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Farming Scale Impact on Ration and Dairy Cow's Performances under Traditional Farm Management in Major Producing Province of Indonesia

Idat G. Permana, R. Zahera, T. Toharmat, & Despal

email: permana@ipb.ac.id



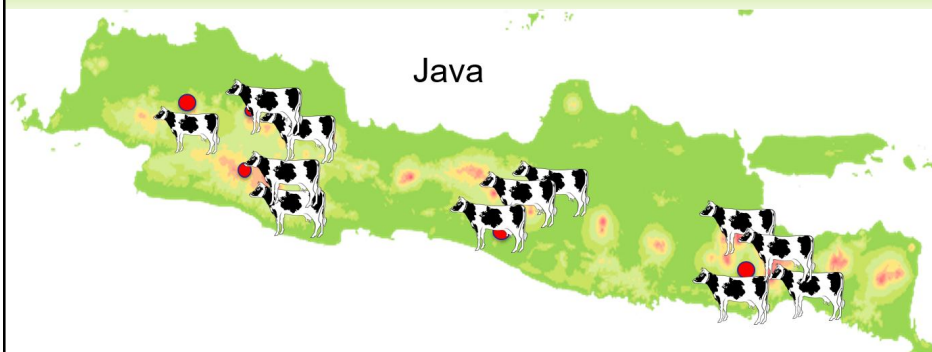
Department of Animal Nutrition and Feed Technology
Faculty of Animal Science
Bogor Agricultural University (IPB)
<http://intp.fapet.ipb.ac.id>

INTRODUCTION

- ❑ Currently dairy cattle population in Indonesia is 525.000 head
- ❑ Local milk production in Indonesia is 1.5 Million ton per year
- ❑ Local milk production is only 18% of total demand.



DAIRY POPULATION IN INDONESIA



- ❑ Dairy cattle population in Indonesia distributed mainly (99%) in Java island, and contribute only 6.8% from the total Indonesian area (BPS, 2016).
- ❑ The cows distributed mainly in fertile highland with high agricultural to non-agricultural land conversion rate.

INTRODUCTION

- ❑ **Animal Ownership:**
 - ❑ Average 6.1 Animal Unit (AU) per farmer
- ❑ **Forage Supply:**
 - ❑ 63% supplied from 0.44 Ha cultivated land
 - ❑ 37% natural grass from open field and under plantation area.
 - ❑ In dry season, some farmers purchase grass



INTRODUCTION

- ❑ Increase human population:
 - ❑ reducing farmer capacity to provide forage for their cattle
 - ❑ labor movement to urban sectors
 - ❑ less family worker available,
 - ❑ and increase labor cost for agriculture sector in rural



INTRODUCTION

- ❑ Limiting Forage Availability:
 - ❑ Farmer use more concentrate
 - ❑ Use more concentrate increase feed cost
 - ❑ Less of farm income

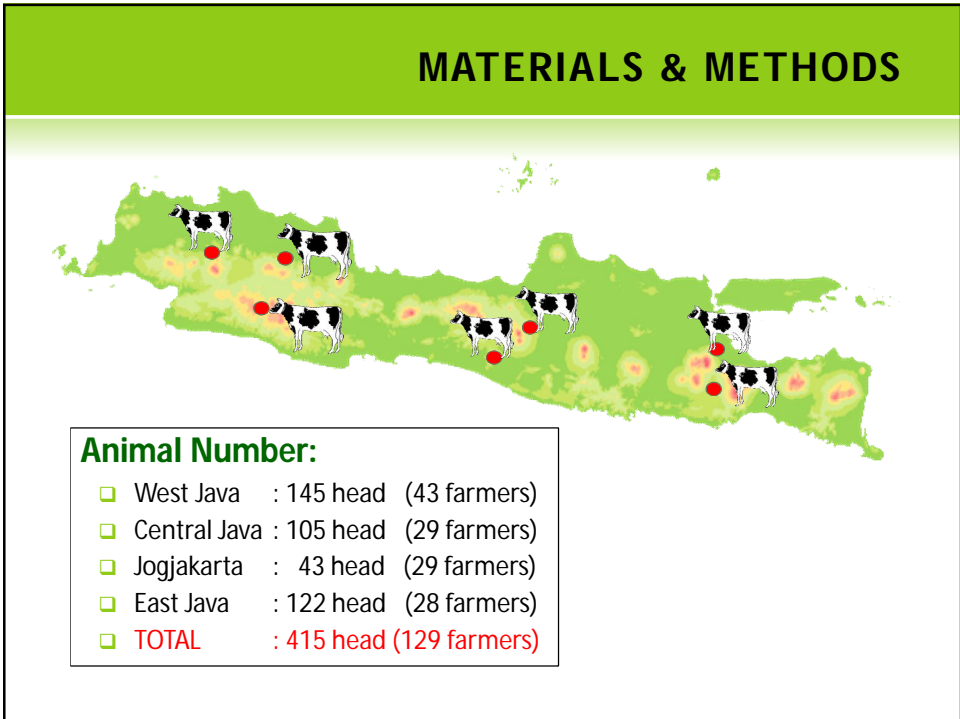


OBJECTIVES

- comparing impact of farming scale on dairy farmer capacity to provide feed and nutrition to their cattle and their impact to the cow's performances and farmer income in the four major dairy farm area



