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

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Nordic cattle genetic evaluation

- Dairy breeds
  - Joint genetic evaluation
  - Joint TMI = Nordic Total Merit

- Beef breeds
  - Beef x dairy – joint genetic evaluation
  - Purebred beef – development ongoing
Why a Nordic beef × dairy genetic evaluation?

Number of beef x dairy calves

Year

DNK  FIN  SWE


0  10000  20000  30000  40000  50000  60000
The aim

- Develop breeding values that helps dairy farmers to select beef sires that produce the economically best crossbred calves
- All beef bulls are comparable across breeds and countries
Data in the evaluation

Crossbred Nordic calves with:

- purebred dairy dam (HOL, JER and RDC)
- purebred AI beef sire (major breeds)
- born on milk producing herds
PROPORTION OF BEEF X DAIRY CALVES BORN IN 2018 AFTER DIFFERENT SIRE BREEDS

- Blond 28%
- Danish Blue 41%
- Angus 9%
- Limousin 8%
- Hereford 8%
- Charolais 6%
- Simmental (beef) 5%

BBL: Only used in DNK ~80% of calves ↑ over years

BAQ: Major breed in FIN ~50% of calves ↑ over years

More equal distr. in SWE BSM, HER, CHA, LIM, ANG ~from 30 to 15% each
Differences in rearing system

Different average age at slaughter for males and females in our three countries

- Short, intensive rearing (<550d) for both sexes
- Long, extensive rearing (>550d) esp. for males
- Long, extensive rearing (>550d) esp. for females
Published breeding values

Calving traits: 4 EBV
- Calf survival
- 1\textsuperscript{st} and later lact.*
- Calving ease
  - 1\textsuperscript{st} and later lact.
- Indicator trait:
  - Calf size

Carcass traits: 3 EBV
- Carcass daily gain
- Carcass conformation score*
- Carcass fat score
- Split on rearing period and/or gender

*Publication rule: 50%
Effects in the multiple trait models

- Sire beef breed  
  Adjust for breed differences, added back to sire solutions

- Herd - year

- Year-month-country

- Age calving/slaughter

- Dam breed-year-country
  Adjust for breed differences and genetic trend

- Genetic effect of animal=beef sire solution
"I use always Angus on my dairy cows to avoid difficult calvings. Which bull it is doesn’t matter…”
Distribution of breeding values by sire breed

- Calving traits

Relative breeding values
Mean=100
Std=10

BV for Calf survival, later parities
Distribution of breeding values by sire breed
• Carcass traits

Index for carcass conformation score
Status and 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 Beef x Dairy Index

- Birth index (calving traits)
- Growth index (carcass traits)
  - Short rearing period
  - Long rearing period

➢ NBDI (all traits)
  - *Short rearing period*
  - *Long rearing period*
Take-home message

- Nordic dairy farmers can now select beef sires across breed for a profitable production
- Communication and advisory service needed to promote new values