NAV EBVs

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Outline


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Changes introduced in 2011

Development and implementation in near future

Milkability - 2nd February 2011

- **Electronic milk flow measurements from Danish milk meters included in the routine genetic evaluation for milkability – about 80% of all Danish cows have that registration**
- **Reliability of bulls tested in DK increased significantly for milkability**

Milkability

	Before 2nd Feb 2011	After 2nd February 2011
Number of daughters young bull tested in DK	40	80
EBV correlation young bull tested in DK	70-80%	
EBV correlation old bulls tested in DK	95%	
EBV correlation FIN and SWE bulls	>99%	

Milkability - future registration

- Today, data from electronic milk meters are collected automatically in Denmark.
- In the future electronic milking speed data from different milking equipment will hopefully be routinely collected at the national databases in all three countries.
- The goal is that the judgement will be phased out in the long term in all three countries, so that the farmers and classifiers do not have to spend time on judging milking speed

Claw health - status

- Registration
- EBVs – published 2nd May
- Inclusion in NTM –9th August

Claw health - status

- Registration
- EBVs Included in NTM
- Presented at Interbull meeting

Number of trimmings in evaluation

	Denmark	Finland	Sweden
Number of trimmings	246957	103534*	725257

***Number is lower in routine evaluation – missing Finnish data will be added at the next routine run**

Number of trimmed and evaluated cows in 2010

Number of cows	Holstein	RDC	Jersey
	296904	179240	22057

Trait definition – genetic evaluation

Trait	Denmark	Finland	Sweden
Dermatit (DE)	Digital de+ spaltebetaendelse	Sorkkavälin ihon tulehdus+ Sorkka-alueen ihotulehdus	Digital de+klövspalteksem
Heel Horn Erosion (HH)	Balleråd	Kantasyöpymä	Klövröta
Sole Haemorrhage (SH)	Såleblödning	Vertymiä anturassa	Sulblödning
Sole Ulcer (SU)	Sålesår	Anturahaavauma	klövsulesår
Cork screw claws (CSC)	Proptraekker klov	Sorkkakiertymä	Korkskruvskölv
Skin Proliferation (SP)	Nydannelse+Digital vorte	Sorkkavälin liikakasvu+Sorkkasyylä	Limax+vårta
White line separation+ double sole (WLS)	Hul vaeg+ dobbelt sål	Valkoviivan repeämä+ (Valkoviivan repeämä?)	Hålvägg+ dubbelsula

Number of trimmed and evaluated cows and percent disorder records in 2010

Number of cows	Holstein			RDC			Jersey		
	296904			179240			22057		
Lactation	1	2	3	1	2	3	1	2	3
Dermatitis	19	20	19	11	11	11	14	12	10
Heel Horn Erosion	18	23	28	20	24	28	7	8	14
Skin Proliferation	3	6	8	2	5	6	1	1	1
Sole Hemorrhage	24	21	26	24	17	20	8	6	8
Sole Ulcer	5	6	9	4	3	4	5	5	7
Cork screw claws	1	2	2	3	4	4	0	1	1
White line sep. double sole	5	7	10	4	4	7	3	4	7

Trait definition

- Today
  - A few differences in trait definitions across countries
  - Finland score 0/1 (except dermatis) and Sweden and Denmark 0/1/2

Trait definition

Working group of claw experts:

- Christer Bergsten, Pia Nielsen; Nynne Capion, Terhi Vahlsten, Jouni Niemi

- Agreement for the future
    - Claw disease defintions 100% harmonised
    - Classification 0/1 or 0/1/2 disease dependent
    - Joint atlas with pictures of all diseases

Registration in the three countries today

Finland (paper):

Claw trimmer deliver a report – farmer or technician key the data and transfer to data base

Sweden (paper):

Report from claw trimmer is scanned to data base

Denmark (PC – touch screen):

Claw trimmer or farmer key the data simultaneous with claw trimming – transferred by blue tooth to data base

Nordisk Klovatlas

Trait	Grade	Description	Comments
Dermatitis	1 mild	Inflammation of the digital and/or interdigital skin with excudation or dry crusts (hyperkeratosis). Not painful	
Digital dermatitis	2 severe	Inflammation of the digital and/or interdigital skin with erosion, bleeding ulcerations. Painful and can cause lameness	M2 (Döpfer et al., 1997)
Heel horn erosion	1 mild	Superficial erosions of the bulbs, pits, V-shaped or circular. Not painful.	
Heel horn erosion	2 severe	Profound erosions of the bulbs, typical V-shaped or circular, extending to the corium	
Sole hemorrhage	1 mild	Superficial hemorrhage of the horn of sole and/or white line, disappears at normal trimming	
Sole hemorrhage	2 severe	Profound haemorrhage of the horn of sole and/or white line, remains after trimming	
Sole ulcer	1 mild	Penetration through the sole horn exposing fresh corium. Most likely lameness	Better picture is needed
Sole ulcer	2 severe	Penetration through the sole horn exposing affected corium with necrotic miss coloured tissue and or protruding granulation tissue. Lameness	
Wart growth	1	Papillomatoes dermatitis, chronic stage of digital dermatitis	
ID hyperplasia	1	Interdigital growth of fibrous tissue	Only one class

