,000 kg within the program implementation period.

### Technology adoption

According to the research team, among the problems they gathered through survey questionnaires and interview with select dairy farmers in Nueva Ecija and San Agustin were lack of food supply, poor feeding management, dearth of forage

garden and failure to follow standard feeding ration.

“The project will help find solutions to the problems identified. So we potted more than 600,000 pieces of legumes at the PCC@CLSU in Nueva Ecija as forage nursery. We distributed the legume seedlings and grasses to select farmers for homegrown forage production,” Christian Lacanilao, PCC science research assistant and one of the members of the research team, said.

The selection of farmers was based on the current number of animals raised, expanse of area of plantation, their interest and commitment to participate, readiness to utilize

their available resources for the implementation of the project and willingness to record and share relevant data that will be gathered from the project.

Lacanilao added that the kinds and bulks of grasses and legumes that the farmers planted depend on their adaptability to sources of water, whether the lands are rainfed or irrigated, annual fodder requirements, and the standard ration to be followed in order to achieve a year-round consistent feeding of the dairy buffaloes.

A total of 134,420 potted legume seedlings (*Gliricidia sepium*,

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*Indigofera anil* is one of the kinds of potted legume seedlings distributed to farmers for homegrown forage production.

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*Leucaena leucocephala*, *Desmodium rensoni*, and *Indigofera anil*) and 619,000 cuttings of Pakchong were grown and distributed to 60 dairy farmers in rainfed and irrigated areas in Nueva Ecija. In San Agustin, Isabela, 29,250 volumes of legume seedlings were distributed to 33 dairy crossbred owners.

According to Lacanilao, the research team also planted improved grasses (4 hectares) and legumes (6 hectares) in Digdig, Carranglan, Nueva Ecija for commercial seed production. The harvested and packed seeds, and other forms of planting materials like seedlings, cuttings will be commercially available to farmers and can be bought by interested parties at the Dairy Box (a products outlet near the PCC National Headquarters), he said.

### Standard ration

One of the interventions in the project is to transform traditional farmers into science-based farmers by producing and utilizing sustainable supply of homegrown improved grasses and legumes and development and adoption of improved feeding management system.

“With year-round supply of

homegrown forages, the farmers will adopt intensive system of management, thus, the problem of liverfluke infestation among dairy buffaloes can also be addressed,” Dr. Aquino averred.

He added that it is important for the farmers to have a standard ration (grass-legumes-feeds) for their buffaloes. Grasses will serve as rice of buffaloes while the legumes distributed by the research team will serve as their viand.

“We compute the feeding requirements for one year based on the number of animals raised. Usually, we give 70%-80% of grasses and 20%-30% of legumes,” Dr. Aquino explained.

The research team recommended this kind of formulation of feeding or “Total Mixed Ration” per day for dams and lactating buffaloes: 50 kg of grasses, 5 kg of legumes, and 2 kg of concentrates. This kind of formulation, according to the research team, is a complete supplement for energy, protein, vitamins and minerals.

The team is currently conducting different actual feeding trials for growing and lactating buffaloes. The trials were subdivided into two

groups, namely: control (traditional feeding) and treated (formulated ration), which consist of 10 buffaloes each, to determine the effects of the two feeding systems in terms of the average daily gain of growing buffaloes and milk production of lactating buffaloes, respectively.

Other than that, the research team also conducted calf rearing trial using milk substitute to increase calf as well as milk production of the dam. They were also divided into two groups. Group 1 is the control group using the raw milk for feeding while group 2 is the treated group using milk replacer.

“We are expecting that once we established good BCS of animals, they will be receptive in terms of reproduction. This will also result in reduced mortality and enhanced milk production. That’s the role of nutrition in attaining our target of two million liters of milk production,” Dr. Aquino stressed.

### Testimony of farmer-beneficiary

Although the project is still ongoing and is expected to end in February next year, Ferdinand Urbano of “Nag-iisang Masikap Multi-Purpose Cooperative” in General Natividad,



Nueva Ecija, and one of the beneficiaries of the project, already has his initial observations of the good impact of the project.

He observed that after he adopted the “grass-legumes-feeds feeding” technology, his buffalo becomes sexually receptive. One month after its parturition, it already got pregnant.

“I used to feed my buffalo with just grasses because I didn’t have a forage plantation area before. Thus it didn’t get pregnant easily. After I adopted the feeding technology, I observed that when my buffalo gave birth, its BCS remains the same,” he attested.

He added: “Improved feeding management system is of great importance to the milk producing capacity of our buffaloes. I myself witnessed that.”

