



Buffalo Semen for Global Marketing

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OUTLINE OF PRESENTATION

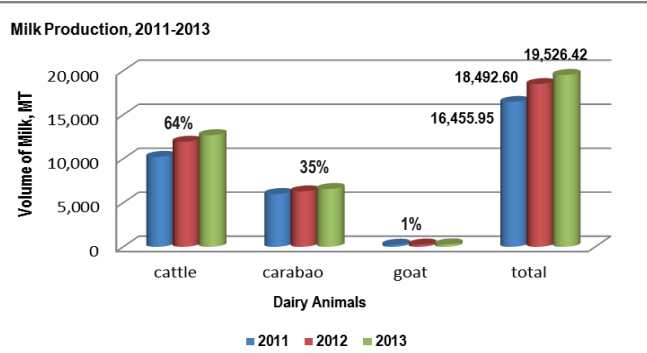
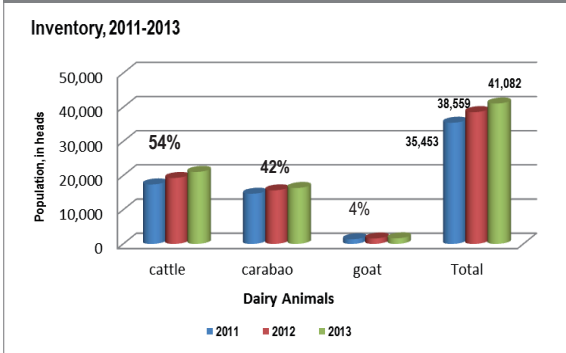
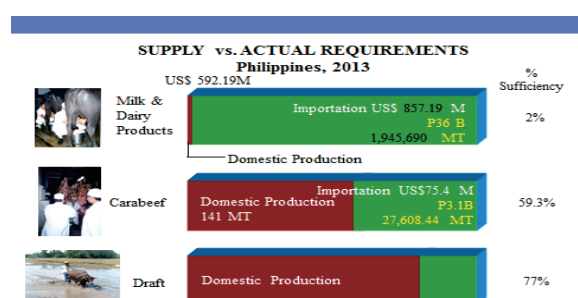
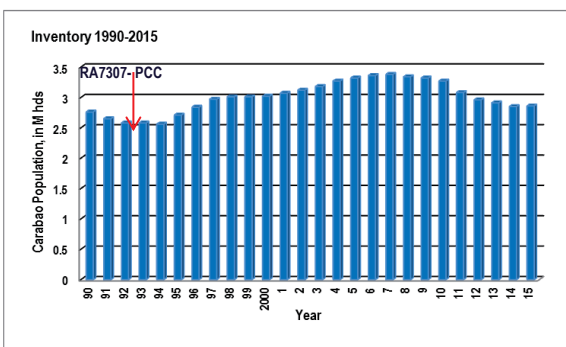
- I. The Philippine Carabao Center
- II. The Carabao (Water Buffalo) Industry Situationer
- III. The Carabao Development Program
- IV. The Philippine Dairy Buffalo Breeding Program
- V. Water Buffalo Semen for Export



- ▶ an attached agency of the Department of Agriculture
- ▶ created by virtue of RA 7307, otherwise known as the Philippine Carabao Act of 1992 and became operational in 1993
- ▶ a lead agency in Livestock Biotechnology under DA by virtue of AO No. 9 s. 2008

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INDUSTRY SITUATIONER



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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

Thematic Areas: GIP, Production Sys, Biosafety, Environment & Climate Change, Enterprise Dev, Product Dev, Industry & Policy, Technical Training, Socio-economics Dimensions of CDP, & Institutional Dev

Goal

Improving Productivity

Improving Income/
Empowerment

Improving Productivity

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CARABAO DEVELOPMENT PROGRAM



LEGEND

- 12 Regional Centers
- National Impact Zone

1 National Impact Zone – The Province of Nueva Ecija - implemented by the PCC National Headquarters, Science City Of Munoz, Nueva Ecija

