

Development of Dairy Goat Farming in the Philippines

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Outline

- Introduction
 - Dairy Goat Farming in Asia
 - Importance of Dairy Goat
- Status of dairy goat in the Philippines
- Dairy goat population and herd composition
- Breeds, management system and marketing
- Development strategy and approaches

Introduction

Some dairy goat statistics in Asia

	Population	Milk Yield, kg/d	Lactation period, months	Price relative to cow's milk
China	12,000,000	2.0 - 4.0	9	2-3 times
Australia	60,000	2.0 – 3.0	6	5 times
India	140,540,000	0.5 – 2.0	3 – 6	2 - 3
Pakistan	12,470,00	NA	NA	Same
Iran	22,000,000	0.75 – 1.8	5 - 8	Same
Indonesia	17,500,000	0.5 – 1.5	NA	3 - 4
Malaysia	8,195	1.0 – 5.0	NA	10
Thailand	20,013	0.8 – 3.0	3 - 7	3
Vietnam	150,000	1.0 – 3.0	5 - 8	2

Introduction

- In 2012, the **Asian-Australasian Dairy Goat Network (AADGN)** was established to serve all stakeholders including researchers, academicians, policy makers, farmers & investors and milk & other dairy processors in order to promote dairy goat farming in Asia-Australasia.
- It aims to:
 - facilitate generation, collection, dissemination and exchange of knowledge,
 - provide technical, institutional and policy support,
 - promote improved and sustainable dairy goat farming in the Asian-Australasian region.
- 3rd biennial conference in China

Introduction

DOST National Dairy Goat S&T Program

According to Sec. Mario Go Montejo:

“goats can turn country into a *land of milk* in two years”

“the goat that many of us belittle is actually a *gold mine*”

PCARRDD:

- Help ease country’s importation of milk
- Healthier for babies and senior citizens being non-allergenic and more digestible
- More financially rewarding
- Increase milk yield in backyard farms from 45 liters in 90 days to 135 liters in 180 days and 360 liters in 180 days in commercial farms
- Increase milk yield to 150% by 2017

Status of Philippine Dairy Industry

Developing industry

- Valued at \$47 million (36 billion pesos) annually
- 99% of dairy requirements are imported
- Local production accounts for mere:
 - 0.04% of total agricultural production
 - 0.23% of livestock production
- Value of local milk production
 - 53% cow's milk ~ P191 million
 - 43% carabao's milk ~ P151 million
 - 4% goat's milk ~ P14 million

Status of Dairy Goat Farming



In the past,

- From 1970-80, large importation of Nubians attracted farmers to upgrade their native stocks with the impressive features of Nubians
- Purpose of upgrading was towards goat meat production and very few farms were into dairy production
- Thus, there is paucity of information with regards the performance of imported dairy goats

Status of Dairy Goat Farming

At present,

- Renewed interest on the financial viability of goat milk production
- Awareness on the health benefits of goat's milk
- Application of science in breeding and nutrition
- Commercial dairy goat farmers are now more selective of the breeders that they import
- Lesser government support vis-a-vis the other milk sources (buffalo and cattle)
- Mainly private sector-led dairy goat development projects

Status of Dairy Goat Farming

- National goat herd (mainly meat type) are mostly found in:
 - Central Visayas
 - Southern Mindanao
 - Central Mindanao
 - Western Visayas
 - Ilocos Region
- Big dairy goat farms are located in
 - Batangas, Tarlac, Sorsogon and Camarines Norte in Luzon
 - Davao, Misamis Oriental and North Cotobato in Mindanao



