

2023 ANNUAL REPORT

DEPARTMENT OF AGRICULTURE
PHILIPPINE CARABAO CENTER



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EDITORIAL CONSULTANT **ERIC P. PALACPAC**
EDITOR **ROWENA S. GALANG**
LAYOUT & DESIGN **FRANCE JOSEPH O. PASCUAL**
MANAGING EDITOR **RONALINE C. CANUTE**



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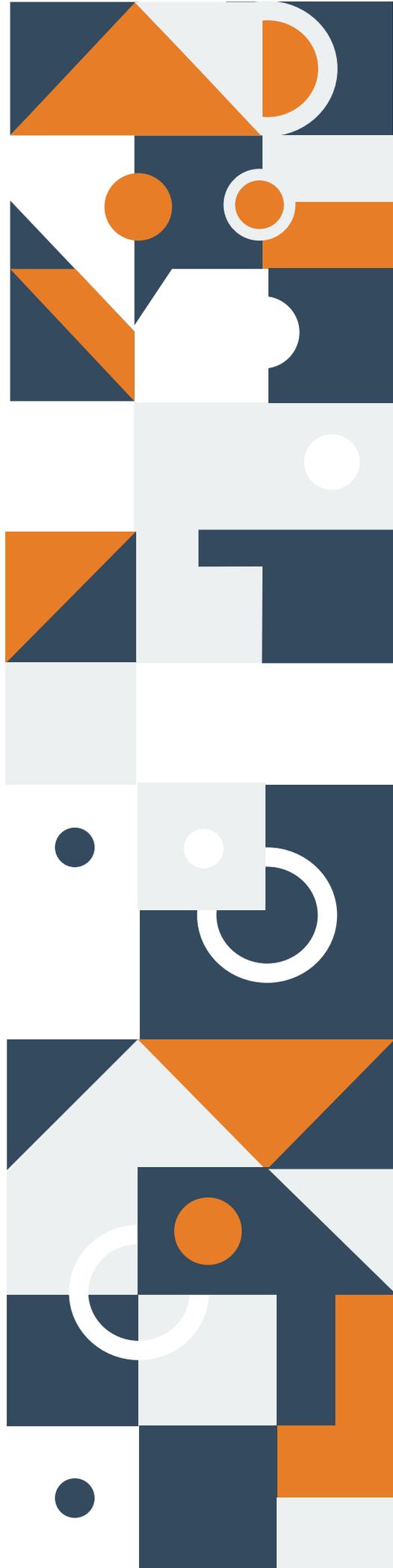




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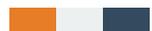


ABOUT US

The DA-Philippine Carabao Center (DA-PCC) operates as an attached agency of the Department of Agriculture (DA). DA-PCC is mandated under Republic Act No. 7307 or the Philippine Carabao Act of 1992 to conserve, propagate and promote the carabao as a source of draft animal power, meat, milk and hide to benefit the rural farmers.

Historically, DA-PCC was an offshoot of the significant gains achieved from the United Nations Development Programme/Food and Agriculture Organization (UNDP/FAO)-assisted project called “Strengthening of the Philippine Carabao Research and Development Center (PCRDC) under the umbrella of the Department of Science and Technology–Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (DOST-PCARRD) and which was carried out in two phases covering the period 1982–1992.

Per DA Administrative Order No. 9, series of 2008, DA-PCC likewise is the lead Institution in livestock biotechnology research and development.



VISION

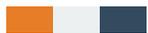
A premier research and development institution propelling sustainable growth of the livestock industry.



MISSION

Improve the general well-being and competitiveness of the livestock industry stakeholders through:

- ▶ Animal biotechnology and technology development
- ▶ Technology dissemination and knowledge resource management
- ▶ Active private sector participation
- ▶ Development of livestock enterprises
- ▶ Policy reforms to sustain development of livestock enterprises



POWERS & FUNCTIONS

RA 7307, which was signed on March 27, 1992 and operationalized on April 1, 1993, provides that DA-PCC's powers and functions are:

- ▶ Conserve, propagate and promote the Philippine carabao as a source of draft animal power, meat, milk and hide;
- ▶ Enable the farmers, particularly smallholder-farmers and CARP beneficiaries, to avail themselves of good quality carabao stocks at all times and at reasonable prices through an organized program of production, breeding, training, and dispersal;
- ▶ Undertake training programs for farmers, particularly smallholder farmers and CARP beneficiaries, designed to transfer technology on the proper care and reproduction of the carabao and the processing of its meat and milk;
- ▶ Encourage backyard dairy development in rural areas by raising carabaos so as to meet the nutritional needs of the smallholder farmers and their families and reduce dependence on imported milk by-products;
- ▶ Undertake research activities in all disciplines that lead to the improvement of the overall productivity of the Philippine carabao;
- ▶ Increase the existing annual population growth of the Philippine carabao to keep pace with human population growth; and
- ▶ Enter into memoranda of agreement and receive donations through the Department of Agriculture from local and foreign sources. Upon the recommendation of the DA-PCC Advisory Board, the individual carabao centers may enter into agreements directly with funding agencies through their respective board of regents or head of agency.



GENETIC IMPROVEMENT



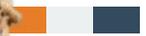
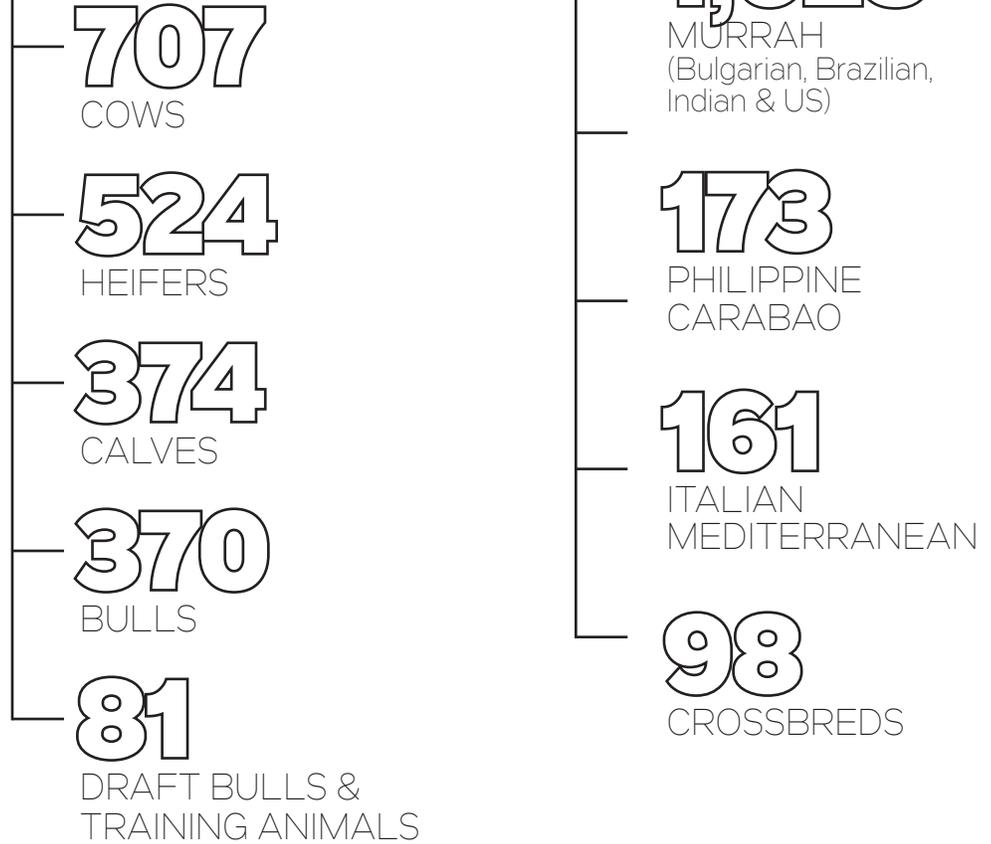
**INSTITUTIONAL
HERD**



**2023
INVENTORY**

Year-end inventory of the water buffaloes (Philippine Carabao, Murrah (dairy) buffaloes and crossbreds) in the **12 network centers and the national gene pool.**

TOTAL HEAD
2,057



CALF PRODUCTION

402 CALVES BORN



MILK PRODUCTION

LACTATING COWS 344

TOTAL MILK PRODUCED 522,275.09 kg

4.22 kg AVERAGE MILK YIELD PER COW



MEAT PRODUCTION

TOTAL SALES OF MEAT AND LIVE ANIMALS FROM DA-PCC INSTITUTIONAL BUSINESS MODULES

₱10,674,745.57



FORAGE PRODUCTION

**BULL FARM,
SEMEN
PRODUCTION &
DISTRIBUTION**

995 ha

MAINTAINED FORAGE AREA
IN THE REGIONAL CENTERS

11.6 ha

**NEWLY DEVELOPED
FORAGE AREA**

DA-PCC
at CLSU in
Carranglan,
Digidig,
Nueva Ecija



BULL FARMS



DA-PCC
at UPLB in
Los Baños,
Laguna

42 **52** 10

TOTAL ACTIVE HEAD OF DONOR BULLS
FOR FROZEN SEMEN PRODUCTION

193,208

236,985

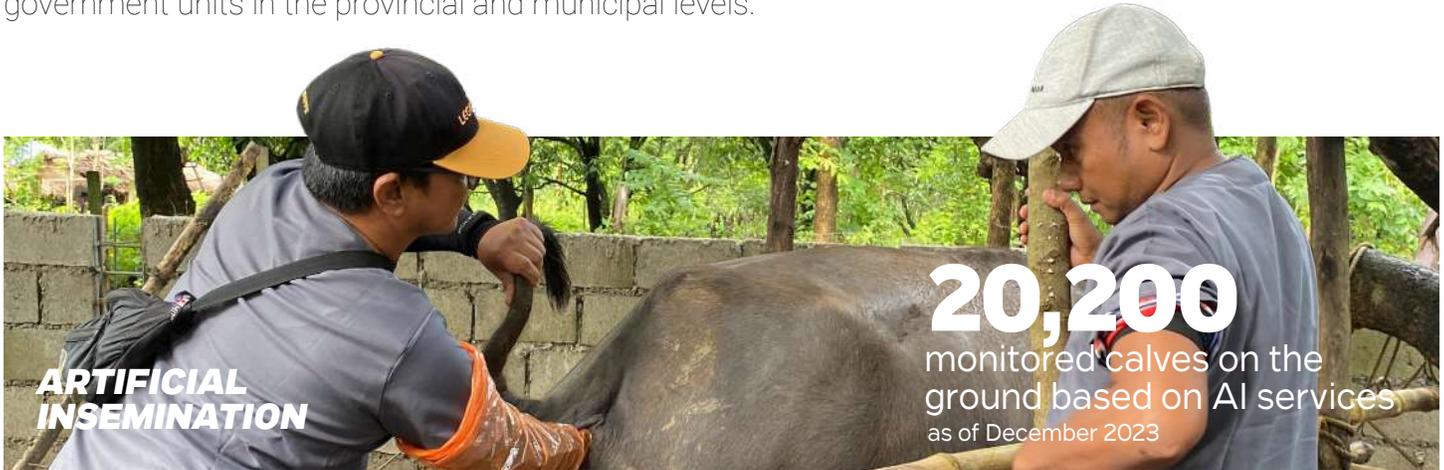
43,777

TOTAL DOSES
OF FROZEN SEMEN

176,142

Total doses distributed to the DA-PCC regional centers and other partner agencies and individuals **for the conduct of nationwide AI for water buffaloes**. The remaining doses were stored for **reference and/or future research work**.

To maintain the quality and viability of the frozen semen for AI, DA-PCC also distributed a total of **349 dewars of liquid nitrogen** to its regional centers and partner institutions nationwide under the Carabao Crossbreeding Program, the aim of which is to develop a Philippine dairy breed adaptable under the Philippine conditions. Crossbred production was done in two ways: (a) *artificial insemination (AI)*, and (b) *natural mating through the Bull Entrustment Program*. This is implemented in partnership with the local government units in the provincial and municipal levels.



The program provided **80,763 AI Services**, **24,346** of which was conducted by local government unit's AI technicians while **45,269** was contributed by village-based AI technicians (VBAIT) and the other **11,974** was accomplished by the PCC AI Technician. 545 clients were served across **77 provinces**, **928 municipalities** and **8,251 barangays**.

These accomplishments were made possible with the effort of the **local government AI technicians** (n=562), **village-based AI technicians** (n=377), and **DA-PCC AI technicians** (n=98). The Agency conducted **10 basic AI trainings** that resulted in **123 new AI technicians** adding to the pool of trained AI technicians in the country and **1 advanced training** which upskilled the skills of **10 AI technicians**.



In support of the carabao upgrading program and for areas where AI services were not accessible, farmers availed of the bull entrustment program through the initiative of their respective LGUs.

Consequently, there are **652 Murrah breeding bulls** in the villages around the country. Out of these bulls, **427 are in active service**, registering a total of **4,263 services** and benefitting more than 2,633 carabao raisers including bull handlers.

CARABAO-BASED ENTERPRISE DEVELOPMENT



**REGULAR
CBED
PROGRAM**



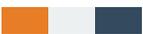
**NEWLY CREATED
CARABAO-BASED MODULES**

In order to expand the development reach of its carabao-based enterprises, the DA-PCC entered into a partnership with the local government and its respective cooperatives and farmer associations to mobilize and help more carabao owners, particularly owners of crossbreds produced out of AI and bull entrustment programs in the regional impact zones. The CBED aims to create more income generating opportunities for smallholder carabao raisers.



**CARABAO-BASED
MODULES**

There were **146 cooperatives/associations** of **8,620 carabao owners** engaged in carabao-based enterprises.



**INFUSION OF
PUREBRED BUFFALOES**

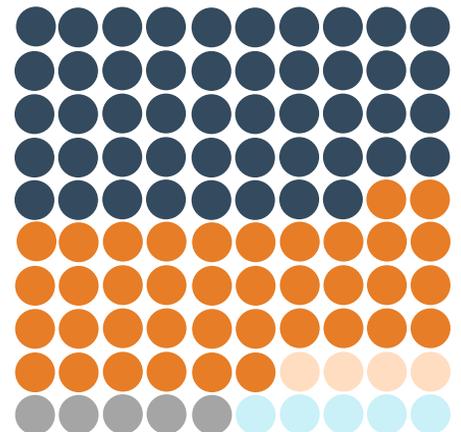
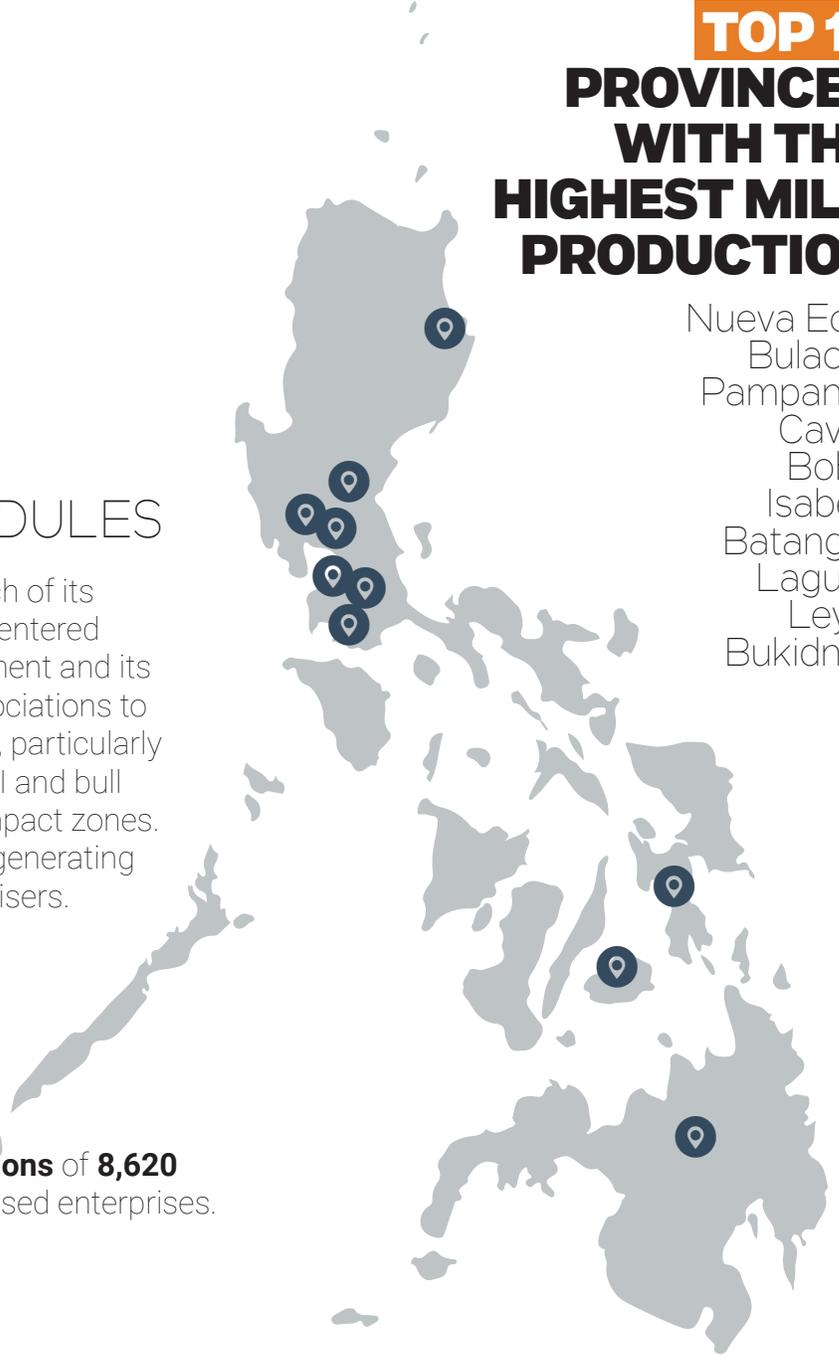
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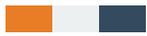
- **NIZ (48)**
- **DA-PCC at CLSU (38)**
- **DA-PCC at DMMMSU (5)**
- **DA-PCC at MMSU (5)**
- **DA-PCC at UPLB (4)**