12 Regional Impact Zones – being Implemented by the 12 Regional Centers

2 Gene Pools of Philippine Swamp Buffalo (carabao) – PCC at CSU & PCC at USF

1 Gene Pool of Crossbreds – PCC at UPLB

2 Gene Pools of Italian Mediterranean Buffaloes - PCC at LCSF & PCC at WVSU

9 Gene Pools of Murrah-based Buffaloes – PCC at MMSU, PCC at CSU, PCC at CLSU, PCC at UPLB, PCC at VSU, PCC at USF, PCC at CMU, PCC at USM & PCC at MLPC

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THE PHILIPPINE DAIRY BUFFALO BREEDING PROGRAM

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%

SP



CB



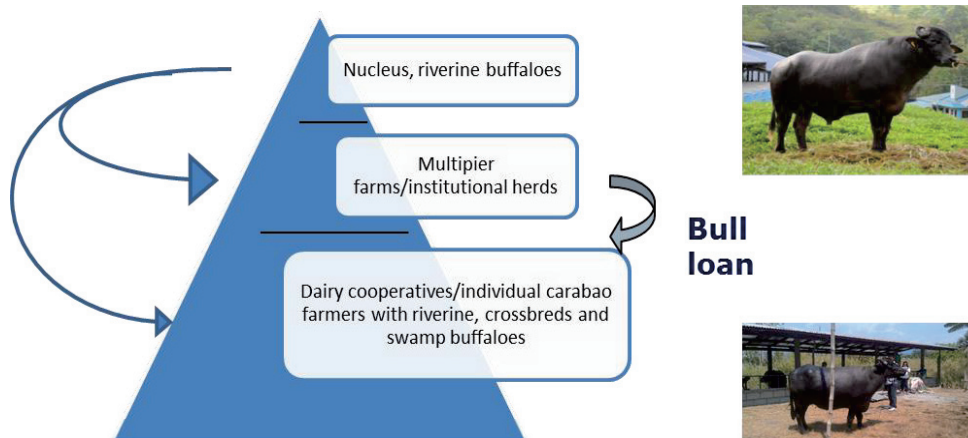
RV



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Govt. initiated breeding program for Philippine dairy buffaloes

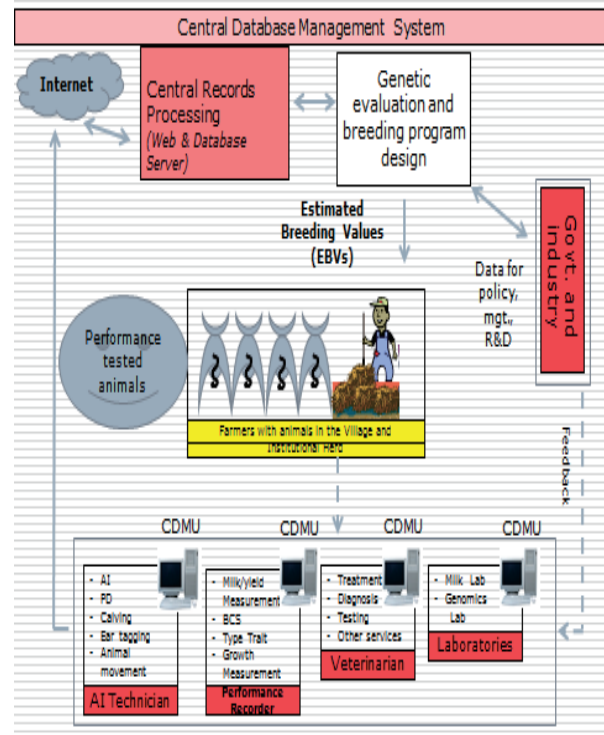
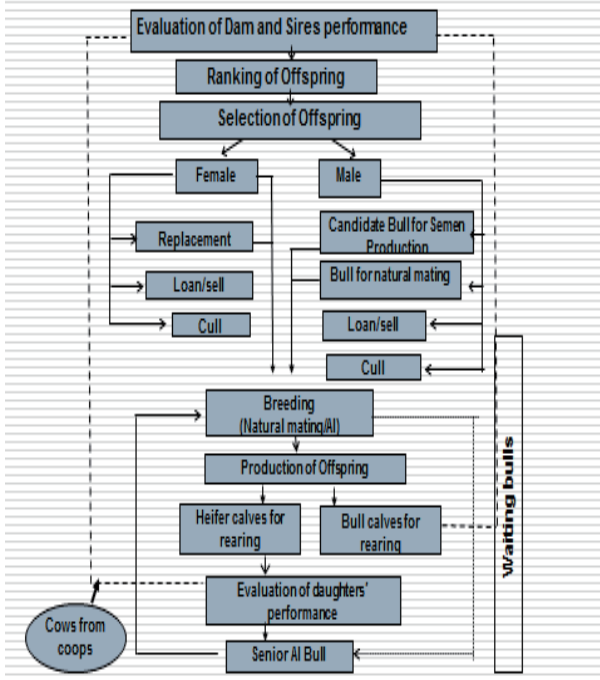


