News - NAV routine evaluation
May 2nd 2013

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	01.04.2013	25.03.2013	14.03.2013
Type, milk ability and temperament	02.04.2013	25.03.2013	17.03.2013
Fertility	02.04.2013	25.03.2013	16.03.2013
Udder health and other disease	02.04.2013	25.03.2013	16.03.2013
Calving	02.04.2013	25.03.2013	16.03.2013
Longevity	02.04.2013	25.03.2013	16.03.2013
Growth	02.04.2013	25.03.2013	25.03.2013
Claw health	02.04.2013	25.03.2013	18.03.2013

Data used in genomic prediction
Genotypes were extracted from the joint Nordic SNP data base March 21st 2013. Interbull information from April 2013 and national information according to extraction dates in table 1 were included in genomic prediction.

News in relation to NAV genetic evaluation

- Weighting on traits in Y-index have been modified for Holstein and Red Holstein
- Weighting on traits in NTM have been changed for RDC, Jersey and Holstein
- Improvement of the method used for calculating GEBVs for Feet and Legs.

NTM

NTM weights have been updated May 2nd 2013. The new weights have been discussed at a NAV workshop held January 10th 2013 and approved by the NAV board in March 2013. Columns marked May 2nd 2013 in table 2 show the new weights. The effect of the changed weights in NTM on the correlations between NTM and the single traits are presented in table 3-5. In general the changes will have a limited effect on the genetic progress.

Table 2. Current weight factors for NTM

	Holstein		RDC		Jersey		Red Holstein
	Old	**May 2nd 2013**	**Old**	**May 2nd 2013**	**Old**	**May 2nd 2013**	**May 2nd 2013**
Yield*	0.75/0.68	0.75/0.68	0.92/0.84	0.92/0.84	0.82/0.73	**0.87/0.78**	0.75/0.68
Growth	0.06	0.06	0.00	0.00	0.00	0.00	0.11
Fertility	0.31	0.31	0.26	0.26	0.26	**0.20**	0.23
Birth index	0.15	0.15	0.14	0.14	0.06	0.06	0.17
Calving index	0.17	0.17	0.12	0.12	0.06	0.06	0.17
Udder health	0.35	0.35	0.32	0.32	0.49	**0.44**	0.35
Other diseases	0.11	0.11	0.12	0.12	0.04	0.04	0.12
Body	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feet&Legs	0.12	0.12	0.09	0.09	0.04	0.04	0.15
Udder	0.18	**0.25**	0.32	0.32	0.20	**0.26**	0.24
Milk ability	0.08	0.08	0.09	**0.10**	0.10	0.10	0.08
Temperament	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Longevity	0.11	0.11	0.08	**0.07**	0.12	**0.08**	0.11
Claw health	0.08	0.08	0.05	0.05	0.05	0.05	0.10

*Weight factor for bulls/weight factor for cows with own yield record

Table 3. Correlations NTM and single traits. Jersey bulls born 2004-2006. 144 bulls

	Old	**May 2nd 2013**
Yield	0.56	**0.62**
Growth	-0.07	**-0.10**
Fertility	0.51	**0.45**
Birth	0.17	**0.14**
Calving	0.20	**0.20**
Udder health	0.50	**0.47**
Other diseases	0.24	**0.21**
Body	0.05	**0.08**
Feet and legs	0.25	**0.22**
Mammary system	0.15	**0.16**
Milk ability	0.04	**0.02**
Temperament	0.02	**0.00**
Longevity	0.53	**0.49**
Claw health	0.20	**0.18**

Table 4. Correlations NTM and single traits. RDC bulls born 2004-2006. 661 bulls.

	Old	May 2nd 2013
Yield	0.66	**0.65**
Growth	0.02	**0.01**
Fertility	0.20	**0.20**
Birth	0.22	**0.21**
Calving	0.14	**0.15**
Udder health	0.40	**0.40**
Other diseases	0.28	**0.27**
Body	-0.01	**0.00**
Feet and legs	0.16	**0.17**
Mammary system	0.28	**0.29**
Milk ability	0.18	**0.18**
Temperament	0.14	**0.13**
Longevity	0.57	**0.56**
Claw health	0.04	**0.04**

Table 5. Correlations NTM and single traits. Holstein bulls born 2004-2006. 1112 bulls

	Old	May 2nd 2013
Yield	0.61	**0.59**
Growth	0.10	**0.09**
Fertility	0.44	**0.44**
Birth	0.32	**0.31**
Calving	0.25	**0.25**
Udder health	0.48	**0.49**
Other diseases	0.47	**0.47**
Body	-0.03	**-0.03**
Feet and legs	0.24	**0.24**
Mammary system	0.19	**0.25**
Milk ability	0.03	**0.03**
Temperament	0.00	**0.00**
Longevity	0.68	**0.68**
Claw health	0.33	**0.33**

Weights in Y-index

The relative weight on fat in the Y-index has been increased for Holstein (table 6) and Red Holstein. The correlation between the new and old Y-index for Holstein is very high 0.993 based on bulls born 2004-2006.

Table 6. Relative weights in Y-index

	M-index	F-index	P-index
RDC	-0.25	0.25	1.00
HOL-old	-0.25	0.25	1.00
HOL-May 2nd 2013	**-0.20**	**0.40**	**0.80**
HOL-old	-0.25	0.25	1.00
RED HOL-May 2nd 2013	**-0.20**	**0.40**	**0.80**
JER	-0.30	0.50	0.80

Calculation of GEBV for Feet and Legs

The method for estimation GEBV for Feet and Legs has been improved.The improved method take better into account that foreign bulls in the reference population have only information about three (excluding Hock quality and Bone quality) of the five linear feet and legs traits whereas bulls with a Nordic progeny test have information about all five traits.

Genomic EBVs (GEBVs)

GEBVs combine genomic and phenotypic information. GEBVs are estimated for all combined traits in NTM, single type traits, and NTM. Table 7 describes how different categories of genotyped animals are handled in the evaluation. All non genotyped animals get traditional EBVs.

Table 7 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 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 GEBVs 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 ½(EBVsire-100) +1/4(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 8 the future NAV and INTERBULL release dates are shown. NAV does seven extra genomic predictions to get GEBVs based on the newest information for all genotyped bull calves and females. The extra runs in 2013 take place 2.3, 2.4, 2.6, 2.7, 2.9, 2.10, 2.12. After the extra runs GEBVs for females are published on national data bases

Table 8. NAV and INTERBULL release dates in 2013. EBVs released at NAV dates in bold will be delivered to international genetic evaluation.

	2013	
Month	NAV	INTERBULL
January 2013		
February 2013	**4**	
March 2013		
April 2013		9
May 2013	2	
August 2013	**13**	13
September 2013		
October 2013		
November 2013	**2**	
December 2013		3

You can get more information about the joint Nordic evaluation:

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