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

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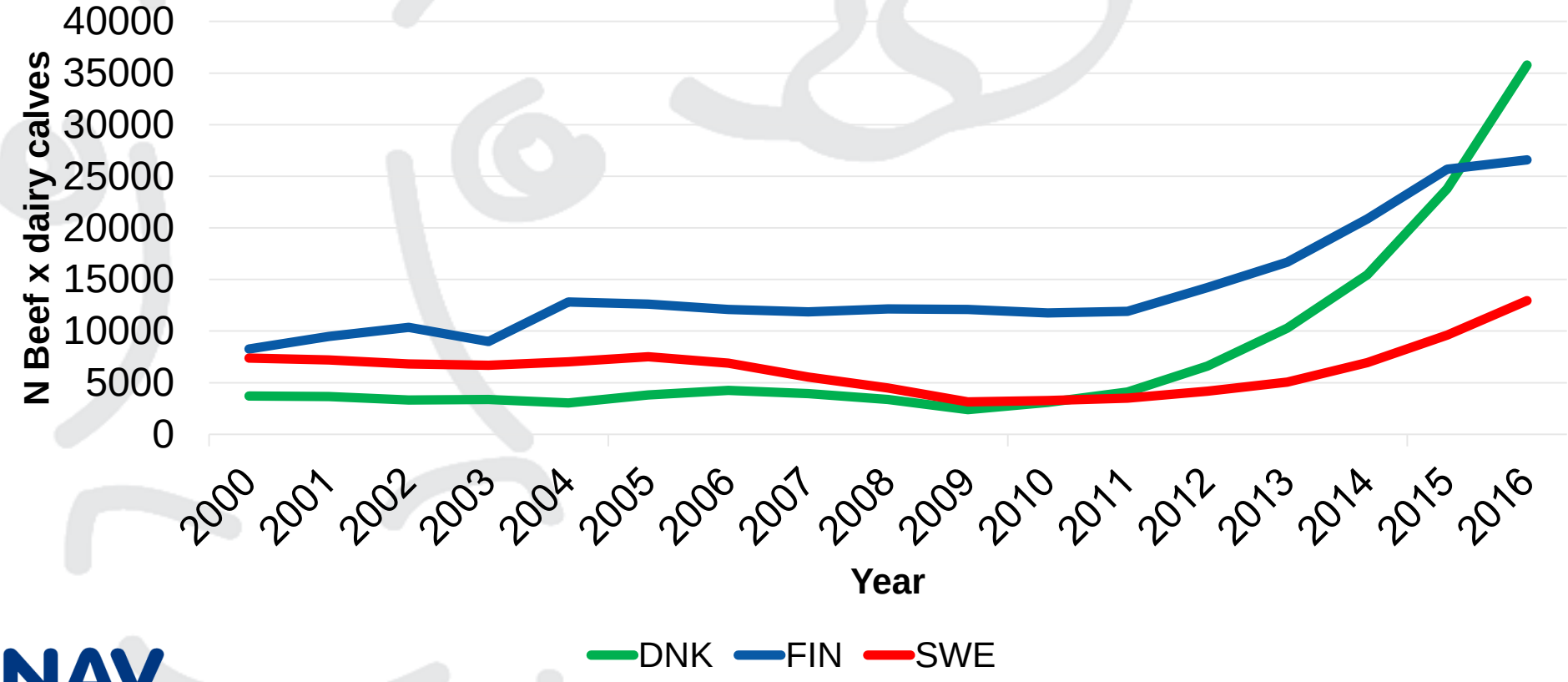
Why a Nordic beef × dairy genetic evaluation?



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

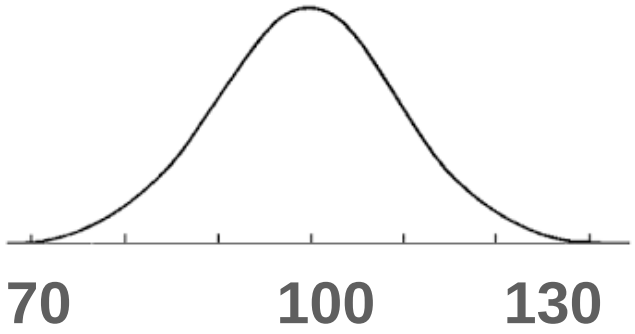
- Moderate heritabilities
  - 0.2 – 0.4
- Moderate/high genetic correlations
  - Daily gain short – long fattening: >0.95
  - Male – female traits: 0.8 – 0.9