Trait	Grade	Description	Comments
ID phlegmon	1	Interdigital infection with *Fusobacterium necrophorum*, open wound, swollen foot, fever, odorous smell, lameness	Picture 1 unclear Klövspaltsinflammation
Fissure white line	1(mild)	Separation in the white line, present after normal trimming. Separation needs to be removed, leaving normal horn wall and white line	Better picture needed
Abscess, ulcer of white line	2 (severe)	Purulent exudation originating from a fissure of the white line, lameness	Böld i vita linjen
Abscess, ulcer of toe	2 (severe)	Ulceration of toe with abscess and or necrotic tissue, lameness	Tåböld
Double sole	1	Two or more layers of undermined sole horn	Picture looks rather severe
Laminitic ring	1	Concave deviation of the dorsal wall with horizontal lines i.e. laminitic ring	Konkav tåvägg, fångring
Asymmetric claws	1	Significant difference in width between outer and inner claws	
screw claw	1	Inward torsion length wise of the either outer or inner claw	Least tendency should be recorded
Over grown claws	1	Severely overgrown toes (>)	Record toe length in mm??
Scissor claws	1	Tip of toes crossing each other	
Lameness	1, mild	Stands normal but walks with an arched back and with stiffness	Hälta
Lameness	2, severe	Stands and walks with and arched back and is clearly lame, bobbing of the head	
Hock lesion	1 mild	Swollen hock with superficial decubital injury	Benskada
Hock lesion	2 severe	Swollen hock with ulcer	

dansk: Balleråd / Balleforrådnelse
engelsk: Heel horn erosion
svensk: Klövröta
Finsk: Kantasyöpymä (766)

Mild

Sever

Future registration in the three countries

Three separate registration systems one per country

or

A joint registrations system - will ensure joint development

(Danish Cattle has offered a joint ownership to the electronic registration program)

Registration of claw health

Discussions still ongoing between FABA, Swedish Dairy Association and Danish Cattle about a possible joint use of the Danish registration program

Infection related claw diagnoses

- Dermatitis (DE)
  Digital de + spaltebetaendelse Sorkkavälin ihon tulehdus + Sorkka-alueen ihotulehdus Digital de + klövspalteksem
- Heel Horn Erosion (HH)
  Balleråd Kantasyöpymä Klövröta
- Skin Proliferation (SP)
  Nydannelse+Digital vorte Sorkkavälin liikakasvu+Sorkkasyylä Limax+vårta

Malformation claw diagnoses

- **Cork screw claws (CSC)**
  Proptraekker klov Sorkkakiertymä
  Korkskruvsklöv

Metabolic related claw traits

- **Sole Haemorrhage (SH)**
  Såleblödning Vertymiä anturassa Sulblödning
- **Sole Ulcer (SU)**
  Sålesår Anturahaavauma + Valkoviivan paise Klövsulesår
- **White line separation+ double sole (WLS)**
  Hul vaeg+ dobbelt sål Valkoviivan repeämä Hålvägg+ dubbelsula

Trait definition …

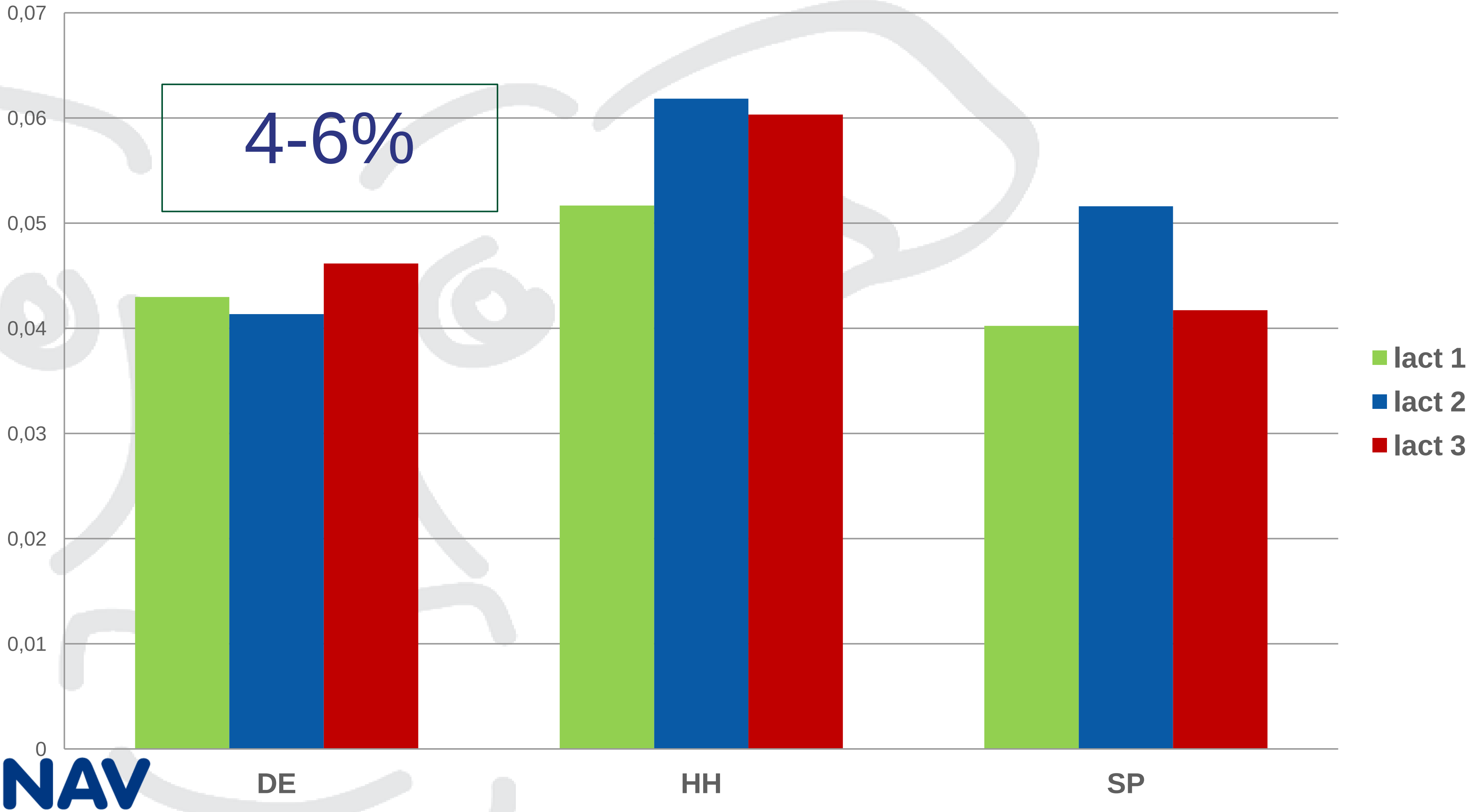
- 7 traits per lactation
- 3 lactations
- Maximum 3 trimmings per lactation
- Trimmings within 430 days after calving