MATERIALS & METHODS



□ Data Collection:

- cattle ownership, type & the amount of feed offered, milk production & quality, body weight, Body Condition Scoring (BSC), and farm income.
- the observations were aimed at confronting data from interview.

□ Laboratory Analysis

- conducted to determine nutrient contents of feeds used and milk compositions.

Feed Sample Analysis:

- The amount of feeds offered were measured gravimetrically,
- Proximate analyses followed Naumann and Bassler (1997) procedures,
- Ca and P sample preparation followed Reitz *et al.* (1987) procedure.

Body Weight and BSC:

- Cows' body weights were estimated using Schoorl's formula.
- BCS were scored according to five scales Penn State University (2004) procedure.

Milk Production and Quality:

- Milk productions were measured volumetrically
- Milk qualities were measured using lactoscan

STATISTICAL ANALYSIS

- ❑ The study used imbalance randomized design.
- ❑ Collected data were analyzed using ANOVA procedure.
- ❑ Correlation between parameters have been analysis prior to regression.



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RESULTS & DISCUSSIONS

DAIRY CATTLE OWNERSHIP

Province	Lactation Cow	Dry Cow	Heifer	Young	Bull	Total
West Java	5.1	0.5	1.2	0.6	0.4	7.8
Centra Java	3.9	0.4	0.6	0.9	1.8	7.7
Jogjakarta	2.3	0.3	0.4	0.3	0.0	3.3
East Java	6.1	0.8	2.0	0.8	0.3	9.9
Indonesia	4.3	0.5	1.0	0.1	0.6	6.5

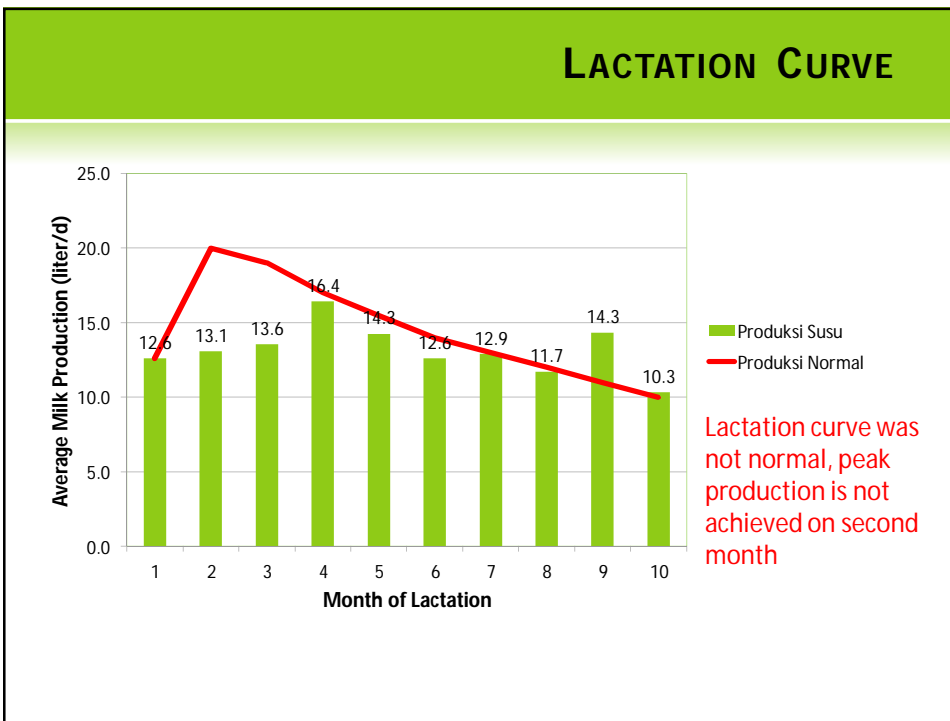
- Average of cattle ownership in East Java is highest (9.9 animal/farmer), meanwhile in Jogjakarta province was the lowest (3.3 animal/farmer).