**FEMALE PUREBRED DAIRY BUFFALOES
ENTRUSTED TO SELECT FARMER
TRUSTEES, DBMF OPERATORS & INSTITUTION**

**TOP 10
PROVINCES
WITH THE
HIGHEST MILK
PRODUCTION**

- Nueva Ecija
- Bulacan
- Pampanga
- Cavite
- Bohol
- Isabela
- Batangas
- Laguna
- Leyte
- Bukidnon





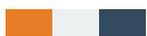
VOLUME AND VALUE OF BUFFALO-DERIVED PRODUCTS TRADED

TOTAL VOLUME OF REGISTERED BUFFALO-DERIVED PRODUCTS

4,624,748.76 kg

PRODUCED FROM THE NATIONAL AND REGIONAL IMPACT ZONES AND DA-PCC INSTITUTIONAL HERD

~~₱~~ 574,950,173.77 **TOTAL**



CAPABILITY BUILDING AND STRENGTHENING SUPPORT

1,256

TYPES OF TRAININGS CONDUCTED BY DA-PCC

Attended by **21,264** participants from Luzon, Visayas, and Mindanao

2,440

CLIENTS ORIENTED ABOUT CDP/CUP IN DA-PCC REGIONAL CENTERS



ACCREDITATIONS

The PCC Regional Centers provide their assisted cooperatives and associations the guidance in making sure that they are on the right track throughout the accreditation process.

44

CSO-ACCREDITED COOPERATIVES FROM DIFFERENT REGIONS

Another intervention of the DA-PCC to its assisted farmer-cooperative-associations is the assistance on their **NDA-LTO** accreditation. As of this reporting, the agency has assisted for the approved of **13 farms**. For the **FDA-LTO**, there are **22 accredited cooperatives and associations** which are engaged in milk feeding.



The establishment of province-wide Carabao-based Business Improvement Network (CBIN) popularly known as ALAB Karbawan is a project initiated and funded by the Office of the Senate Committee on Agriculture, Food and Agrarian Reform, which aims to establish robust carabao-based enterprise (CBE) value chains in identified provinces, deemed to create livelihoods for farmers and kick-start the development of the dairy sector.

In 2019, funding for the initial list of identified recipient provinces was released to DA-PCC, amounting to PHP185 million for 17 project sites in 16 provinces. All sites are already operational in the CBE value chain, indicating that all components are existent and functional. Under this fund, a total of **1,134 animals** were entrusted to **378 recipients**, **1,050 clients** were trained, and **17 complete lines of dairy processing equipment** were procured. The approval of the Bayanihan II Fund also enabled the construction of dairy processing and marketing outlets in 12 project sites.

With the success of the **2019 CBIN** project sites, **11 additional sites** were identified and included in the GAA FY 2020 as an expansion of the project. Under CBIN 2020, eight sites were already

operational, while three sites are in the production stage. Through **CBIN 2020**, a total of **596 female crossbred buffaloes** were entrusted to **268 farmers in 11 provinces**. Moreover, Dairy Box were established in 8 project sites.

As the project continues to expand, an additional 11 sites for **CBIN 2021** were identified. Seven sites are already operational, while four sites are in the production stage. Through CBIN 2021, a total of **484 female crossbred buffaloes** were entrusted to **219 farmers** in 11 provinces. Moreover, Dairy Box were established in 9 project sites, and 2 sites are still under ongoing construction.

An additional 25 sites for **CBIN 2022** were released to the DA-PCC, amounting to PHP250 million. Currently, 21 sites are already in the production stage, while 4 sites are in the preparatory stage. Through CBIN 2022, a total of **1,216 female crossbred buffaloes** were entrusted to 566 farmers in different provinces. A total of **292 animals** are expected to be delivered in the first quarter of 2024. Moreover, Dairy Box are established in 10 project sites, and 15 are still under ongoing construction, expected to be established in March 2024.



CCDP

COCONUT-CARABAO DEVELOPMENT PROJECT

The Coconut-Carabao Development Project (CCDP) aims to increase the income of coconut farmers by integrating carabao-based enterprise into the coconut farming system, adopting the CBIN concept. In 2019, the Philippine Coconut Authority (PCA) allocated a total of PHP164 million for the implementation of the project in 17 sites across the country. With the commitment of PCA and DA-PCC to implement the project, the goal of providing business opportunities and increasing income among small coconut farmers is slowly being realized.

Currently, the **value chain of 8 sites (%) is already operational**. Farmers are producing milk, processing it into different milk-based products, and marketing it in their mini grocery stores. They are also working on becoming involved in the milk feeding program. On the other hand, **9 sites (%) are still in the production stage**, where carabaos have been entrusted to farmers and are undergoing

nutrition and breeding activities. A total of **775 female crossbred buffaloes** were procured and entrusted to 12 sites, benefiting **437 small coconut farmers**. Moreover, Dairy Boxes were established in 6 project sites, while 11 sites are still under construction.

To ensure the success of the project, all preparatory activities such as courtesy calls, project orientation, social preparation training, and technical training have been completed in almost all of the sites. Legal documents such as MOAs, usufructs, and deeds of donation (in case the cooperative will donate a lot for infrastructure) are also being processed.

DA-PCC, in partnership with PCA and other stakeholders, is steadfast and committed to achieving the ultimate goal of this project: increased income for farmers.



MILK FEEDING PROGRAM

In support to Republic Act No. 11037, the DA-PCC facilitated the implementation of the **DepEd-funded School-based Feeding Program - Milk Component in 14 regions, 37 provinces nationwide**. For the Fiscal Year (FY) 2019, **30 DA-PCC-assisted dairy cooperatives/suppliers** were able to supply the milk requirements of **516,517 children** or **24.95%** of the total undernourished children from Kindergarten to Grade Six enrolled in public elementary schools.

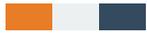
For FY 2020, **32 DA-PCC-assisted dairy cooperatives/ suppliers** were able to supply the milk requirements of **1,032,318 children** or **32.92%** of the total undernourished children from Kindergarten to Grade Six enrolled in public elementary schools in **14 regions, 40 provinces** nationwide.

For FY 2021, **36 DA-PCC-assisted dairy cooperatives/suppliers** were able to supply

the milk requirements of **1,087,849 children** or **31.20%** of the total undernourished children from Kindergarten to Grade Six enrolled in public elementary schools in public elementary schools in **13 regions, 41 provinces** nationwide.

For FY 2022, 36 DA-PCC-assisted dairy cooperatives/suppliers were able to supply the milk requirements of **1,330,984 children** or **38.39%** of the total undernourished children from Kindergarten to Grade Six enrolled in public elementary schools in public elementary schools in **16 regions, 49 provinces** nationwide.

For FY 2023, the status of the Mother Memorandum of Agreement (MOA) is still on hold due to legal concerns. As of December 2023, the DA-PCC submitted their final comments on the last revision of the operating MOA.



DA-PCC PARTICIPATION IN THE SUPPLEMENTARY FEEDING PROGRAM – HOT MEALS AND MILK COMPONENT FUNDED BY DSWD

Similarly, the DA-PCC facilitated the DSWD-funded Supplementary Feeding Program- Hot Meals in six regions, eight provinces nationwide. For the 10th cycle, seven (7) DA-PCC assisted dairy cooperatives/suppliers were able to supply the milk requirements of **10,619 children** or **21.77%** of the total undernourished children from Supervised Neighborhood Play (SNP) and Child Development Centers (CDCs) for 120 feeding days; The agency also facilitated the DSWD-funded Supplementary Feeding Program-Milk Component in one region, two provinces nationwide wherein eight DA-PCC-assisted dairy cooperatives/suppliers were able to supply the milk requirements of **40,285 children** for 12 feeding days.

Table 1. Number of undernourished children supplied with milk (DSWD 10th Cycle Supplementary Feeding Program–Hot Meals)

Region	No. of Provinces	No. of undernourished children
III	2	1,603
IV-A	1	860
IV-B	1	697
VI	2	2,836
VIII	1	925
IX	1	3,698
Total (6)	8	10,619

Table 2. Number of undernourished children supplied with milk (DSWD 10th Cycle Supplementary Feeding Program–Milk Components)

Region	No. of Provinces	No. of undernourished children
III	7	128,396
TOTAL (1)	7	128,396

For the 11th cycle, 24 DA-PCC-assisted dairy cooperatives/suppliers were able to supply the milk requirements of **50,374 children** or **47.61%** of the total undernourished children from Supervised Neighborhood Play (SNP) and Child Development Centers (CDCs) for 120 feeding days in 10 regions, 34 provinces nationwide. The agency also facilitated the DSWD-funded Supplementary Feeding Program-Milk Component in one region, seven provinces nationwide wherein nine DA-PCC assisted dairy cooperatives/ suppliers were able to supply the milk requirements of **48,498 children** for 12 feeding days.

Table 3. Number of undernourished children supplied with milk (DSWD 11th Cycle Supplementary Feeding Program–Hot Meals)

Region	No. of Provinces	No. of undernourished children
CAR	4	1,240
I	4	3,464
II	3	4,600
III	7	4,385
IVA	5	6,860
IVB	2	1,309
V	4	16,218
VI	3	4,707
IX	1	5,080
XII	1	2,511
Total (10)	34	50,374

Table 4. Number of undernourished children supplied with milk (DSWD 11th Cycle Supplementary Feeding Program–Milk Components)

Region	No. of Provinces	No. of undernourished children
III	7	48,498
TOTAL (1)	7	48,498

For the 12th cycle, 31 DA-PCC-assisted dairy cooperatives/suppliers were able to supply the milk requirements of **49,553 children** or **20.42%** of the total undernourished children from Supervised Neighborhood Play (SNP) and Child Development Centers (CDCs) for 120 feeding days in 10 regions, 33 provinces nationwide. The agency also facilitated the DSWD-funded Supplementary Feeding Program - Milk Component in one region, two provinces nationwide wherein eight DA-PCC-assisted dairy cooperatives/suppliers were able to supply the milk requirements of **40,285 children** or **100%** of the total undernourished children for 30 feeding days.

Table 5. Number of undernourished children supplied with milk (DSWD 12th Cycle Supplementary Feeding Program–Hot Meals)

Region	No. of Provinces	No. of undernourished children
I	3	4,915
II	4	3,000
III	7	2,713
IVA	5	8,372
IVB	2	5,528
V	4	5,688
VI	3	7,460
VII	1	13,045
IX	2	5,787
XII	2	1,594
Total (10)	33	49,553

Table 6. Number of undernourished children supplied with milk (DSWD 12th Cycle Supplementary Feeding Program–Milk Components)

Region	No. of Provinces	No. of undernourished children
III	2	40,285
TOTAL (1)	2	40,285

For the 13th Cycle, the status of the implementation is still on-going. Some of the DA-PCC regional centers are still in the procurement process and the others are currently delivering milk packs to their respective municipalities. As of December 4, 2023, 24 DA-PCC-assisted dairy cooperatives/ supplier will be able to supply the milk requirements of **48,981 children** or **33.10%** of the total undernourished children from Supervised Neighborhood Play (SNP) and Child Development Centers (CDCs) for 120 feeding days in 10 regions, 30 provinces nationwide.

Table 7. Number of undernourished children supplied with milk (DSWD 13th Cycle Supplementary Feeding Program–Milk Components)

Region	No. of Provinces	No. of undernourished children
I	3	4,915
II	4	3,000
III	7	3,500
V	4	5,123
VI	2	2,819
VII	1	13,045
IX	2	3,698
CARAGA	4	5,000
BARMM	2	6,131
XII	1	1,750
TOTAL (10)	30	48,981

Table 8. Number of undernourished children supplied with milk (DSWD 13th Cycle Supplementary Feeding Program–Milk Components)

Region	No. of Provinces	No. of undernourished children
I	3	4,915
II	2	3,000
III	5	3,500
V	4	5,123
VI	2	3,537
IX	2	3,698
CARAGA	4	5,000
BARMM	2	6,131
XII	1	1,750
TOTAL (9)	25	36,654

The DA-PCC focal on Milk Feeding Program provided technical assistance on aspects of proper and hygienic milk handling and processing to produce food safety compliant pasteurized carabao's milk. This program has provided a ready market for the milk produced by the dairy cooperatives, sustained livelihood and increased income, during the pandemic.



The program on Enhanced Partnership Against Hunger and Poverty is a convergence program led by the Department of Social Welfare and Development, aims to mitigate hunger, ensure food and nutrition security, and reduce poverty in rural and urban communities. The particular convergence project that DA-PCC was involved in is the **Pilot Gatasang Kalabaw Project** which aims to: (1) establish viable enterprises along the value chain as a source of additional income of farmers and members of community-based organizations; (2) increase the volume of locally produced milk that can be supplied to the National Feeding Program. Components entrusted **75 head of dairy buffaloes** to identified recipients in Region I (Ilocos Norte), Region VI (Iloilo) and Region IX (Zamboanga del Norte). After the successful implementation of the project, it has then evolved into **Expanded Gatasang Kalabaw Project** wherein Region III (Nueva Ecija), Region IVA (Batangas) and Region V (Sorsogon) were the identified recipients of **75 head of dairy buffaloes**.



OTHER RELATED ACTIVITIES

Organized the following pertinent activities in support of the Centers' human resource capability building and continual commitment in the pursuit of the effective and efficient implementation of the CDP.

Conducted PMC meetings:

- ▶ **80th PMC Meeting at DA-PCC-OED** on March 27-28, 2023;
- ▶ **81st PMC Meeting at DA-PCC-OED** on September 11-15, 2023; and
- ▶ **82nd PMC Meeting at PCC-USM**, North Cotabato, last December 6-8, 2023.

Conducted **Program Coordinators' meeting** on July 30 - August 4, 2023 at NIA, Pantabangan, Nueva Ecija.

DAIRY HERD BUILDUP PROJECT

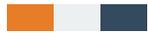
The aim of the Dairy Herd Buildup Project (DHB), without compromising the existing DA-PCC breeding herd, is to purchase animals for rearing both at the DA-PCC institutional and cooperative-led agistment farms. The agistment farms will serve as business models for the sustained management and production of good quality dairy animals. "Agistment" refers to the original "Grow-out Model" that was initially introduced, this is to better capture the actual terms of the agreements which is where a landowner allows another person's livestock to be kept, or agisted, or grazed in exchange for a specified rate.

In 2023, the Senate Committee on Agriculture under the leadership of Senator Cynthia Villar, provided a start-up fund with a total amount of **PHP698 million**, for the establishment of the DBHBP covering the initial procurement of 3,000 head of crossbred carabaos. This program aims to accelerate the increase of local dairy stocks and consequently the local milk production.