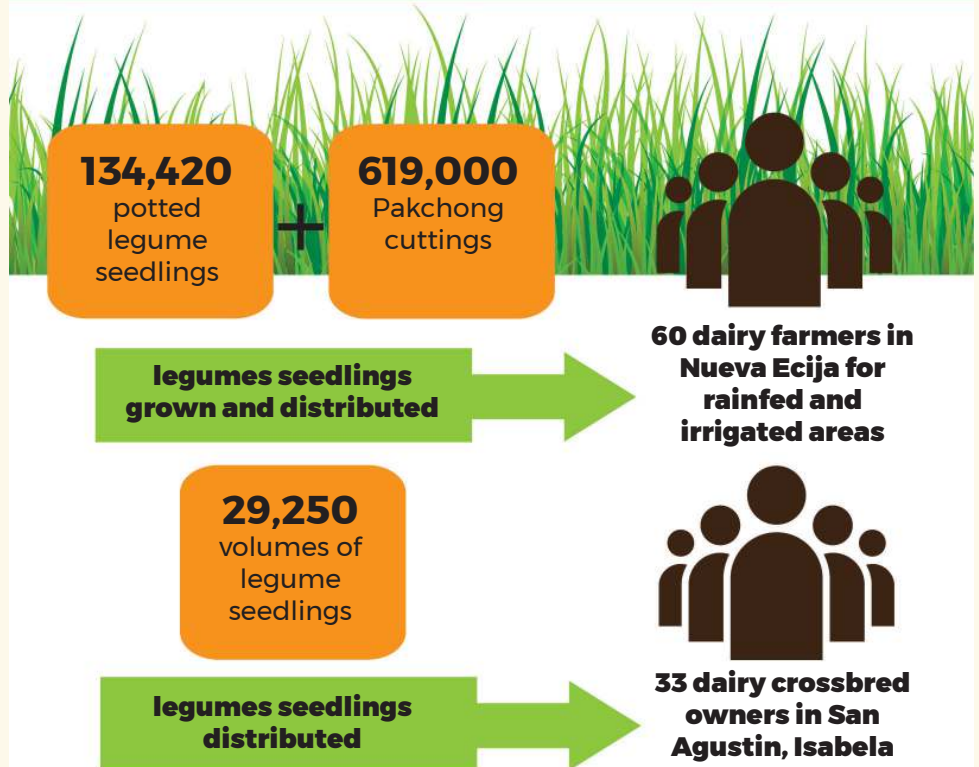
Aside from nutrition and feeding management, other components of the program include “Reproductive Biotechnology”, “Animal Health Management”, “Milk Quality Evaluation and Safety Assurance”, and “Field Application of Science-based Technologies to Increase Milk Production”.

## Development of Feeding Protocols and Practices to Support the Nutritional Requirement of Dairy Buffaloes



### Objective

Increasing milk production of dairy buffaloes, more specifically their average daily milk production from 4.5 kg to 7kg through the establishment of a year-round practical feeding system using nutritionally complete homegrown forages.



### Total Mixed Ration for dams and lactating buffaloes



Recommended formulation of feeding per day

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## White revolution: The farmers' liberation from hopelessness

Their harvests from their rice and vegetable farming have been in an up-and-down state, their margin of profit in a pittance as cost of inputs goes higher, their debts mounting, and their dreams for a better tomorrow unreachable.

Until they were introduced to carabao dairying. And, they speak no more in pain but in blasts of unbounded glee.

One of them, Melchor Correa, 47, is unabashed in speaking about his unshackled bondage to hopelessness. He is a towering figure of the "White Revolution" launched in the province some years back.

He affirms that this revolution, although fraught by sacrifices, determination and dogged commitment, is worth it - for what successful undertakings are not without those virtues?

"Nakabaon po noon talaga sa kawalang pag-asa (Buried in hopelessness then)," Correa says. "It was a hand to mouth existence then and our children seemed destined to follow our paths," he added in Tagalog.

Then he got wind about carabao dairying - a relatively new venture that makes use of the carabao's other breed. Its hope lies on the

oozing milk of this mammal and the concomitant carabao-based enterprises. It was unheard of then, as he only knows the carabao is just an ally in farm works. But, it has its other importance: that of directly providing nutritious food and promise of daily income as oppose to the seasonality of rice and vegetable farming. They were, to his estimation, certainly compelling attractions to engage himself in.

"From one, I now have a herd of 30 dairy carabaos, eight of which are lactating," Correa proudly said.

