

# NAV official evaluation for Purebred Beef

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# NAV official evaluation for Purebred Beef

With the aim to...

Develop joint modern  
Nordic genetic evaluations  
for Purebred Beef

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# NAV PbB evaluation – Phase 1

## Breeding values

- Calving
- Weights/growth and carcass

## Breeds

- Aberdeen Angus (AAN)
- Beef Simmental (SIM)
- Charolais (CHA)
- Hereford (HER)
- Limousine (LIM)

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# Outline

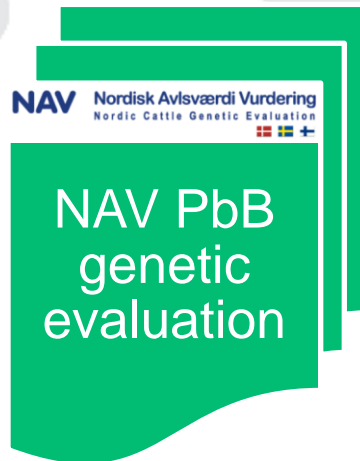
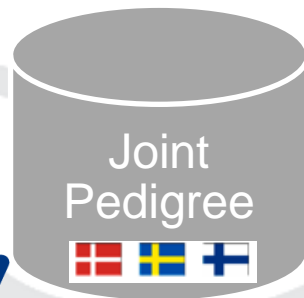
- Overview NAV PbB genetic evaluations
- Introduction to the sub-indexes

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# Overview NAV PbB genetic evaluation



# Registrations

- **Data:**
  - Calving ease and calf survival scores (> 1998)
  - Birth, weaning and post-weaning weights and carcass records since the 80's for DNK and SWE and 90's for FIN
- **From:** Farmers, technicians, test stations (SWE) and slaughterhouses

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# Calving traits

3 traits (12 breeding values)

- Calf survival\*
- Calving ease\*
- Birth weight\*

2 groups

- First calving
- Later calving
- *\*maternal and direct breeding values*



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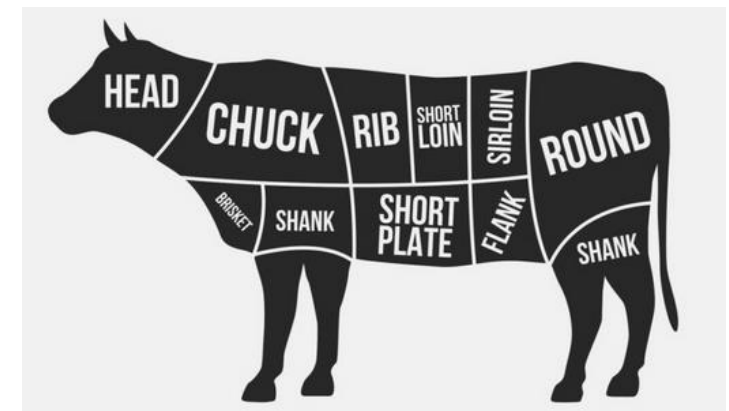


# Weight/growth and carcass traits

7 traits (10 breeding values)

- Birth weight\*
- Weaning weight gain\*
- Post-weaning weight gain (FIN&SWE)
- Yearling weight (DNK)\*
- Slaughter daily gain
- EUROP conformation class
- EUROP fat class

*\*maternal and direct breeding values*



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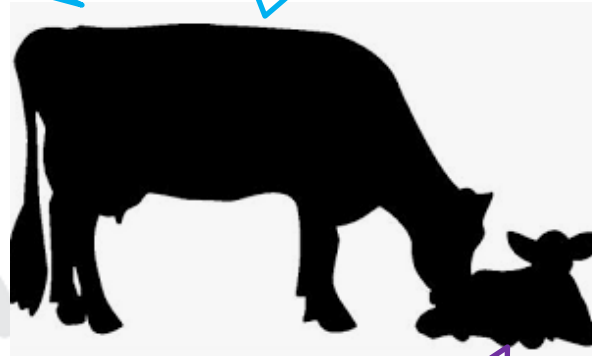