Dairy Animal Population

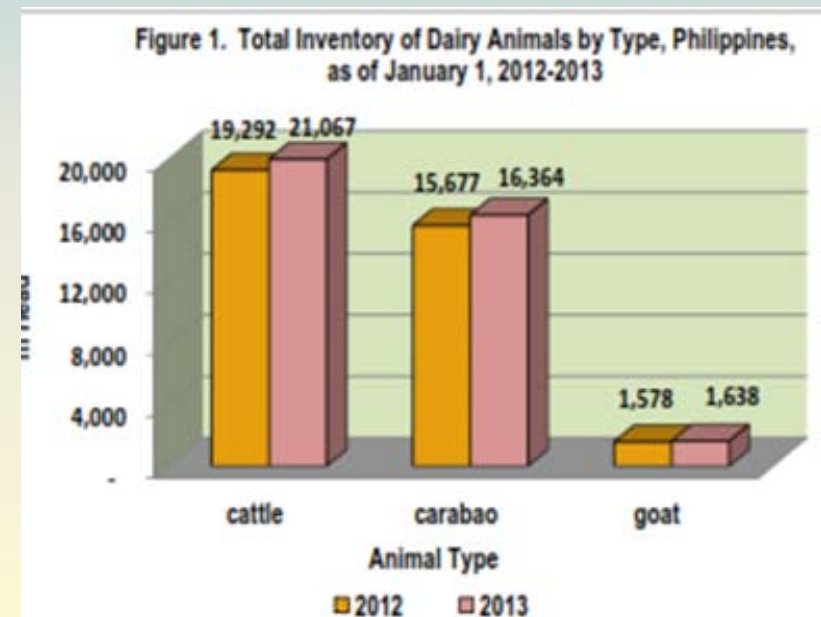
- As of 2013, there were 39,069 dairy animals, (cattle, buffalo and goats)
- While the total numbers of the cattle, buffalo, and goats were decreasing, those being used as dairy animals increased by 27% from 2006 to 2012

	2006	2011	2012	% Change	
				2011 - 2012	2006- 2012
Total Dairy	27,845	35,329	38,322	7.8	27.3
Total Cattle	2,519,740	2,518,407	2,493,157	-1.0	-1.1
Dairy type	13,092	19,292	21,067	8.4	37.9
Total Buffalo	3,360,675	3,075,259	2,963,980	-3.8	-13.4
Dairy type	13,648	14,681	15,677	6.4	12.9
Total Goat	3,735,816	3,881,503	3,715,228	-4.5	-0.6
Dairy type*	1,105	1,356	1,578	14.1	30.0

*NDA data

Dairy Animal Population

- The increase in the number of dairy animals can be attributed to the:
 - importation of dairy cattle and dairy buffalo by the government;
 - renewed interest by private sector in case of dairy goats
- Dairy goat population varies
 - NDA – 1,638
 - PCARRD – 6,379 with 600 on milk