DHB BUDGET UTILIZATION

The BAC completed the bidding process for infrastructures, animals, machinery, and equipment with **97.29% budget utility rate**.



ANIMAL PROCUREMENT STATUS

The bidding process covering all **3,000 animals** was completed at the DA-PCC national headquarters. Of this total, **60% (1,800 heads)** was issued a notice to proceed, **3.3% (100 heads)** is awaiting NTP and **26.66% (1,100 heads)** is on process at the regional centers. A total of **751 out of 3,000** animals were already delivered to the regional centers to start the rearing and breeding program (sequential breeding).



ANIMAL FACILITIES STATUS

Six sites for institutional herd are already under construction and one undergoing repair with a total of **66.83% progress**.



MACHINERY AND EQUIPMENT PROCUREMENT STATUS

Twenty-two out of 125 machines and equipment were delivered to the regional centers constituting 19 (17.6%). The remaining number is either awaiting for delivery (9.6%) or currently processed for procurement (75.2%).

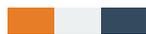




RESEARCH FOR DEVELOPMENT

The Research and Development Division (RDD) of the DA-PCC plays a pivotal role in advancing scientific knowledge and technological innovation within the carabao industry. By managing and coordinating research activities across various sections and units, RDD supports the agency's overarching mission to enhance the productivity and sustainability of the carabao sector. RDD also facilitates knowledge dissemination through a variety of learning interventions such as webinars, workshops, and training sessions.

Under the RDD, several disciplinary sections focus on conducting research and development activities that align with the DA-PCC's Research for Development (R4D) Agenda. These sections work collaboratively to advance scientific understanding and address critical needs in the carabao industry. This strategic alignment ensures that research efforts are targeted towards solving real-world challenges, fostering innovation in the sector, and contributing to the agency's major final outputs.



AWARDS AND RECOGNITIONS

GROUP CATEGORY

Best Paper Award under the Biotechnology Category
First Place in the Socio-economic Research Category
Best Paper for the Nutrition Category



DR. DANILDA HUFANA-DURAN
 Upgraded to **Career Scientist II**
 Career Scientific System of the National
 Academy of Science and Technology



DR. EDWIN C. ATABAY
 Scientist II
**Honored in the list of Most Outstanding
 Scientists and Researchers** in the 2023 Asian
 Scientist Magazine



DR. ESTER FLORES
 Scientist I
**Distinguished Researcher in Veterinary and
 Animal Science**
 Philippine Society of Animal Science (PSAS)



DR. EXCEL RIO MAYLEM
 Senior Science Research Specialist
**Outstanding Young Professional in Animal
 Science Research**
 Philippine Society of Animal Science (PSAS)



ABGS

ANIMAL BREEDING AND GENOMICS SECTION



R4D INITIATIVES

In 2023, the ABGS through its the Genetic Improvement Program Laboratory (GIPL) continued its efforts in the genetic evaluation of Philippine dairy buffaloes using the multi-trait random regression test day model (MT-RRM). The evaluation covered **3,004 buffaloes from 10 enrolled herds**, with extensive records including **17,946 milk test day records, 9,929 fat test day records, and 9,812 protein test day records**. This evaluation identified 232 bulls with progeny performance, among which 133 are island-born. The youngest bulls, born in 2015, are showing significant performance. Notably, eight out of the top ten ranked bulls based on the Total Merit Index (TMI) are semen donors. In addition, a remarkable trend was observed as the younger generation of cows, born in 2016 and 2017, is starting to surpass older generations in performance. The evaluation system's effectiveness is validated by these findings, demonstrating the principle that proper selection leads to improved subsequent generations.

Externally funded research included the DOST-PCAARRD project on the genetic structure and screening protocols for Philippine Native Pig populations, which commenced, following a related project completed in 2022. Also, ongoing DOST-PCAARRD projects focused on developing screening protocols for genetic defects in cattle and buffaloes, and applying DNA markers and assisted reproduction techniques in local cattle breeding. Internally-funded research covered a range of topics including the development of a multiplex panel for parentage testing, the association of genetic markers with meat quality traits, SNP discovery for functional traits, and whole genome sequencing of Philippine swamp buffaloes.



JOURNAL PUBLICATIONS

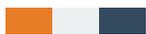
Several publications from the year are highlighted.

Flores and Bacual (2023) examined genetic parameters for ultrasound measures of eye muscle area and rib fat depth in Philippine riverine buffaloes. **Atabay et al. (2023)** explored the influence of ovarian follicle sizes and estrous signs on pregnancy rates following artificial insemination in water buffaloes. **Matias et al. (2023)** conducted genetic screening of the halothane gene in selected Philippine native pig herds. These publications reflect significant contributions to the field of animal genetics and breeding.



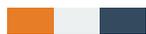
PRODUCTION SUPPORT SERVICES

The dairy buffalo breeding program has made significant strides with the development of a new line of meat-type buffaloes. Two young semen donor bulls, selected for their growth rate and rib-eye area, have entered frozen semen production. This frozen semen is now available for use in crossbreeding, aiming to enhance growth and meat yield. The meat line is categorized as Philippine Riverine Buffalo – Matipuno, focusing on growth and meat traits, contrasting with the dairy-focused Philippine Riverine Buffalo – Dalisay line.



R4D INITIATIVES

Proposed R4D projects included developing a rapid test kit for *Babesia* spp. and reducing mastitis prevalence. Ongoing research covers nanosensor diagnostics for *Mycobacterium avium* and *Mycoplasma bovis*, screening for antibiotic residues in milk, and epidemiological studies on tuberculosis, brucellosis, and leptospirosis. Other studies include dengue virus among livestock, mastitis incidence, and a survey of the dairy buffalo sector.



PRODUCTION SUPPORT SERVICES

BES successfully conducted the **Animal Health Monitoring Program** across 15 DA-PCC Regional Centers and farms. They collected **1,818 samples (feces, blood, urine)**, performed DNA extraction and molecular testing on **3,073 blood samples (surra)** and **1,251 urine samples (leptospirosis)**, and conducted serum testing on **3,048 Rose Bengal tests (brucellosis)**, **1,940 blood parasite exams**, and **3,686 fecal exams**. Special tests on 286 samples covered various conditions. TB testing was conducted on 223 water buffaloes, and CAEV testing on 157 goats. The California Mastitis Test was administered to 2,573 animals. Prevention and treatment services, including vaccinations and deworming, were provided to 576 animals, totaling 8,720 animals receiving health services.



EXTENSION SUPPORT, EDUCATION, AND TRAINING

Proposed R4D projects included developing a rapid test kit for *Babesia* spp. and reducing mastitis prevalence. Ongoing research covers nanosensor diagnostics for *Mycobacterium avium* and *Mycoplasma bovis*, screening for antibiotic residues in milk, and epidemiological studies on tuberculosis, brucellosis, and leptospirosis. Other studies include dengue virus among livestock, mastitis incidence, and a survey of the dairy buffalo sector.



PARTICIPATION IN CONFERENCES, SEMINARS, WORKSHOPS, & TRAININGS

BES staff attended various events, including **veterinary diagnostics refresher courses**, **major scientific conferences**, and **webinars on dairy safety, animal facility registration, and cooperative dairy enterprise sustainability**. They also participated in **international training at Iowa State University**.



JOURNAL PUBLICATIONS

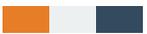
BES published research on antimicrobial treatments for *Mycoplasma bovis*, fluoroquinolones' effects on *Salmonella typhimurium*, and the high positivity rate of Caprine Arthritis Encephalitis in Luzon.



R4D INITIATIVES

Notable R4D proposals include the DA-BAR project on **Female Livestock Genetics Cryopreservation Program** and the VLIR-UOS Belgium project on **Biobanking and Stem Cell Technologies for Livestock**.

Externally funded research focuses on genetic screening protocols for cattle and buffaloes, while in-house funded projects include early pregnancy diagnosis by Pregnancy-Associated Glycoproteins (PAG) and the establishment of a dairy cattle foundation breeder herd via embryo transfer.



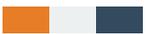
TECHNOLOGIES APPLIED/ COMMERCIALIZED/ ROLLED OUT

RPS successfully implemented **Fixed Time Artificial Insemination (AI), Enhanced AI, and advanced pregnancy diagnosis techniques through ultrasound and PAG**.



TECHNOLOGIES DEVELOPED/OPTIMIZED/ VERIFIED

Innovations include **Ovum Pick Up, Multiple Ovulation and Embryo Transfer, Embryo Transfer, in vitro embryo production and cryopreservation, and the use of L-Carnitine to enhance bull libido**.



INTELLECTUAL PROPERTY APPLICATIONS FILED

RPS filed patents for a breeding method promoting ovulation during artificial insemination (RG910E1271T2023JRD, Oct 27, 2023) and a kit for identifying thermotolerance using the HSP70 gene in water buffaloes (3T512RM11MV202355J, Dec 11, 2023).



EXTENSION SUPPORT, EDUCATION, & TRAINING

RPS conducted various training programs to enhance skills in reproductive technologies, including basic and advanced courses on reproductive ultrasonography, AI, and pregnancy diagnosis. The programs trained a total of over **140 participants** across multiple locations, ensuring widespread capacity-building in reproductive management and technology application.



AWARDS RECEIVED

RPS received numerous accolades, including the **Best Paper Award in Biotechnology from the Philippine Society of Animal Science (PSAS)** and the **Best Poster Paper Award from the Philippine Society of Biochemistry and Molecular Biology (PSBMB)**.



PARTICIPATION IN CONFERENCES, SEMINARS, WORKSHOPS, & TRAININGS

RPS attended various conferences, including the **PSAS Scientific Meeting and Annual Convention**, **International Livestock Biotechnology Symposium**, and the **International Symposium on Reproductive Biotechnology in Ecuador**.

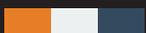
The section also made several technical presentations locally and internationally, discussing topics like **freemartinism in cattle and buffalo**, **vaginal chart development in water buffalo**, and **estrus detection methods**.



KNOWLEDGE PRODUCTS & JOURNAL PUBLICATIONS

Key publications cover **Epididymal Sperm Cryopreservation Technology**, **Hormone Priming in Goats**, and **Sperm Rescue from Post-Mortem Testicles of Slaughtered Farm Animals**, among others.

Publications in prominent journals addressed issues such as cryogenic tolerance and sperm motility in Philippine native pigs and the influence of ovarian follicle sizes on AI success in water buffaloes.



PSNS

PRODUCTION SYSTEMS AND NUTRITION SECTION



R4D INITIATIVES

The PSNS made significant advancements in biotechnology to enhance the nutritional and physiological status of carabaos. The section's R4D efforts focused on improving forage production, mitigating greenhouse gas emissions, and developing advanced feed supplements. Key research areas included plant growth promoters, greenhouse gas mitigation, silage quality improvement, mineral blocks, seaweed supplements, probiotics for calves, and fermented total mix ration silage using banana by-products and water hyacinth.

Current ongoing research projects are exploring various aspects, including the **effects of chitosan on forage grasses**, the **use of seaweeds as mineral supplements**, **sugarcane utilization**, **greenhouse gas mitigation**, **silage enhancement**, and the **development of probiotics and prebiotics**.

Collaborations with the New Zealand Agriculture Research Center and DA-PCC at LCSF aim to enhance silage quality and reduce emissions.



PRODUCTION SUPPORT SERVICES

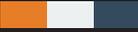
In 2023, PSNS provided **275,295 services** to **91 clients**, offering planting materials and laboratory services to cooperatives, researchers, government agencies, and private institutions. This support encouraged farmers to establish forage areas and address nutritional deficiencies in ruminants.



EXTENSION SUPPORT, EDUCATION, & TRAINING

PSNS conducted extensive extension support and educational programs, including capacity enhancement trainings for **480 clients**, such as cooperatives, LGU personnel, and DA-PCC Regional Centers. Training covered topics such as **ensiling**, **Blockmate (mineral block) preparation**, **forage production**, **dairy buffalo production and management**, and **nutrition technologies**.

Additionally, the section organized numerous technical seminars and workshops throughout the year. These events included **dairy herd planning workshops**, **lecture series**, **research writeshops**, and **training sessions on Blockmate**, **forage production**, and **greenhouse gas mitigation**.



AnGRS

ANIMAL GENETIC RESOURCES SECTION



The year 2023 marked the inaugural year for the National Livestock Cryobank (NLC), which expanded its role in strengthening linkages and contributing to scientific research in the livestock sector. The NLC intensified efforts to diversify the stored animal genetic resources, achieving a notable increase in the units of frozen semen for goats, cattle, and swine. Collaborations with local stakeholders and the Bureau of Animal Industry, particularly through the NSPRDC-VSU, have been instrumental in supporting genetic studies and enhancing cryopreservation protocols.



R4D INITIATIVES

The NLC is actively engaged in several research projects, including **semen profiling from various swine, cattle, and goat breeds**, which aim to enhance cryopreservation protocols. Other projects focus on **assessing the quality and microbial survival of cryopreserved semen and optimizing STR multiplex panels** to differentiate between riverine and swamp buffaloes. Collaborative research with the University of Adelaide and USDA on **whole-genome sequencing of the Philippine swamp buffalo** highlights the unit's commitment to advancing genetic research.

CRYOBANK UNIT



EXTENSION SUPPORT, EDUCATION, & TRAINING

In 2023, the unit facilitated numerous training and capacity-building events. These included a **public-private stakeholder capacity-building workshop on cryopreservation** and a **technical caucus on boar semen cryopreservation in the tropics**.



PARTICIPATION IN CONFERENCES, SEMINARS, WORKSHOPS, & TRAININGS

Staff members also attended several conferences, such as the **PSAS Scientific Meeting and Annual Convention** and the **45th National Academy of Science and Technology Annual Scientific Meeting**. These efforts contributed to enhancing the skills and knowledge of both staff and external stakeholders.

NATIONAL GENE POOL FARM (NGP) INVENTORY & PRODUCTION

PRODUCTION PERFORMANCE AND SUPPORT SERVICES

The National Gene Pool Farm ended the year with an inventory of **480 animals, including 284 breedable females**. The farm achieved a **40.60% average conception rate** following AI and produced **105 buffalo calves with a calving rate of 76%**. The recorded average calving interval was **15.79 months**. Additionally, **38 female buffaloes** were allocated through the Paiwi Program, and **49 yearling bulls** were transferred to the Livestock Biotechnology Research and Animal Facility (LBRAF) for further evaluation.

MILK PRODUCTION AND MARKETING

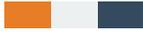
In 2023, the NGP farm produced **114,795 kg of raw milk**. Of this, **74,839 kg were processed**, generating a **total revenue of PHP5,987,120**. The farm also produced **2,819 bags of vermicast, selling 1,327 bags** for a total of **PHP330,250**. Monthly milk production varied, with **December seeing the highest output of 11,419 kg and a value of PHP913,520**.



LIVESTOCK BIOTECHNOLOGY RESEARCH & ANIMAL FACILITY

PRODUCTION PERFORMANCE AND SUPPORT SERVICES

As of December 31, 2023, the LBRAF maintained an inventory of **43 animals**, including Italian Mediterranean Buffalos, Philippine carabaos, crossbred buffaloes, and Bulgarian Murrah Buffalos. The facility released 53 animals throughout the year, including transfers to the Bull Loan Program and the National Bull Farm, as well as animals sold or used for research purposes. This strategic distribution supports genetic improvement programs and research initiatives across various locations.



PRODUCT DEVELOPMENT & INNOVATION SECTION

R4D INITIATIVES

The PDIS has been actively involved in the research and development of new carabao-based products. Significant innovations include the **development of ice cream with alternative cream, optimized Gouda cheese, new gelato flavors,** and **sterilized toned carabao milk in aluminum pouches.** The section has filed several Intellectual Property (IP) applications, including a trademark for the **Karapops logo,** a utility model for stirred yogurt, and a patent for a yogurt drink with mango peel pectin. Ongoing research proposals include enhancing milk bun formulations for premium markets and improving **Karabun™** with additional fillings.