Prouder was he as he told of his average daily milk yield.

"It is 57 liters," he said. "I sell it at Php54 a liter," he added.

That's a cool daily income of Php3,078, which in his wildest dream then he could not have imagined. "I expect my 16 pregnant dams to give birth during the year," he said. "They will go on yielding milk for ten months," he added.

His gains so far, he disclosed, are windfalls for a former downtrodden farmer: a concrete house built on a purchased lot, one hectare more of a rice field, a lot and a functional corral with milking parlor for his animals, a brand new owner-type jeepney, a second-hand car, two motorcycles, several home appliances, and above all the concretization of a dream to see one of his children go up the stage

to receive a diploma for finishing a college course.

Correa and his achievements were not alone. In his place, 59 others are members of their dairy cooperatives. Last November, his coop was declared the "most outstanding cooperative" during the National Carabao Conference. Per evaluation, the organization's members have 432 dairy carabaos with a combined milk harvest of 145,099.65 liters from 91 lactating carabaos.

That milk yield translated to Php7,254,982.50 gross sales.

Elsewhere in the province, there are 62 such dairy cooperatives. Together, they had a total milk yield last year of 1,235,472.39 which at Php54 per liter translated to a whopping Php66,715,509.06 gross sale.

Added to that volume are the thousand more liters of milk harvested and sold by at least 10,000 farmers who own crossbred carabaos which is the product of the crossbreeding of their native carabaos with the dairy-type water buffalo.

Correa understood that the "white revolution" in the province is corollary to championing the province as the "National Impact Zone" for carabao-based enterprise development. It is designed to change the frontiers in the practice of agriculture that he knows.



Melchor Correa while milking his carabao.



“I and my wife, and sometimes my children when they are not readying for school, rise up at four in the morning to bathe the animal, sterilize the milk can and other milking paraphernalia and I need to squat and gently force the milk to flow from the animal’s teat ‘til it flows no more.”

- Melchor Correa

The movement recalls to mind the “Green Revolution”, which begun in Mexico in the 1940s and spread worldwide in the decades that followed. It changes the way agriculture was conducted in order to overcome mass starvation in some countries due to insufficient food supply.

In a way, the ‘White Revolution’ in Nueva Ecija follows the path of the “Green Revolution”.

### Grit and determination

It was not a “give-me” undertaking that Correa and the rest participated in. It involved education, struggle, commitment, and grit and determination which is not for the faint of heart.

“Kailangang bunuin ng husto para

magtagumpay (It must be fully conquered in order to succeed),” Correa said.

He recalled sitting through for days in a seminar on carabao management. Then on the lectures and demonstrations on feeds and feedings, health care, de-worming, need for artificial insemination, taking care of the mother carabao and its calf, bathing the animal and cleaning the pen, proper milking and milk handling, and many more. Then, too, there was social preparation or the need to cope up with the expected changed life.

He also bound himself in an agreement of putting up a planting area for the napier grass and legumes needed, construction of appropriate corral, and “not to sell or slaughter the animal”, and

return to the government a female offspring for every animal entrusted to him.

He said it must be a family work – of instilling the value of loving and dotting the animal – for it returns what you give, you bestow love and care for it, it gives more milk yield – doing the assigned work no matter how difficult it is or how lowly it seems.

### Sustaining the gains

Correa’s personal saga in joining the “White Revolution” doesn’t end there. He became chair of the 60-member Eastern Primary Multipurpose Cooperative (EMPC).

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He led his coop in putting up a processing plant and an outlet. The coop now produces and sells milk-based products such as pastillas de leche, chocomilk, pasteurized milk, kesong puti, milk-o- gel, iced candy, ice cream, espasol de leche, yogurt, leche flan, and others.

The other cooperatives, too, have put up their own carabao's milk-based enterprises. Like the Catalanacan Multi-purpose Cooperative in the Science City of Muñoz which also produces such products as sweet macapuno, macaroons, leche flan, bibingkang kanin, bibingkang gatas, pandan-

flavoured bibingkang kanin, and espasol de leche. And they are making money.

Nevertheless, viewed in the context of the huge amount used for importation of milk and milk-based products, which in 2017 were valued at Php23 billion, this success in the “White Revolution” in the province needs to be fanned some more. Estimates have it said that for every glass of milk consumed or used in the country, three are sourced from importation and only one locally.

Thus there is need for concerted efforts – by the stakeholders,

that include the public and private sectors, policies, adept planning for the pathways to pursue, implementation, and continuous monitoring and evaluation.

