Nordic breeding values for beef breed sires used for crossbreeding with dairy dams

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Ruth Bønløkke Davis, Freddy Fikse, Emma Carlén, Jukka Pösö, Gert Pedersen Aamand
Why a Nordic beef × dairy genetic evaluation?
The aim

• Develop an overall economic index that helps dairy farmers to select beef sires that produce the economically best crossbred calves
  • Include economically important traits

• All beef bulls are comparable across breeds and countries
  • On the same scale
Data in the evaluation

Crossbred Nordic calves with:

• purebred dairy dam (HOL, JER and RDC),
• purebred AI sire from a beef breed (also INRA)
• born on milk producing herds

Photo: VikingGenetics
Distribution of sire breeds

Birth year


Birth year

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Distribution of sire breeds over the years.
Rearing system

Differences across:
• Countries
• Sex
Traits in the evaluation

Calving traits
- Calf survival
- Calving ease
- (Calf size)
- 2 trait groups
  - First parity
  - Later parities

Carcass traits
- Carcass daily gain
- Carcass conformation score
- Carcass fat score
Published breeding values

Calving traits
- Calf survival
- 1\textsuperscript{st} and later lact.*
- Calving ease
  - 1\textsuperscript{st} and later lact.

Carcass traits
- Carcass daily gain
- Carcass conformation score*
- Carcass fat score

*reliability of 50% or 500 offspring
Effects in the Model

- Sire beef breed
- Herd - year
- Year-month-country
- Age calving/slaughter
- Dam breed-year-country
- Multiple-trait

Comparison within herd when multiple beef sire breeds are used

Adjust for breed differences and genetic trend
Correlation between traits
Presentation of Breeding Values

- As for dairy genetic evaluation
  - Mean: 100
  - Standard deviation: 10
  - No economic index (yet)
Distribution of breeding values by sire breed

- Calving traits
Distribution of breeding values by sire breed

- Carcass traits

Index for carcass conformation score
Future plans

- December 2018 first publication
  - With NAV routine evaluation (4 times/year)

- Economic *Nordic Beef x Dairy Index* in the pipeline

- Research on genetic evaluation for additional traits
NBDI – Nordic BeefxDairy Index

- Birth index (calving traits)
- Growth index (carcass traits)
  - Short fattening period
  - Long fattening period
- NBDI (all traits)
  - Short fattening period
  - Long fattening period

Photo: VikingGenetics
Take-home message

- Nordic dairy farmers can now select beef sire across breed for a profitable production

- Communication and advisory service needed to promote new values