PRODUCTION & MARKETING SUPPORT SERVICES

The PDIS through its Production and Marketing Unit (PMU) is instrumental in dairy processing and commercialization. The Central Dairy Collecting and Processing Facility (CDCPF) and Milka Krem play crucial roles in this area. In 2023, CDCPF processed a total of **300,242.87 kg of raw milk,** with **25% sourced from the Gene Pool National Headquarters** and **75% from various cooperatives and individuals.** The facility supports multiple cooperatives including **Catalanacan MPC, Eastern Cooperatives, and SIPBU Dairy Cooperative,** among others. Milka Krem, as a techno-demo store and cafe, focuses on promoting carabao milk and milk-based products.

The PDIS has also provided market development assistance to dairy cooperatives and organizations, including technical support for obtaining Licenses to Operate (LTO) under RA 10611 (Food Safety Act of 2013). Support was extended to DA-PCC facilities and cooperatives in **Bohol, Isabela, and Nueva Ecija,** helping them meet food safety regulations.



EXTENSION SUPPORT, EDUCATION, & TRAINING

In 2023, PDIS conducted numerous training sessions on various aspects of food safety and milk processing. Notable trainings include **Kardeli Food Safety Training, Milk Testing, Food Safety,** and **Milk Processing Training,** and the **BizTalk Food Safety Series.** These sessions covered topics from menu planning to GMP and FDA-LTO requirements, reaching a diverse audience of dairy cooperatives and stakeholders across the Philippines. A total of **295 participants** attended these training programs throughout the year.



PARTICIPATION IN CONFERENCES

PDIS staff engaged in several conferences and seminars to enhance their expertise and knowledge. Noteworthy events include the **Livestock Expo Philippines 2023,** the **9th National Carabao Conference,** and the **60th PSAS Scientific Meeting and Annual Convention.** These events provided opportunities for staff to stay updated on industry developments and to network with peers in the dairy sector.

SOCIO-ECONOMIC & ENVIRONMENT RESEARCH SECTION

R4D INITIATIVES

SEERS has made significant strides in research across various projects. The section has initiated and supervised four key research projects, presented at the DA-PCC RDD Pre-In-House Review in June 2023. Among these, the **“Rapid Composting of Buffalo Manure”** project, conducted in collaboration with Central Luzon State University, includes three studies focusing on vermicomposting and its effects on soil quality and corn production. Additionally, the **“Profiling and Mapping the Carabao-Based Enterprise Development Value Chain Stakeholders”** project involves ongoing surveys of 2,415 carabao farmers and assessments of their knowledge and attitudes toward DA-PCC programs. The **“Applying the Concept of Circular Economy”** project aims to improve wastewater management at the Central Dairy Collecting and Processing Facility (CDCPF) through various innovative studies, including the development of a biofiltration system and fuel briquettes. Finally, the **“Enhancement of Greenhouse Gas (GHG) Inventory”** project is underway to assess and mitigate GHG emissions from buffalo farming in the Philippines.

PRODUCTION & MARKETING SUPPORT SERVICES

In 2023, SEERS facilitated the implementation of ALAB Karbawan projects, which support the development of carabao-based enterprise value chains. As of December 31, 2023, the projects span **81 sites across 61 provinces**. Of these, **37 sites have operational value chains, 38 are in the production stage, and five are in the preparatory stage**. The projects, funded by the Office of the Senate Committee on Agriculture, Food, and Agrarian Reform, provide processing equipment, construct facilities, and offer technical support.

SEERS has actively supported marketing efforts for carabao-based enterprises through the ALAB Karbawan project. This initiative has focused on establishing processing facilities and market outlets for dairy buffalo products, enhancing the visibility and reach of carabao-based businesses across the country.

EXTENSION SUPPORT, EDUCATION, & TRAINING

The section has hosted six significant learning events for farmer-clients in 2023, attracting a total of **477 participants**. These events, held both online and in-person, covered various topics including **cooperative policy, parliamentary procedures, government procurement, and enterprise development**. The sessions aimed to improve organizational skills and foster development within the carabao-based enterprises.

SEERS provided extensive training to support the development of carabao-based enterprises. Notable training events included workshops on **comprehensive policy handbooks, parliamentary procedures, and procurement processes**. The section also facilitated a series of webinars on topics such as **allergen awareness, animal welfare, and genomic advancements in water buffalo farming**.



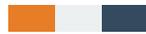
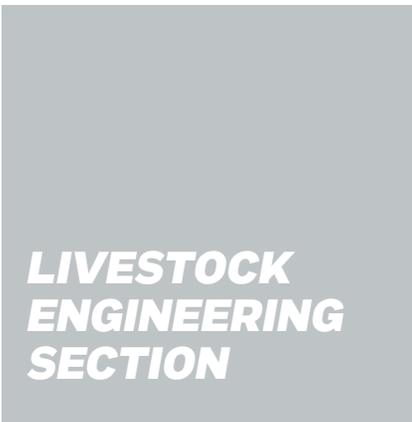
PARTICIPATION IN CONFERENCES

SEERS participated in numerous conferences and webinars, contributing to the broader discourse on livestock biotechnology and agricultural research. Key events included the **7th International Livestock Biotechnology Symposium** and the **60th PSAS Scientific Meeting and Annual Convention**, held in Tagbilaran City, Bohol in October 2023. These conferences offered valuable opportunities for knowledge exchange and professional development.



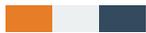
PUBLICATIONS

The section contributed to the scientific community through various publications and reports, including the **Quality Assurance Review (QAR) for Climate Change Expenditure Tagging** and the **National Climate Change Action Plan Accomplishment Report**. These publications highlight SEERS' commitment to advancing knowledge and promoting sustainability in carabao-based enterprises.



R4D INITIATIVES

In 2023, LES has made notable progress in advancing infrastructure and engineering interventions for the DA-PCC. Key research initiatives included the **establishment of retort facilities under the CFIDP and PRDP funds**, with proposals and designs developed for sites in Zamboanga del Norte and San Jose City, Nueva Ecija. The LES also prepared proposals for a **sewage treatment plant and a remote sensing drone**, enhancing the technical capabilities and environmental sustainability of the DA-PCC's operations.



PRODUCTION AND MARKETING SUPPORT SERVICES

The LES has overseen significant developments in infrastructure, with **21 projects completed** or nearing punchlisting, and **32 under ongoing construction** as of December 30, 2023. These projects include various facilities and equipment aimed at improving livestock management and production. Notably, construction work on sites across multiple regions, including **Zambales, Pampanga, and Isabela**, has reached various stages of completion, contributing to the overall enhancement of DA-PCC facilities and services.

Marketing support services provided by the LES focused on improving infrastructure to support livestock operations. This included the **planning and design of facilities like retort plants and the procurement of advanced equipment** such as remote sensing drones. By enhancing these infrastructures, the LES aims to better support the marketing and distribution of dairy and livestock products, thereby strengthening the DA-PCC's role in the livestock industry.



INTELLECTUAL PROPERTY MANAGEMENT UNIT

In 2023, the IPMU achieved notable milestones in intellectual property management, including the successful institutionalization of the Intellectual Property Technology Business Management (IP-TBM) framework. This framework has streamlined the process of managing and optimizing innovative ideas and technologies. Additionally, the IPMU secured a new project funded by DOST-PCAARRD, titled “**Regional Agri-Aqua Innovation System Enhancement**,” with a budget of PHP 4,202,908.00, further driving innovation and sustainable development in the sector.



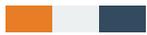
FILING OF INTELLECTUAL PROPERTIES (IPS)

The IPMU has made significant progress in filing and managing intellectual property. Noteworthy achievements include the filing of multiple patents and utility models, such as “**A Multi-Nutrient Lick Block as Feed Supplement for Ruminants**” and “**A Kit for Identifying Thermotolerance using the HSP70 Gene in Water Buffaloes**.” These filings demonstrate the unit’s commitment to advancing agricultural technologies and improving livestock management practices.



MONITORING OF FILED IPS

The IPMU’s efforts in intellectual property management have included ongoing maintenance and monitoring of filed properties. For instance, the “**Dairy Buffalo Production Handbook 2nd Edition**” and various other intellectual properties are currently under review or pending approval, reflecting the IPMU’s dedication to supporting the commercialization and dissemination of innovations in the livestock sector.

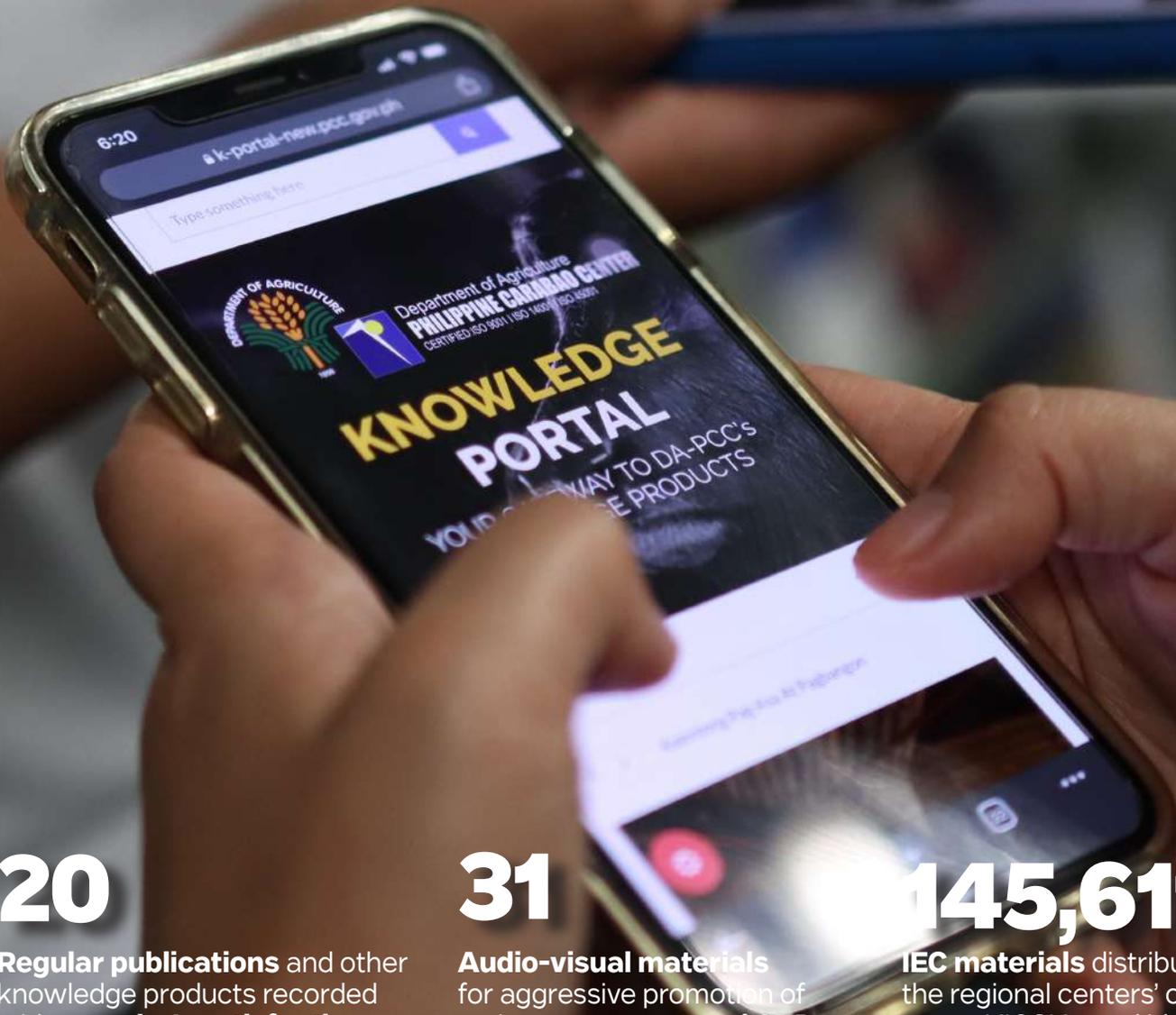


EXTENSION SUPPORT, EDUCATION, AND TRAINING

The IPMU has also contributed to the broader knowledge base through technical seminars and training. In September 2023, the unit hosted a **Technical Workshop on Patent Search and Claim Drafting** facilitated by experts Aramando Reosura and Dindo Dumali from IPOPhl. This workshop aimed to enhance participants’ understanding of intellectual property management and patent processes.



KNOWLEDGE MANAGEMENT



20

Regular publications and other knowledge products recorded with a **reader's satisfaction rating of 4.76 for 1st semester** and **4.64 for 2nd semester**.

31

Audio-visual materials for aggressive promotion of various components of CDP; official music video, testimonial narrative video produced

145,611

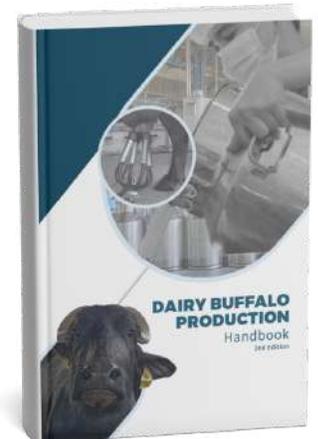
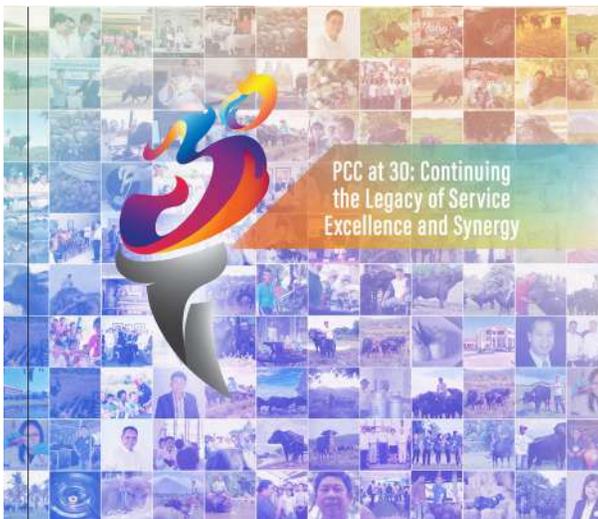
IEC materials distributed to the regional centers' coverage areas, KIOSKs, and identified DA stakeholders, visitors, clients, and partner institutions



SUSTAIN MASSIVE INFORMATION AND COMMUNICATION CAMPAIGN

The DA-PCC through the Knowledge Management Division's (KMD) Applied Communication Section (ACS) has spearheaded the production and distribution of the following knowledge products or information, education, and communication (IEC) materials in multimedia platforms in 2023:

- ▶ **Four (bimonthly) issues of CaraBalitaan** (Newsletter for the National and Regional Impact Zones written in Tagalog)
- ▶ **Four (quarterly) issues of Karbaw Magasin** (written in Tagalog)
- ▶ **Four (quarterly) issues of Bubalus Newsletter** (written in English)
- ▶ **One issue of R4D Highlights** (written in English)
- ▶ **Two issues of ALAB Karbawan Newsletter** (written in TagLish), a publication produced in support of the Accelerating Livelihood and Assets Buildup project sponsored by the Office of the Senate Committee on Agriculture, Food, and Agrarian Reform chaired by Senator Cynthia Villar
- ▶ **Production of the DA-PCC's 30 Years of Milestones Coffee Table book** documenting not only DA-PCC's accomplishments as an agency, but also the personal contributions of its personnel and workforce (pillars, pioneers, and new generation of future leaders) to a noble cause.
- ▶ **Production of souvenir programs** for DA-PCC's **30th anniversary** and **9th National Carabao Conference**, respectively.
- ▶ **Production of Transforming Communities through Agriculture: Reflections on Volunteer Work at DA-PCC book**
- ▶ **31 audio-visual materials** for aggressive promotion of various components of CDP
- ▶ **Launching of the 2023 Corporate AVP** and 30-year Milestones AVP during the DA-PCC's 30th anniversary in March
- ▶ **Launching of the Dairy Herd Buildup Project AVP** detailing the project's thrust and goal to boost local dairy stocks and milk production by establishing dairy buffalo agistment farms during the 9th Carabao Conference in Cebu.
- ▶ **Launching of the #DocuSeries** featuring success stories of Analyn Tade of La Union, Richard Reyes of Pampanga, Grace Boyles of Bohol, The Rosario Livestock and Agriculture Farming Cooperative, Baclay Multi-Purpose Cooperative, the carabao upgrading efforts of Isabela, and the carabao industry in Bohol through its provincial government's steadfast support.
- ▶ **Launching of the new DA-PCC's official jingle titled "Wow na Wow sa Kalabaw"** during 9th NCC.
- ▶ **Launching of the new edition of Dairy Buffalo Handbook**
- ▶ **Reprinting of FLS session guide and technical handouts and AI manual**



- ▶ Promotion of **DA-PCC knowledge portal** for digitized knowledge products with a total of **596 subscribers** as of December 2023 and a **satisfaction rating of 4.53**.