# Direct and maternal effects

Genes of the dam  
for maternal ability  
(ex. milk production)

environmental factors  
that affect maternal  
characteristics



Genes of the calf for  
growth

Environmental  
factors experience by  
the calf

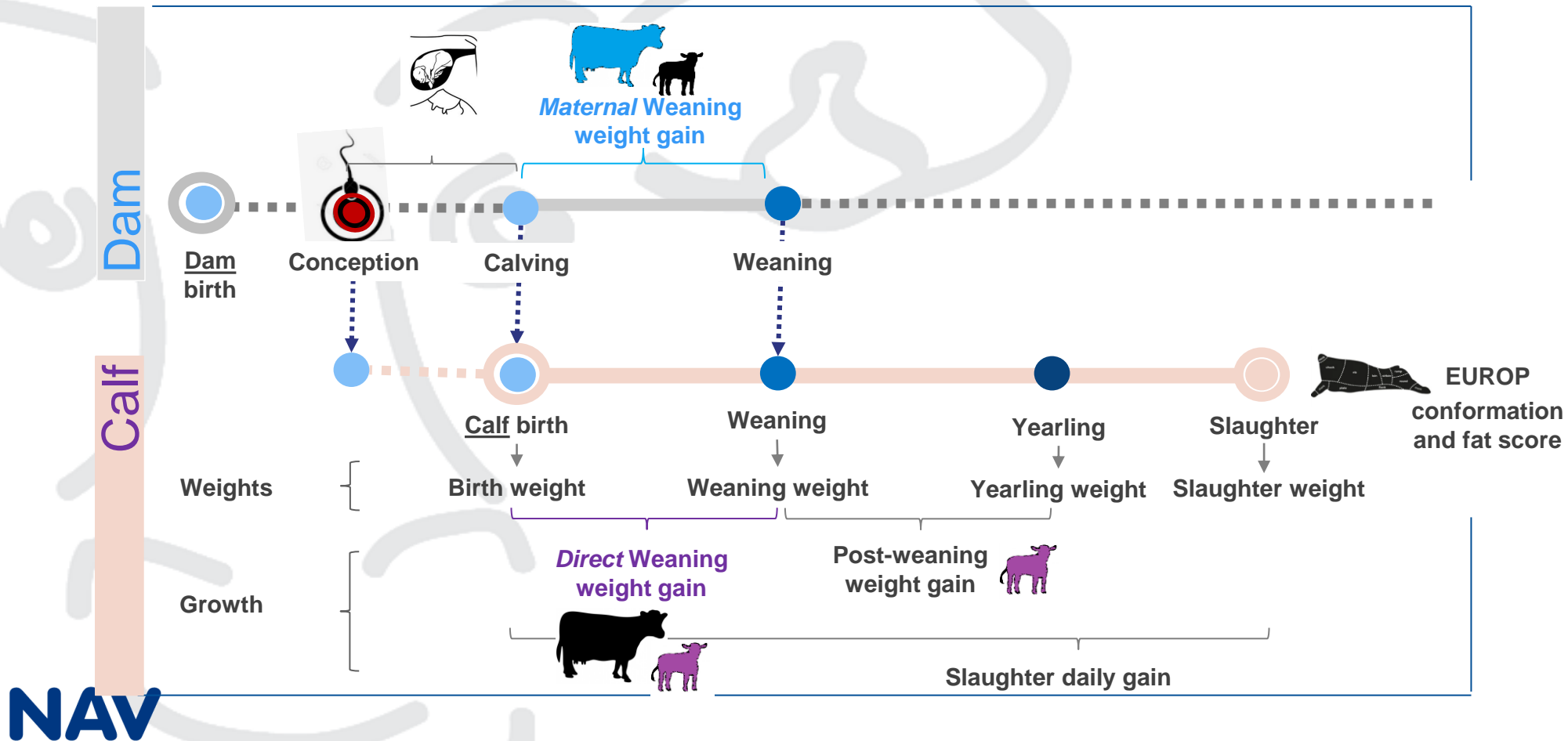
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# Direct and maternal traits



