



# PHILIPPINE CARABAO CENTER

# Roundup

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**PHILIPPINE CARABAO CENTER**  
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## Unspeaking 'Leonora' gets accolade in PCC National Carabao Conference

BY ANSELMO S. ROQUE



She was 30 kilometers away, unaware of the explosion of accolades by at least 500 farmers and other stakeholders gathered at the Philippine Carabao Center National Headquarters and Gene Pool in the Science City of Muñoz, Nueva Ecija on November 27.

But thru photos and written description about her, the audience got to regard her, who answers by the name "Leonora", very highly.

She is a dairy buffalo of Brazilian breed, with milk yields of up to 18 liters a day or a total of 3,364.5 liters in a ten-month lactation period, and provided

"Leonora", the name (meaning Light in many languages) Marquez gave her in appreciation of her "beauty" and "domesticity", gave birth to a female calf on November 30, 2016 in her fourth calving. Even in her dry months of lactation, her milk yield never went below 10 liters daily.

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an income of Php149,670 to her owner Rogelio Marquez, 44, of San Andres 1, Quezon, Nueva Ecija.

“Leonora”, the name (meaning Light in many languages) Marquez gave her in appreciation of her “beauty” and “domesticity”, gave birth to a female calf on November 30, 2016 in her fourth calving. Even in her dry months of lactation, her milk yield never went below 10 liters daily.

The ex-farm price of carabao’s milk in Marquez’ area is Php45 per liter. Elsewhere, though, it goes up to Php60 to Php80 per liter in raw form.

Aside from her milk yield, “Leonora” was judged for her body conformation (symmetry, size and shape) which is ideal for a milking carabao.

Marquez received from DA assistant secretary Enrico Garzon Jr. and Dr. Arnel del Barrio, executive director of the Philippine Carabao Center (PCC), the “Gintong Kalabaw Cup” and a cash award.

He is set, with his cash award, to improve further his carabao management practices, to retain in temporary keeping the trophy.


Del Barrio said the giving of award for the outstanding carabao, alongside other awards for carabao dairying, was to highlight the achievements in carabao development in the 3rd National Carabao Conference of PCC (Nov. 27-28). The conference provided avenues for exchange of ideas, information, practices and technologies in further improving the carabao development program, particularly the carabao-based industry, in the country.

The “Outstanding Dairy Buffalo Farmer” awardees were Henry Orbino of Calinog, Iloilo (smallhold category), Victoriano Dumale of Licaong, Science City of Muñoz (family module category), and Samuel Mercader of San Jose City (semi-commercial category).

Meanwhile, Emily Velasco of Villa Josen, San Jose City was awarded the “Modelong Juana sa Kalabawan” (model woman in carabao dairying) while Patrick Pascual of Sto. Domingo, Nueva Ecija was awarded the “Modelong

Kabataan sa Kalabawan” honors. Finally, for the third consecutive time, the Eastern Primary Multi-Purpose Cooperative of San Jose City was bestowed the “best dairy cooperative” title.

The Eastern Primary Multi-Purpose Cooperative has 432 dairy carabaos in the hands of 60 members and had combined milk harvest of 145,099.65 liters from 91 lactating carabaos in one year (Php7,254,982.50 at Php50 per liter). It also runs its own milk processing plant and marketing outlet.

Dumale and his family earned Php70,000 a month from their five dairy carabaos while Orbino grossed Php354,314.80 from the milk yield of his two carabaos. Mercader, who started raising a dairy carabao in 2000, has 32 carabaos of which 14 are mature females, one a senior bull, four are heifer, and nine are calves. He earned more than enough to finance the education of four daughters, two of whom had graduated from their respective collegiate courses, acquired agricultural lands, house and lot, vehicles, farm equipment, and appliances. 

# Farmers from Isabela, with assistance from PCC, set to sire first-ever Phl dairy buffalo calves

BY MERVALYN O. TOMAS



One of the farmers in San Agustin who received an almost purebred bull, which will be used to sire the first-ever Philippine dairy buffaloes.

**Three carabao farmers in San Agustin, Isabela were entrusted with buffalo bulls that will be used for natural mating of crossbred female carabaos to sire the first-ever Philippine Dairy Buffalo.**

The recipients were Rodol Bartolome of barangay Salay, Joel Vallejos of San Antonio, and Reynaldo Tapaoan of Masaya Sur, according to Dr. Annabelle Sarabia, Chief of the PCC’s Research and Development Division.

The bulls, with 93.75 % riverine blood and 6.25% swamp-type(native) blood of buffaloes, were given to the recipient-farmers during the town’s celebration of its 13th Nuang Festival last September 28. The entrustment of the animals was coursed thru the PCC at Cagayan State University (PCC@CSU).