A total of **145,611 copies of knowledge products** were distributed by the regional centers

- ▶ and KMD to **73,168** identified PCC stakeholders, visitors, clients, and partner institutions

A total of **76 documentations, communication activities, and legworks** were translated into knowledge products and other reports

AWARDS



Binhi Awardee
Best Agri
Government
Publication
KARBAW
Magazine

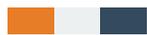
OTHER MEDIA FORMS

- ▶ The KMD has facilitated and recorded **24 media exposures** in diverse news platforms (TV, Radio, Press, Online, and Social Media) such as Sunstar, Philippine Daily Inquirer, PhilStar, Philippine News Agency, Manila Times TV and online news, SMNI, UNTV, DWNE Teleradyo, GMA-7 24 Oras featuring Lakas Kalabaw, Manila Bulletin, and Philippine Information Agency, among others and has uploaded **247 online contents** to the PCC website and popular social media (Facebook).
- ▶ Conducted **six Cara-Ugnayan activities** with media partners and farmers in Nueva Ecija, Zamboanga Peninsula, Southern Leyte, Antique, and Cebu
- ▶ Successfully conducted **training workshop titled “Strengthening CDP Promotion through leveraging KM services”**, participated in by 12 regional knowledge managers (RKMs) across the DA-PCC network nationwide. The training workshop aimed to empower RKMs to become key drivers of effective knowledge management within their respective regional centers. By enhancing their knowledge and capabilities in information dissemination, learning events facilitation, and visitors’ assistance, they will be better equipped to leverage knowledge assets, promote knowledge sharing, and facilitate organizational learning.

ENHANCING THE SKILLS OF FARMERS & OTHER EXTERNAL CLIENTS

The DA-Philippine Carabao Center’s **Learning Events Coordination Section (LECS)**, under the Knowledge Management Division (KMD), organized and facilitated **10 webinars** attended by **1,088 participants**. These online events covered technical training in Production Support Services and Marketing Support Services. Topics included:

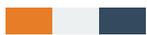
- ▶ May Magandang Bukas sa Paggagatas
- ▶ Kumikitang Kabuhayan sa Gatasang Kalabaw
- ▶ Kwento at Kwenta ng Tagumpay ni Lodivico Guieb
- ▶ Kwento at Kwenta ng Tagumpay ni Emily
- ▶ Rumen Development, Nutrient Needs and Feed Formulation
- ▶ Feeding Management Practices for Calf, Growing, Breeding, and Lactating Dairy Animals
- ▶ Kardeli: Meet the New Meat
- ▶ Ka’gatas: Bagong Henerasyon sa Kalabawan
- ▶ Tamis ng Tagumpay ni Aying’s Pastillas
- ▶ Hataw sa Kooperasyon, Hataw sa Kita



FARMER LIVESTOCK SCHOOL ON DAIRY BUFFALO PRODUCTION (FLS-DBP)

Developed by DA-PCC's KMD, FLS-DBP aims to enhance dairy buffalo production practices, promoting efficiency and income through modern technology options. A re-tooling workshop for FLS-DBP

Facilitators trained **44 participants from Cagayan and Bohol** in 2023, achieving a **13.30% knowledge gain** among farmer-trainees through pre and post evaluation tests.



SOA IN CALABARZON

DA-PCC at UPLB, in partnership with DA-ATI, conducted a **School-on-the-Air (SOA)** in CALABARZON to facilitate learning of smallholder carabao keepers on dairy buffalo production. The SOA, comprising **16 episodes** aired on **Radio Natin Laguna 106.3 FM and 95.1 KISS FM** from June 27 to August 16, 2023, graduated **445 farmer-enrollees**, achieving a **13.69% knowledge gain**.



SOA IN CEBU

DA-PCC at USF, with Cebu Technological University-Tuburan and FCCT, conducted another SOA on Dairy Buffalo Production broadcasted on **Bulawanong Tinubdan (BT) radio at 98.1 MHz**. The program included **16 episodes** and involved **230 carabao keepers and stakeholders** in its graduation ceremony.



KBGAN IHEALTH AND IFEED APP AND REFRESHER COURSE ON ANIMAL HEALTH AND NUTRITION

The DA-PCC, in collaboration with Grameen Foundation, developed two mobile apps called **iHealth and iFeed** under the **Knowledge, Brokerage, Guidance, and Advisory Network (KBGAN)**. These apps assist extension professionals (EPs) in providing animal health and feeding management advisory services to carabao raisers. A **hands-on training** at Visayas State University trained **15 EPs** and included a refresher course on animal health and nutrition, achieving a **36% knowledge gain** through pre and post evaluation tests.



ASSISTANCE TO VISITORS AND CUSTOMERS SATISFACTION RATING

The Learning Events Coordination Section (LECS) of KMD welcomed and assisted **1,270 scheduled and walk-in visitors** in orientation about DA-PCC programs and services, with a satisfaction rating of **4.64 out of 5**. Additionally, the LECS developed a **PCC Virtual Tour** of the National Headquarters and Gene Pool, attracting **633 visitors** in 2023 with a satisfaction rating of **4.59**.



INSTALLATION OF CARABAO DEVELOPMENT PROGRAM-KARUNUNGAN, IMPORMASYON, AT OPORTUNIDAD SA KALABAWAN (CDP-KIOSK)

Initiated by the KMD, the **CDP-KIOSK** provides easy access to DA-PCC knowledge products. In 2023, **five kiosks** were installed in selected local government units and universities including **Rosario Batangas, Maitum Sarangani, Central Luzon State University, Visayas State University, and Cebu Technological University - Tuburan**. The CDP Kiosk received a client satisfaction rating exceeding **4.23**.




**PLANNING &
INSTITUTIONAL
DEVELOPMENT**



ADVISORY BOARD MEETING

DA-PCC held a Special Advisory Board Meeting on August 11, 2023, chaired by DA Usec. Domingo F. Panganiban of the Department of Agriculture. The meeting included updates on Senate Bill No. 119 and plans to establish a satellite facility in Bicol for herd development, including a liaison office and liquid nitrogen depot to support buffalo enterprises. The Advisory Board Committee approved several resolutions:

- ▶ **Delegation of policy formulation to the DA-PCC Program Management Committee.**
- ▶ **Adoption of Evaluation Criteria for Farmers' Representatives on the Advisory Board.**
- ▶ **Implementation of the Dairy Buffalo Entrustment Agreement through Cooperative Conduit Scheme.**
- ▶ **Implementation Guidelines for the Buffalo Agistment Service Program.**
- ▶ **Institutionalization of the Intellectual Property Policy and Technology Transfer Protocol.**



PUBLIC CONSULTATION

DA-PCC conducted a public consultation on October 16-17, 2023, to identify gaps in dairy farming. Stakeholders discussed challenges across regions, leading to insights for the Carabao Foresight 2026-2040.



US PL480: INTENSIFIED COMMUNITY-BASED DAIRY ENTERPRISE DEVELOPMENT

The agency continued implementing the US PL480 project until December 2023, focusing on enhancing dairy enterprise development among family businesses. Key activities included:

- ▶ **Food Safety Business Talks** held in Bacolod City, North Luzon, Tagaytay, and Maramag, Bukidnon, aimed at improving food safety practices in the dairy supply chain.
- ▶ **A Business Talk Learning Event for Youthpreneurs** in Cebu City on October 17, 2023, aimed at engaging youth in agriculture and preparing them for leadership roles.
- ▶ **Feed and Forage Development Projects** in Luzon, Visayas, and Mindanao to support sustainable carabao-based farming.



These efforts are integral to achieving the agency's Carabao Development Program objectives, focusing on enhancing value chain outcomes and promoting enterprise growth in the carabao industry through practical research and applied technologies.



LOCAL & INTERNATIONAL PROPOSALS

In addition to ongoing local and foreign projects, DA-PCC has submitted two foreign proposals and four local projects under FY 2023 Tier 2 proposals:

1. A foreign proposal under the KOICA project titled **'Enhancing Carabao Smallholder Farm Productivity through the Establishment of a National Dairy Herd Improvement System in the Philippines.'**
2. **Capacity Building on Drone Utilization for Forage Production in the Philippines (2025-2027).'**

The four local projects proposed are:

1. **'Infrastructure Repair and Relocation of DA-PCC's Facilities in Selected Impact Zones'**
2. **'Carapreneurship: Building Stronger Communities through Upscaling of Buffalo-Derived Products'**
3. **'Enhancement of ICT Network Infrastructure, Equipment, and Databases of PCC and its Regional Centers in support of monitoring, database buildup, and online information sharing.'**

These initiatives are aimed at continual enhancement and contribution to the Carabao Development Program.



FINANCIAL SERVICES PROVIDED

One of the functions of the section is to provide business planning and consultancy support services to internal and external clients. For the year 2023, the following services were provided by the team:

- ▶ **Milka Krem Incremental Investment Analysis**
- ▶ **Presentation of Financial Analysis in Cebu City**
- ▶ **10-Cow Module**
- ▶ **Daily rearing cost for the 2024 dairy herd buildup budget proposal**
- ▶ **PCC Dairy Buffalo Farm Business Model for Presentation to LGU**
- ▶ **School on the Air Speaker (CBED and Financial Management of Carabao Businesses)**
- ▶ **Revision of Milk Payment Slip**
- ▶ **Discussion of Carabao Business Portfolio to the Army**
- ▶ **Presentation of Economic Viability of Meat Value Chain Products**
- ▶ **Dairy Buffalo Business Portfolio Summary and Presentation**



CARABAO VALUE CHAIN BUSINESS PORTFOLIO ANALYSIS DEVELOPED

Six Business Portfolio Analyses were developed and will be reproduced as knowledge products of the agency. The following modules are included in the portfolio:

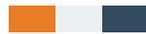
- ▶ **5-head Fattening Business**
- ▶ **10-head Fattening Business**
- ▶ **Grow-out (Agistment)**
- ▶ **Artificial Insemination (Group)**
- ▶ **Artificial Insemination (Individual)**
- ▶ **Kardeli All Day Breakfast**



INTENSIFIED RESEARCH-BASED ENTERPRISE BUILDUP (iREB) DASHBOARD UPGRADE

The iREB Dashboard, designed to monitor clients' production and business performance, is being utilized by the 12 regional centers and the NDBH. The web-based dashboard underwent updates along with the development of a mobile app as a data gathering tool for the system.

Key updates included **speeding up data processing, enhancing graphics and visualization, fixing errors, adding features like exporting to Excel or PDF, and introducing dashboards for processing and marketing outlets for cooperatives.** The upgraded support-to-client monitoring systems were cascaded to DA-PCC and its value chain players on December 29, 2023, via Zoom, attended by NDBH and Regional CBED coordinators.



PCC BUSINESS TALK

The Business Talk for the DA-PCC Business Operating Units was designed to build the capacity of those who manage them. Given the structural changes due to personnel turnover and the requirement to become self-liquidating units, a new round of business talks with the theme **"Regroup, Refocus, Rebrand: Becoming Business Professionals for Modern Day Agriculture"** was proposed. This aimed to increase competence among service frontliners and introduce a new brand of excellence to clients.

Conducted at the Development Academy of the Philippines, Tagaytay City from May 29 to June 1, 2023, it was attended by **77 PCC staff** from national headquarters and regional centers. The topics discussed were:

PROGRAM 1: REGROUP

- ▶ Review of business concepts
 - ▶ Basic Business Principle
 - ▶ Practical Tips on Grammar & Writing
 - ▶ Refresher Course on Fiscal Management
- ▶ Relearning analytical tools and methods
 - ▶ Financial Statement Analysis and Ratios
 - ▶ Cost & Benefit Analysis
 - ▶ Product Costing & Pricing
- ▶ Reinforcing IT capacities towards digitalization
 - ▶ iREB Client Dashboard

PROGRAM 2: REFOCUS

- ▶ Review of written plans
 - ▶ Livestock Development Agenda
 - ▶ Carabao Industry Roadmap
 - ▶ DA-PCC Strategic Direction
- ▶ Workshop: Needs Assessment
 - ▶ Post-pandemic emergent qualities for a more competitive carabao value chain
 - ▶ Identifying weak links and interventions
 - ▶ The Carabao Industry we all want workshop
 - ▶ Strategic Visioning and Planning
 - ▶ Creating leaders for the Vision
- ▶ Industry Fact Sheet Presentation

PROGRAM 3: REBRAND

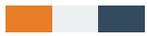
- ▶ The new brand of business excellence
 - ▶ The league of capable business professionals
 - ▶ Highly knowledgeable in finance and marketing
 - ▶ Tech-savvy
 - ▶ Networking specialists
 - ▶ Continuous learners
 - ▶ Carabao raisers and cooperatives as symbols of financial and economic stability
 - ▶ Sustaining the Brand: The Continuing Business Talks Agenda



BUSINESS TALK FOOD SAFETY SERIES

In collaboration with the food safety team, these business talks addressed gaps in food safety knowledge and practices among dairy supply chain players. Topics covered were **food hazards, safety practices, GMP, milk quality, environmental sanitation, animal husbandry, and dairy safety regulations**. A total of **332 farmers and processors from cooperatives** participated across four clusters:

1. **Visayas**: September 11-15, 2023, at Negros Residences, Bacolod City
2. **North Luzon**: September 25-29, 2023, at DA-PCC National Headquarters and Gene Pool, Nueva Ecija
3. **South Luzon**: November 6-10, 2023, at Development Academy of the Philippines, Tagaytay City
4. **Mindanao**: November 13-17, 2023, at Margarette Hotel, Maramag, Bukidnon



BUSINESS TALK LEARNING EVENT FOR YOUTHPRENEURS

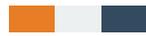
To foster sustainable development in the dairy business, youth were engaged through business talks. These talks aimed to impart knowledge and skills on cooperative and business literacy. The event included topics on cooperativism and basic business principles, attended by **36 youth participants** across two clusters:

1. **Mindanao**: July 25-28, 2023, at Go Hotels Lanang, Davao
2. **Visayas**: October 15-16, 2023, at Lamac, Pinamungajan, Cebu



DAIRY BOXES AUDITED AND MONITORED

Thirty-four Dairy Boxes across DA-PCC-assisted cooperatives were visited for store audits by the team, alongside the Dairy Box Standardization Team and the Product Development and Innovation Section (PDIS). Financial reports from 23 visited Dairy Boxes were monitored, and 31 processing facilities were audited. The visited Dairy Box branches included those in **Tukuran, ICM, Ubay, Carmen, Parian, Pinamungajan, Compostela, Dapitan, Dumalinao, Barotac, Pandan, Hamtic, Isabela, Cagayan, Nueva Viscaya, Muñoz, Pangasinan, Rosario La Union, Davao de Oro, Davao Oriental, Davao del Sur, Surallah (South Cotabato), Sarangani, Misamis Occidental, Agusan del Sur, Victoria, Orani, Dinalupihan, Masinloc (Zambales), Aurora, Oriental Mindoro, Rizal, Sorsogon, and Albay**.



DA-PCC BUSINESS UNITS MONITORING

Monthly performances of PCC IHs and PMOs were monitored through dashboards. These performance indicators were reported and presented at the Program Management Committee (PMC) meeting. The revolving fund of DA-PCC's income-generating units (MK, NGP, Hostel) was also monitored through these dashboards, focusing on its self-liquidating rate.



KARDELI TECHNOLOGY VALUATION

Kardeli offers premium carabao meat products, including choice cuts, sausages, and special recipes. As the latest addition to the carabao-based enterprises modeled by DA-PCC, Kardeli was assessed for its value to license as intellectual property.

RESEARCH PROPOSALS

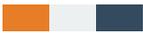
Two ongoing research projects are expected to be completed in 2024:

1. Financial Viability of the Dairy Buffalo Farming Business

One aim of the Carabao Development Program (CDP) is to improve the income of rural farming families. This research assesses the feasibility of various carabao businesses, including dairy buffalo farming modules with different startup cow head numbers, silage production, and vermicast production. The study applies cost and benefit analysis to determine the viability of these businesses. This research was submitted to the socio-economics category and presented at the 60th Philippine Society of Animal Science (PSAS) Scientific Meeting and Annual Convention in Tagbilaran City, Bohol, on October 17-18, 2023.