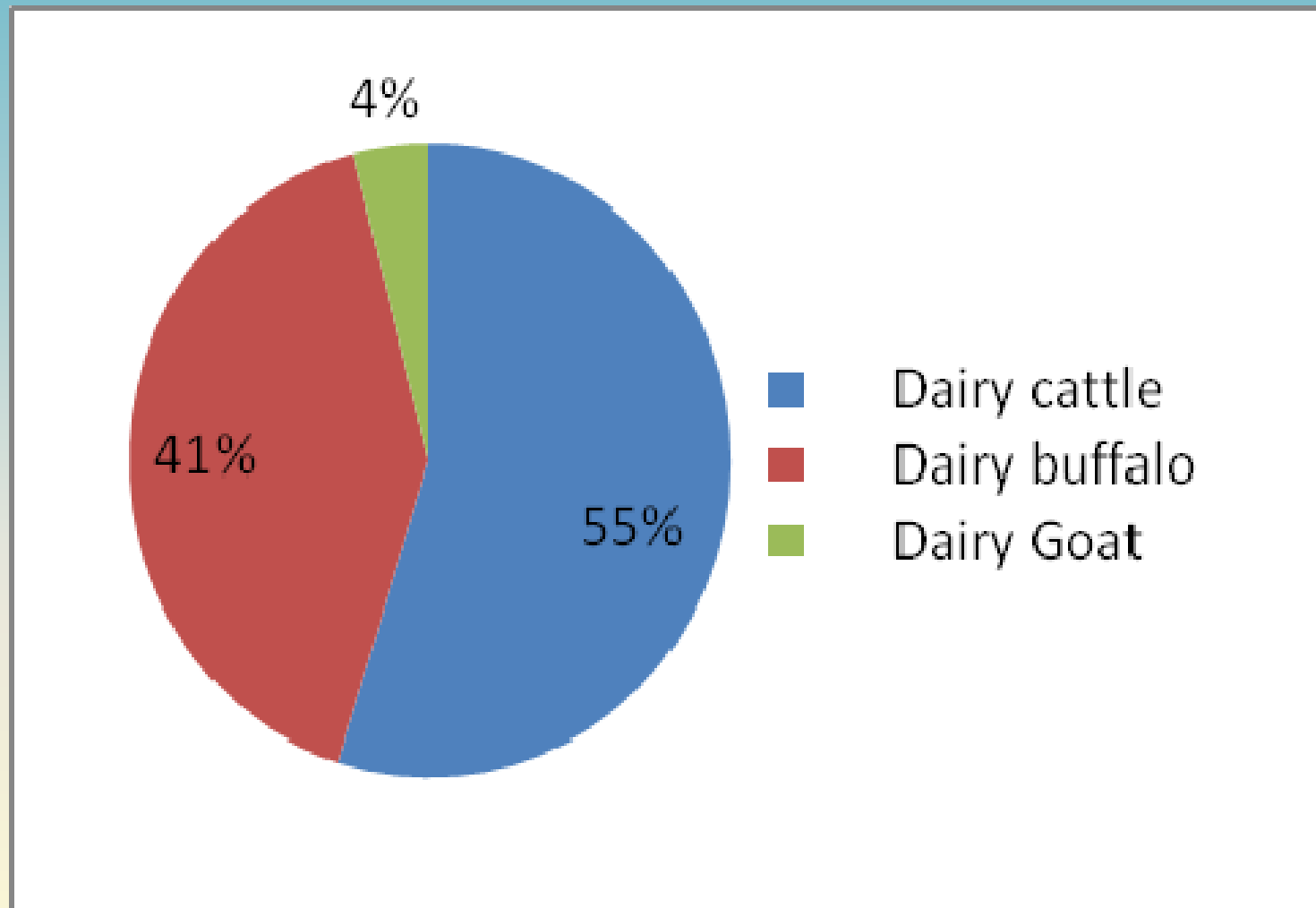


Population Structure

	Goat	Cattle	Buffalo
Total population	3,715,228	2,493,157	2,963,980
% of total as dairy	0.11	0.80	0.50
% increase of dairy animals	38	30	13



Composition of total dairy animals, n = 39,069



Dairy goat herd composition, %

Type	2006	2007	2008	2009	2010	2011
Buck	7	7	8	8	8	8
Does	55	50	52	51	53	52
Does on milk	31	43	45	73	62	65
Kids	31	34	31	30	31	31

- Half of the herd are does
- 8% are the breeder bucks
- does on the milk line increased during the last three years from 40% to about 65%.



