News - NAV evaluation
February 2, 2021

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, Finnish Holstein and Finncattle.

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

Extraction dates

Dates for extraction of data from national databases are given in Table 1.

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

Trait	Denmark	Finland	Sweden
Yield	14.12.2020	07.12.2020	04.12.2020
Type, milkability and temperament	14.12.2020	07.12.2020	04.12.2020
Fertility	14.12.2020	07.12.2020	05.12.2020
Udder health and other disease	14.12.2020	07.12.2020	05.12.2020
Calving[1)]	14.12.2020	07.12.2020	05.12.2020
Longevity	14.12.2020	07.12.2020	05.12.2020
Growth[1)]	14.12.2020	07.12.2020	05.12.2020
Claw health	14.12.2020	07.12.2020	05.12.2020
Youngstock survival	14.12.2020	07.12.2020	05.12.2020
Saved feed	14.12.2020	07.12.2020	05.12.2020

[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 12th January 2021. INTERBULL information from December 2020 was included in the genomic prediction.

News in relation to NAV dairy genetic evaluation

Traditional evaluation

- No changes

Genomic prediction

- Metabolic efficiency for RDC combine for the first-time feed intake data registered by the CFIT camera system and research farm data

Metabolic efficiency for RDC

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 February run is shown. The data is research farm data only for Holstein. For Jersey all feed intake data comes from the camera system for feed intake registration, called CFIT, developed by Viking Genetics. For RDC the feed intake data comes from research farms and for the first time also from the CFIT system

Table 2 Feed intake data for genetic evaluation of metabolic efficiency in February 2021

	Holstein		RDC	Jersey
	Danish research farm data	Abroad research farm data[a)]	CFIT data plus Finnish research farm data	CFIT data
Cows with feed intake phenotypes	799	1581	907	550
Cows with feed intake phenotypes and genotypes	436	1450	462	512
Lactations included	1-3	1-6	1-6	1-6

a) Research farm data from Canada, US and Australia

A single step model – a model using phenotypes and genotypes simultaneously - is used for the genomic prediction for metabolic efficiency.

Genetic base

EBVs for bulls and females are expressed on the same cow base. This genetic evaluation included cows born from 02.02.2016 to 02.02.2018 in the genetic base (average 100).

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 routine evaluation for AI beef bulls based on their crossbred offspring from dairy cows for birth 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 3), and EBVs are published at NAV Beef Search.

No news has been introduced in the NAV genetic evaluation of beef bulls used in dairy herds

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 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 1,000 euro per bull should be paid

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

NAV – frequency and timing of routine runs
NAV has 4 large 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 2021 are shown. The beef evaluation based on beef × dairy crossbreeds takes place along with the large NAV runs 4 times a year.

Table 3. NAV and INTERBULL release dates in 2021. EBVs released at NAV dates in bold will be delivered to international genetic evaluation.

Month	NAV Small run[1)]	NAV Large runs[2)3)]	INTERBULL
January 2021	5		
February 2021		2	
March 2021	2		
April 2021	6		6
May 2021		4	
June 2021	1		
July 2021	6		
August 2021		10	10
September 2021	7		
October 2021	5		
November 2021		2	
December 2021	7		7

[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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