Number of trimmed cows per sire

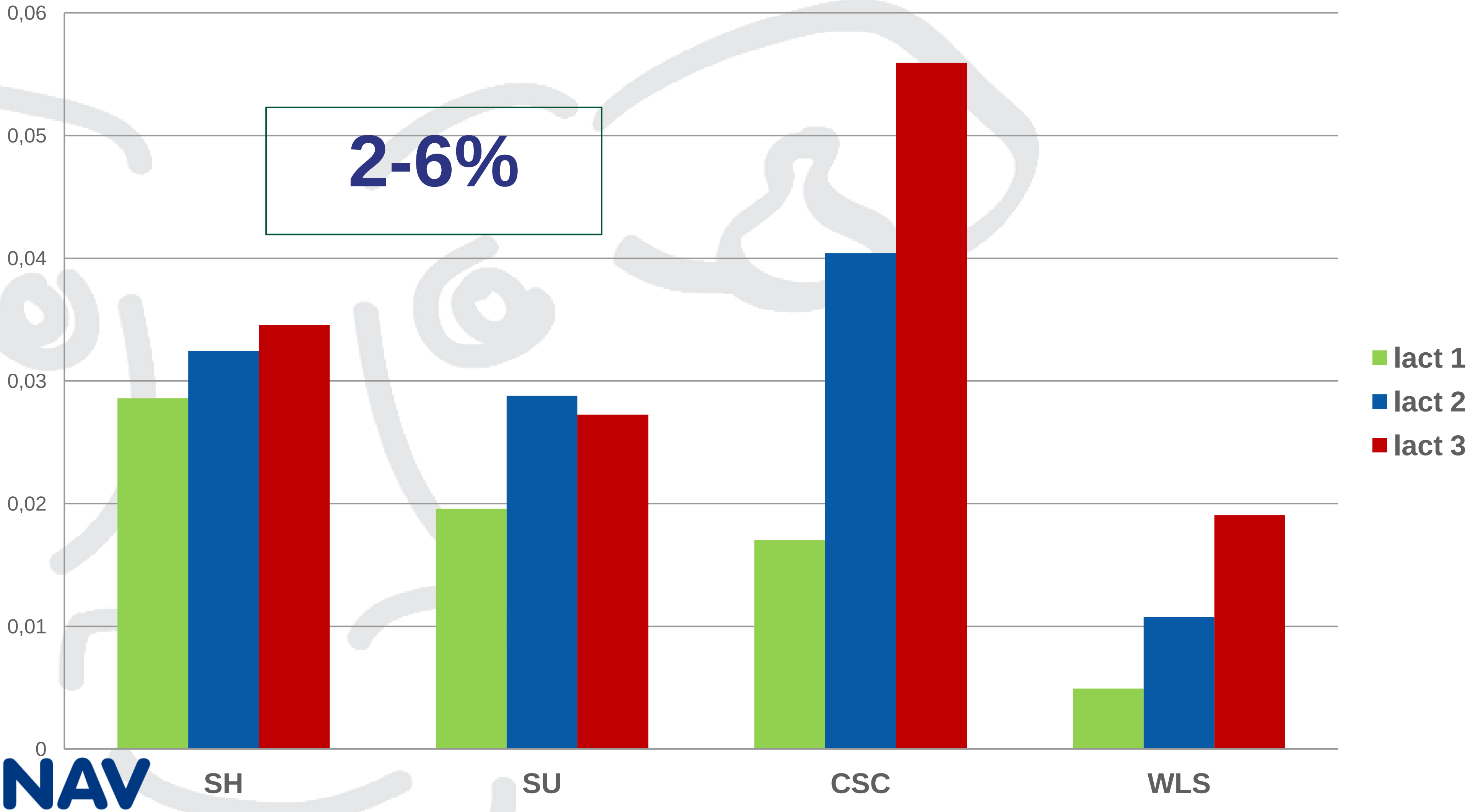
sires born 2004-2006

	Holstein	RDC	Jersey
Denmark	28	15	25
Finland	10	10	
Sweden	46	58	9

Heritability for infection related traits



Heritability for feed related traits



2-6%

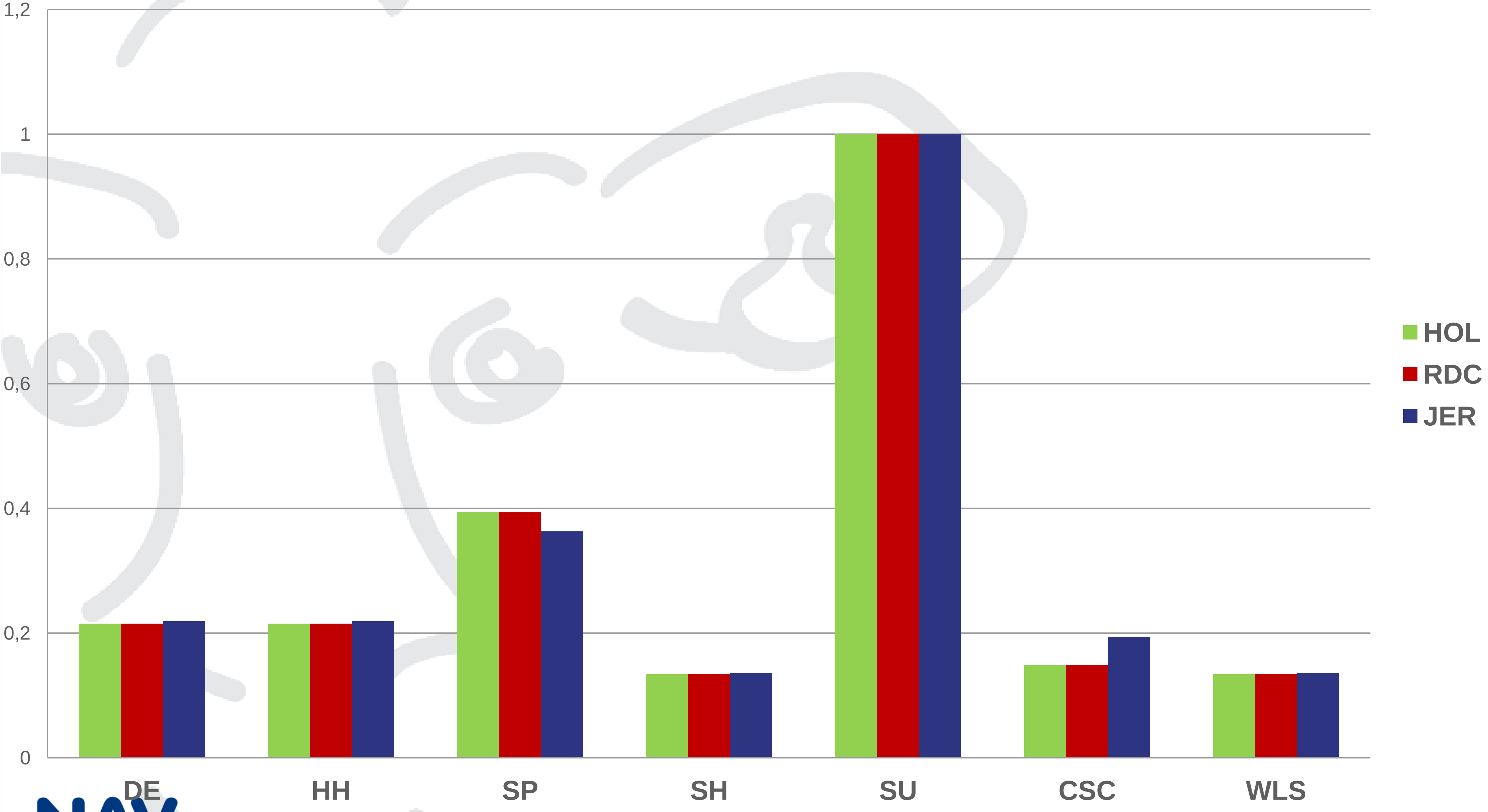
Genetic correlations

Between	**Range**
Infection related traits (DE, HH, SP)	0.3-0.9
Feed related traits (SH, SU, CSC, WLS)	0.2-0.9

Between	**Range**
Infection related and **feed** related traits	-0.2 to 0.3

Between	
Same trait in different Lactations	0.79-0.99

Relative Economic weights (Pedersen 2011)



Correlations between rbvs for claw traits and claw health index

Trait	RDC	Holstein	Jersey
DE	0.63	0.50	0.62
HH	0.76	0.62	0.77
SP	0.58	0.41	0.56
SH	0.66	0.83	0.74
SU	0.79	0.90	0.84
CSC	0.34	0.57	0.68
WLS	0.53	0.78	0.66

Sire EBVs and their trait means

	V Exes	Var Elvis	Difference
Daughters	10516	4669	
Claw index	119	98	21
DE	0.32	0.31	0.01
HH	0.16	0.22	- 0.06
SP	0.05	0.10	- 0.06
SH	0.18	0.24	- 0.06
SU	0.08	0.10	- 0.02
CSC	0.00	0.01	- 0.01
WLS	0.10	0.10	- 0.01

Publication rules

- Official Claw index when reliability = 40 and over
- Almost all bulls in birth year 2005-06 from Denmark and Sweden
- 80% of bulls in birth year 2005-06 from Finland

Weight NTM

	RDC	HOL	JER	RHOL
Yield	0.92	0.75	0.87	0.75
Growth	0.00	0.06	0.00	0.11
Fertility	0.26	0.31	0.26	0.23
Birth index	0.14	0.15	0.06	0.17