2. Technical Efficiency and Technology Adoption in Dairy Buffalo Milk Production in Central Luzon, Philippines

This study examines the potential for increasing technical efficiency among farmers through the adoption of specific technologies and practices. Using Total Factor Productivity Analysis, it aims to identify how inputs influence milk production. This research will help guide farmers and extension officers in enhancing milk output and identifying champion dairy farmers.



IMPLEMENTATION OF THE DAIRY HERD BUILDUP

The DA-PCC received **PHP698M** from the Congress Introduced Changes/Adjustment (CICA) initiative of Sen. Cynthia A. Villar through the FY 2023 General Appropriations Act, RA 11936. This project aims to increase local dairy stocks and milk production. Tasks included:

- ▶ **Budget Breakdown**
- ▶ **Analysis on Agistment Contract**
- ▶ **Profitability Analysis of Agistment**
- ▶ **Cash Allocation and Disbursement to Centers**
- ▶ **Monthly Downloading of Funds**
- ▶ **Financial Accomplishment Report for SPCMAD**



IMPLEMENTATION OF KARDELI STANDARDIZATION PL480 COMPONENT

In 2023, the following tasks were performed for Kardeli Standardization:

- ▶ **Kardeli Restaurant Business Analysis**
- ▶ **Kardeli Menu Costing**
- ▶ **Break-Even Point Analysis**



CREDIT FACILITATION SERVICES

One request for assistance was made for the PRDP Proposal, which involves the Value Adding of PMOs.



INFORMATION MANAGEMENT SYSTEM

The DA-PCC’s Planning and Information Management Division-Information and Communication Technologies Section (PIMD-ICTS) facilitated the continuous development, operationalization, and digitalization of the Finance and Administrative Support Tracking System (FAST System) to monitor financial transactions. The ICTS also enhanced the online Intensified Research-based Enterprise Buildup (iREB) Dashboard System (version 2.0) for client/farmer analysis and the Major Final Output (MFO) dashboard to measure the agency’s physical targets and budget utilization.

The ICTS maintains various online systems, including:

- ▶ **DA-PCC Main Website**
- ▶ **MFO Dashboard**
- ▶ **Records Management Information System**
- ▶ **Online Master Calendar**
- ▶ **iREB Dashboard**
- ▶ **Knowledge Portal**
- ▶ **HRMIS**
- ▶ **eNGAS**
- ▶ **eBUDGET**
- ▶ **Virtual Tour Website**
- ▶ **KBGAN Website**

The ICTS also upgraded and maintained several desktops, CPUs, laptops, and servers at DA-PCC operating units and regional centers. This included acquiring and upgrading 40 computers and other ICT peripherals with MITHI funds. Continuous maintenance and patch upgrading of the Windows Server Data Center 2019 edition Operating System, SOPHOS Firewall, Secure Socket Layer (SSL) for cybersecurity, and licensed software (Microsoft Windows 11, Microsoft Office 365, Adobe CS 6) were achieved. Regular updates of the Symantec End Point Protection Server and client-based anti-virus ensured a virus-free Local Area Network (LAN), protecting all computer units joined in the LAN-Active Directory from computer viruses.



A. INDUSTRIALIZATION AND MODERNIZATION



PRODUCTION SUPPORT SERVICES PROVIDED TO CLIENTS

The DA-PCC provided a total of **350,887 production support services** to **216,342 clients**. These services included distributing **225,000 semen straws** to village-based artificial insemination technicians (VBAITs), LGU technicians, and other institutional partners across the DA-PCC network coverage areas. Additionally, **30,844 calves were produced**. Production support services covered forage production, improved feeding systems, animal nutrition, animal health, genetic improvement, reproduction, milk production and processing, and cooperative development.

Production Support Services Provided to Clients by Island Clusters				
	No. of Services	Percentage	No. of Clients	Percentage
Luzon (Nueva Ecija, Cagayan, Isabela, Bulacan, Ilocos Norte)	186,107	53	105,651	49
Visayas (Iloilo, Bohol, Negros Oriental, Cebu, Leyte)	123,755	35	63,655	29
Mindanao (Bukidnon, North Cotabato, Zamboanga del Norte, Agusan del Sur, Zamboanga del Sur)	41,025	12	47,036	22
TOTAL	350,887	100	216,342	100

No. of genetically improved calves produced		
	No. of calves produced	Percentage
Luzon (Nueva Ecija, Cagayan, Isabela, Bulacan, Ilocos Norte)	19,932	65
Visayas (Iloilo, Bohol, Negros Oriental, Cebu, Leyte)	8,785	28
Mindanao (Bukidnon, North Cotabato, Zamboanga del Norte, Agusan del Sur, Zamboanga del Sur)	2,127	7
TOTAL	30,844	100

No. of Organized Groups provided with Market Development Services		
	No. of Organized Groups	Percentage
Luzon (Nueva Ecija, Cagayan, Bulacan, Laguna, Bataan)	154	71
Visayas (Bohol, Iloilo, Negros Occidental, Leyte, Cebu)	41	19
Mindanao (Bukidnon, North Cotabato, Zamboanga del Norte)	22	10
TOTAL	217	100

Volume of Buffalo-derived Products Traded (kgs)		
	Volume	Percentage
Luzon (Nueva Ecija, Bulacan, Cagayan, Isabela, Laguna)	4,996,770	75
Visayas (Bohol, Leyte, Iloilo, Cebu, Negros Occidental)	666,312	10
Mindanao (Bukidnon, North Cotabato, Zamboanga del Norte, South Cotabato, Agusan del Norte)	962,284	15
TOTAL	6,625,365	100

Value of Buffalo-derived Products Traded (PHP)		
	Value	Percentage
Luzon (Nueva Ecija, Bulacan, Cagayan, Isabela, Laguna)	390,082,536	64
Visayas (Bohol, Leyte, Iloilo, Cebu, negros Occidental)	105,277,350	17
Mindanao (Bukidnon, North Cotabato, Zamboanga del Norte, South Cotabato, Agusan del Norte)	115,200,579	19
TOTAL	610,560,465	100

B. CONSOLIDATION



MARKET DEVELOPMENT SERVICES

There were **217 organized groups** provided with Market Development Services. The organized groups were able to trade **6,625,365 kg of buffalo-derived products** amounting to **PHP610,560,465**.

As part of the Market Development Services, Dairy Box was established under CBIN, CCDP, and PL480 Projects. In December, **nine new Dairy Box store** and processing plant were established in the provinces of **Aklan, Camarines Sur, Davao Occidental, Davao Oriental, Isabela, Misamis Occidental, Pampanga, Surigao del Sur, and Zambales**.

No. of Dairy Box Established		
	No.	Percentage
Luzon (Apayao, Aurora, Cagayan, Camarines Sur, Isabela, Pampanga, Rizal, and (2) Zambales))	9	41
Visayas (Aklan, Guimaras, Negros Oriental, and Bohol)	4	18
Mindanao (Agusan del Sur, Davao Occidental, Davao Oriental, (2) Misamis Occidental, South Cotabato, (2) Surigao del Sur and Zamboanga Sibugay)	9	41
TOTAL	22	100

No. of Processing Plants Established		
	No.	Percentage
Luzon (Aurora, Camarines Sur, Isabela, Pampanga, Rizal, and (2) Zambales))	7	35
Visayas (Aklan, Guimaras, Negros Oriental, and Bohol)	4	20
Mindanao (Agusan del Sur, Davao Occidental, Davao Oriental, (2) Misamis Occidental, South Cotabato, (2) Surigao del Sur and Zamboanga Sibugay))	9	45
TOTAL	20	100

Moreover, **60 organized groups** were linked to the milk-feeding program across the country, resulting in the provision of **140,494.95 liters of milk** that benefitted **119,850 children**.

Organized Groups linked to the Milk Feeding Program		
	No.	Percentage
Luzon (Albay, Cagayan, Cavite, Bataan (4), Batangas (2), Bulacan (2), Ilocos Norte, Ilocos Sur, Isabela (2), Laguna (2), La Union, Nueva Ecija (10), Oriental Mindoro, Palawan, Pangasinan, Rizal, Sorsogon, Masbate)	34	57
Visayas (Antique (2), Bohol, Cebu (2), Guimaras, Negros Occidental, Negros Oriental, Leyte, Iloilo (2))	11	18
Mindanao (Agusan del Norte, Bukidnon, Cotabato (2), Davao del Norte, Davao de Oro, Davao del Sur, Misamis Oriental, Misamis Occidental, Sarangani, South Cotabato, Zamboanga Sibugay, Zamboanga Del Sur, Zamboanga Del Norte (2))	15	25
TOTAL	60	100

Volume of Milk (in liters)		
	Volume	Percentage
Luzon (Bataan, Bulacan, Cagayan, Ilocos Norte, Isabela, Nueva Vizcaya, Pampanga, Quirino, Zambales)	78,385.72	56
Visayas (Antique, Bohol, Capiz, Guihulngan City, Iloilo, Negros Oriental, Leyte)	57,854.06	41
Mindanao (Agusan del Sur, Agusan del Norte, Bukidnon, Cotabato, Surigao del Sur, Surigao del Norte)	4,255.17	3
TOTAL	140,494.95	100
	No. of children beneficiaries	Percentage
Luzon (Bataan, Bulacan, Cagayan, Ilocos Norte, Isabela, Nueva Vizcaya, Pampanga, Quirino, Zambales)	50,002	42
Visayas (Antique, Bohol, Capiz, Guihulngan City, Iloilo, Negros Oriental, Leyte)	48,341	40
Mindanao (Agusan del Sur, Agusan del Norte, Bukidnon, Cotabato, Surigao del Sur, Surigao del Norte)	21,507	18
TOTAL	119,850	100

C. PROFESSIONALIZATION

EXTENSION SUPPORT, EDUCATION, AND TRAINING SERVICES (ESETS)

A total of **28,773 clients** received ESETS, including training, program orientations, and **145,611 knowledge products** or IEC materials. The ESETS accomplishment is on track, utilizing ICT platforms such as webinars to deliver these services to clients.

No. of Clients Trained		
	Clients Trained	Percentage
Luzon (Nueva Ecija, Ilocos Norte, Cagayan, Pangasinan, Laguna)	5,722	20
Visayas (Bohol, Leyte, Iloilo, Antique, Negros Oriental)	17,888	62
Mindanao (Bukidnon, North Cotabato, Zamboanga del Norte, South Cotabato, Agusan del Norte)	5,163	18
TOTAL	28,773	100

BABAE KASI KAMI!

BABAE
KASI KAMI!

BABA
KASI KAM



GENDER AND DEVELOPMENT PROGRAM

GOAL #1

IMPROVED INSTITUTIONAL CAPACITY FOR GENDER MAINSTREAMING

1. GAD-Related Learning Events

- Kick-Off Celebration and Opening Program of the 2023 National Women's Month
- Special Cara-Aralan Webinar Episode featuring Female Carapreneurs
- Attendees: 200 men and women

2. Training and Workshops

- Three-day Enhanced Gender Mainstreaming Evaluation Framework (GMEF) Training Workshop
- GAD Planning and Budgeting Coaching and Mentoring
- Attendees: 35 GFPS Committee Members

3. Special Leave Benefits

Provided special leave benefits for women who underwent surgery for gynecological illnesses (Section 19 of Magna Carta for Women and CSC Resolution 1000432 s. 2010), Solo Parent Leave, and Maternity Leave.

- Beneficiaries: 2 PCC women employees

4. International Women's Day Promotion

Milka Krem offered a one-day 5% discount on all products on March 8 as part of the "Serbisyo para Kay Juana" to appreciate women's contributions to society.

5. Video Presentation

Produced a short video highlighting the important roles of women in society, presented during the Opening Program of the 2023 National Women's Month.

GOAL #2

INCREASED WOMEN'S ACCESS TO TECHNOLOGIES AND SERVICES

1. Market Development Services

Assisted 10,760 women in market development services (MDS).

2. Production Support Services

Provided production support services and access to technologies to 16,694 women.

3. Extension Support, Education, and Training Services (ESETS)

9,329 women participated in ESETS conducted by DA-PCC.

35,185 women received IEC materials.

GOAL #3

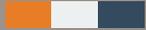
INCREASED PARTICIPATION OF WOMEN IN DA-PCC PROGRAMS

1. Documentation and Recognition:

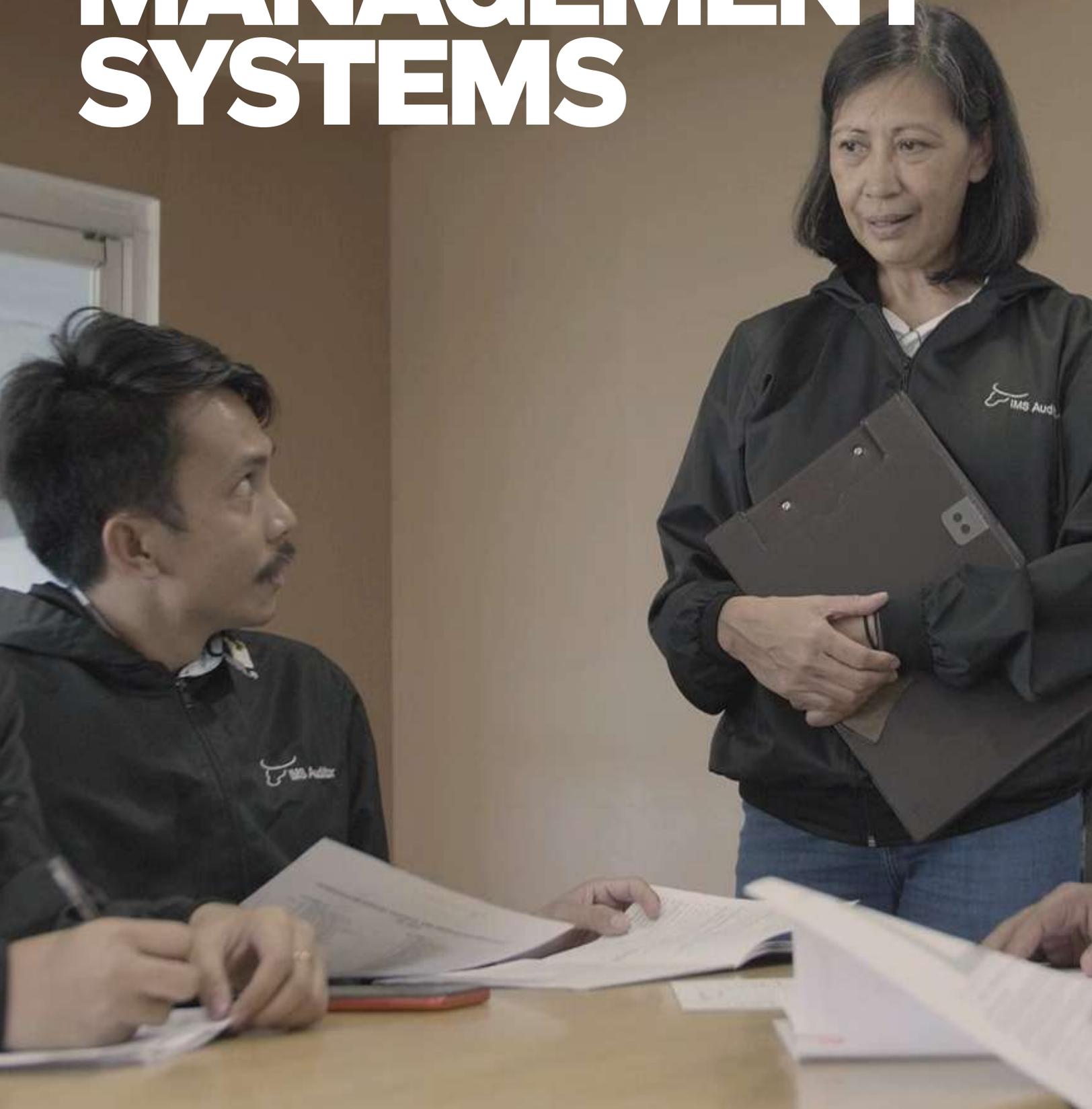
Conducted a national search for Huwarang Juana and Huwarang Kabataan to recognize outstanding women and youth for their contributions to carabao development programs.

