

News - NAV routine evaluation

February 2nd 2014

The latest NAV routine evaluation for yield, fertility, type, udder health, other diseases, calving traits, milk ability, temperament, growth, longevity, claw health and NTM took place as scheduled. NAV carried out three evaluations per trait group:

Holstein evaluation, including data from: Danish Holstein, Danish Red Holstein, Swedish Holstein, Finnish Holstein, Finnish Ayrshire and Finn Cattle.

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

Jersey evaluation, including data from: Danish Jersey and Swedish Jersey (only yield and type).

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	27.12.2013	15.12.2013	19.12.2013
Type, milk ability and temperament	30.12.2013	15.12.2013	16.12.2013
Fertility	30.12.2013	15.12.2013	21.12.2013
Udder health and other disease	30.12.2013	15.12.2013	21.12.2013
Calving	30.12.2013	15.12.2013	21.12.2013
Longevity	30.12.2013	15.12.2013	21.12.2013
Growth	27.12.2013	15.12.2013	15.12.2013
Claw health	30.12.2013	15.12.2013	23.12.2013

Data used in genomic prediction

Genotypes were extracted from the joint Nordic SNP data base December 15th 2013. Interbull information from December 2013 and national information according to extraction dates in table 1 were included in genomic prediction.

News in relation to NAV genetic evaluation

Traditional evaluation

No changes

Genomic prediction

The standard deviation of the Holstein GEBVs for longevity has been reduced by about 15% so that NAV GEBVs for longevity fulfil the Interbull validation requirements. Earlier it has been found when doing the Interbull genomic validations that the standard deviation of GEBVs was too high.

Genotypes for progeny tested Jersey bulls have been exchanged with US and Canada. The exchanged genotypes have been added to the calculation, but not to the reference population since it requires more analysis. It means that the only effect of adding the North American Jersey genotypes is that North American bulls having a Nordic herd book number, but no Nordic daughters get a GEBV for the non Interbull traits included in NTM.

For RDC and Jersey it has been observed that:

- Bulls increase on average in breeding value when they get an EBV based on milking daughters
- Pedigree index is on average higher than GEBV for genomic tested heifers

The discrepancy is primarily observed in yield index. NAV works in close cooperation with the research organisations on solutions to get the problem solved.

NTM

Current weight factors NTM (table 2)

Table 2. Current weight factors for NTM

	Holstein	RDC	Jersey	Red Holstein
Yield*	0.75/0.68	0.92/0.84	0.87/0.78	0.75/0.68
Growth	0.06	0.00	0.00	0.11
Fertility	0.31	0.26	0.20	0.23
Birth index	0.15	0.14	0.06	0.17
Calving index	0.17	0.12	0.06	0.17
Udder health	0.35	0.32	0.44	0.35
Other diseases	0.11	0.12	0.04	0.12
Body	0.00	0.00	0.00	0.00
Feet&Legs	0.12	0.09	0.04	0.15
Udder	0.25	0.32	0.26	0.24
Milk ability	0.08	0.10	0.10	0.08
Temperament	0.03	0.03	0.03	0.03
Longevity	0.11	0.07	0.08	0.11
Claw health	0.08	0.05	0.05	0.10

*Weight factor for bulls/weight factor for cows with own yield record, but without genomic information

Genetic base

EBVs for bulls and females are expressed on the same cow base. This genetic evaluation included cows born from 02.02.2009 to 02.02.2011 in the genetic base (average 100)

Genomic EBVs (GEBVs)

GEBVs combine genomic and phenotypic information. GEBVs are estimated for all combined traits in NTM, single type traits, and NTM. Table 3 describes how different categories of genotyped animals are handled in the evaluation. All non genotyped animals get traditional EBVs.

Table 3 Publication of Genomic breeding values (GEBVs) for different categories of animals

Category of animals		Status	Published Breeding value
Genotyped males	Bulls without a progeny test	Culled	None
		AI bulls with a Nordic herd book number	GEBV when at least 17 month old at publication date
	Bulls with a Nordic progeny test or a progeny test abroad	AI bulls with a Nordic progeny test	EBV
		Foreign AI bulls with a Nordic herd book number and a progeny test abroad	IB EBV for all international traits available. GEBV for traits with pedigree information only
Genotyped females	Heifers & cows		GEBV

- EBV=Estimated breeding value based on phenotypic data only
- IB EBV = Interbull breeding value based on phenotypic data only
- GEBV=Genomic Enhanced breeding value – based on phenotypic data and genomic information

For animals having a GEBV the GEBV is published as the official index instead of the EBV

Publication of NTM for Nordic and foreign bulls

A NTM is published if the bull has official EBVs (NAV 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 estimates EBVs for the single bull. EBVs are used in the following priority NAV EBVs, IB EBVs and Pedigree index. For traits without a NAV EBV or an IB 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 $\frac{1}{2}(\text{EBVsire}-100) + \frac{1}{4}(\text{EBVmgs}-100) + 100$. If EBVsire or EBVmgs is not official NAV EBVs then 100 is used.

NAV – frequency and timing of routine runs

NAV has 4 evaluations per year including all phenotypic data. In Table 4 the future NAV and INTERBULL release dates are shown. NAV does eight extra genomic predictions to get GEBVs based on the newest information for all genotyped bull calves and females. The extra runs in 2014 takes place 2.1, 3.3, 2.4, 2.6, 2.7, 2.9, 2.10, and 2.12. After the extra runs GEBVs for females are published on national data bases

Table 4. NAV and INTERBULL release dates in 2014. EBVs released at NAV dates in bold will be delivered to international genetic evaluation.

Month	2014	
	NAV	INTERBULL
January 2014		
February 2014	2	
March 2014		
April 2014		1
May 2014	2	
June 2014		
July 2014		
August 2014	12	12
September 2014		
October 2014		
November 2014	3	
December 2014		2

You can get more information about the joint Nordic evaluation:

General about Nordic Cattle Genetic Evaluation: www.nordicebv.info

Contact person: Gert Pedersen Aamand, Ph.: +45 87405288 gap@vfl.dk,

Denmark: www.landbrugsinfo.dk/kvaeg/avl/avlsvaerdital-for-malkekvaeg

Contact person: Ulrik Sander Nielsen, Danish Cattle, Ph. +45 87405289, usn@vfl.dk

Sweden: www.sweebv.info, www.vxa.se

Contact person: Jan-Åke Eriksson, Växa Sverige, Ph. +46 010 471 06 26

Jan-Ake.Eriksson@vxa.se

Finland: www.faba.fi

Contact person: Jukka Pösö, Faba, Ph +358-(0)207472071 jukka.poso@faba.fi