Dairy Buffalo Industry in the Philippines

A. N. del Barrio, Acting Executive Director
Philippine Carabao Center, Department of Agriculture
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Introduction

- Buffalo dairying in the Philippines started by virtue of Republic Act 7307 (Philippine Carabao Act of 1992) and became operational in 1993;
- This law created the Philippine Carabao Center that installed the Carabao Development Program for buffalo dairy development and other purposes;
  - Results of an FAO/UNDP funded program on “Strengthening of the Philippine Carabao Research and Development Center” implemented from 1982-1992, facilitated the establishment of PCC.

Introduction: Glimpse of the Carabao Industry

- Carabao Inventory: 2.87M (2015)
- Meat Production: 143,000 tons, worth PhP 10.74B (2014)
- Milk production: 6.6M liters (PSA, 2014), and 7.2M liters (PSA, 2015)
- Draft contribution: 2.4M head or 74% of carabao inventory

Outline of Presentation

I. Introduction
II. The Carabao (Water Buffalo) Industry Situationer
III. The Philippine Carabao Center (PCC)
IV. Some Strategies to Fast Tract Dairy Buffalo Development
V. Milestones of Dairy Development in the Philippines
The PCC National Headquarters and Gene Pool, Department of Agriculture - led the dairy buffalo program; and Lead agency in carabao R&D and livestock biotechnology researches.

Aim is better nutrition, higher levels of income and improved general well-being of rural farming families, thru the conservation, propagation and promotion of water buffalo as important source of milk and meat, in addition to draft power and hide

Carabao Development Program

I. GENETIC IMPROVEMENT
   • GENE POOL
     Riverine Buffalo  Swamp Buffalo
   • CROSSBREEDING (UPGRADING)
     Bull Loan  Artificial Insemination

II. CARABAO-BASED ENTERPRISE DEVELOPMENT
   • Cooperative Development/Organized group
   • Credit
   • Dairy Hub – Collection, Processing, Market Assistance, Ancillary enterprises

III. RESEARCH 4 DEVELOPMENT

Goal

Improving Productivity

Improving Income/ Empowerment

Improving Productivity

TYPES/BREEDS OF BUFFALO

1. Swamp Type - draft
   Example:
   • Philippine Carabao (PC)
     Can give 1-2 L of milk per day
     Generally used for work
     Brownish in color
     Horns semicircular in shape
     White band on the chest

Each Center has:
• Gene Pool = 25 to 400 hd
• Dairy Zone = community-based dairy program with 100 to 500 dairy animals
• Research facility
2. River Type – dairy (imported)

Example of Breeds:
- Indian Murrah Buffalo
- Bulgarian Murrah Buffalo
- Brazilian Murrah Buffalo
- Italian Mediterranean buffalo

- Can give 6-8 liters of milk per day, 300 days lactation period, with a fat content of 7-8%
- Jet black in color
- Curled horns

3. Crossbred or Hybrids

- Offspring of Murrah and Carabao
- Females are used for milking, and males for work and meat
- Generally black in color
- Bigger than Philippine carabao
- Can give 4-6 liters of milk per day

The Philippine Dairy Buffalo Breeding Program

Govt. initiated breeding program for Philippine dairy buffaloes

Enhancing mechanisms

- Frozen semen production
  - 2 semen production laboratories
    - CASA
- 51 active bulls (swamp and riverine)
  - 400,000 semen straws in 2014
- Frozen semen storage/Cryobank
  - Senior bulls
  - Waiting bulls
- Artificial Insemination Program
  - Creation of a critical mass of Village-based AI Technician
  - Enhancement of training facilities
- Bull Loan Program
  - Riverine bulls for use in crossbreeding
Main strategies for dairy development program

1. Infusion of dairy animals – dairy buffaloes were imported
   - dairy modules for cooperatives (25 hd per cooperative; 1 to 3 hd per person),
   - Family modules (5 to 10 hd) animal dairy modules for families
   - Multiplier farms (25 hd and above)

   PCC imported dairy buffalo
   From Bulgaria, Brazil and Italy

2. Artificial insemination – complements the bull loan program,
   - Wide-scale AI of native carabaos using frozen semen from purebred bulls to produce dairy-type crossbreds.
   - AI activities are done by trained AI technicians
   - PCC semen laboratories can produce at least 400,000 doses of frozen annually.

3. ENTERPRISE DEVELOPMENT PROGRAM

   Production
   - Infusion of purebred dairy buffaloes as multiplier modules
   - Cooperatives as entry points
   - Upgrading of Carabaos thru AI, and bull loan
   - Mortuary fund as system of co-operation & co-ownership

   Processing
   - Milk collection system
   - Milk testing and quality control
   - Centralized milk processing & technology
   - Commercialization
   - Plant operation & maintenance

   Marketing
   - Centralized processing of milk and milk products
   - Centralized product distribution
   - Wholesale & retailing of milk products

   Support Services
   - Production management & technical assistance
   - Social preparation of farmer partners & community mobilization
   - Organizational strengthening
   - Capacity building among partners
   - Enterprise dev’t & business management

Average milk production performance of buffaloes in the Philippines

- Large variation in milk prod’n
  - Swamp type – 1 to 2 kg/day/L
  - Crossbred – 4 to 6 kg/day/L
  - Riverine – 6 to 8 kg/day/L

- 305D Lactation - <600 kg to >3,000 kg/L
- Peak yield - <5kg to 19.8kg
- % cows with failed lactation (FTM)
  - 9.9% in 1997 to 2.6% in 2007