- Purebred performance testing and selection
- Cryobanking/frozen semen storage
- AI program/Bull loan program
- Production of dairy crossbreds and continuous backcrossing
- Carabao-based enterprise development

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Breeding Program for purebred riverine buffaloes



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THE PHILIPPINE DAIRY BUFFALO BREEDING PROGRAM

Animal recording system

- PCC Institutional herds
 - 9 participating herds
 - 2 institutional and 3 private multiplier herds due for enrollment
- 2010- Village-based recording system
 - National Impact Zone (NIZ) Dairy cooperatives
 - Enrolled 11 coops
 - 222 dairy farmer
 - 532 dairy cows
 - 2,409 milk samples

Data being collected

- Basic Information
 - Animal Identification
 - Sire and Dam
 - Date of Birth
 - Sex
- Calving events
 - Calving dates, Calf Sex, Abortion/Stillbirth
- Breeding and Reproduction Record
 - Mating Dates (AI/Natural)
 - Actual Sire Used
 - Estrus Date/Sign of Estrus
 - Reproductive examination (PD)
- Milk test day records
 - Milk Yield (AM and PM)
 - Milk Components (Fat%, Prot%, SCC)
 - Daily milk yield

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Genetic evaluation for purebred dairy buffaloes

- Multi-trait random regression test day model for milk, fat and protein yield
 - Higher estimates of heritability
 - Account for systematic environmental effects on the actual day of recording
 - Allow individual cows' lactation curve to deviate from the average
 - Can also be used to select for lactation persistency

The data set

For estimation of genetic parameters and EBVs

- There were 1,791 animals in the pedigree file extending to 5 generations
 - 1,227 first parity cows with records
 - 142 sires
 - 9,217 milk test day records
 - 4,859 fat test day records
 - 4,743 protein test day records

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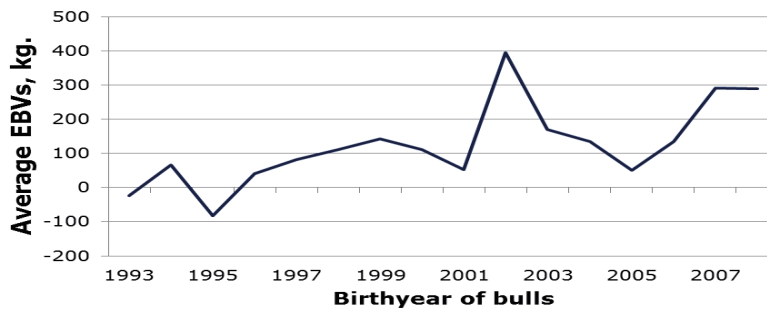
Genetic correlations and heritabilities for milk yield and milk component traits at different days in milk estimated by multi-trait random regression model from first parity test day records of Philippine dairy buffaloes