Recognized:

- 10 women and youth clients, with their stories documented
- One woman as Huwarang Juana
- One youth as Huwarang Kabataan



INTEGRATED MANAGEMENT SYSTEMS





AT THE NATIONAL HEADQUARTERS AND GENE POOL

ISO CERTIFICATION MAINTENANCE

ISO 9001:2015; ISO 14001:2015; and ISO 45001:2018

1. Conducted internal audits on all processes to measure performance, including the quality of products and services.
2. Held **two Management Review Meetings** to assess policy appropriateness, objective achievement, and discuss issues affecting the Integrated Management Systems. These meetings also reviewed and reassessed risks and opportunities at the agency level.
3. Presented **44 educational video topics** on Environmental, Occupational Health, and Safety at lobby monitors and Monday start-off meetings, enhancing compliance with Environmental and Occupational Health and Safety Management Systems.
4. Passed the **second surveillance audit with no "Major Nonconformity,"** completing 7 cycles of ISO 9001 certification and 4 cycles of ISO 14001 and ISO 45001 certification.

LEGAL AND OTHER REQUIREMENTS (LOR) COMPLIANCE

1. For Employees:

- ▶ Conducted mandatory drug testing.
- ▶ Performed annual physical and medical examinations to ensure a healthy workplace, preventing the transmission of communicable diseases.
- ▶ Conducted mandatory fire and earthquake drills to measure employee preparedness for emergencies.

2. For Facilities:

- Maintained validity of:
- ▶ License to Operate from Food and Drugs Administration
 - ▶ Permit to Operate for 5 standby gensets
 - ▶ Permit to discharge wastewater
 - ▶ Renewed License from the Philippine Drug Enforcement Agency (PDEA) for the use of Controlled and Precursor Elements and Chemicals (CPECs) in different laboratories
 - ▶ Fire Safety Inspection Certificate (FSIC)



INTERNAL AUDIT PROCESS STRENGTHENING

Enhanced the capability of designated auditors through:

1. Lead Auditor's completion of the International Registry of Certificated Auditors (IRCA) accredited Lead Auditor's Training Course (LATC) on ISO 9001:2015.
2. Conducting foundation courses on Quality Management System and Environmental Management System.
3. Conducting workshops on IMS Audit Findings Classification, Explanation, and Writing.



HEALTH & SAFETY INITIATIVES

- ▶ Launched the "Balik Sigla Program" and Virtual Walkathon version 2.0, recognizing employees who completed a 75-kilometer walk within 3 months.
- ▶ Administered pre-exposure anti-rabies vaccines to select staff conducting fieldwork and extension services.
- ▶ Coordinated with CHO-Muñoz for the administration of flu and pneumococcal vaccines.
- ▶ Coordinated with BFP-Muñoz for Fire Hose and Fire Extinguisher Training.



AT THE REGIONAL CENTERS



QUALITY MANAGEMENT SYSTEM (ISO 9001:2015) CERTIFICATION

1. Assisted in the successful certification of DA-PCC at DMMMSU to ISO 9001:2015.
2. Supported the sustained certification of DA-PCC at WVSU, DA-PCC at VSU, and DA-PCC at USM to ISO 9001:2015.
3. Conducted Internal Quality Audits (IQAs) at six centers: DA-PCC at MLPC, DA-PCC at USM, DA-PCC at CMU, DA-PCC at VSU, DA-PCC at LCSF, and DA-PCC at DMMMSU.



TRAININGS AND WORKSHOPS

- ▶ Organized and facilitated training on Quality Management System Requirements and Internal Quality Auditing at DA-PCC at DMMMSU, DA-PCC at VSU, and DA-PCC at MMSU.
- ▶ Conducted ROA and RCA workshops with DA-PCC at USM, DA-PCC at VSU, DA-PCC at CLSU, and DA-PCC at WVSU.

PHILIPPINE CARABAO CENTER AT 30



HUMAN RESOURCE MANAGEMENT

your Today?

The DA-PCC Human Resource Management Section (HRMS) is responsible for managing the agency's workforce, fostering employees' professional and personal development, and meeting staffing requirements. The section also manages the screening and filing of vacant positions for both permanent and temporary personnel. This included job openings, screening of applicants, interviewing and testing qualified candidates. In addition, HRMS provides regular training and development programs for employee upskilling and focuses on strategic HRM practices tailored to enhance organizational capabilities and mission readiness. HRMS explores key principles and initiatives aimed at cultivating skilled and resilient manpower essential for achieving excellence.

Table 19. Personnel Complement (as of Dec. 2023)

No.	OPERATING UNIT	TOTAL FILLED POSITIONS (PERMANENT)	NO. OF VACANT POSITIONS
I.	Office of the Executive Director	4	-
II.	Administrative, Financial and Management Division	13	2
III.	Planning & Information Management Division	8	2
IV.	Research and Development Division	12	5
V.	Knowledge Management Division	5	-
i.	Central Luzon State University	16	1
ii.	University of the Philippines Los Baños	8	3
iii.	Cagayan State University	5	3
iv.	Central Mindanao University	8	-
v.	Ubay Stock Farm	7	-
vi.	La Carlota Stock Farm	5	-
vii.	Mariano Marcos State University	5	2
viii.	Don Mariano Marcos State University	5	2
ix.	Visayas State University	5	1
x.	West Visayas State University	5	1
xi.	University of Southern Mindanao	8	1
xii.	Mindanao Livestock Production Complex	8	-
	TOTAL	127	23
	COTERMINOUS WITH THE INCUMBENT POSITIONS	42	4
	GRAND TOTAL	169	27

The agency has **203 authorized personnel (Plantilla Positions)**, of which 179 are filled while 32 are still unfilled.

RECRUITMENT, SELECTION AND PLACEMENT

Positions	FY 2024		
	Authorized	Filled	Unfilled
I. Permanent			
Key Positions	18	18	-
Administrative	19	15	4
Support Technical	16	14	3
Technical	156	132	25
Total No. of Permanent	203	179	32
II. Job Order (JO)	Authorized	Filled	Additional
Administrative	156	156	10
Technical	277	277	52
Total No. of JO Personnel	433	433	62
GRAND TOTAL	636	612	32 Unfilled 62 Additional COS

The agency's Human Merit, Promotion and Selection Board (HRMSPSB) continued to conduct the recruitment, selection, and placement activity. The HRMS served as the secretariat of the HRMSPSB and facilitated the conduct of screening of applicants virtually and in person.

The HRMS was able to **hire 6 new permanent employees, promote 5 existing plantilla positions, and hire 62 Contract of Service (JO) staff** assigned to the different operating units of the centers.



STRATEGIC PERFORMANCE MANAGEMENT

The HRMS continued to monitor the submission of performance evaluations of all employees and facilitated through the Performance Management Team, the request for target calibration of some operating units as well as concerns of employees in relation to their targets and accomplishments.



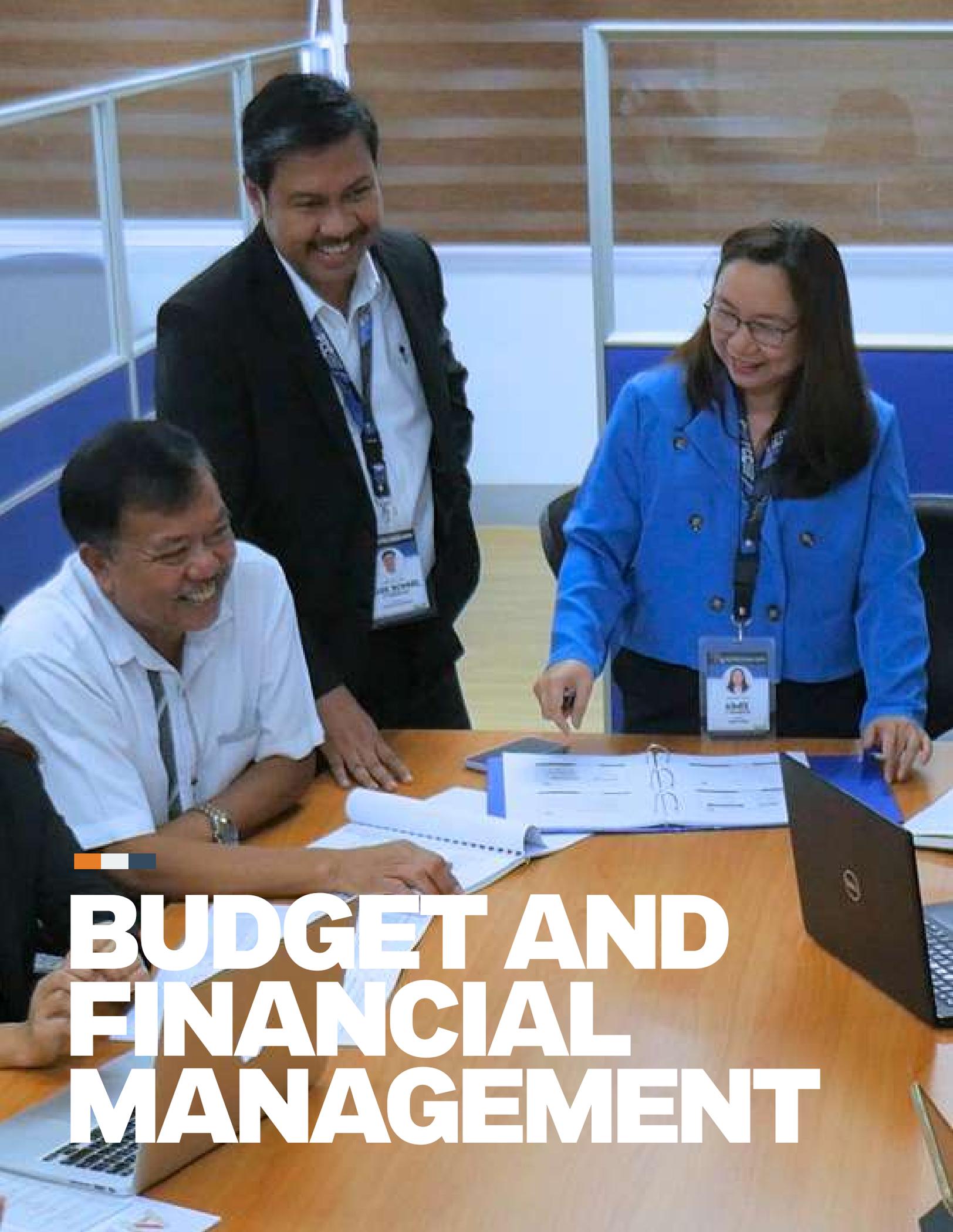
LEARNING AND DEVELOPMENT

The HRMS facilitated employee attendance to pertinent training and seminars through various online platforms for employee competency enhancement. Employee Training Request.

- 257** Total # Training Request Received
- 249** Total # Training Request Approved
- 8** Total # Training Request Disapproved

In terms of Awards and Recognitions, **5 outstanding employees** were recognized under the Program on Awards and Incentives for Service Excellence (PRAISE). The PRAISE awards adhere to the principle of providing incentives and awards based on performance, innovative ideas, and exemplary behavior of the DA-PCC and its network centers.

No.	NAME	POSITION / CENTER	AWARD
1.	Dr. Abraham G. Tandang	DA-PCC at UPLB	Most Outstanding Supervisor
2.	Ms. Rebecca Ruby G. Gabriel	DA-PCC at CLSU	Most Outstanding Development Officer
3.	Mr. Arnold B. Morales	DA-PCC at CSU	Most Outstanding Support Staff
4.	Knowledge Management Division	DA-PCC NHQ	Top Performing Unit
5.	DA-PCC at CLSU	DA-PCC at CLSU	Top Performing Regional Center



BUDGET AND FINANCIAL MANAGEMENT

The DA-PCC has remained committed to the government's objectives of public expenditure management reform. These commitments were reflected in the agency's operating budget for FY 2023, focusing specifically on critical aspects of the agency's financial management system:

a. **Fiscal discipline.** As a matter of policy, all agency units are expected to exercise due care and prudence in spending government funds. Fundamental principles governing financial transactions and operations have been consistently adhered to. Effective measures were implemented to prevent excessive and unwarranted expenditures, ensuring that all planned expenses align with the agency's strategic priorities.

b. **Fund management effectiveness.** In line with the government's public financial management reform roadmap, DA-PCC has continued to enhance the adoption of the Unified Accounts Code Structure (UACS) system across its regional centers. The UACS provides a standardized budgetary and accounting code classification, facilitating efficient and accurate financial reporting of actual revenues and expenditures. The institutionalization of UACS across DA-PCC networks has strengthened internal controls and risk management, streamlined financial reporting, and enhanced transparency and accountability in expenditure management. PCC also implemented the electronic New Government Accounting System (e-NGAS) in its Central Office and regional centers.

c. **Operational effectiveness.** In 2023, DA-PCC focused on enhancing engagement with program implementers and frontline service providers in the budget preparation process. A consultative mechanism was introduced involving partners and key stakeholders throughout the budget cycle and program implementation phases. Budgetary requirements for DA-PCC operating units were promptly provided in accordance with approved plans. Administrative policies, procedures, and processes were also implemented to increase operational transparency and minimize lead time in procuring critical goods and services. Additionally, strategies were initiated towards adopting a Cash Budgeting System.



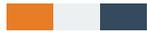
HIGHLIGHTS OF FY 2023 BUDGETARY EXPENDITURES

The DA-PCC implemented its **VIPPS 2020-2024 Medium-Term Strategic Plan** aimed at enhancing the development of the carabao value chain. This included providing essential services to farmers, forging partnerships with key stakeholders, and expanding the impact models of carabao-based enterprises.

In its inaugural year, DA-PCC prioritized enhancing its genetic program. This involved producing high-quality frozen sperm, cryobanking genetic materials, and conducting DNA-based screenings for genetic defects. The center also focused on educating farmers and training AI technicians to increase live births and reduce mortality through scientifically supported solutions, modern equipment, and expert knowledge dissemination.

Additionally, DA-PCC allocated funds to support carabao-based enterprises and strengthen partnerships, including establishing a value-chain portal and continuous support for multiplier business farms. Emphasizing genetic improvement, technological advancement, and carabao-based businesses, the center conducted significant Research for Development (R4D) to address critical industry issues.

Collaborative projects with the Department of Social Welfare and Development (DSWD), Department of Education (DepEd), and Philippine Coconut Authority (PCA) focused on combating malnutrition, poverty alleviation, and enhancing the income of coconut farmers through carabao's milk-based enterprises.



SOURCES AND USAGE OF FUNDS

The main sources of funds supporting DA-PCC’s operations are provided by the national government through the General Appropriation Act (GAA) and Revolving Fund. Key allocations and utilization details are presented below.

FUND SOURCE	AUTHORIZED TOTAL ALLOTMENT (a)	TOTAL OBLIGATION (b)	TOTAL DISBURSEMENT (c)	BUDGET UTILIZATION RATE (BUR)	
				OBLIGATION BUR (b/a)	DISBURSEMENT (c/b)
GAA - Current Appropriation	1,282,380	1,250,117	1,164,419	97.48%	93.14%
Personnel Services	162,216	161,541	160,954	99.58%	99.64%
Maintenance & Other Operating Expenses	595,282	573,129	539,655	96.28%	94.16%
Financial Expenses	-	-	-	-	-
Capital Outlay	524,882	515,447	463,810	98.20%	89.98%
GAA – FY2023 Continuing Appropriation	3,949	3,895	3,618	98.62%	92.90%
Revolving Fund-Dairy Business Module & Income from PCC Hostel Facilities	299,031	174,799	150,051	58.46%	85.84%
Special Projects	244,559	172,796	79,143	70.66%	45.80%
TOTAL	1,829,918	1,601,606	1,397,231	87.52%	87.24%

Research funding is allocated to special projects by various government agencies, with transfers from DOST-PCAARRD and DA-BAR supporting the development of carabao-based enterprises and genetic improvement initiatives. A substantial increase in funding is necessary for implementing the “Herd Buildup of Genetically Improved Dairy Buffaloes of the Philippine Carabao Center” project, amounting to **PHP698,879,000.00**. Additionally, the DA-PCC budget for 2023 includes **PHP58,415,000.00** for the second-year implementation of Foreign-Assisted Projects. Disbursements from the allocated funds align closely with the approved 2023 implementation plan.