- Average fat and protein percentage
  - Protein – 4.1%, Fat – 7.5%
### Milestones of Dairy Buffalo Development in the Philippines

<table>
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<tr>
<th>YEAR</th>
<th>MILESTONES</th>
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</table>
| 1992-1993 | Enacted RA 7307, creating the Philippine Carabao Center and established the Carabao Development Program with 3 major components:  
- Genetic Improvement Program  
- Carabao-based Enterprise Development  
- Research and Development  
Operationalized 6 PCC centers |
| 1994 | Operationalized additional 7 Centers, which completed 13 PCC centers nationwide |
| 1995 | Established gene pool facilities and headquarters in a 40 hectares area in Munoz, Nueva Ecija  
Arrival of 459 head of Bulgarian Murrah Buffaloes (51 male and 408 female) in Luzon |
| 1996 | Arrival of 403 head of Bulgarian Murrah Buffaloes (49 male and 354 female) in Mindanao for dairy development |
| 1997 | The first 25-cow dairy module was awarded in Luzon to launch the Carabao-based Enterprise Development Program |
| 1998 | Arrival of 1,078 head of Bulgarian Murrah Buffaloes (76 male and 1,003 female) in Mindanao  
Re-launching of the Carabao Development Program by President Joseph E. Estrada focused on institutionalized upgrading and carabao-based enterprise development  
Carabao slaughter ban was lifted to promote carabao meat enterprises |
| 1999 | Declared Nueva Ecija province as the National Impact Zone (NIZ) for Dairy Buffalo enterprises  
Regional Impact Zones (RIZ) were also established in 13 PCC Centers to demonstrate dairy buffalo enterprises |
| 2000 | The government of Japan and Philippines signed a “Water Buffalo and Beef Cattle Improvement Project” to improve productivity of both animal species – buffalo for dairy  
Ground breaking of PCC’s research and training facilities |
| 2001 | A satellite laboratory for reproductive biotechniques in buffaloes was established in India to produce IVM/IVF–derived embryos for transfer to cows in the Philippines |
| 2002 | PCC’s Research and Training facility was inaugurated  
Established the Federation of Dairy Cooperatives in Nueva Ecija province to lead in the collection and marketing of milk at the level of the cooperatives |
| 2003-2005 | Strengthened collaboration with partners like Dairy Development Foundation and other local funding institutions  
Massive implementation of AI, Bull loan and CBED programs to expand dairy buffalo enterprises |
### Milestones of Dairy Buffalo Development in the Philippines

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<td>2006</td>
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<td>A national project &quot; Expanding the Reach of AI Program for the Acceleration of Dairy Herd Build-up&quot; was launched to train 2,000 AI technicians to hasten the expansion of dairy herd</td>
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<td>Heightened research and development efforts in the area of reproductive biotechnology in upgrading the potentials of Philippine carabao for meat and milk</td>
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<td>2007</td>
<td>Started technical cooperation with KOICA to increase efficiency of livestock industry thru institutionalized genetic improvement system – livestock genetics, dairy nutrition animal breeding, data analysis, etc.</td>
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<td>2008</td>
<td>PCC was designated as the Lead Agency in Livestock Biotechnology research to hasten genetic improvement in ruminants using reproductive and gene-based markers</td>
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<td>PL480 fund was secured for the project &quot;Strengthening Livestock Biotechnology Center &quot; laboratories for various R&amp;D activities</td>
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<td>2009</td>
<td>Arrival of 2,000 Murrah buffaloes from Brazil in Luzon to fast track dairy development</td>
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<td>2010</td>
<td>Launched the PCC-KOICA project &quot; Enhancing Livestock Sector Performance in the Philippines&quot; aimed to enhance propagation of superior animals, improvement of National Bull Farm and Semen Laboratory, and cryobanking.</td>
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<td>Launched &quot;Enhancing Village-based Carabao Enterprise Development funded thru Japan’s KR2 program</td>
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<td>2011-2012</td>
<td>PCC inaugurated the Central Milk Processing Facility and Milk outlet to serve as technology demonstration facility of a viable dairy enterprise</td>
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<td>National Bull Farm, semen laboratory and cryobank were improved and operated – to produce about 400,000 doses/year</td>
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<td>2013</td>
<td>Arrival of 1,203 head of Italian Buffaloes (22 male and 1,181 female) in Luzon to boost dairy development</td>
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<td>Establishment of 3 AI Bull Farms and Semen Laboratories</td>
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<td>2014</td>
<td>Arrival of 1,150 head of Italian Buffaloes (5 male and 1,145 female) in Luzon to enhance dairy development</td>
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<td>Infusion of Italian buffaloes to cooperatives and multiplier farms to boost dairy development</td>
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<tr>
<td>2015</td>
<td>Infusion of Italian buffaloes to cooperatives and multiplier farms to boost dairy development in Luzon, Visayas and Mindanao</td>
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<td>Establishment of milk processing facilities and milk outlets.</td>
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<td>2016</td>
<td>Started PCAARRD program “Enhancing Milk Production of Water Buffaloes through Science and Technology Interventions” from 2016-2018, to increase milk production to 2M liters, in Nueva Ecija.</td>
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<td>Establishment of Bull Performance testing Farm in Luzon.</td>
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<td>Improvement of Gene Pool Facilities in the PCC Centers.</td>
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<td>Establishment of Carabao Conservation Area in Calayan Islands, Cagayan province.</td>
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In 2015, milk production of dairy carabao is 7.2M liters.