DIM	Milk, Fat and Protein Yield					
	h^2_{MY}	h^2_{FY}	h^2_{PY}	$r_{G(my-fy)}$	$r_{G(my-py)}$	$r_{G(fy-py)}$
30	0.21	0.14	0.19	0.85	0.97	0.83
60	0.34	0.27	0.26	0.85	0.98	0.86
90	0.34	0.26	0.28	0.87	0.98	0.72
120	0.37	0.23	0.28	0.88	0.98	0.88
150	0.33	0.20	0.26	0.90	0.98	0.89
180	0.30	0.17	0.24	0.91	0.97	0.90
210	0.25	0.14	0.21	0.91	0.96	0.91
240	0.23	0.13	0.19	0.90	0.94	0.91
270	0.23	0.13	0.20	0.86	0.91	0.90
300	0.22	0.13	0.19	0.81	0.88	0.87

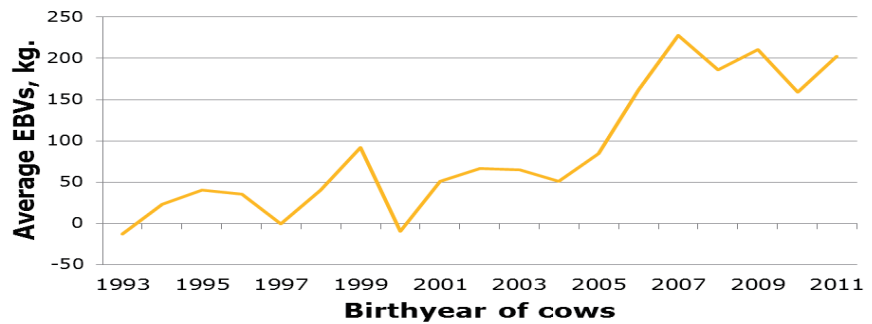
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Genetic trend of bulls for milk yield



Genetic trend of cows for milk yield



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Some top ranking of AI bulls

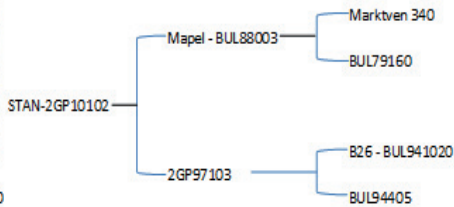
ID	# daughters	Acc	MY _{EBV}	FY _{EBV}	PY _{EBV}	TMI
2GP01102	20	0.78	551.3	26.6	21.9	0.89
2GP99107	13	0.70	430.6	17.8	15.7	0.70
2GP03020	6	0.56	440.8	17.4	15.0	0.69
2GP01070	10	0.66	364.3	20.7	15.0	0.59
2GP99089	9	0.64	337.1	20.4	12.8	0.57
2GP03017	22	0.79	383.7	-2.7	14.8	0.57
2GP03015	10	0.66	326.5	9.8	13.7	0.53
2GP97060	8	0.61	275.6	15.3	11.7	0.50
MEMO	11	0.67	290.1	20.5	11.3	0.49
MAPEL	41	0.87	264.8	15.8	11.7	0.45
2GP03093	13	0.70	301.9	-11.9	9.2	0.45

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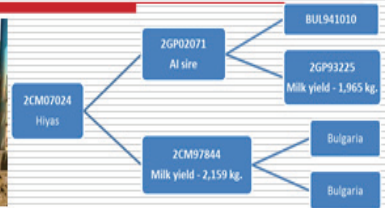
"Proven Bull"

Stan - 2GP01102



No. of daughters:	20	
No. of herds	7	
Trait	EBV	Acc
Milk yield	569	0.78
Fat yield	27	0.66
Protein yield	22	0.73

"Bull Mother"



Parity	Year calved	Milk yield, kg	Fat yield, kg	Protein yield, kg
First parity	2011	2,730.0	192.5	108.3
Second parity	2012	2,913.6	193.1	116.2
Third parity	2013	2,621.6	181.8	109.4

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THE PHILIPPINE DAIRY BUFFALO BREEDING PROGRAM

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

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Village-Based Recording System

- Establishment of pedigree records of cows and calves born in cooperatives
- Monthly milk testing and recording
- Establishment of pedigree and performance database for analysis and report generation.

