Breeding values for beef breed sires used for crossbreeding with dairy cows

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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
  • On the same scale
Which traits are included?

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

**Carcass traits**
- Carcass daily gain
  - Short fattening period
  - Long fattening period
- Carcass conformation score
- Carcass fat score
Which calves are included?

Crossbred calves with:

- purebred dairy dam (HOL, JER and RDC),
- purebred AI sire from a beef breed (also INRA)
- born on milk producing herds
Effects in the Model

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

Comparison within herd when multiple beef sire breeds are used

Adjust for breed differences and genetic trend in dairy population
Effects in the Model

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

Correlation between traits
Genetic Parameters – Calving traits

• Low heritabilities
  • Calf survival: 0.01 – 0.05
  • Calving ease: 0.05 – 0.11

• Moderate genetic correlations
  • First – later parity: ~0.90
  • Calving ease – calf survival: 0.6 – 0.7
Genetic Parameters – Carcass traits

- Moderate heritabilities
  - 0.2 – 0.4

- Moderate/high genetic correlations
  - Daily gain short – long fattening: >0.95
  - Male – female traits: 0.8 – 0.9
### Publication rules

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<tr>
<th>Calculated EBVs</th>
<th>Published EBVs</th>
<th>Minimum reliability</th>
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<td>50% or 500 offspring</td>
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<td>Combined Carcass daily gain</td>
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Presentation of Breeding Values

- As for dairy genetic evaluation
  - Mean: 100
  - Standard deviation: 10
- No economic index (yet)
Breeding values for Stillbirth, later parities
Index for Carcass conformation score

Breeding value for EUROP conformation
Roll-out

- December 2018 first publication
- Then together with the NAV routine evaluation (4 times/year)
- Economic index in the pipeline
- Publication of breeding values:
  - NAV website
  - VikingGenetics