For one, it is suggested that a determined move by the government be undertaken to make the rising generation to be “milk drinkers” like those carried out by other foreign governments. In the long run, it will be for the health benefits of the young especially those suffering from malnutrition. It will also augur for a more robust dairy carabao enterprises in the country.

*Sayang* (what a pity) is the apt word if these gains shown in the “White Revolution” would be frittered away.



PCC's national bull farm has an 'exercise ring' for heavy bulls to allow them to walk in circular motion to lose weight and strengthen their legs.

## Efficient bull farm operations impact on nationwide GIP

By Charlene Corpuz

The Philippine Carabao Center (PCC) thru its national bull farm located in Caranglan, Nueva Ecija exerts efforts to produce quality semen for widescale Artificial Insemination (AI) in support of its Genetic Improvement Program (GIP).

Successful AI and GIP necessitate quality semen, which is anchored on proper donor bull management practices.

According to bull farm manager Hernando Venturina, included in the farm operations are regular vaccinations of bulls, shaving,

disinfection, spraying of vehicles entering the farm for biosecurity, regular monitoring of feeding activities, close monitoring of the bulls' Body Condition Scores or BCS, and their capability to mount (they should not be overweight).

Heavy bulls are provided with 'exercise ring' – a metallic equipment that allows the bulls to walk in circular motion to lose weight and at the same time strengthen their legs. Venturina proudly says that the national bull farm is the only farm in the country that has this kind of facility.

He also added that, "another important factor to pay attention

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to is the monitoring of personnel who takes care of the bulls. This has a very big impact on the farm operations, especially on the bulls' health."

### Bull farm facility and efforts for GIP

In summary, the bull farm serves as the source of superior semen for AI of water buffaloes throughout the country. Currently, it has 67 bulls, 57 of which are enough to supply the needs for frozen semen.

In support of this function, the national bull farm also has a facility called 'semen processing laboratory' where semen are being evaluated after twice-a-week collection from the bulls. It also caters to the needs of semen of the PCC regional centers by way of a systematic semen distribution. The latter is carried out by PCC regional centers with the help of the Local Government Units (LGUs) to eventually reach the Village-based Artificial Insemination Technicians (VBAITs).

As a result, the bull farm creates impact throughout the Philippines by adding value to the carabaos through crossbreeding.

Its impact does not only reach VBAITs and dairy farmers in rural communities, but goes along with a major aim of producing improved breeds of buffaloes in the Philippines.

### Semen processing procedure

The semen collection is done every Tuesdays and Fridays with twice-a-day collection at 9am and at 12pm. Before the semen goes through a processing, it must first undergo an evaluation, either subjectively or



Quality assessment of sperms using Computer Assisted Semen Analyzer.

through a Computer Assisted Semen Analyzer, for sperm movement or motility. The PCC has standards for each evaluation tests.

The semen must have at least 60% motile sperm and a concentration of not less than 500 million sperm cells per millimeter. Even when sperm motility is high, still, a standard concentration is needed to assure the sperm quality suitable for AI. Around 50 million sperms are being put per straw.

The concentration and motility level are two main criteria to look for in assessing the quality of semen.

Processing and freezing of semen with liquid nitrogen in tanks under  $-196^{\circ}\text{C}$  happens for almost 8 hours before it finally moves into final/post-evaluation the next day. The standard postthaw motility at PCC is 30% but most of the processed semen reaches around 40-50%.

All semen that did not pass evaluations and meet the standards

are discarded properly to ensure that semen to be distributed all over the Philippines are of quality and underwent proper processing procedures.

After the semen quality evaluation, it is stored in a semen tank. Inventory takes place during this time, wherein all semen must have a traceability indicating the processing date. So if for example, laboratory personnel received complaints or feedbacks about the semen, they could easily detect why and retrieve details of semen processing, or might as well consider if it is concerning the bull where semen is collected from.

The production of sperm being processed is around 3,000 to 3,500 straws per collection day and these are sent to the PCC national headquarters and regional centers for appropriate distribution to the technicians.

## SUMMER TREAT Veggie ice cream, anyone?

By Anselmo Roque



To beat the heat, customers in Science City of Muñoz splurge on a refreshing frozen dessert laden with nutritious ingredients – carabao’s milk and a choice of malunggay, kalabasa, ampalaya, and carrot flavors. It is handy, too, as it is solidified in a stick. It’s called “Veggie Ice Cream Bar”.

(Malunggay is moringa known for various nutritional and medicinal properties, kalabasa is squash while ampalaya is bitter melon. The squash, and bitter melon, and carrots pack nutritional properties, too.)