Calving index	0.12	0.17	0.06	0.17
Udder health	0.32	0.35	0.49	0.35
Other diseases	0.12	0.11 (0.12)	0.04	0.12
Body	0.00	0.00	0.00	0.00
Feet and legs	0.09	0.12 (0.15)	0.04 (0.05)	0.15
Mammary system	0.32	0.18	0.15	0.24
Milkability	0.06	0.08	0.10	0.08
Temperament	0.03	0.03	0.03	0.03
Longevity	0.08	0.11	0.12	0.11
Claw health	0.05	0.08	0.05	0.10

Correlation between NTM and other traits for HOL

	Old	New
Yield	0.61	0.61
Growth	0.09	0.10
Fertility	0.44	0.43
Birth index	0.31	0.30
Calving index	0.35	0.34
Udder health	0.45	0.45
Other diseases	0.49	0.49
Body	-0.04	-0.04
Feet and legs	0.15	0.13
Mammary system	0.34	0.33
Milkability	0.11	0.12
Temperament	0.00	0.00
Longevity	0.71	0.71
Claw health		0.17

Correlation between NTM and other traits for RDC

	Old	New
Yield	0.68	0.67
Growth	0.06	0.05
Fertility	0.16	0.17
Birth index	0.20	0.20
Calving index	0.22	0.21
Udder health	0.30	0.30
Other diseases	0.24	0.26
Body	0.06	0.06
Feet and legs	0.17	0.18
Mammary system	0.32	0.33
Milkability	0.21	0.21
Temperament	0.20	0.21
Longevity	0.60	0.61
Claw health		0.13

Correlation between NTM and other traits for Jersey

	Old	New
Yield	0.75	0.75
Growth	-0.05	-0.05
Fertility	0.22	0.23
Birth index	-0.02	0.02
Calving index	0.08	0.09
Udder health	0.43	0.40
Other diseases	0.30	0.31
Body	0.03	0.03
Feet and legs	0.25	0.25
Mammary system	0.25	0.24
Milkability	0.10	0.11
Temperament	0.22	0.19
Longevity	0.60	0.62
Claw health		0.10

