



Republic of the Philippines  
**OFFICE OF THE SECRETARY**  
Elliptical Road, Diliman  
1100 Quezon City

## MEMORANDUM CIRCULAR

NO. 04  
Series of 2022

### SUBJECT: IMPLEMENTING GUIDELINES FOR THE NATIONAL LIVESTOCK CRYOBANKING PROGRAM

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#### 1. Introduction

This Memorandum Circular outlines the implementing guidelines in the operation of the National Livestock Cryobank (NLC) of the Department of Agriculture. The NLC will serve as the national repository of germplasm and biological samples from diverse livestock species.

In particular, the NLC serves as a facility for *ex-situ* type of conservation that manages diverse animal genetic resources (AnGR), which include oocytes, semen, embryos, somatic cells, tissues, blood, or DNA, in an external or artificial environment under low-temperature conditions. It also stands as a "biological vault" or a backup for the management of AnGR in support of the *in-situ* conservation of animals or conservation that implies constant use of the animal in its natural environment or habitat. The *in-vitro* cryo-conservation has been made possible through the application of cryopreservation technology.

Likewise, the NLC will lead the national effort to increase the preservation and cryo-conservation of AnGR from diverse indigenous and introduced species and breeds within the species. These animals with economic importance exhibit adaptable and resilient traits towards diseases and adverse effects of climate change. Thus, the implementation of NLC will pave the way to sustain the genetic diversity of livestock species in the Philippines for future utilization.

#### 2. Rationale

The economic and social importance of livestock in the Philippines should be secured amid the threats posed by climate change. The increasing incidents of animal heat stroke and proliferation of other pests and diseases can be brought about by extreme weather events such as El Niño, La Niña, *habagat* (monsoon rain), super typhoons, and prolonged dry spells can be attributed to the effects of climate change. It is anticipated that such events will be more frequent in the coming years and will likely impose dire consequences.



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Animal deaths due to heat stroke in 2010 resulted in economic losses in livestock. In addition, a significant number of animals had died in Negros Occidental due to dry spells. The detrimental effects of climate change are not limited to water supply shortage. The phenomenon also contributes to increasing the intensity of tropical cyclones e.g., super typhoon *Haiyan (Yolanda)* of 2014, which resulted in severe flooding and loss of about 20%-30% of livestock and poultry inventories in Antique, Aklan, Panay, Cebu, and Leyte.

The African Swine Fever (ASF) outbreak in the Philippines, which started in 2019, has also devastated the livestock sector incurring severe economic losses due to the deaths of thousands of Philippine native and commercial pigs in different swine herds. This scenario, if left unattended, could endanger further the country's swine population and could possibly lead to the brink of extinction.

The above premises call for immediate intervention and strategic innovations, hence, the crafting of these NLC Program guidelines.

### 3. Mandate

The NLC is mandated to:

- serve as the national germplasm repository of livestock, indigenous, and commercial species/breeds for animal diversity, and future utilization toward food security;
- lead in the establishment or strengthening *ex-situ* conservation programs for various livestock breeds and species;
- support the local livestock sectors through establishing or strengthening collaboration with national institutions, private, and public sectors for planning and implementing measures on animal genetic resources conservation and propagation; and
- ensure that individuals or groups of farmers, animal breeders from cooperative or associations, private business sectors, state universities and colleges, and other government agencies will have access to its offered services.

### 4. Objectives

#### General:

The program aims to preserve the diversity of AnGR of indigenous species, domesticated farm animals, and recently introduced breeds, which have economic importance and exhibit adaptable and resilient traits towards diseases and environmental elements in the country. The Food and Agriculture Organization or FAO (2001)<sup>1</sup> provides the following working definitions:

<sup>1</sup> FAO. 2001. Animal Genetic Resources Information. Annex 2: Working Definitions for Use in Developing Country Reports and Providing Supporting Data.



- a. **Indigenous species** (also called native species) are animals that belong to an area where they have evolved.
- b. **Domesticated animals** are animals whose breeding and husbandry are controlled by human communities to obtain benefits or services.
- c. **Recently introduced breeds** are animals whose importation was within the last five (5) or so generations for the species concerned. Moreover, these animals were imported recently but have not been reintroduced since that time.