According to Dr. Ester Flores, National Genetic Improvement Program Coordinator and geneticist of PCC, the bulls are products of breeding efforts done by researchers of the PCC at the University of the Philippines-Los Baños (PCC@UPLB) under her guidance.

She added that they were able to come up with this kind of bull by continuous backcrossing of female crossbred buffalo with purebred riverine bull.

“If these carefully bred bulls are mated with [breedable] crossbred female buffaloes, their offspring will be the first batch of Philippine Dairy Buffaloes,” Franklin Rellin, director of PCC@CSU, said.

Flores explained that they may be called Pinoy Buffaloes or other name that may be selected by higher authorities.

**Significance explained**

Flores explained that one of the goals of PCC through its Carabao Development Program (CDP) is to improve milk production potential of swamp buffaloes through crossbreeding with the purebred riverine buffaloes, which are better milk producers. This will enhance the swamp buffalo’s ability to produce milk, according to her.

The native buffalo can only produce an average of one to two liters of milk a day.

The PCC, in keeping with the goal of the CDP, took initiatives to undertake a crossbreeding program

using imported purebred buffaloes and native buffaloes in order to enhance the latter’s offspring’s ability to produce milk. Earlier, it carried out crossbreeding activities using imported dairy buffalo semen but it proved very expensive.

“The bulls that were entrusted recently to the San Agustin farmers have high percentage of riverine blood. Since they still have native blood, they can adapt to the country’s tropical climate compared to the imported bulls which needed proper acclimatization protocols,” Flores explained.

**The process**

When the program started years ago, the process used was inter-se mating (among or between themselves). In other words, the F1 females are mated with F1 males of the same breed. The program aims to look at the performance of the different filial generations (F1, F2, etc.), according to Flores.

She clarified that the result of inter-se mating is different from the result of backcrossing.

She explained that the end-result of inter-se mating is a crossbred buffalo with 50% purebred blood and 50% native blood, while in backcrossing, the riverine blood increases in each generation as the process continues.

To illustrate, Flores explained that in inter-se mating, a purebred bull is mated with a native cow to produce a crossbred cow, the resulting offspring is the first filial generation (F1) with 50% riverine blood and 50% swamp blood. To achieve the second filial generation (F2), an F1 cow is mated with an F1 bull. Their offspring will still be 50% riverine and 50% swamp. Then, to achieve the third filial



Rogelio Marquez (fourth from left) receives a cash prize of Php30,000 for his outstanding buffalo.

## Farmers... ▶ FROM PAGE 3

generation (F3), an F2 cow is mated with an F2 bull that results in production of offspring which will again have 50% riverine and 50% swamp blood.

This still would be the case even as this process continues to the succeeding generations.

### Backcrossing

In the backcrossing method, the F1 (50% swamp, 50% riverine) cow will be mated with a riverine bull. Their offspring (F2), will have 25% swamp blood and 75% riverine blood and when mated with a riverine bull, the F3 offspring will have 87.5% riverine blood and 12.5% swamp blood. The offspring of the F3 cow mated with a riverine bull is F4 with 93.75% riverine and 6.25% swamp blood which is almost a purebred, according to Flores.

The F4 bulls can then be used for breeding for the production of the Philippine dairy buffalo, she added.

Flores also said that the reason why it is not advisable to use F1, F2, and F3 bulls for breeding is because there is a high probability of them having offspring with lower fertility.

"Purebred and native buffaloes have different chromosome numbers. Native buffaloes have 48 chromosomes, while purebred buffaloes have 50 chromosomes. Therefore, their chromosomes are not aligned. In F1, there will be fusing of chromosomes. This will again break-up for the subsequent F2, thus, the offspring will have high chances of having abnormal sperms or low fertility rate," Flores said.

She said this is the reason why continuous backcrossing is needed, she added.

"In the process, some of the offsprings will look more native than purebred, while some will look

more purebred than native," she explained.

She elaborated that the good thing in backcrossing is that the offsprings, as far as observable characteristics are concerned, become more uniform in each generation as the process continues.

In F4, almost all offsprings will look more purebred, according to her.

### Rigorous choosing of cow

More than just improving the bloodline until the fourth filial generation, the cows used in breeding were also carefully selected. The PCC@UPLB researchers selected crossbred cows that have high milk production performance to be used in breeding.

"These (three bulls entrusted to farmers) are not just ordinary bulls with 93.75% riverine blood. They are products of continuous backcrossing and selection of cows that are really good milk producers. Their daughters will be included in the genetic evaluation, the process that purebred cows undergo, having their own estimated breeding values," Flores said.