Publication rules

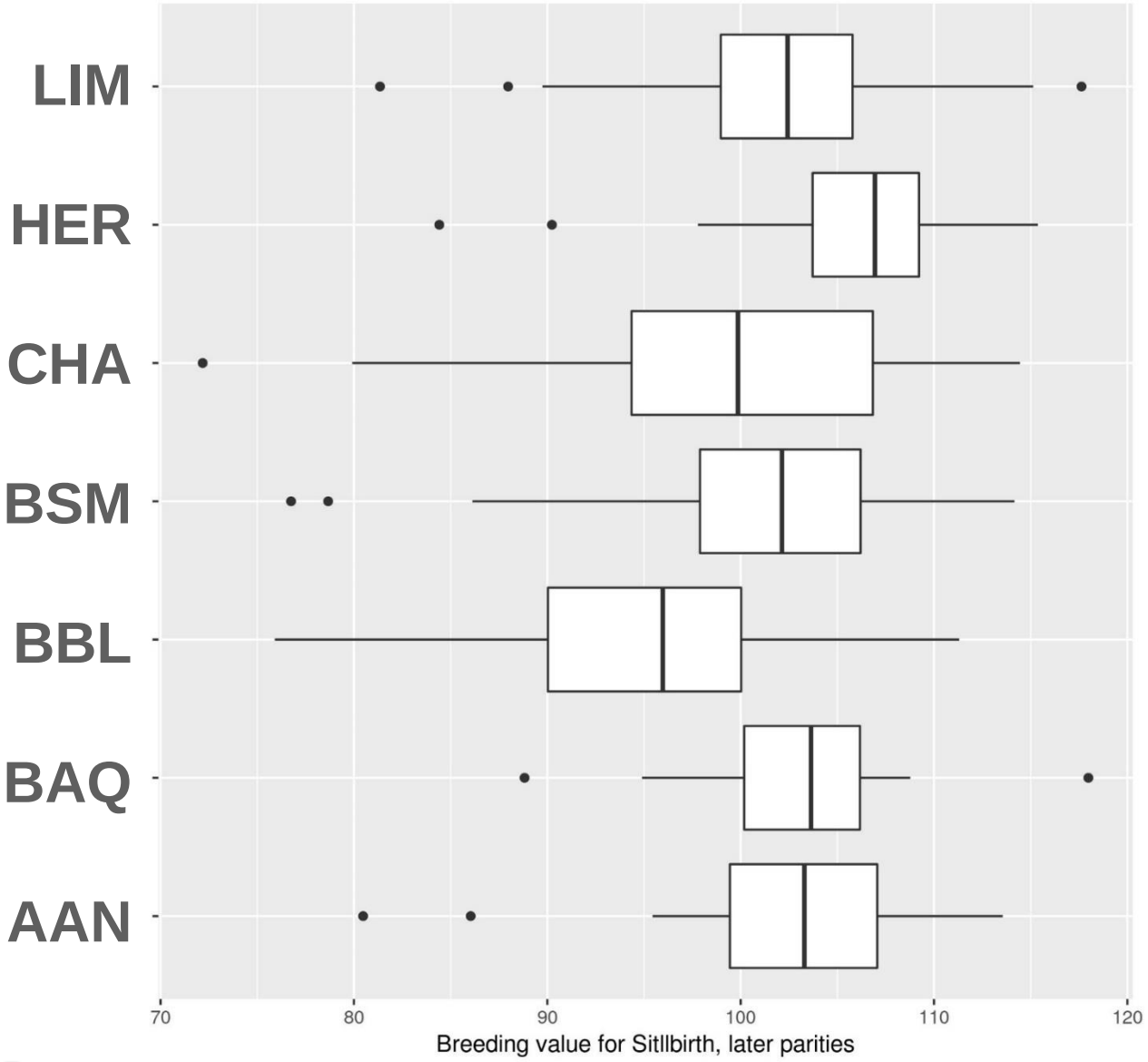
Calculated EBVs	Published EBVs	Minimum reliability
Calf survival 1st	Calf survival 1st	
Calf survival 2+	Calf survival 2+	50% or 500 offspring
Calving ease 1st	Calving ease 1st	
Calving ease 2+	Calving ease 2+	
Calf size 1st		
Calf size 2+		
Carcass daily gain <550 day bulls	Combined Carcass daily gain Weight 25/25/25/25	
Carcass daily gain >550 day bulls		
Carcass daily gain <550 day heifer		
Carcass daily gain >550 day heifer		
Carcass conformation score bulls	Combined carcass conformation score Weight 50/50	50% or 500 offspring
Carcass conformation score heifers		
Carcass fat score bulls	Combined fat score Weight 50/50	
Carcass fat score heifers		