**Specific:**

- a. To secure the biodiversity conservation of AnGR based on international standards. This implies adhering to the recommended protocols by the FAO and other pertinent international organizations that are aligned to the priorities of the Department of Agriculture;
- b. To establish the phenotypic and genotypic characteristics of animals to be cryo-conserved based on the following definitions:
  - i. Phenotypic characteristics typically indicate the process of identifying distinct breed populations and describing their external and production characteristics within a given production environment (FAO. 2012. Phenotypic characterization of animal genetic resources. FAO Animal Production and Health Guidelines No. 11, Rome)
  - ii. Genotypic characteristics refer to genotypes that imply the genetic constitutions of an organism. It also refers to the total of all pairs of alleles at all loci that contribute to the expression of a quantitative trait (Zaid et al., 1999; FAO Research and Technology Paper 7.)
- c. To establish and maintain inventory and records of the genetic materials to be cryo-conserved.

## 5. Creation

In the interest of service and in recognition of the implication of conservation and management of AnGR from various livestock breeds and species, the management team for the NLC of the Philippines, as hosted by the Philippine Carabao Center (PCC), Science City of Muñoz, Nueva Ecija, is hereby created to be composed of the following:



## Overall Management

The PCC Executive Director shall approve the guidelines and policy on cryobanking of AnGR upon the recommendation of the TWG. He/She shall also be responsible for providing policy and overall direction of the NLC.

### Technical Working Group (TWG)

Chair: **DR. CLARO N. MINGALA**  
Deputy Executive Director for Production and Research, DA-PCC

Co-Chair: **MS. LILIAN P. VILLAMOR**  
Research and Development Division-Cryobank Unit, DA-PCC

Members: **DR. MARVIN A. VILLANUEVA**  
Research and Development Division, DA-PCC

**DR. DANILDA H. DURAN**  
Research and Development Division-Reproduction and Physiology Section, DA-PCC

**DR. ESTER B. FLORES**  
Research and Development Division-Animal Breeding and Genomics Section, DA-PCC

**DR. MA. WYNNE A. PAGADUAN**  
Research and Development Division-Biosafety and Environment Section, DA-PCC

The specific functions of the TWG are as follow:

1. Assist in the establishment or strengthening of *ex-situ* conservation programs for various livestock breeds and species;
2. Develop, evaluate, review approaches and technical standards for conservation;
3. Establish collaboration with national institutions, private and public sector, for planning and implementing animal genetic resources measures for local livestock sector development;
4. Develop and implement approaches on regional and global long-term conservation strategies;
5. Assist in the evaluation and development of local and international policies and guidelines relevant to animal genetic resources; and
6. Develop policies and protocols for NLC services.

The Co-Chair in the TWG has a designation in the PCC Research and Development Division-Cryobank Unit and has the function to establish and maintain inventory and records of the genetic materials to be cryo-conserved.

**Technical Advisory Group (TAG):**

Chair: Dr. LIBERTADO C. CRUZ, NAST Academician  
Members: Representative (1) from the Bureau of Animal Industry  
Representative (1) from the National Dairy Authority  
Representative (1) Private Sector  
Representative (1) Academe/State University/College

The Technical Advisory Group (TAG) shall provide strategic and technical advice related to NLC matters. The TAG shall also assist the PCC Executive Director in formulating policies and implementing rules and regulations for the NLC Program.

**6. Funding**

In carrying out the preliminary activities of the NLC, an initial amount of fifty million pesos (PHP50,000,000) shall be provided by the National Livestock Program (NLP) to the PCC, as the lead implementing agency. In addition, the NLP shall allocate funds annually to the PCC to sustain the NLC Program.

All expenses related to the implementation of the NLC Program are subject to existing accounting and auditing rules and regulations.

**7. Administrative and Operation Guidelines and Order**

The NLC Program Management Team shall issue the pertinent administrative and operation guidelines on processing AnGR samples for submission, donation, acquisition, and transfer of AnGR within six months of the mandate and authority granted under this Order.

**8. Separability Clause**

If any clause, sentence, or provision of this Memorandum Circular shall be declared invalid or unconstitutional, the other provisions will not be affected and shall remain valid and subsisting.

**9. Amendment Clause**

As the need arises, the rules and regulations may be recommended for amendment by the TWG for approval by the Secretary of the Department of Agriculture.

## 10. Effectivity

This Memorandum Circular shall take effect immediately upon signing and shall be valid unless revoked and superseded by future issuances.

Done this 17th day of February 2022 in Quezon City.



**WILLIAM D. DAR, Ph.D.**

Secretary

DEPARTMENT OF AGRICULTURE  
  
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