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# Associations between traits

- Total growth is a combination of different weight gains across the animal's life until slaughter.
  - The trait slaughter daily gain includes all these different growth periods
- Unfavourable genetic associations direct-maternal
  - More calving difficulties with larger calves

# National vs. NAV Purebred Breed evaluations

- **Better handling of:**
  - ✓ Genetic level of imported animals
  - ✓ Within-herd variation
- **New genetic estimates:**
  - ✓ Heritabilities
  - ✓ Genetic correlations between traits



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# Calving traits in the model and resulting breeding values

Traits in the model	Resulting EBVs
Calf survival – 1 calving	2 official EBVs: Direct + Maternal
Calf survival – 2+ calving	2 official EBVs: Direct + Maternal
Calving ease - 1 calving	2 official EBVs: Direct + Maternal
Calving ease - 2+ calving	2 official EBVs: Direct + Maternal
Birth weight – 1 calving	Direct + Maternal, used as indicator trait
Birth weight - 2+ calving	Direct + Maternal, used as indicator trait

# Weight/growth and carcass traits in the model and resulting breeding values

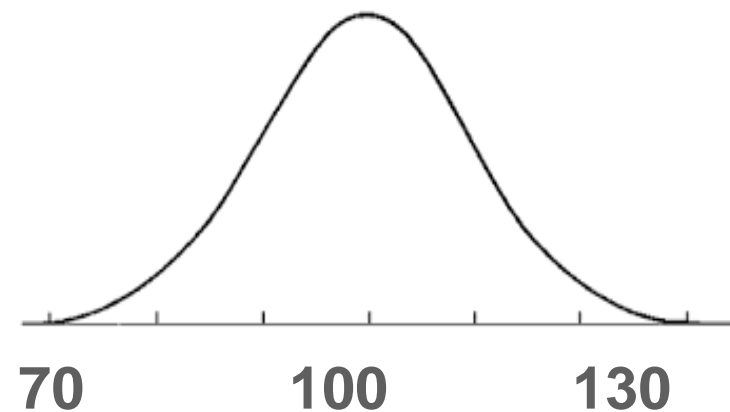
Traits in the model	Resulting EBVs
Birth weight	2 official EBVs: Direct + Maternal
Weaning weight gain	2 official EBVs: Direct + Maternal
Yearling weight	2 official EBVs: Direct + Maternal
Post-weaning weight gain	1 official EBV: Direct
Slaughter daily gain	1 official EBV: Direct
Carcass score	1 official EBV: Direct
Fat score	1 official EBV: Direct

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# Presentation of the NAV PbB breeding values

- Follows the same principle as for the Dairy and BxD NAV breeding values
- Mean = 100
- Standard deviation = 10



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**Selection index**

**Multiple-trait selection**

# **HOW ARE WE GOING TO SELECT?**

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# Selection index

Allows for efficiently improve more than one trait simultaneously

Breeding  
values

- Birth weight, weaning weight gain (maternal and direct) etc ...

INDEX

- Index1 = Birth weight + ...
- Index2 = ...

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# Combining information on different traits