Correlations between claw health and selected traits

Criterion for bulls too be included

- Bulls born 2000 to 2005

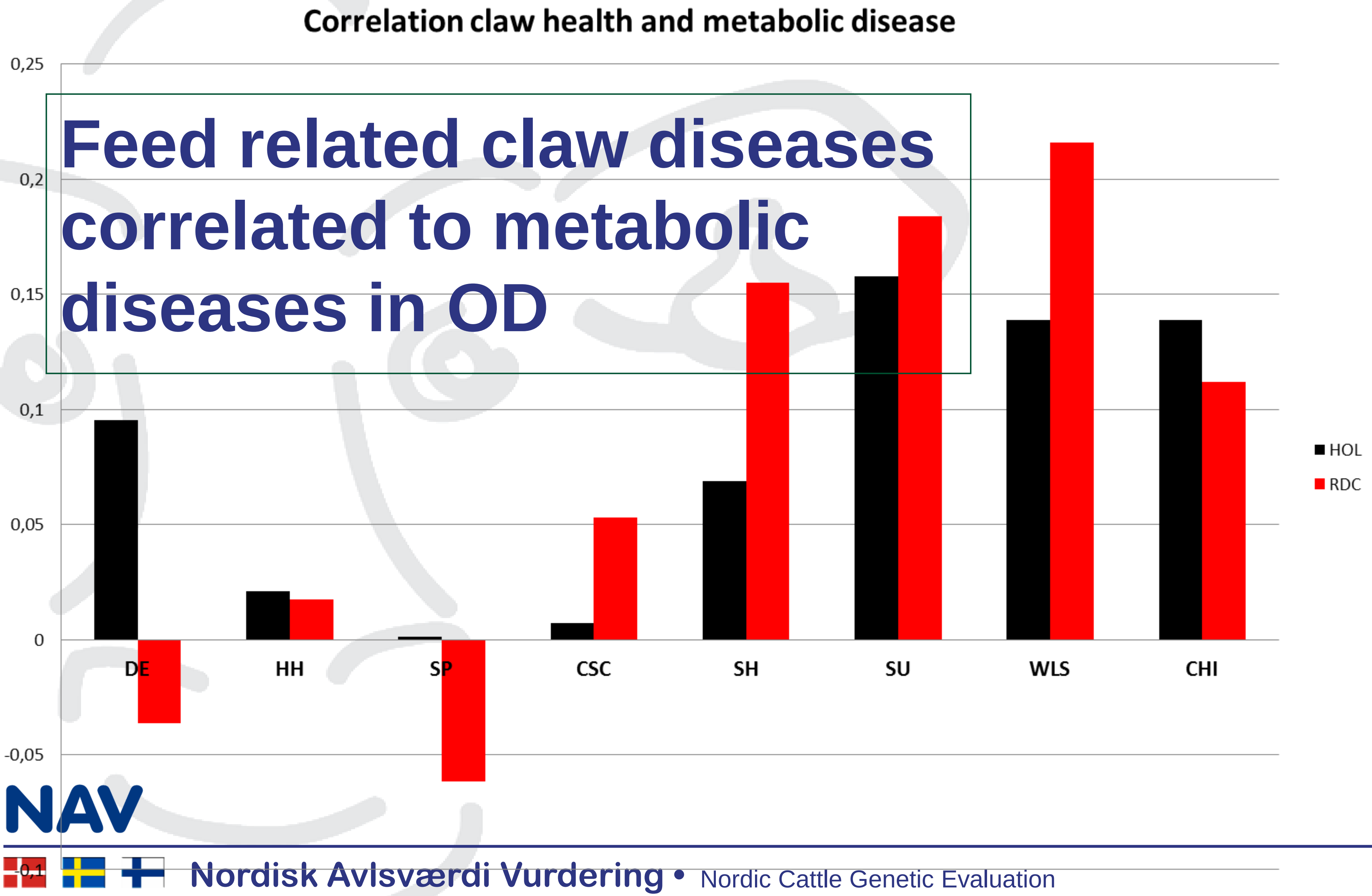
  Claw health traits: >14 daughters and official claw health index