TOTAL COW, LACTATION COW AND PROCENTAGE OF LACTATING COW

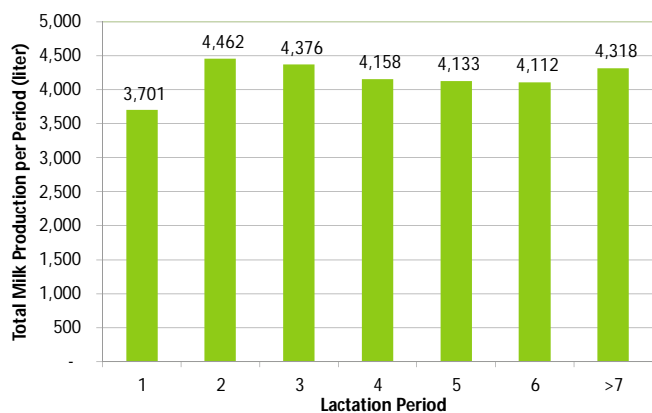
	National	WestJava	Centra Java	Jogjakarta	East Java
Total cattle (AU)	6.61±5.30	4.98±2.70	7.10±5.48	2.88±1.42	8.95±5.30
Lactating cow (AU)	5.05±3.77	4.40±2.63	4.83±3.46	2.25±1.89	6.91±4.83
Lactating cow (%)	76.33±22.47	88.44±13.96	68.04±30.28	78.26±27.73	77.16±17.11

- Percentage of lactating cow in Jogjakarta Province is highest,
- while Central Java Province was lowest

TOTAL & AVERAGE MILK PRODUCTION, TOTAL FARM INCOME & INCOME PER LACTATION COW					
	National	WestJava	Centra Java	Jogjakarta	East Java
Total milk production (liter/d)	68.40±55.59	64.17±33.04	60.08±43.89	25.50±17.25	96.91±78.75
Average milk production (liter/d)	13.81±3.34	15.40±3.03	12.99±2.61	12.38±1.84	13.78±4.46
Total farm income (Rp/d)	3377±3211	3017±2000	3154±2467	1905±2467	4504±4276
Income per lactating cow (Rp/cow)	643±300	695±342	642±279	627±416	604±278



TOTAL MILK PRODUCTION PER LACTATION

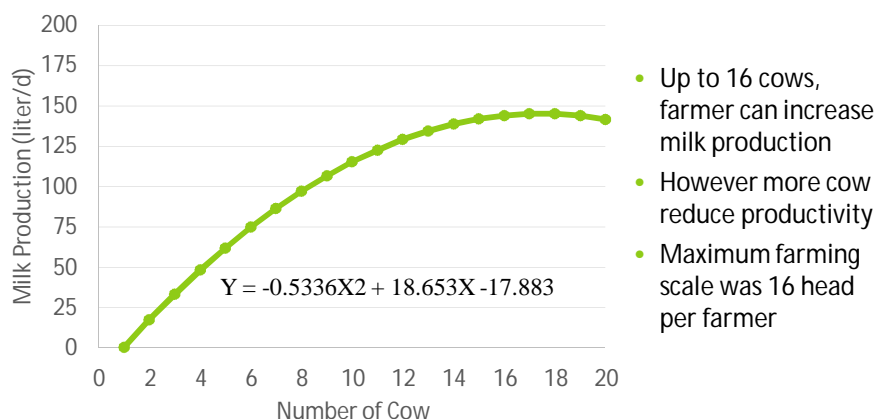


Milk production per lactation was flat

NUTRIENT SUFFICIENCY

	National	West Java	Central Java	DIY	East Java
Offered (kg/d)					
• TDN	8.70±3.06	9.84±2.71	8.56±2.27	6.50±1.42	8.61±4.17
• CP	1.82±0.74	2.02±0.54	1.89±0.77	1.36±0.31	1.71±0.95
• Ca	0.05±0.03	0.05±0.02	0.04±0.01	0.04±0.02	0.07±0.05
• P	0.03±0.02	0.04±0.01	0.03±0.01	0.02±0.01	0.03±0.02
Requirement (kg/d)					
• TDN	7.48	8.20	6.77	7.25	7.39
• CP	1.57	1.71	1.45	1.44	1.55
• Ca	0.06	0.07	0.05	0.06	0.06
• P	0.04	0.04	0.03	0.04	0.04
Balanced (kg/d)					
• TDN	1.22±3.00	1.64±2.72	1.79±2.27	-0.75±1.42	1.23±4.17
• CP	0.27±0.73	0.31±0.54	0.44±0.77	-0.08±0.31	0.17±0.95
• Ca	-0.01±0.03	-0.02±0.02	-0.01±0.01	-0.02±0.02	0.01±0.03
• P	-0.01±0.02	-0.01±0.01	-0.01±0.01	-0.01±0.01	-0.01±0.02

CURVE REGRESSION FARMING SCALE AND MILK PRODUCTION



CONCLUSIONS

- There was no accurate estimation of nutrient availability can be produced from farm scale.
- With the current national scale (6.61 AU), farmer in Indonesia still have capacity to provide sufficient nutrient for their cows and increase their production level as well as income.