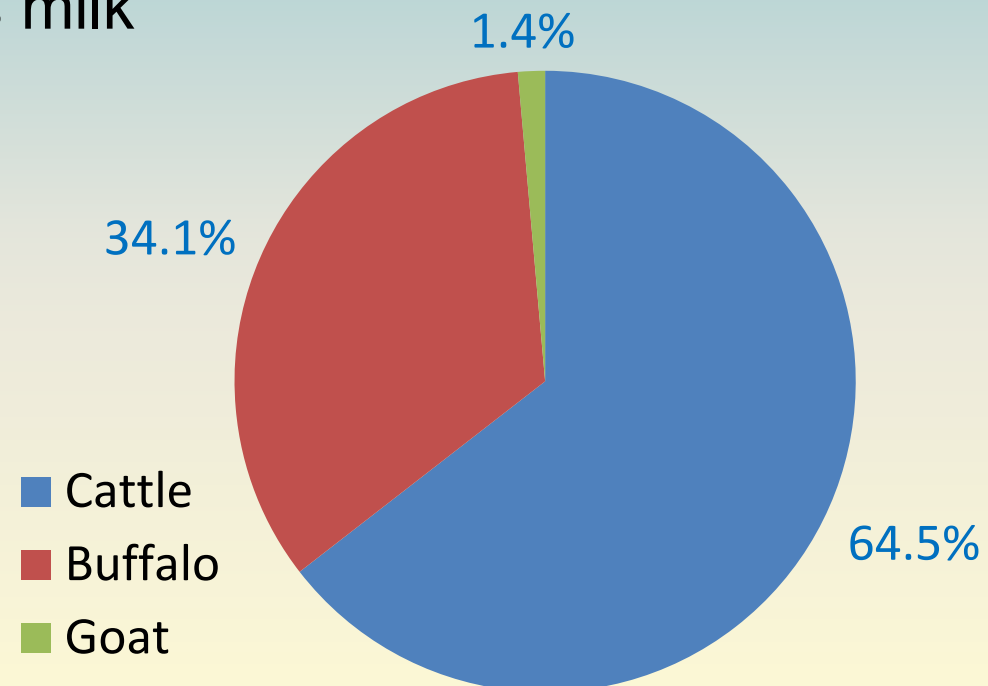
Dairy goat herd composition

- Does make up 55% of a typical dairy goat farm
- 43% of these does are reportedly on the milk line.
- Large dairy farms = 50 to 150 does
- Small dairy farms = 10 to 20 does



Milk Production

- In 2012, total milk production was 18.4 million liters
- Of this:
 - 11.9 m liters - cow's milk,
 - 6.3 m liters - carabao's milk
 - 0.26 m liters - goat's milk



Number of does on the milk line and milk yield

	2006	2007	2008	2009	2010	2011
Goats on milkline	190	198	212	344	397	463
Production, tons LME	92	94	94	185	227	237
kg LME/doe/lactation	482	474	446	539	571	513

- A large increase in the inventory of dairy goats from 2008 onwards.
- Milk production increased during the same period
- But, milk yield per doe was estimated to level off starting 2010.



Commercial Dairy Goat Farming

At least 4 of the large commercial dairy goat farms process their milk into pasteurized fresh milk, feta cheese and vanity products

1. Alaminos Goat Farm

- located near Manila
- good quality genetics
- improved pasture
- developed variety of goat's milk products



Commercial Dairy Goat Farming

2. The Mindanao Baptist Rural Life Center (MBRLC)

- has been raising dairy goats since the early 1970s
- known for Simple Agro-Livestock Technology (SALT 2)
- major source of genetics



Commercial Dairy Goat Farming

3. Malagos Goat Farm

- specializes in the processing of gourmet cheeses

4. Naawan Dairy Goat Coop

- village-based
- process their produce into pasteurized milk, chocomilk, ice candy, sweets and vanity products



Breeds of Dairy Goats

Native goat

- Production: about 66 kg milk with 4.6% butterfat
- Lactation period: 187 days or about 350 ml/day
- Weight at birth = 1.09 kg
- Twinning rate = 1.35
- Adult weight = ranges from 15 to 20 kg



Breeds of Dairy Goats

Purebreds

- Believed to be first introduced as early as during the Spanish colonization (19th century)
- No documentary evidence
- “Dadiangas” goats
 - found in Southern Mindanao
 - possess the characteristics of the Nubians, Alpine and Saanen
 - ideal for dairy production
 - Near extinction

Breeds of Dairy Goats

- Popular exotic dairy stocks introduced into the Philippines:
 - Anglo-Nubian
 - Saanen
 - Toggenburg
 - Alpine
 - La Mancha
 - and lately the Oberhasli

Purebred Anglo-Nubian



3 major suppliers:

- Alaminos Goat Farm
- Sagana Farm
- Mindanao Baptist Rural Life Center
- Nutrimix

Alpine Oberhasli



- recently imported by government
- doe with pair of kids weighing 3.5 kg each
- gained 12.2 kg in two months.

