News - NAV evaluation
13 August 2024

Dairy cattle

The latest NAV official evaluation for yield, fertility, conformation, udder health, general health, calving traits, milkability, temperament, growth, longevity, young stock survival, claw health, saved feed and NTM took place as scheduled. NAV carried out three evaluations per trait group:

Holstein evaluation, including data from: Danish Holstein, Swedish Holstein, Norwegian Holstein, Finnish Holstein, Finnish Ayrshire and Finncattle.

Red Dairy Cattle evaluation, including data from: Danish Red, Swedish Red, Finnish Ayrshire, and Finncattle.

Jersey evaluation, including data from: Danish Jersey, Swedish Jersey, Finnish Jersey, Norwegian Jersey and French Jersey.

Dates for extraction of data from national databases for the latest official evaluations are given in Table 1.

Table 1. Dates for extraction of data from the national databases

Trait	Denmark	Finland	Sweden
Yield	24.06.2024	24.06.2024	06.06.2024
Type, milkability and temperament	24.06.2024	24.06.2024	07.06.2024
Fertility	24.06.2024	24.06.2024	08.06.2024
Udder health and other disease	24.06.2024	24.06.2024	08.06.2024
Calving[1)]	24.06.2024	24.06.2024	08.06.2024
Longevity	24.06.2024	24.06.2024	08.06.2024
Growth[1)]	24.06.2024	24.06.2024	08.06.2024
Claw health	24.06.2024	24.06.2024	08.06.2024
Youngstock survival[1)]	24.06.2024	24.06.2024	08.06.2024
Saved feed	24.06.2024	24.06.2024	07.06.2024
Pure beef cattle	16.05.2024	07.05.2024	14.05.2024

[1)]Including data for the evaluation of beef bulls used on dairy

Data used in genomic prediction.

Genotypes were extracted from the joint Nordic SNP data base 28 June 2024. INTERBULL information from April 2024 was included in the genomic prediction.

News in relation to NAV dairy genetic evaluation

Dairy pure

Data handling

- Yield – correction in the handling of Swedish yield data for all breeds:
- General health and mastitis -Växa no longer receives veterinary treatment records, in this run there are close to zero new records on veterinary treatments.

DairyxDairy

- No changes

BeefxDairy

- No changes.

Beef pure

- Latest evaluation took place 4.6.2024.

Yield evaluation

Vaxa found some error in the data delivered to NAV and has made the following:

- Calculated fat and protein content (on test-days where only milk yield was measured) are removed from the data files
- Days carried calf has been corrected for test-days since 2021-01-01
- The information whether or not the milking was with an AMS has been corrected, this affects test-day records from 2007-2016.

The changes cause minor changes in the estimated breeding values for animals having records in Sweden.

Metabolic efficiency

Metabolic efficiency is based on feed intake data. The core trait for metabolic efficiency is residual feed intake, which is the observed feed intake minus the expected feed intake. The expected feed intake is calculated by use of information about yield and metabolic body weight change.

In Table 2 the amount of feed intake data available for the August 2024 run is shown for all three breeds. The amount of feed intake data has increased significantly during the last year. CFIT data is in August 2024 included from in total 21 herds and close to 11,500 cows.

Table 2 Feed intake data for genetic evaluation of metabolic efficiency in August 2024

	Holstein			RDC		Jersey
	CFIT data	**Danish research farm data**	**Abroad research farm data[a)]**	**CFIT data**	**Finnish research farm data**	**CFIT data**
Cows with feed intake phenotypes	5124	1226	1581	3691	769	2808
Cows with feed intake phenotypes and genotypes	4266	730	1450	3332	416	2489
Lactations included	1-6	1-3	1-6	1-6	1	1-6
Number of herds	9	1	a)	7	4	6

a) Research farm data from Canada, US and Australia

NAV has observed some weakness in the genetic evaluation of metabolic efficiency evaluation, and work is ongoing to improve the statistical model. The current metabolic feed efficiency evaluation take place in two steps. In the first step the residual feed intake is estimated by correcting the feed intake for the energy sinks used for producing milk, maintenance, and changes in body weight during lactation. The estimated energy in one kg ECM by this method is somewhat lower than one should expect from feeding norms indicating a weakness in the current model. Furthermore, we observe an unexpected negative genetic trend in Holstein and to some extent also RDC, which is linked to the problems estimating correct effects of the energy sinks. Currently intense development work is ongoing to improve the statistical model for metabolic efficiency. The expectation is that it will be possible to introduce an improvement of the metabolic efficiency evaluation in the November 2024 run, which make better use of the CFIT data than what we are doing today.

Genetic base
EBVs for RDC, Holstein and Jersey bulls and females are expressed on a cow base except for growth where the EBV are expressed on bull calf base. This genetic evaluation included cows born from 13.08.2019 to 13.08.2021 in the genetic base (average 100). For growth EBVs are expressed on a genetic base of 3-5 year old bull calves. For Finn Cattle the EBVs are expressed on base of 3-7 year old cows. The GEBVs for crossbred are expressed on a genetic base of 1-7 year old cross-breds.