"With all the rigorous processes done to come up with these bulls, they are ready to be used for breeding," she added.

The farmers in San Agustin who were entrusted with bulls would be given technical assistance in using the animals for breeding, Flores and Rellin said. PCC will record the bulls' performance, they added.

In a response during the entrustment program, Virginia Lamug, San Agustin municipal agriculturist, expressed her gratitude to the agency for the good luck accorded their municipality for entrusting the bulls that will hopefully result in the birth of a Philippine dairy buffalo.

# Kneeling carabao wows crowd in 1st-Farmers', Fisherfolk's Day in Anda

BY MA. CECILIA C. IRANG

**They cheered, they clapped, they wolf-whistled as Luisa showed off her special talent. The event was the first ever farmers' and fisherfolk's day held in Anda, Pangasinan last December 14.**

Upon signals from her caretaker, Willy Castro, 64, of brgy. Macaleeng, she knelt while her back feet stumped the ground in cadence with the beat of the background music.

Not only that, she posed with gusto like a pro in front of the camera.

Luisa is a native carabao.

"It takes a lot of patience to teach a carabao how to kneel, lie down, and sit. The caretaker must be passionate in teaching and goading for his animal to do those things," Willy said in Filipino.

Willy named the carabao "Luisa", after his granddaughter, because of her docility and domesticity—the same demeanor his granddaughter manifests.

According to him, Luisa was only four years old when he started to teach her how to kneel and lie down. He has been taking care of Luisa for 14 years now, which already had six parities.

"I kept on asking and telling her to lie down by slowly pulling and moving her leash. She learned in two days how to lie down and another two days how to kneel," he shared.

Willy is fond of teaching animals and treat them like growing up kids. He said that he even taught his goat, dog, and cow how to pull



"Luisa", while showing off her kneeling ability.

a cart.

Luisa is owned by Milagros Arig. She herself was in awe as she didn't expect that her carabao could show off such talents.

"When the emcee said it's time for the talent show of carabaos, I was shocked and at the same time amazed when Luisa entered and began flaunting her kneeling ability and beauty by striking a pose in front of the camera. That was the first time I saw her doing those in front of many people," Milagros said.

No other carabao in the event dared to compete with Luisa in the talent show.

The event, dubbed as the "Awron Magtatalon Tan Mangnguna 2017 (Day of Farmers and Fisherfolk)", was a day of thanksgiving for

the bounties of the land and sea. It featured varied abundances of Anda, Pangasinan such as vegetables, fish, rice, carabaos and others.

Other activities of the event which starred the carabaos included contests for carabao painting, best-dressed carabao, best in talent, biggest, and heaviest carabao based on their body conformation. Eight competed in the events.

Luisa, obviously, was the runaway winner in the "best in talent" award category and second place for the best-dressed carabao and fourth for best painted carabao categories.

"Marian", a crossbred carabao owned by Jimy Cacho of brgy. Sablig, won the best-dressed award. Meanwhile, a crossbred carabao owned by Renato Celso

and tended by Bartolome Cacho of brgy. Macando-candong won several awards such as in the carabao painting, biggest, and heaviest female carabao competition. For the biggest and heaviest male carabao, a crossbred owned by Ernesto Carlit and tended by Boy Caniedo won the award.

Crossbreds in Anda are being used mainly for draft purposes but the municipality is also supportive of the dairy program of the Philippine Carabao Center at Don Mariano Marcos Memorial State University (PCC@DMMMSU).

Mayor Aldrin Cerdan, on the other hand, underscored the executive order declaring the second week of December of every year as farmers' and fishermen's day or week.

"It is indeed a must that we express our gratitude to our farmers and fishermen who work hard just to produce our staple food. If not because of them, we wouldn't be able to eat nutritious meals. When it comes to our livestock and farming industry, as a veterinarian by profession, I fully support the farmers and raisers," Mayor Cerdan said.

Meanwhile, Municipal Agriculturist Elizabeth Tomas bared noteworthy plans after this event.

"This event will be implemented yearly. The Sangguniang Bayan is already drafting an ordinance on this to give emphasis to the carabao industry because we need to maintain and improve our carabao population," she said.

She added that through this event, they expect to appreciate more the carabao as an essential part of the farming industry in Anda.

"The farmers will be more open to the initiatives of PCC@DMMMSU and LGU when it comes to carabao upgrading program. Rest assured that our LGU will be supportive of any carabao-related activities," she said. **R**



## PCC researchers haul awards in PSAS 54th scientific seminar and annual convention

BY LILIAN P. VILLAMOR

The Philippine Carabao Center (PCC) romped off various awards during the Philippine Society of Animal Science (PSAS) 54th Scientific Seminar and Annual Convention held at Bayfront Hotel, Cebu City last October 18-21.