RECOGNITION AND AWARDS

The DA-PCC achieved notable recognition for its effective financial and cash management throughout FY 2023. It received the **Overall Best in all DA Regional Field Offices, Bureaus, and Attached Agencies**, as well as the **1st Placer Award in the Attached Agency Category**. This marks the fourth consecutive year the agency has been honored, from FY 2020 to FY 2023, recognized during the DA Year-End Financial Evaluation and Assessment for FY 2023 held in Baguio City from March 11-15, 2024.



Department of Agriculture
PHILIPPINE CARABAO CENTER
CERTIFIED: ISO 9001 | ISO 14001 | ISO 45001

2023

Outstanding EMPLOYEES, CENTER, & UNIT



Outstanding CENTER

DA-PCC at UNIVERSITY OF THE PHILIPPINES LOS BAÑOS

For continuously exhibiting exemplary performance as evidenced by the level of achievement of its targets and its contribution to the Agency Programs and Sub-Programs.

For excellently demonstrating the execution of the three core programs of the Carabao Development Program (CDP) – the genetic improvement (GIP), carabao-based enterprise development (CBED), and the research and development (R&D).

For the GIP, the Center has persistently performed its task of producing full-blood dairy buffalo breed through continuous backcrossing, which resulted in the development of female buffalo cow, producing more than 3 tons of milk in its lactation period and 20 liters of milk at the peak of its lactation. It has also produced bulls, which were distributed to farmers under the bull loan scheme and some were selected as AI sires.

Through the implementation of CBED, the Center was able to facilitate carabao value chain development in strategic areas by helping progress the operations of 24 farmer cooperatives and associations (FCAs), and by engaging 12 new FCAs in dairy buffalo production as their main source of income; successfully assisted 13 FCAs in developing their processing and marketing facilities; actively linked eight FCAs as supplier of milk in the National Feeding Program; and has effectively encouraged the FCAs to record and evaluate their enterprise performance through the iREB dashboard.

The Center has significantly contributed in addressing carabao industry gaps through the implementation of 10 R4D projects in 2023, which were duly compliant with the R&D processes. By working as a team, the DA-PCC at UPLB management and staff were able to sustain their linkages with the government units at the provincial and municipal levels, and earned the support of various private and government agencies in implementing the CDP in Regions IV-A, IV-B and V, covering 15 provinces.



Outstanding CENTER DIRECTOR

DR. THELMA A. SALUDES

For her exemplary leadership in facilitating synergy and strategic partnerships with government agencies, academic institutions, and industry stakeholders that resulted in DA-PCC at UPLB's significant MFO achievements and contributions to the agency and the whole dairy industry.

For fostering innovation through research for development initiatives in promoting and operationalizing the Carabao Development Program across CALABARZON, MIMAROPA, and BICOL Regions, leading the development of top performing dairy buffalo crossbreds, and managing the implementation of 14 CBIN and CCDP Projects resulting in additional livelihood opportunities, increased income for carabao farming families, and transforming rural communities.

And for her passion for continuing DA-PCC's legacy of excellence, professionalism, integrity and innovativeness, commitment, and socio-ecological responsibilities amidst political, social, environmental, and geographic challenges of program implementation in South Luzon.



Outstanding SUPERVISOR

DR. ERIC P. PALACPAC

For more than 20 years of exemplary supervisory accomplishments and technical and practical experiences in the fields of agricultural program monitoring, evaluation, R&D, extension, knowledge management, learning events, and communication.

His meticulous attention to detail and innovative approaches have consistently delivered exceptional results. He has spearheaded the establishment of Knowledge Management practices, revolutionizing knowledge sharing and dissemination within the DA-PCC. He also led KM innovations on digitalization such as the KBGAN iHealth and iFeed mobile applications, Knowledge Portal, and Virtual Tour.

Under his guidance, the development and dissemination of knowledge products, including award-winning IECs, have effectively bridged the gap between research and practice, benefiting countless individuals and communities.



Outstanding RESEARCHER

PATRIZIA CAMILLE O. SATURNO

For her invaluable contributions to the development of various carabao-based products and technologies that added value to milk and carabao's meat.

Her significant effort in the technology transfer of Karabun, Karapops, Kardeli, mozzarella cheese, and sterilized toned carabao milk contributed greatly to the development and promotion of carabao-based products. Moreover, she published five utility models and registered two intellectual property rights, which resulted in various products' consumer acceptability, market stability, and income generation that benefited the carabao industry.



Outstanding DEVELOPMENT OFFICER

ERWIN C. ENCARNACION

For his exemplary dedication, creativity, and effectiveness in leading the successful implementation of the agency's Genetic Improvement Program such as the Artificial Insemination Program and the Bull Entrustment Program. His commitment to excellence and tireless advocacy has contributed significantly to establishing carabao-based enterprises in Region 3.

His outstanding commitment has significantly propelled the growth of the carabao population by intensifying carabao upgrading carried out by a team of organized village-based AI technicians and partner Local Government Unit AI technicians resulting in increased productivity and profitability for small-scale farming families.



Outstanding SUPPORT STAFF

HARNEL M. LASTIMOZO

For his unparalleled dedication and exceptional contribution to the successful implementation of artificial insemination (AI) services across the islands of Panay and Guimaras, significantly increasing calf drop rate and overseeing AI services as team leader. His performance has been crucial in achieving the Major Final Outputs (MFO) of the DA-PCC at West Visayas State University with an outstanding performance score of 102.87%.

His commitment extends far beyond the usual duties of a team leader. His willingness to assume multiple roles-as driver, messenger, herder, milker, and Bid and Awards Committee (BAC) member-epitomizes the spirit of dedication and selflessness. Working often behind the scenes, his contributions as a support staff member have been instrumental in the Center's success.

Top Performing CENTER

DA-PCC at
WEST VISAYAS STATE
UNIVERSITY (WVSU)

For being the 2023 top performing center with an average of 102.87% based on the Major Final Output (MFO) Scoreboard. Its excellent performance contributes to improved lives among rural farming communities in Panay and Guimaras islands through the advancement of carabao genetics, development and dissemination of new technologies, and establishment of carabao-based enterprises.

Top Performing UNIT

KNOWLEDGE
MANAGEMENT
DIVISION

For being the 2023 top performing unit with an average of 104.82% based on the Major Final Output (MFO) Scoreboard, and as evidenced by its contribution to the DA-PCC's Extension Support Education and Training Services (ESETS), it has significantly expanded the scope of its extension services. This remarkable performance led to the provision of a useful web-based application (KBGAN), along with advanced knowledge products and learning events, benefiting the livestock industry. The Division has scored this recognition in six consecutive years since 2018.



Scan the following QR codes to visit our Knowledge Portal and experience a virtual tour to the DA-PCC National Headquarters and Gene Pool



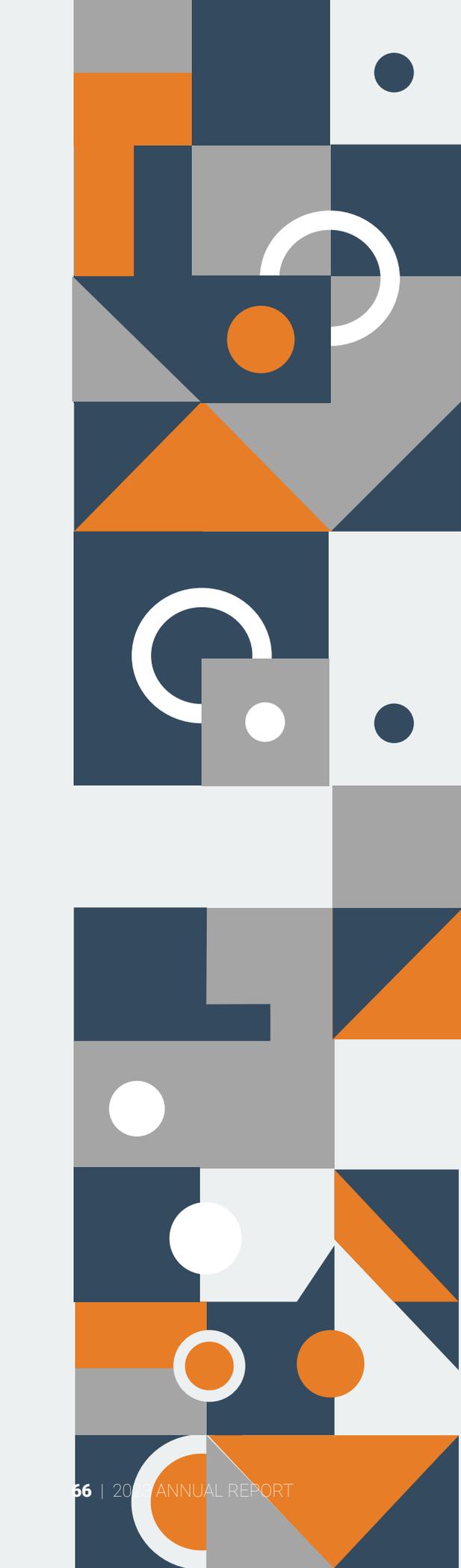
DA-PCC Virtual Tour

To know more about DA-PCC's services and facilities, you can now explore the National Headquarters and Gene Pool via virtual tour which can also be accessed in the agency's official website.



DA-PCC K-Portal

The DA-PCC Knowledge Portal (or simply called the K-Portal) serves as a hub or a one-stop e-platform for all knowledge products, in various formats, produced by the agency through the Knowledge Management Division.



DEPARTMENT OF AGRICULTURE
PHILIPPINE CARABAO CENTER

NETWORK DIRECTORY



DA-PCC NATIONAL HEADQUARTERS AND GENE POOL
Science City of Muñoz, Nueva Ecija
Telephone No.: (+63) (044) 456.0731
Email: oed@pcc.gov.ph



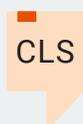
DA-PCC AT MARIANO MARCOS STATE UNIVERSITY
Batac City, Ilocos Norte
Mobile No.: (+63) 919.224.9062
Email: pcc-mmsu@pcc.gov.ph



DA-PCC AT CAGAYAN STATE UNIVERSITY
Tuguegarao City, Cagayan
Telephone No.: (+63) (078) 377.9315
Mobile No.: (+63) 977.806.4930
Email: pcc-csu@pcc.gov.ph



DA-PCC AT DON MARIANO MARCOS MEMORIAL STATE UNIVERSITY
Rosario, La Union
Mobile No.: (+63) 920.982.9666
Email: pcc-dmmsu@pcc.gov.ph



DA-PCC AT CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija
Telephone No.: (+63) (044) 940.3061
Mobile No.: (+63) 968.853.5754
Email: pcc-clsu@pcc.gov.ph



DA-PCC AT UNIVERSITY OF THE PHILIPPINES - LOS BAÑOS
Los Baños, Laguna
Telephone No.: (+63) (049) 536.2729
Email: pcc-uplb@pcc.gov.ph



DA-PCC AT VISAYAS STATE UNIVERSITY
Baybay City, Leyte
Mobile No.: (+63) 908.895.2461
Email: pcc-vsua@pcc.gov.ph



DA-PCC AT WEST VISAYAS STATE UNIVERSITY
Calinog, Iloilo
Telephone No.: (+63) (033) 323.4781
Mobile No.: (+63) 999.991.6115 | (+63) 928.945.7760
Email: pcc-wvsu@pcc.gov.ph



DA-PCC AT LA CARLOTA STOCK FARM
 La Granja, La Carlota City, Negros Occidental
 Mobile No.: (+63) 919.006.8392
 Email: pcc-lcsf@pcc.gov.ph



DA-PCC AT UBAY STOCK FARM
 Ubay, Bohol
 Mobile No.: (+63) 997.111.7680 |
 (+63) 945.119.3998 | (+63) 966.330.2214
 Email: pcc-usf@pcc.gov.ph



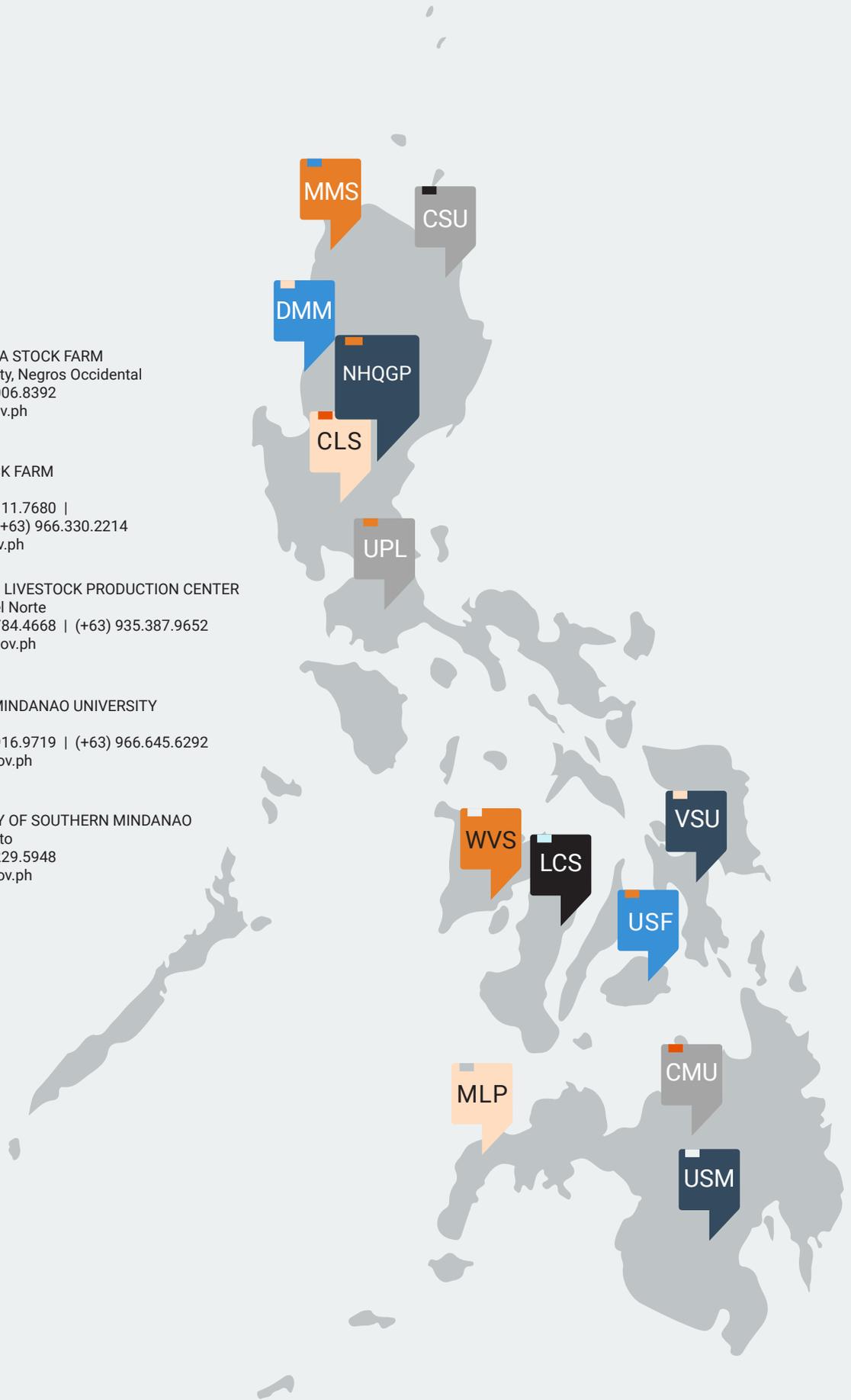
DA-PCC AT MINDANAO LIVESTOCK PRODUCTION CENTER
 Kalawit, Zamboanga del Norte
 Mobile No.: (+63) 912.784.4668 | (+63) 935.387.9652
 Email: pcc-mlpc@pcc.gov.ph



DA-PCC AT CENTRAL MINDANAO UNIVERSITY
 Maramag, Bukidnon
 Mobile No.: (+63) 939.916.9719 | (+63) 966.645.6292
 Email: pcc-cmu@pcc.gov.ph



DA-PCC AT UNIVERSITY OF SOUTHERN MINDANAO
 Kabacan, North Cotabato
 Mobile No.: (+63) 999.229.5948
 Email: pcc-usm@pcc.gov.ph





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-  National Headquarters and Gene Pool
Science City of Muñoz, Nueva Ecija
-  www.pcc.gov.ph
-  (+63) (044) 456.0731
-  oed@pcc.gov.ph
-  DA-Philippine Carabao Center