Publication of NTM for Nordic and foreign bulls
NTM is published if the bull has official EBVs (NAV (G)EBV or international EBV) for Yield, Mastitis and Type. By official means for NAV EBVs that the NAV thresholds are met, and for international EBVs (IB EBVs) that Interbull EBVs for the single bull exist. For traits without a NAV (G)EBV or an IB (G)EBV a NAV pedigree index is calculated.

For bulls with a Nordic herd book number the pedigree index follows the principles described in the October 2008 routine information. For foreign bulls without a Nordic herd book number the pedigree index is calculated in as ½(EBVsire-100) +1/4(EBVmgs-100) +100. If EBVsire or EBVmgs is not official NAV EBVs then 100 is used.

Publication of EBVs/GEBVs
Official EBVs/GEBVs for bulls used for AI in Denmark, Finland or Sweden are published at the NAV Bull Search.

Official NAV GEBVs for foreign AI bulls not used for AI in Denmark, Finland and Sweden are published at NAV homepage. The excel sheets also include GEBVs for bulls used for AI in Denmark, Finland and Sweden. The excel sheets include AI bulls that are 10 months to 5 years old at the date of publication and is mainly useful for foreign AI-companies.

Interbull EBVs/GEBVs are published at the NAV Interbull Search.

Genetic evaluation of beef bulls used in dairy herds

The latest NAV official evaluation for AI beef bulls based on their crossbred offspring from dairy cows for gestation length, birth, youngstock survival and carcass traits took place as scheduled. Extraction date for the data can be found in table 1. Breeding values for AI beef bulls are estimated four times per year, in connection to the NAV routine genetic evaluation for dairy breeds (table 5), and EBVs are published at NAV Beef Search.

Genetic base

The genetic base for beef bulls evaluated based on dairy crosses is defined as relative breeding values with a mean of 100 and standard deviation of 10. The genetic base animals for beef bulls evaluated based on dairy crosses constitutes of 2-5 year old crossbreds born after beef breeds which can be used in all 3 countries.

Fee for EBV of beef bulls based on beef × dairy crossbred offspring

Nordic Cattle Genetic Evaluation (NAV) conducts a genetic evaluation of AI beef bulls based on beef × dairy crossbred offspring for young stock survival, gestation length, calving and carcass traits. A fee system was introduced 1.1.2020 for the service. It means a fee must be paid for all bulls getting publishable EBVs for the first time after 1.1.2020. No fee needs to be paid for bulls already having official EBVs before 1.1.2020. To get published EBVs the following criteria should be fulfilled for each bull:

- The EBV should meet the criteria for publication.
- A one-time fee of currently 1,300 euro per bull should be paid.

More information about the genetic evaluation and the publication criteria can be found at NAV homepage.

Genetic evaluation for Purebred Beef animals

The latest genetic evaluation of purebred beef animals took place 4 June 2024. NAV publish EBVs for calving, growth and carcass traits based on phenotypes from purebred beef Angus, Charolais, Simmental, Hereford, Limousine, Highland Cattle, Blonde d 'Aquitaine, Belgian Blue, Dexter, Galloway, Grauvieh, Piemontese, Salers, Shorthorn cattle. Extraction date for the data used in the June evaluation can be found in Table 1. Breeding values for pure beef cattle are estimated four times per year (table 2), and EBVs are published at NAV Beef Search.

The NAV breeding values from the June 2024 evaluation can be found at the NAV Beef search page for all animals and all 18 traits included in the evaluation.

NAV – frequency and timing of official runs

NAV has 4 large dairy evaluations per year, which include updated phenotypic and genomic data, and additional eight small runs including updated genotypes. In Table 3 the NAV and INTERBULL release dates for 2024 are shown. The beef evaluation based on beef × dairy crossbreeds take place along with the large NAV dairy runs 4 times a year. The NAV pure beef evaluation has its own time schedule.

Table 3. NAV and INTERBULL release dates in 2024. EBVs released at NAV dates in bold will be delivered to international genetic evaluation.

	Dairy Cattle			Beef Cattle	
Month	**NAV Small run[1)]**	**NAV Large runs[2)3)]**	**INTERBULL**	**NAV Pure Beef**	**INTERBEEF**
January 2024	9				
February 2024		6			28
March 2024	5			5	
April 2024	2		2	16	
May 2024		7			
June 2024	4			4	
July 2024	2				
August 2024		13	13		
September 2024	3				
October 2024	1				16
November 2024		5		5	
December 2024	3		3		

[1)] Genotypes updated; [2)] Genotypes and phenotypes updated; 3) Beef × dairy evaluation

You can get more information about the joint Nordic evaluation:
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