Does with La Mancha blood



Saanen



Saanen x Alpine cross



averaging 2.0 liters of milk per day.

Reproductive performance of native, grade and purebred Anglo-Nubian

Parameters	Native	Grade	Anglo-Nubian
No. of does mated	58	138	6
No. of does kidding	60	130	7
No. of kids born	96	195	11
Litter size	1.6	1.5	1.6
Age at 1st kidding, days	405	441	-
Kidding rate, %	103.5	94.2	116.7
Single birth	25 (41.7%)	73 (56.2%)	3 (42.9%)
Twins	34 (56.7%)	49 (37.7%)	4 (57.1%)
Triplets	1 (1.6%)	8 (6.1%)	0
Prolificacy, %	160	150	157
Fertility, %	64	50.5	47.8
Kidding Interval, days	258	279	383
Kidding per year	1.41	1.31	0.95
Pre-weaning mortality	19 (19.8%)	32 (16.4%)	3 (27.3%)
Single	6 (31.6%)	9 (28.1%)	0
Twins	12 (63.2%)	20 (62.5)	3 (100%)
Triplet	1 (5.2%)	3 (9.4%)	0
No. of kids weaned	77	163	8
Weaning rate, %	128	125	114
Post-weaning mortality	10 (12.9%)	10 (6.1%)	4 (50.0%)
Annual productivity rate, kids weaned/doe	1.8	1.6	1.1

Management System

- Confined, intensive goat management system
- Rarely are the animals allowed to graze freely on pastures.
- Typical large commercial farms have elevated housing with floor made of either wooden planks or plastic mats, elevated and forage racks



Feeding System

- Leguminous shrubs and trees popularized by MBLRC on integration of dairy goats
- SALT 2: a half-hectare model of goat-based agro-forestry
 - wherein 20 percent of land can sustain 12 does producing 2.3 l of milk per day for 300 days.
 - *Desmodium rensonii*, *Flemingia macrophylla*, acid-tolerant leucaena, and *Indigofera anil* are alternately planted in alleys and harvested as feed for dairy goats.



Feeding System

- Indigofera
 - species of choice of farmers being well liked by goats, followed by *rensonii*
- Flemingia
 - not as palatable as the first two species
- *Morus alba* and *Cajanus cajan*
 - prospective forage legumes for dairy goats.



Health management

Caprine arthritis encephalitis (CAE) :

- suspected to be introduced through importation in 1998
- common cause of mortality among adults
- adversely affects the development of the dairy goat industry
- mandatory testing for breeder goats above 6 months of age intended for transport
- Should be tested negative prior to issuance of travel permit

Health management

Pneumonia

- common cause of mortality among kids

Other common diseases:

- mastitis, caseous lymphadenitis, contagious ecthyma, enterotoxemia and tetanus

Parasitic diseases:

- gastrointestinal nematodiasis and coccidiosis
- Incidence of external parasitism in the form of mange or scabies is sometimes observed in few farms

Health Management

- package of technologies including construction of elevated housing, stall feeding, regular deworming and pasture rotation to control mortality due to pneumonia and internal parasitism
- Small dairy goat farmers use herbal medicine against parasites.
 - *Chrysophyllum cainito*, *Tinospora rumphii* and *Mimosa pudica* - found to be effective in killing, lyzing and expelling adult worms

Marketing

- Consumers are aware of the nutritional characteristics of goat's milk
- Recent reports regarding the benefits of goat's milk for human health have added to the interest on dairy goat production
- Entrepreneurs engaged in dairy goat are expanding production and market
- The “goaty” odor or flavour of goat's milk is not a major concern.