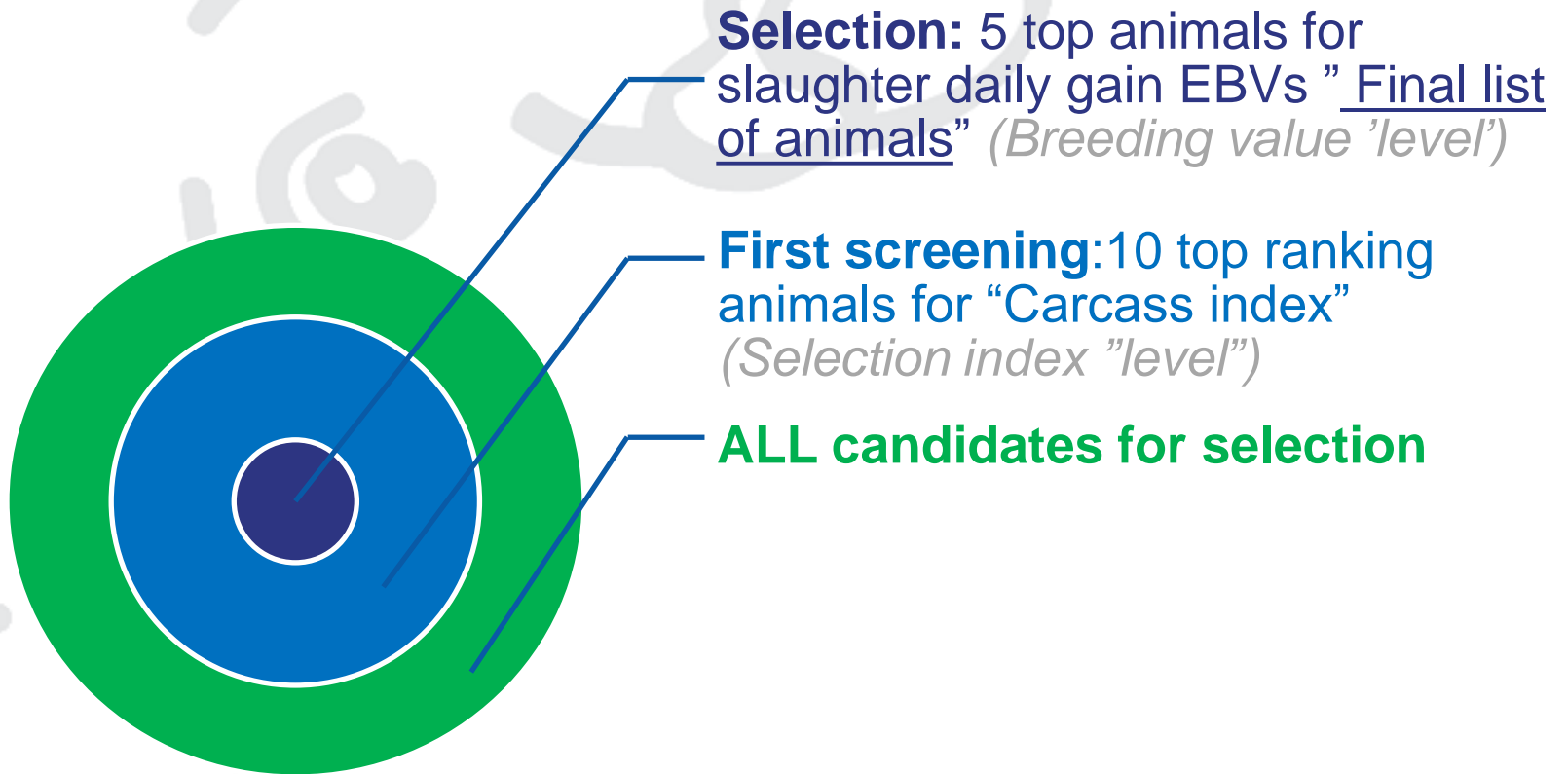
- We can group traits based on the use we want to give to the animal (i.e replacement female) into an index
- Indexes...
  - Helps to find animals to use in breeding
  - Can have one or more than one trait (multi-trait indexes)
  - Index selection is the most efficient way to select for multiple traits

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# Selection of breeding animals – How?



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# Selection of breeding animals – who?

- **Production herds**
- **Breeding herds**
- **AI organizations**
- **Station performance test**
- **Breed societies**
- ...

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# Considerations

- Multi-trait indexes spread our selection efforts over several traits
  - **...and allows for a balanced genetic progress for all traits**
- We have favourable and unfavourable associations between traits
  - **...and selection indexes helps in the selection of animals as a “whole” avoiding detrimental genetic trend for some traits**

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**Thank you!**

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