Dr. Arnel N. del Barrio, PCC-Executive Director, received the 2017 PSAS Distinguished Fellow, which is the highest award being bestowed by the society, while Dr. Gundolino P. Bajenting of the PCC at Ubay Stock Farm was handed the 2017 PSAS-Advira Trading Corporation award as an Outstanding Farm Manager. Other PCC personnel were bestowed top awards during the event for their oral and scientific poster presentations.

The "Best Scientific Oral Presentation for the Breeding and Genetics" category was given to Alexander M. Paraguas with the topic "Morphological and phylogenetic analysis as tools for conservation and management of swamp buffaloes (*Bubalus bubalis*) in Calayan Island". The other authors of the study were Therese Patricka C. Cailipan, Ester B. Flores, and Lilian P. Villamor.

The "Best Scientific Oral Presentation for the Biotechnology-Reproduction category" was given to Excel Rio S. Maylem for the study "Thermotolerance identification in water buffalo using heat shock

protein 70 (HSP70) and its effect to semen quality in varying environmental conditions". Her co-authors were Shanemae M. Rivera, Eufrocina P. Atabay, Edwin C. Atabay, and Emma V. Venturina. The "Best Scientific Poster Presentation" was awarded to Alfred D. Sayson, Eufrocina P. Atabay, Ma. Elizabeth C. Leoveras, Edwin C. Atabay, and Excel Rio S. Maylem for their poster titled "Defining the culture medium for the production of cattle embryos (*Bos taurus*) for cryopreservation by vitrication method".

In the election for the governing council members and PSAS chapter officers for 2018, PCC's Dr. Ester B. Flores of the Animal Genomics and Bioinformatics Unit was elected vice president (and automatic incoming president after next year's convention).

The participation of 82 PCC researchers during the PSAS provided them opportunities to present the current researches on buffaloes and other livestock and paved the way to inspire them to fulfill the vision of the agency to be the premiere livestock researcher institute in the country.

The theme of the scientific seminar and convention was "Animal Productivity and Food Safety: Enhancing Safe and Healthy Animal-Based Products".



# Int'l confab underscores challenges, opportunities in carabao-based enterprise development

BY MERVALYN O. TOMAS

Challenges faced by the public and private sectors engaged in enterprises anchored on the carabao industry in some Asian countries, including the Philippines, and opportunities out of these challenges were discussed in an International Conference on Carabao-based Enterprise Development (CBED) held at the Philippine Carabao Center (PCC) National Headquarters and Gene Pool in the Science City of Muñoz, Nueva Ecija on October 26-27.

"The objectives of this event are to share scientific and technological knowledge and best practices, and to explore beneficial partnerships and collaborations," Dr. Arnel del Barrio, executive director of the PCC, said.

## Philippines

Dr. Flordeliza Lantican, Project Leader of the CBED Value Chain Analysis (VCA) in the Philippines and one of the plenary speakers, suggested [basing on the VCA] that there is a need for strategic partnerships between government and private agencies to hasten the development of the industry.

"You [PCC] already have strong cooperatives. Now, you need to partner with DTI (Department of Trade and Industry) and DOST (Department of Science and Technology) to improve the quality of your product if you want to penetrate the market," she said.

She added that there is a need to increase the knowledge of the cooperatives in marketing quality milk.



Senator Cynthia Villar, in her keynote speech read by her representative and Chief-of-Staff, Atty. Rheagee Tamaña, also emphasized the need to train smallholder farmers in agribusiness and entrepreneurship.

On the other hand, del Barrio emphasized the need to partner with other countries as well, because according to him, "it is difficult to develop the [carabao] industry without [foreign and local] partners."

"The road to dairy development is rough, but with the partners from India, Laos, Thailand and the Philippines, it will become easier for us," he said.

He added that since India is the largest milk-producing country in the world, the Philippines needs their knowledge and expertise.

## India's dairy industry

Three of the ten speakers in the conference are from India. They are Mr. Sriram Singh, executive director of the National Dairy Development Board (NDDB) Dairy Services; Dr. Avnish Kumar, Principal Scientist of the National Bureau of Animal Genetic Resources (NBAGR); and Mr. Sagi Ram Mohan Rao, Chief Operations Officer of the Mother

Dairy Fruit and Vegetable Pvt., Ltd.

Singh tackled the key strategies employed by the NDDB to increase their country's milk production. He shared that India's production was scant during the 1950's to 1960's. It gradually increased in the 1970's to 1990's; and it skyrocketed in 2015-2016.