  Type traits and Other disease : Official EBVs

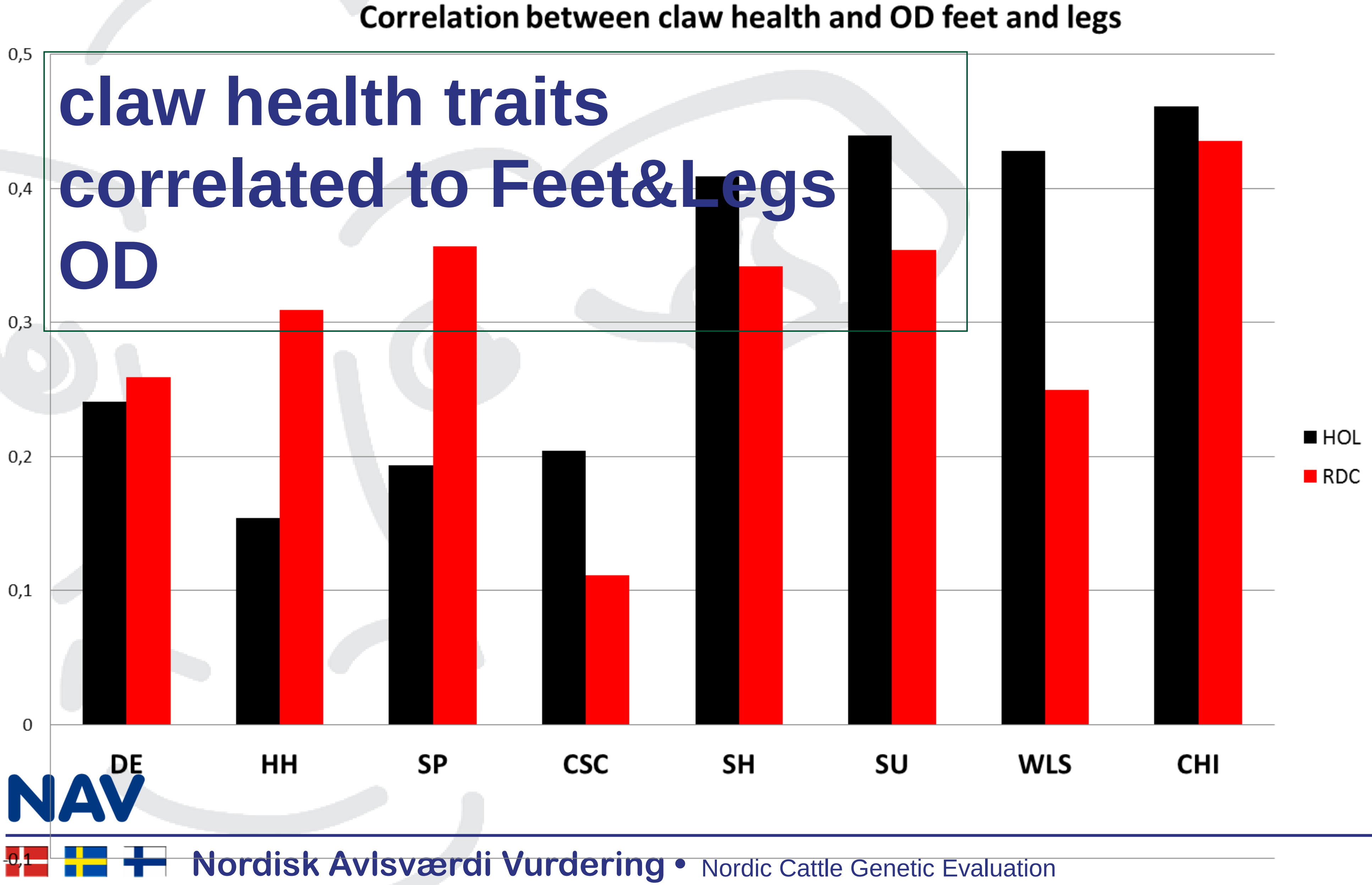
Correlation between claw health and NTM traits

	HOL	RDC
Longevity	0.25	0.20
Other disease	0.15	0.15
Udder health	0.15	0.10
Feet&Legs	0.05	0.15

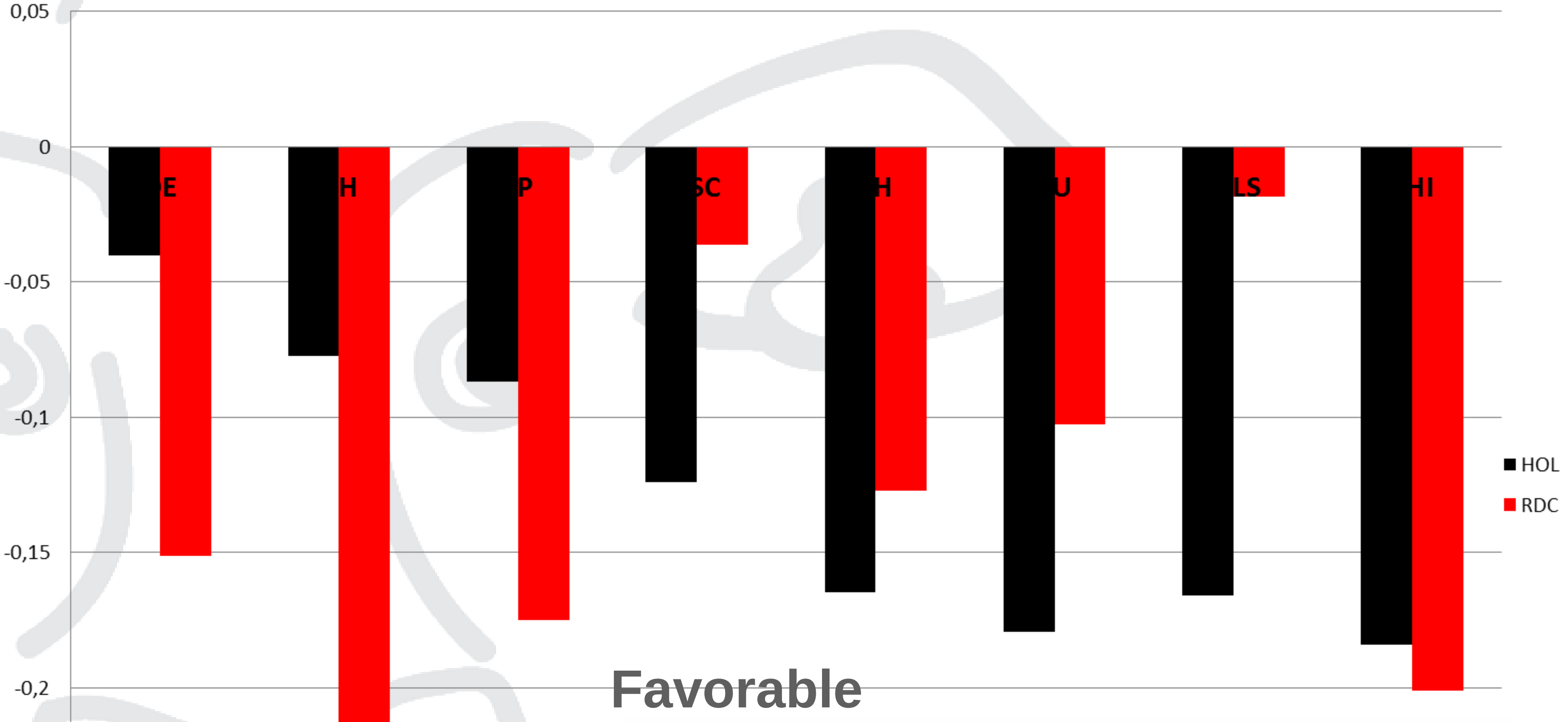
Feed related claw diseases correlated to metabolic diseases in OD