Advantages over cow's milk

	Goat's Milk	Cow's Milk
Lactose (%)	4.11	4.47
β -s1 casein (g/100 g milk)	18.92	30.80
Medium chain fatty acids C6-14 (mg/100 g milk)		
C6: 0	171.68	77.86
C8:0 (caprylic acid)	192.20	57.80
C10: 0 (capric acid)	579.10	114.91
C12:0 (lauric acid)	232.61	130.87
C18:2 n-6 (conjugated linoleic acid)	142.39	82.31
Organic Minerals (mg/100 g milk)		
Calcium	158.57	113.58
Phosphorus	118.97	87.04
Magnesium	12.92	9.40
Iron	0.15	0.09
Copper	0.042	0.014
Zinc	0.528	0.463

Marketing

- Potential market - 15.6 million Filipinos

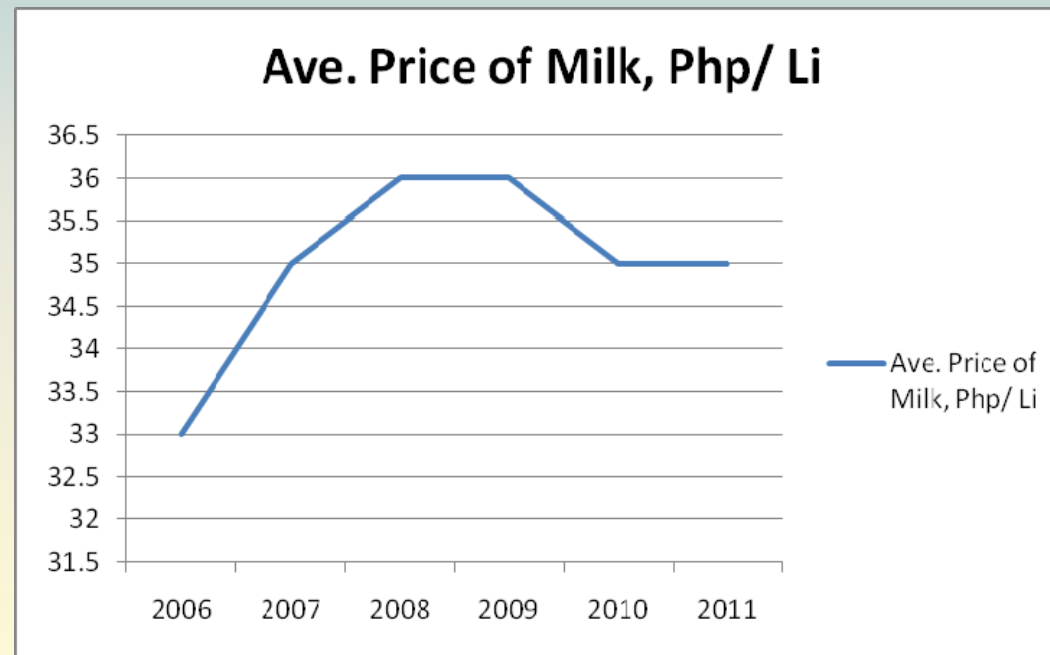
Diabetes mellitus (Type I and II)	Hypertension
7.9 million	7.7 million

- Assuming 50% will consume $\frac{1}{4}$ liter goat's milk/day at P160.00/l, market size is P102 billion/yr
- Even if only 1% will consume goat's milk, market is still P2.0 billion/yr

Marketing

Pasteurized goat's milk sells at least PhP 150.00 per liter lower than pasteurized cow's milk which sells at PhP 75.00 per liter

Cheeses made of goats milk sells at 50% more than those processed using cow's milk.



Challenges

- Availability of breeder stocks
- Lack of breeding plan (indiscriminate crossbreeding)
- Inadequate nutrition
- Limited land area for pasture
- Weak biosecurity measures
- Fragmented and limited researches on dairy goat farming
- Unorganized marketing system

Development Strategy

- Wider recognition, better resource use, strong interdisciplinary and community-based approaches, clear government policy, and strong institutional support to ensure the future contribution of goats

Development Approaches

- Two-Pronged Development Approach
 - Smallholder
 - Commercial
- Differences in production system, products and markets, and socioeconomic features
- Community-based breeding program with recording system
- Promotion and marketing of goat's milk
- Strict adherence to control measures and quarantine procedures for the control of CAE and other diseases
- Engage LGU to adopt dairy goat farming as a priority livelihood project

Thank you

