Challenges and Opportunities for Improvement in Dairy Production and Genetic Progress in Thailand

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Thailand

- A tropical country
- 9° 37' to 20° 27' N latitude
- 97° 21' to 105° 37' E longitude
- Elev. 0 to 2,565 m
- Area 513,115 km²
- Tropical Monsoons
- Population: 63,525,062

Seasons:
- Winter (Nov–Feb)
  - Temp: 15° to 25° C
  - Dry: 73% RH
  - Prec: 282 mm/year
- Summer (Mar–Jun)
  - Temp: 21° to 36° C
  - Dry: 71% RH
  - Prec: 245 mm/year
- Rainy (Jul–Oct)
  - Temp: 24° to 33° C
  - Humid: 79% RH
  - Prec: 1,160 mm/year

Dairy Population in Thailand

- Multibreed: purebred and crossbred cattle can be parents
- In 2009: 483,899 dairy cattle, 42% were milking cows (204,805 cows)
- Most of them (>95%) are crossbred with high Holstein fraction
- Produced 2,093,421 kg of milk/day (Avg. 10.22 kg/cow/day)

Dairy Population in Thailand

Thai Multibreed Dairy Population
HF = Holstein Friesian; BS = Brown Swiss; BRA = Brahman; JER = Jersey; NA = Thai Native; RD = Red Dane; RS = Red Sindhi; SW = Sahiwal; Z = Other Zebu

Fed. 73.75%
59,918 cows 20%
HF 100%
3,470 cows 1%
HF 50%
2,759 cows 1%
HF 62.5%
11,345 cows 4%
Other Breeds
3,470 cows 1%
HF 87.5%
137,066 cows 46%
HF 75.0%
79,463 cows 27%

Feeding:
- Concentrate: 5 to 15 kg/d, or 1 kg of concentrate per 2 kg of milk
- Fresh grass: direct grazing or cut and carry; 30 to 40 kg/d
- Guinea [Pennisetum maximum], Kudzu [Pueraria phaseoloides], Napier [Pennisetum purpureum], Para [Brachiaria mutica]

During dry seasons (winter and summer)
Supplements: silage, hay, rice straw, urea treated rice straw, crop residues, agricultural byproducts
Thai Dairy Markets their cow herd to their

The Monthly •

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The Monthly •

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The Monthly •

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The Dairy farm, source 338 dairy

LARGE SCALE DAIRY GENETIC EVALUATION PROGRAM

Dairy Genetic Evaluation and Selection

South

Northeast

North

Central

Northeast

Dairy Farmers and Their Dairy Production System

Farm

Farm

Farm

Private Organizations

Dairy Cooperatives

Dairy Markets

School Milk

Genetic Evaluation and Selection

Sire selection in Thailand

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Most Thai dairy farmers (59%) lacked sufficient knowledge and understanding of genetic selection and mating strategies.

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Dairy Genetic Evaluation and Selection

When the farmers selected sires, most of them (96%) sought the advice of:
- Artificial inseminators,
- Semen sellers,
- Consultants, or
- Other people.

On the other hand, farmers who decided by themselves (4%) used their own knowledge and experience (49%) rather than discussing with other farmers or considering EBV of potential sires.

Unfortunately, most farmers (96%) did not know how to use EBV. Among farmers who knew the benefit of EBV for selection, less than 5% of them frequently used it.

Genetic and Phenotypic Trends

Genetic yearly means for 305-d milk yield in cows, sires and dams suggest that sires and dams were primarily chosen based on considerations other than their EBV for this trait.

This is supported by the closeness of weighted (number of daughters) and unweighted sire yearly mean EBV which suggests that sire usage was similar among available sires within years (1993 to 2003).

Challenges and Opportunities for Improvement

Training of producers
In dairy production and genetic improvement

Farmers may have limitations in their ability to understand new technology and to acquire new knowledge for improving dairy production and profitability.

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Challenges and Opportunities for Improvement

Data recording and its utilization

Most farmers did not keep records, did not know how to utilize recorded data in their dairy business, and considered data recording to be costly and a waste of time.

Proper data recording and utilization needs to continue to be promoted and supported to Thai dairy farmers. This will not only benefit individual dairy farmers through improved practices and higher revenues, but it will also benefit the complete dairy industry through improved regional and national dairy databases for potential use in production, genetic, economic, and social programs.

Challenges and Opportunities for Improvement

National Dairy Genetic and Genomic Evaluation Systems

A "National Dairy Genetic Evaluation" needs to be implemented to improve the accuracy of genetic predictions and to increase the availability of Thai and imported sires evaluated under Thai environmental conditions.

Research and development efforts towards the implementation of a "Genomic Evaluation system" are needed.

Genomic research will provide needed information on the importance of genes associated with dairy traits under Thai tropical environmental conditions.
Challenges and Opportunities for Improvement

**Sustainability of Dairy Production**

The most economically important dairy traits in Thailand are milk yield and fat percentage. Milk price in Thailand is primarily determined by amount of milk produced, with additions and deductions due to milk components.

Most Thai dairy herds are small (less than 10 milking cows). (Hemphill et al., 2007)

On the other hand, cows between 75% H and less than 100% H had higher milk production than purebred H. (Rhone et al., 2008a; Seangjun and Koonawootrittriron, 2007)

To stimulate increases in herd size and number of dairy farms willing to participate in genetic improvement programs, the milk price paid to farmers in Thailand needs to increase.

A sustainable dairy production program in Thailand needs to consider economic, social, production, and genetic improvement aspects.

Selection programs in Thailand need to include adaptability (heat and humidity tolerance, tolerance to insects), reproduction, and production traits.

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