Correlation claw health and metabolic disease

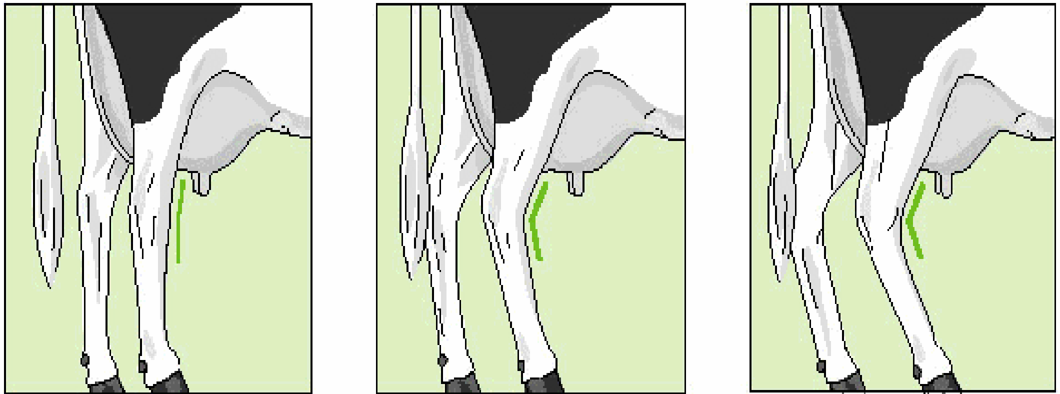
claw health traits correlated to Feet&Legs OD



Correlation between claw health and rear legs side view



Favorable



Summary

- Claw health has a favorable correlation to NTM and NTM sub traits
- Selection for claw health is favorable for all fitness traits

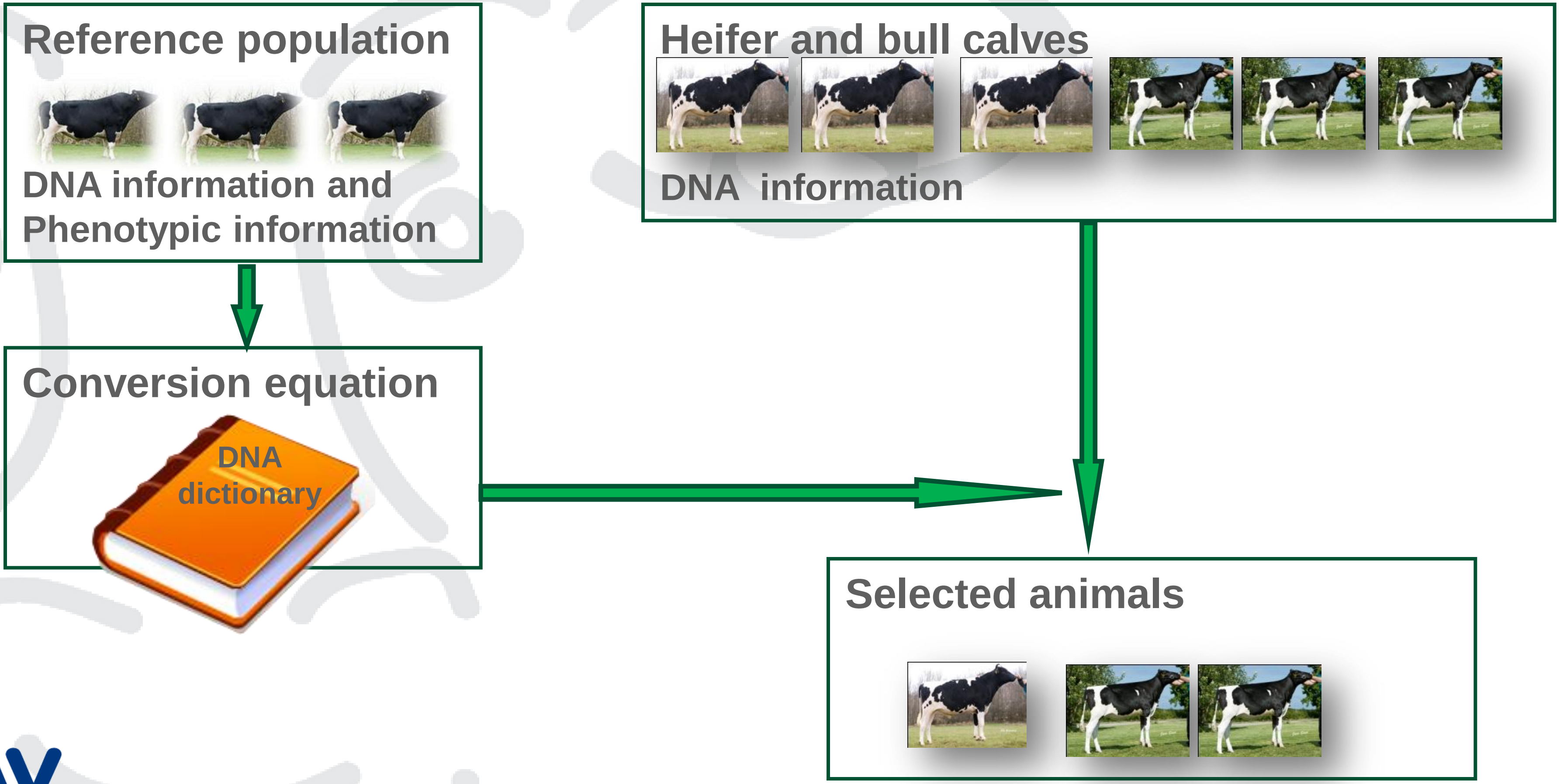
GEBV - update

- Current routine evaluation and publication
- SNP data base – test of data
- Number of animals tested
- Results
- Change between two evaluations
- Understanding standard deviation and reliability
- GEBV females level (bull dam bias)

GEBV

Remember

- A new method - start 2008
- Development very fast
- Very fast movement from R&D to implementation in practice
- A lot of changes for NAV, breeding organizations and farmers



Reference population

DNA information and
Phenotypic information

Conversion equation

Heifer and bull calves

DNA information

Selected animals

Genomic EBVs in practise 2008-2011 - DGVs

EBVs based on genomic information – DGVs

Shown as plus and minus

Breeding values!

