

Nordic breeding values for beef breeds

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Breeding values for dairy breeds has been calculated jointly across Denmark, Sweden, and Finland for many years and now we go along the same path for beef breeds. The calculation is done by NAV and the first breeding values are published in November 2021. Breeding values are calculated jointly for calving, growth, and carcass traits. From the start it is only for the largest breeds (Angus, Charolais, Simmental, Hereford, and Limousine) and breeding values will be estimated 4 times per year (March, April, June, and November).

NAV – Nordisk Avlsvärdivurdering

Nordic Cattle Genetic Evaluations (NAV) mission is to carry out joint breeding value evaluations for cattle in Finland, Sweden, and Denmark to benefit Nordic farmers. NAV was established in 2002 and is owned by Seges, Faba and Växa

You can find breeding values on your cows and bulls on [NAV Beef Search](#) . Besides, Nordic breeding values will fully or partly replace nationally calculated ones, depending on country.

Why Nordic breeding values?

It is costly to develop and improve a genetic evaluation. Therefore, cooperation both on a Nordic and international level is very important since resources for beef genetic evaluations are scarce and beef populations in the Nordic countries are rather small. Furthermore, to be able to establish a genomic evaluation for beef breeds, similarly as for dairy breeds today, the Nordic Purebred Beef genetic evaluation is a necessary starting point.

Merging the three Nordic countries into one single population with animals ranked on the same scale give the possibility to choose among the best animals (insemination bulls) from all three countries.

Improvements of the new evaluation versus the national evaluations

Many features are improved in the new genetic evaluation. Some improvements are country specific while others are common for all countries. The most important improvements are:

1. Higher reliabilities on foreign and Nordic bulls used across borders because data is merged across countries
2. More precise evaluation of foreign bulls and cows, because of the use and improved definition of genetic groups
3. More precise evaluation of all animals because genetic parameters are updated
4. More precise estimation of reliability because new methods are used

Presentation and publication of breeding values

In the new genetic evaluation, breeding values of animals in the genetic base still average,100, but, as a difference from the national genetic base, it includes a mix of Danish, Finnish and Swedish males and females that are born 5-9 years before the publication date AND have a minimum reliability. This means that the average within country can be considerable higher or lower than 100 for some traits. Standard deviation will be 10 in the Nordic base population. This means that the absolute best animals will have an index of 130 or more.

Criteria for publication of breeding values will also change when going from national to the Nordic genetic evaluation. Breeding values for an animal are published if a trait within a trait group (calving or carcass traits) has a reliability of at least 10% AND has an observation for that particular trait or at least 5 offspring.

These rules apply within trait group (calving or carcass traits) and an animal that fulfills the requirements of publication for carcass but not for calving will have breeding values published for carcass only.

Changes in the genetic evaluation and how breeding values are presented (genetic base) can give changes in breeding values for cows and bulls. However, the magnitude of the changes is country specific. More detailed information about the new NAV PbB genetic evaluation can be found on [NAV's homepage](#).

Traits

The traits that are included in the Nordic genetic evaluation for Purebred Beef are to a large extent the same that have been published previously in each country. However, there will be some changes. Below is a list of traits and their definition. Some traits are important themselves while others are used to increase reliability because they have a genetic correlation to the important traits.

Table 1. Traits in Nordic genetic evaluation

Trait	Definition and use in genetic evaluation
Birth weight	Has a favorable connection to growth rate and an unfavorable to calf ability to be born
Weaning weight gain	Weight gain from birth to weaning. Expresses both the calf ability to grow and the dam ability to take care of the calf
Yearling weight	Expresses both the calf ability to grow and the dam ability to take care of the calf
Post weaning weight gain	Weight gain from weaning to yearling. Expresses the calf ability to grow
Daily carcass gain	Weight gain from birth to slaughter. Expresses mainly the calf ability to grow but also to some extent the dam ability to take care of the calf
Carcass conformation score	Classification of the carcass on the EUROP scale at the slaughterhouse
Carcass fat score	Classification of external fat dressing of the carcass at the slaughterhouse
Calving ease	Evaluation of the calving ease compared to other calving's in the herd
Calf survival	Calf survival within the first 24 hours after calving

Next steps in Nordic genetic evaluation

The Nordic PbB genetic evaluation has just started, and many things will change in the short and longer term.

Representatives from breed organization from Denmark, Sweden and Finland have already had the initial talks about weighing basic indexes (see table 1) into combined indexes, for example calf survival, calving ease, and perhaps other traits into a birth index. It is expected that combined trait indexes will be introduced in the near future.

Next step is to expand the NAV PbB genetic evaluation to other breeds currently nationally evaluated in the three Nordic countries. Additionally, fertility and youngstock survival are expected to be the next traits to include in the Nordic PbB genetic evaluation.