Presentation of Breeding Values

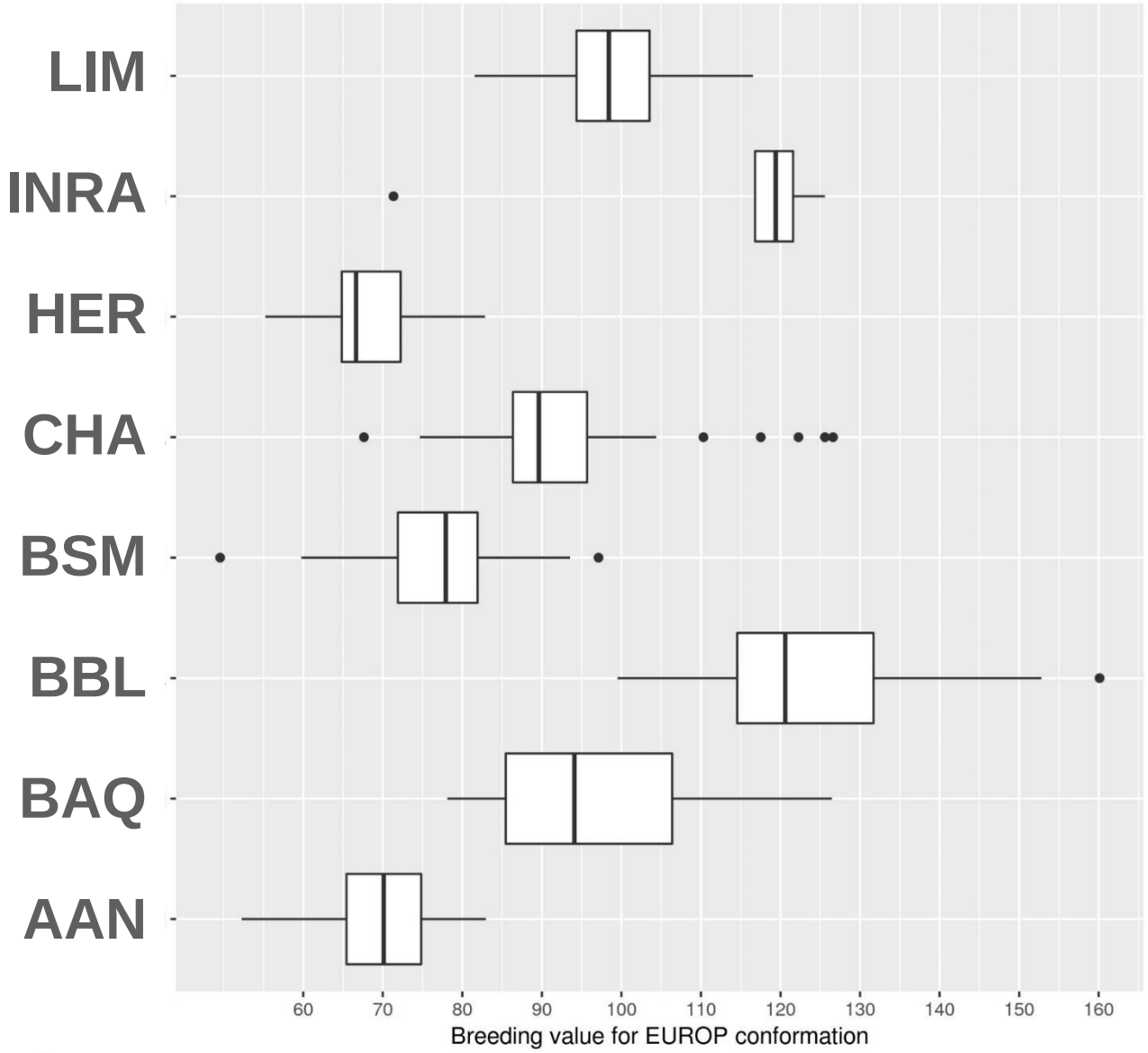
- As for dairy genetic evaluation
  - Mean: 100
  - Standard deviation: 10
- No economic index (yet)



Breeding values for Stillbirth, later parities



Index for Carcass conformation score



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