It is similar, but not the same, as that of a popsicle which is also popularly called “ice drop” that doesn’t contain an ice cream.

Historical notes say the ice cream

bar on a stick was first developed in the United States in 1920 bearing the name “I-Scream Bar”. It used to be confused with popsicle then.

Several brands of this product have been the favorite of people looking for frozen dessert. But the newly introduced “Veggie Ice cream Bar” here capitalized on fresh carabao’s milk and vegetables as main ingredients of this product.

“It is designed for those who want to be refreshed and at the same time get a nutritious treat,” said Margerie Viloso, plant manager of the Catalanacan Multi-Purpose Cooperative (CAMPC), that produces this “ice cream with a twist”.

It was developed in 2016 and was submitted for sensory evaluation

of the Philippine Carabao Center (PCC). Its mass production was last year when the co-op acquired a machine through a soft loan.

The CAMPC is one of the 53 dairy cooperatives in the province assisted by the PCC through the entrustment of purebred dairy carabaos and in providing technical know how on carabao-based enterprises, one of them milk-based entrepreneurship. Based in Barangay Catalanacan here, the members directly sell their raw milk to the cooperative which then uses it for various milk-based products.

The Philippine Rice Research Institute (PhilRice) which is also based in this city, also provided

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Ice cream bars made of carabao's milk and with a full range of flavors from "malunggay" (moringa), "carrot" to "ampalaya" (bitter melon).

assistance in the development of this novel ice cream product, said CAMPC chairman Arturo de Gracia. The staff of the agency's food chemistry division helped in determining the right mix and make for the product, he added. A stick sells at Php20 (non-coated bar) and Php25 (chocolate coated bar) at the "Dairy Box," the co-op's products' outlet near the "Milka Krem Processing Plant and Outlet of the PCC along the Maharlika Highway here (KM 151).

The concept of producing ice cream bar laden with different choices of vegetables was started during the time of the co-op's former chair Leoncio Callo. It is an addition to the array of other milk-based products of the co-op like

sweet macapuno, macaroons, leche flan, bibingka kanin, bibingka gatas, pandan-flavoured bibingka kanin, and its best-selling espasol de leche.

In making the Veggie Ice Cream Bar, about 2.25 liters of milk is used per batch of 300. The vegetables are cooked then blended and mixed with the milk and other minor ingredients. Then the machine finishes the job which comes out with a stick similar to that being used by doctors as tongue depressor.

The co-op employs three workers specifically to produce this product.

Among the four variants, the malunggay-flavored ice cream bar is the bestseller, Viloso said.

"It is the milk ingredient that crosses the taste of the vegetable. The excellent taste of the carabao's milk makes the product very delicious," she said. "Young and old alike are coming to our outlet looking for this product especially now that the heat factor here is almost intolerable," she added.

Last March, the outlet's sale of Veggie Ice Cream Bar grossed Php14,835 because of only limited production.

But the demand for it is expected to increase some more this May, which is traditionally the hottest month of the year in this province.



Magbabago na ang kwento ng buhay mo! Handa ka na ba? Maging bahagi ng kampanya sa:



**Wastong Pag-aalaga ng Kalabaw**



**Wastong Pagpapalahi at Pagpaparami ng Kalabaw**



**Mga Kabuhayang Maaaring Pagkakitaan sa Pag-aalaga at Paggagatas ng Kalabaw**

*Panay Island | Zamboanga Peninsula | Bukidnon | South Cotabato*

- July 2-4**                      Launching of Comdev Campaign in Panay Island
- July 3-6**                      2nd Session of Dairy Box Experiential Business Learning
- July 4-6**                      R4D Annual In-House Review 2018
- July 9-12**                     Launching of ComDev Campaign in Polanco, Zamboanga del Norte and Ipil, Zamboanga Sibugay
- July 16-20**                    66th PMC Meeting
- August 1-3**                    Enhancement Sessions on IMS for Internal Auditors
- August 7-10**                   Launching of ComDev campaign in Bukidnon and South Cotabato
- August 20-24**                2nd Batch Internal Audit
- September 10-21**            Audit of PCC's Manpower Related Strategies



Department of Agriculture  
**PHILIPPINE CARABAO CENTER**  
CERTIFIED: ISO 9001 | ISO 14001 | OHSAS 18001

# PCC NETWORK

**PCC has 12 regional centers strategically located nationwide: five centers in Luzon, four centers in the Visayas and three centers in Mindanao**

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