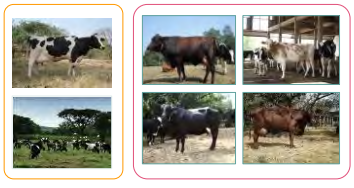
FRACTION OF CATTLE BREEDS

and Their Influence on Milk Production of Thai Dairy Cattle

POJ RITSAWAI

Dairy Cattle in Thailand

Multibreed Dairy Cattle Population in Thailand



Fraction of Cattle Breeds

1	2	3
		
92 31/32%HF, 3 1/8%JER, 2 11/32%RS, 25/32%BRA, 25/32%NA	84 3/8%HF, 3 1/8%RD, 1 9/16%BS, 3 1/8%RS, 6 1/4%SW, 1 9/16%NA	87 1/2%HF, 6 1/4%BRA, 6 1/4%NA

Objective

Distribution and Structure of Breed Fraction inThai Dairy Cattle

Breed Effect on Milk Production under Thai Topical Condition

Materials & Methods

Pedigree
- Animal ID
- Date of birth
- Breed Fraction
- Calving Age

DATASET

Performance
- Monthly test-day milk sample
- Collecting date

5,602 Data of first lactation cows
601 farms Calving from 1989 to 2012

Data Preparation

- Seasons were classified as cold (November to February), warm (March to June) and rainy (July to October)
- Contemporary groups were defined as claving herd-year-season

- Breed presented in the current dataset consisted of Holstein, Brahman, Jersey, Red Dane, Red Sindhi, Sahiwal, Thai Native and Brown Swiss
- Calculate the accumulated 305-d milk yield from monthly test-day milk samples for the individual cows using the Test Interval Method

Statistical Model

$$y = \mu + HYS + Cage + Breed + Animal + e$$

Fixed Effects
- Herd-year-season (HYS)
- Calving age (Cage)
- Breed

Random effects
- Animal
- Residual

Breed:
- Holstein
- Brahman
- Jersey
- Red Dane
- Red Sindhi
- Sahiwal
- Brown Swiss
- Thai Native

Results & Discussion

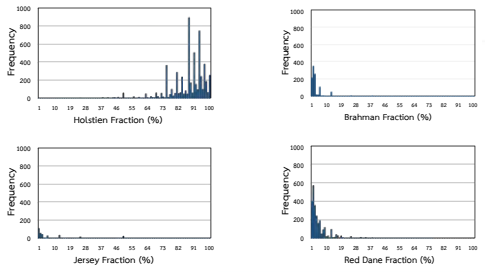
Number of animals, percentage and least squares means of 305-day milk Yield by number of breeds in Thai multibreed dairy population

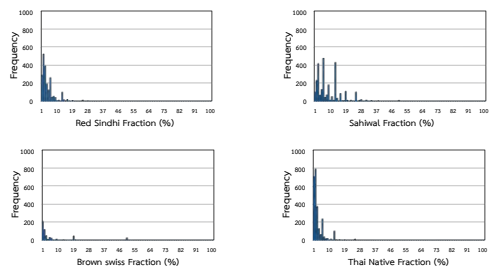
Number of Breeds	Number of animals	Percentage	305-day MY ± SE (kg)
1	504	9.00	4,442.81 ± 78.25
2	1,497	26.72	4,412.67 ± 66.83
3	888	15.85	4,422.45 ± 71.44
4	1,368	24.42	91% 4,454.98 ± 67.93
5	948	16.92	4,455.25 ± 69.92
≥ 6	397	7.09	4,325.33 ± 84.47

Number breeds did not associate with MY (P = 0.43)

Descriptive statistics for breed fraction appeared in Thai dairy population

Breeds	Number of animals	Percentage	Mean	Mode	SD	Min	Max
Holstein	5,602	100.00	87.50	87.50	10.20	12.50	100.00
Thai Native	3,195	57.03	2.53	0.39	3.10	0.39	25.80
Sahiwal	2,675	47.75	8.87	6.25	7.30	0.39	53.10
Red Dane	2,568	45.84	4.86	1.56	5.40	0.39	53.10
Red Sindhi	2,352	41.99	4.04	3.13	4.40	0.39	68.80
Brahman	1,095	19.55	3.09	1.56	4.00	0.39	50.00
Brown Swiss	823	14.69	4.28	0.39	9.60	0.39	51.60
Jersey	514	9.18	4.61	0.39	10.80	0.39	75.00





Regression coefficients for 305-day milk yield of dairy breeds

Breed fraction (%)	Reg. Coef. ± SE (kg)	P-value
Holstein	**3.95 ± 1.64**	0.02
Thai Native	**-21.56 ± 6.01**	<0.01
Sahiwal	-3.02 ± 2.85	0.29
Red Dane	-3.14 ± 3.76	0.40
Red Sindhi	3.84 ± 4.48	0.39
Brahman	-8.35 ± 8.33	0.32
Brown Swiss	-2.53 ± 4.31	0.56
Jersey	**-7.36 ± 3.58**	0.04

CONCLUSIONS

- **Most cow raised in Thailand (91%) were crossbred which had 3 different presented breeds in average (1 to 8 breeds)**
- **Number of presented breeds did not associate with MY in Thai dairy population**
- **Fraction of Holstein, Thai native and Jersey had significantly influenced on MY (P < 0.05)**

Acknowledgement

Thai Dairy Farmers

Dairy Farming Promotion Organization of Thailand

Kasetsart University

THANK YOU!

FOR YOUR ATTENTION