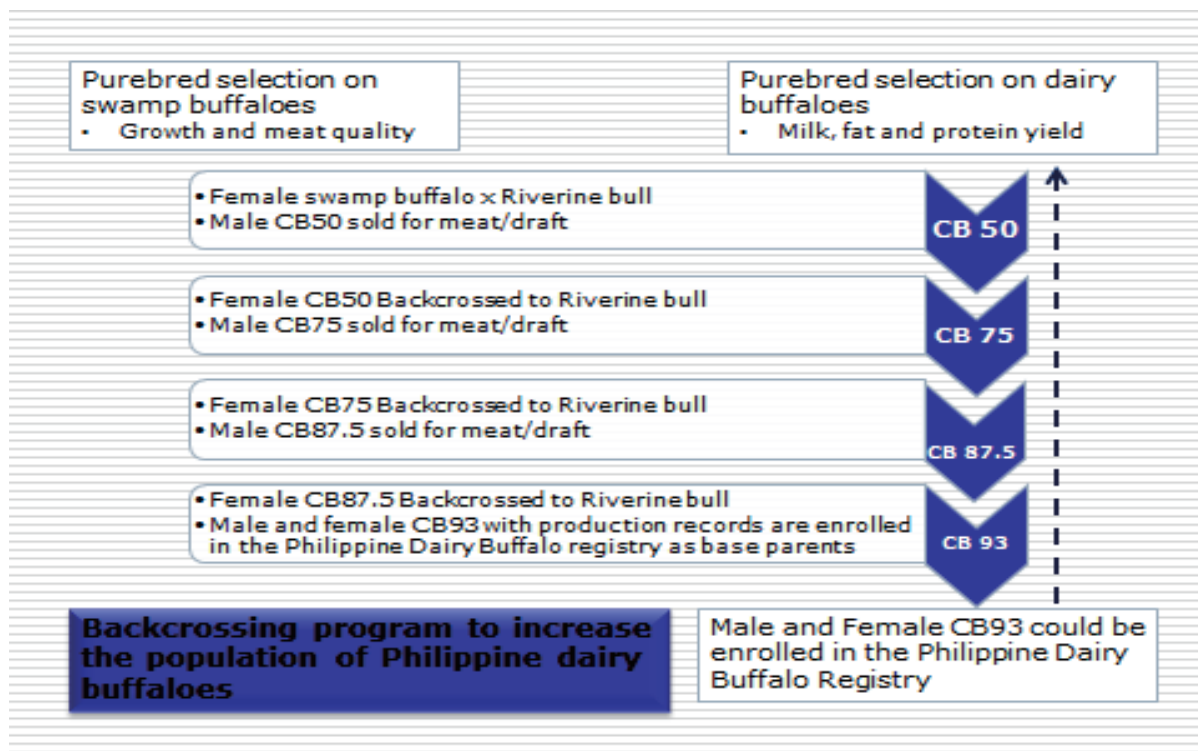
Results generated from animal recording

- Reports given within a month after each test day**
 - [Individual cow test day information](#)
 - Result of CMT
 - [Lactation to date, 305D lactation, total lactation.](#)
- Annual reports**
 - Listing of top ranked cows by lactation yield, fat yield, protein yield and somatic cell count and peak yield.
 - Listing of top ranked cows with best reproductive performance in terms of calving interval and services per conception.
 - Listing of top ranked cooperatives by average lactation yield, protein yield, fat yield and somatic cell count.
 - [Recommendations based on analysis of reports/performance.](#)

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THE BUFFALO SEMEN FOR EXPORT

- ❑ The Philippines is an FMD-free country
- ❑ The PCC is an IMS (ISO 9001:2008, ISO 14001, OHSAS 18001) certified institution, hence, products are compliance to international standards
- ❑ The Philippines through PCC has a stock of dairy buffalo frozen semen (at least 25,000 straws each of the top ranking bulls) stored in its Cryobank
- ❑ The exporting country (Philippines) will comply with the protocols set by the importing country

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**Maraming salamat!!!
Mabuhay!
Thank you!**

For more details, PCC can be contact:ed through:

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