

News NAV evaluation

7 March 2023

Genetic evaluation of Dairy Cattle

The latest Nordic Cattle Genetic Evaluation (NAV) official genomic prediction took place as scheduled. NAV carried out genomic prediction for Holstein, RDC, Jersey, and dairy crossbreds.

Data used in genomic prediction

Genotypes were extracted from the joint Nordic SNP data base 3 February 2023. INTERBULL information from December 2022 and national information from 7 February 2022 run were included in the genomic prediction.

Publication of GEBVs

GEBVs for bulls and females are published monthly. Nordic phenotypic information is updated 4 times a year (February, May, August and November), and is used in the reference population for genomic prediction. The GEBVs for pure breed animals are expressed on the same cow base as in the February evaluation; cows born from 07.02.2018 to 07.02.2020. The GEBVs for crossbred are expressed on a genetic base of 1-7 year old crossbreds.

News in relation to NAV dairy genomic evaluation

- No changes

Official GEBVs for bulls used for AI in Denmark, Finland or Sweden are published at the [NAV Bull Search](#) page.

GEBVs for dairyxdairy crossbreds

Joint Nordic GEBVs for dairyxdairy crossbred females were published for the first time 7th December 2021. The procedures for calculating GEBVs have not been changed since the introduction, but for a few animals it has been observed that the changes in GEBVs between subsequent evaluations are significantly larger than expected. NAV is investigating what is causing these unexpected large changes.

Publication of NAV EBVs on search pages

Official NAV GEBVs for foreign AI bulls not used for AI in Denmark, Finland and Sweden are published on the [NAV homepage](#) in an excel sheet. The excel sheet also includes GEBVs for bulls used for AI in Denmark, Finland and Sweden. The excel sheet includes AI bulls that are from 10 months to 5 years old at the date of publication. The excel sheet is mainly useful for foreign AI-companies.

Interbull EBVs/GEBVs are published at the [NAV Interbull Search](#) page. The Nordic total merit index (NTM) is not calculated based on GMACE GEBVs, since Interbull regulations do not require member countries to calculate total Merit Indices based on Interbull GEBVs, and internationally it is not a common practice.

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 birth, youngstock survival and carcass traits took place 7 February. Breeding values for AI beef bulls are estimated four times per year, in connection to the NAV routine genetic evaluation for dairy breeds (table 2), and EBVs are published at [NAV Beef Search](#).

Genetic evaluation of pure beef cattle

The latest Nordic Cattle Genetic Evaluation (NAV) official evaluation for calving, growth and carcass traits took place as scheduled based on phenotypes from purebred Angus, Charolais, Simmental, Hereford, and Limousine beef cattle.

Extraction date for the data used in the March evaluation can be found in table 1.

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

Trait	Denmark	Finland	Sweden
Pure beef cattle	10.02.2023	20.02.2023	16.02.2023

News in relation to NAV Beef evaluation

- More Danish live weight data included.
- 7 joint Nordic subindices have been implemented: Growth, Slaughter quality, Calving, Milk, Birth, Production, and Dam index.

Subindices

NAV implement in the March 2023 evaluation 7 joint Nordic subindices (Table 2). The NAV board has decided about the subindices based on recommendation from the breed for Angus (AAN), Charolais (CHA), Hereford (HER), Limousine (LIM) and Simmental (SIM). The relative weights in % for the different subindices are given in Table 3-5. E.g., for Angus 75% of the weight is given to the EBV for daily carcass gain and 25% for the yearling weight.

Table 2. Joint Nordic subindices for beef.

Subindex	Underlying index
Growth	Daily carcass gain (DCG)
	Yearling weight - direct (dYW)
Slaughter quality	Carcass fat score (CFA)
	Carcass conformation score (CCO)
Production	Growth
	Slaughter quality
Calving	Calving ease - maternal, 1st calv. (mCAE1)
	Calf survival - maternal, 1st calv. (mCSU1)
	Calving ease - maternal, 2+ calv. (mCAE2)
	Calf survival - maternal, 2+ calv. (mCSU2)
Milk	Weaning weight gain - maternal (mWG)
Dam	Calving
	Milk
Birth	Calving ease - direct, 1st calv. (dCAE1)
	Calf survival - direct, 1st calv. (dCSU1)
	Calving ease - direct, 2+ calv. (dCAE2)
	Calf survival - direct, 2+ calv. (dCSU2)

Table 3. Production indices - final weights in percentage.

Index	Underlying index	AAN	CHA	HER	LIM	SIM
Growth	Daily carcass gain (DCG)	75	75	50	75	50
	Yearling weight - direct (dYW)	25	25	50	25	50
Slaughter quality	Carcass fat score (CFA)	0	25	10	25	25
	Carcass conformation score (CCO)	100	75	90	75	75
Production	Growth	70	70	50	50	70
	Slaughter quality	30	30	50	50	30

Table 4. Dam indices - final weights in percentage.

Index	Underlying index	AAN	CHA	HER	LIM	SIM
Calving	Calving ease – maternal, 1st calv. (mCAE1)	40	40	29	30	35
	Calf survival – maternal, 1st calv. (mCSU1)	40	40	34	31	25
	Calving ease – maternal, + calv. (mCAE2)	10	10	20	16	19
	Calf survival – maternal, 2+ calv. (mCSU2)	10	10	17	24	21
Milk	Weaning weight gain - maternal (mWG)	100	100	100	100	100
Dam	Calving	50	50	30	50	50
	Milk	50	50	70	50	50

Table 5. Birth indices - final weights in percentage.

Index	Underlying index	AAN	CHA	HER	LIM	SIM
Birth	Calving ease – direct, 1st calv. (dCAE1)	41	30	36	28	32
	Calf survival – direct, 1st calv. (dCSU1)	43	25	46	25	20
	Calving ease – direct, 2+ calv. (dCAE2)	9	25	15	17	21
	Calf survival cow – direct, 2+ calv. (dCSU2)	7	20	3	30	27

A detailed note with information about correlations between the 7 subindices and EBVs for the single traits for each breed can be found from a paper [NAV subindices for purebred beef: within breed specific subindex weights](#).

The genetic base for pure beef animals is based on the same principles for all relative breeding values with a mean of 100 and standard deviation of 10. The selection of animals to form the genetic base includes males and females with birth years 5 to 9 years prior to the publication date and having observations or having at least 5 offspring with observations for one trait in each trait group.

Breeding values for pure beef cattle are estimated four times per year, and EBVs are published at [NAV Beef Search](#).

Interbeef EBVs are published at [NAV Interbeef Search](#).

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 6 the NAV and INTERBULL release dates for 2023 are shown. The beef evaluation based on beef x 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 6. NAV and INTERBULL release dates in 2023. EBVs released at NAV dates in bold will be delivered to international genetic evaluation.

Month	Dairy Cattle			Beef Cattle	
	NAV Small run ¹⁾	NAV Large runs ²⁾³⁾	INTERBULL	NAV Pure Beef	INTERBEEF
January 2023	3				
February 2023		7			
March 2023	7			7	3
April 2023	4		4	18	
May 2023		2			
June 2023	6			6	
July 2023	4				
August 2023		8	8		
September 2023	5				
October 2023	3				20
November 2023		7		7	
December 2023	5		5		

¹⁾ Genotypes updated; ²⁾ Genotypes and phenotypes updated; ³⁾ Beef x dairy evaluation

You can get more information about the joint Nordic evaluation:

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