He shared that "linking the production center to the market in an efficient manner, setting up facilities in strategic locations, year round remunerative market for milk producers, timely and reliable services (e.g. animal feedstuff, Artificial Insemination facility, animal health care), creating institutions owned, managed, and controlled by the producers themselves (e.g. cooperatives)," helped in the rapid development of the industry in India.

Dr. Kumar, on the other hand, discussed Information Technology application in animal production, specifically in animal genetic resources inventory, data processing system for field survey of breeds, databases on animal genetic resources, and use of geographic information system.

He said that the benefits from the animal recording system are

decision support for efficient farm management, genetic improvement of animals, disease management, among others.

Susie Martin, CEO and Director of Sales and Marketing of Laos Buffalo Dairy, and Charinee Chaiyochlarb of Murrah Farm in Thailand, also shared their respective experiences in marketing carabao milk products, along with problems encountered and strategies employed.

Other speakers are Dr. Libertado C. Cruz, former PCC Executive Director and Technical Adviser discussing the Philippine experience in CBED; Mr. Juan Miguel Mercado, owner of Mr. Moo's Milk Planet Co., and Mr. Danilo V. Fausto, owner of DVF Dairy Farm, Inc., for the Philippine private sector perspective; and Dr. Eric P. Palacpac, chief of PCC's Knowledge Management Division, who proposed a Science of Delivery model or framework for a more effective extension system in CBED.

The two-day event was organized by SEARCA in partnership with PCC, and was attended by about 200 farmers, entrepreneurs, government agencies, researchers, and scientists. R

# Value chain importance in carabao industry cited in PCC's 3rd National Carabao Conference

BY MA. CECILIA C. IRANG

Value chain analysis (VCA) of the carabao industry is crucial to understand relationships, different key players, markets, opportunities, as well as the constraints in the production and competitiveness of small-hold farmers.

This was emphasized by Dr. Arnel N. Del Barrio, executive director of the Philippine Carabao Center (PCC), in his industry report during the Third National Carabao Conference held last November 27-28. The confab was held at the national headquarters of PCC in the Science City of Muñoz, Nueva Ecija.

He said that in the past two years, the value chain of carabao and carabao-based products was analyzed with assistance from the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA).

"Sometimes, we only focus on producing milk. We don't usually pay much attention on the consumers, suppliers of feeds and antibiotics and drugs. But in the value chain, we are all considered important players and contributors to the value of products, thus, we need to converge and reconcile," he elucidated.

He added that the value chain in the carabao and carabao-based products encompasses different phases such as production, processing, and delivery thru market-focused collaboration among different stakeholders who produce and market value-added products.

He said that those involved are the players in input provision, carabao growing or milk production, collection or storage, processing, and trading or marketing.



**PCC Executive Director Dr. Arnel N. Del Barrio underscores the importance of Value Chain in his industry report during the 3rd National Carabao Conference.**

"Through the analyzed value chain, we can determine those areas that need further investments, funds, and specific measures for improvement. The ultimate goal is to increase the income of the carabao farmers and enhance the growth of the dairy and meat industries," he averred.

Other highlights of the PCC's accomplishments, according to Dr. del Barrio, included the creation of partnerships with government and non-government organizations/agencies to address poverty of the farmers and malnutrition of the children, creation of sustainable markets, provision of credit window for carabao-based enterprise development (CBED), institutionalization of training program thru the Technical Education and Skills Development Authority (TESDA), launching of International Confab on CBED, and a number of promotional and educational strategies to promote the agency's program and services.

"As of now, we've already launched three Dairy Boxes, one in Luzon and two in Visayas. If God will bless us, we target to launch and open 21 Dairy Boxes next year to create sustainable markets of our products. If farmers have a ready

market, they will be inspired and motivated to milk their carabaos and contribute more to the dairy industry," Dr. del Barrio said.

The event was attended by at least 500 farmers and other stakeholders in the carabao-based industry.

Also part of the event was the convergence meeting of partner-stakeholders in the industry, and simultaneous signing of the partners, farmers and other stakeholders on a commitment board to support the carabao industry.

During the opening program, the mechanics of the launching of the "Gintong Kalabaw Cup" were presented via an infographic video presentation.

The winners of the search for "Gintong Kalabaw Cup", "Modelong Juana sa Kalabawan", "Modelong Kabataan sa Kalabawan", "Outstanding Dairy Buffalo", "Best Dairy Cooperative Category", and "Outstanding Dairy Buffalo Farmers" for the smallhold, family module, and semi-commercial categories, were eventually announced and appropriately honored on the first day of the event. **R**