Combined breeding values (GEBV)

Replaced traditionel EBVs (based on phenotypic values only)

GEBV

Since 2008/09	**Unofficial genomic breeding values**
2nd May 2011	**First official GEBVs for NTM traits**
June 2011	**First official intermediate run – GEBV females updated**
9th august 2011	**First official GEBVs for all type traits**

NAV routine evaluations

Normal routine runs

2nd May, 9 August, 2 November, 2 February

- **EBVs including phenotypic or phenotypic +genomic information**

Extra routine runs with GEBV

15 June, 15 September, 15 December ,15 March

- **EBVs including phenotypic +genomic information (GEBVs females updated shortly after; male candidates < 20 month for VG only)**

GEBVs August 2011

Traits

- NTM traits (combined indices) + linear type traits

Category of genotyped animals

- AI bulls (no progeny test yet)
- Heifers
- Cows (traits based on pedigree only)

Breeding values!

August 2011 we have:

- **EBVs – based on phenotype (lots of animals)**
- **EBVs – based on phenotype and genomic information (a few animals)**

The EBVs from the two “categories” are comparable and the SD reflects the reliability

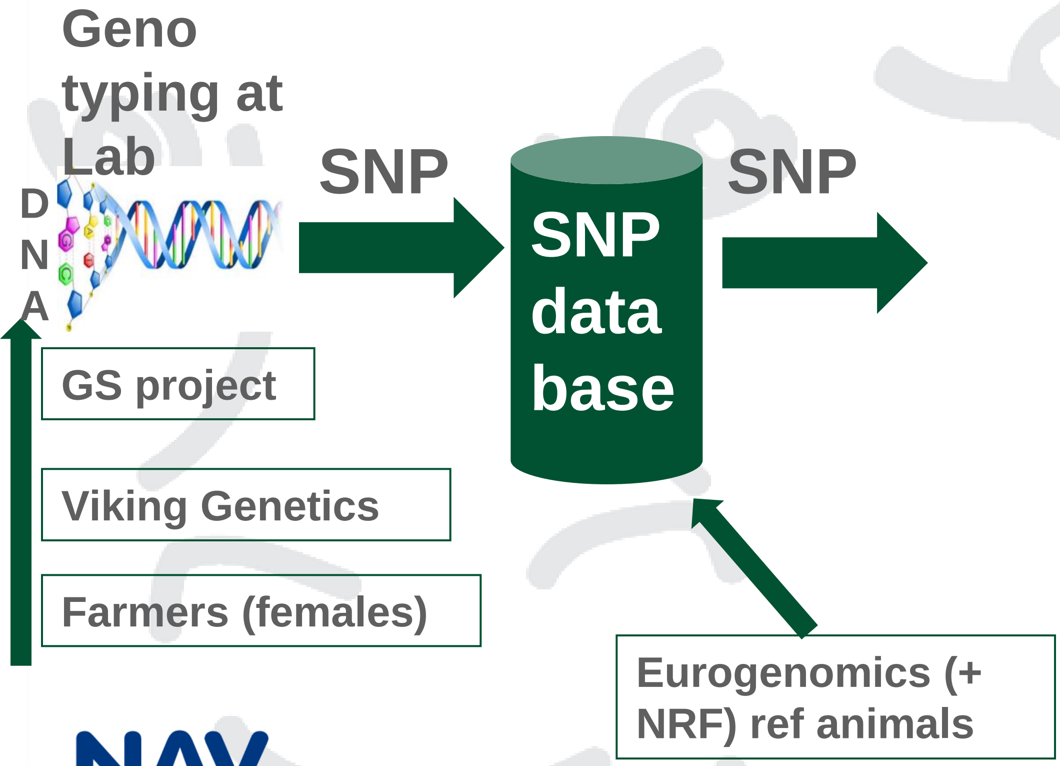
Publication of breeding values

Category of animals	Status	Published breeding value
Bulls without a progeny test	Culled	None
	AI bulls with a Nordic herd book number	**GEBV** when at least 20 month old at publication date
Bulls with Nordic or foreign progeny test	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

Publication of GEBV (genotyped animals)

Category of animals	Published Breeding value
Heifers	**GEBV**
Cows	**GEBV** for traits with pedigree information only (e.g. other disease, fertility, calving) and EBVs for all other traits

NAV SNP data base



Geno typing at Lab

D N A

SNP

SNP data base

SNP

GS project

Viking Genetics

Farmers (females)

Eurogenomics (+ NRF) ref animals

Established spring 2011
Implemented in routine handling of genotypes in Aug 2011

Test of input data to SNP database

- Genotypes from offspring and both parents – parents check (current official ICAR methods not based on SNP – but it will be the case in the future)
- In most cases we have the genotype of the sire but not the dam – it means we can not make a full parentage test, but we can see if the offspring and the sire match by looking at the SNPs.

Sire ATGACTAGGTCTCGATCGTAGCTATAGGGCTAGCTAGCTAGCTAGGTACCACATATAGATACATC
ATGACTAGGTCTCGATCGTAGCTATAGGGCTAGCTAGCTAGCTAGGTACCACATATAGATACATC

???
Dam

Offspring ATGACTAGGTCTCGATCGTAGCTATAGGGCTAGCTAGCTAGCTAGGTACCACATATAGATACATC
ATGACTAGGTCTCGATCGTAGCTATAGGGCTAGCTAGCTAGCTAGGTACCACATATAGATACATC

Test of input data to SNP database

	Match sire-offespring	**Missmatch sire-offspring**
Status	OK	Error • True error • Id error when taking the DNA sample • Lab. error • Other errors
Action GEBV	Genotype is included	Genotype is not included more data test or retyping has to be done*!

Missmatch sire-offspring:

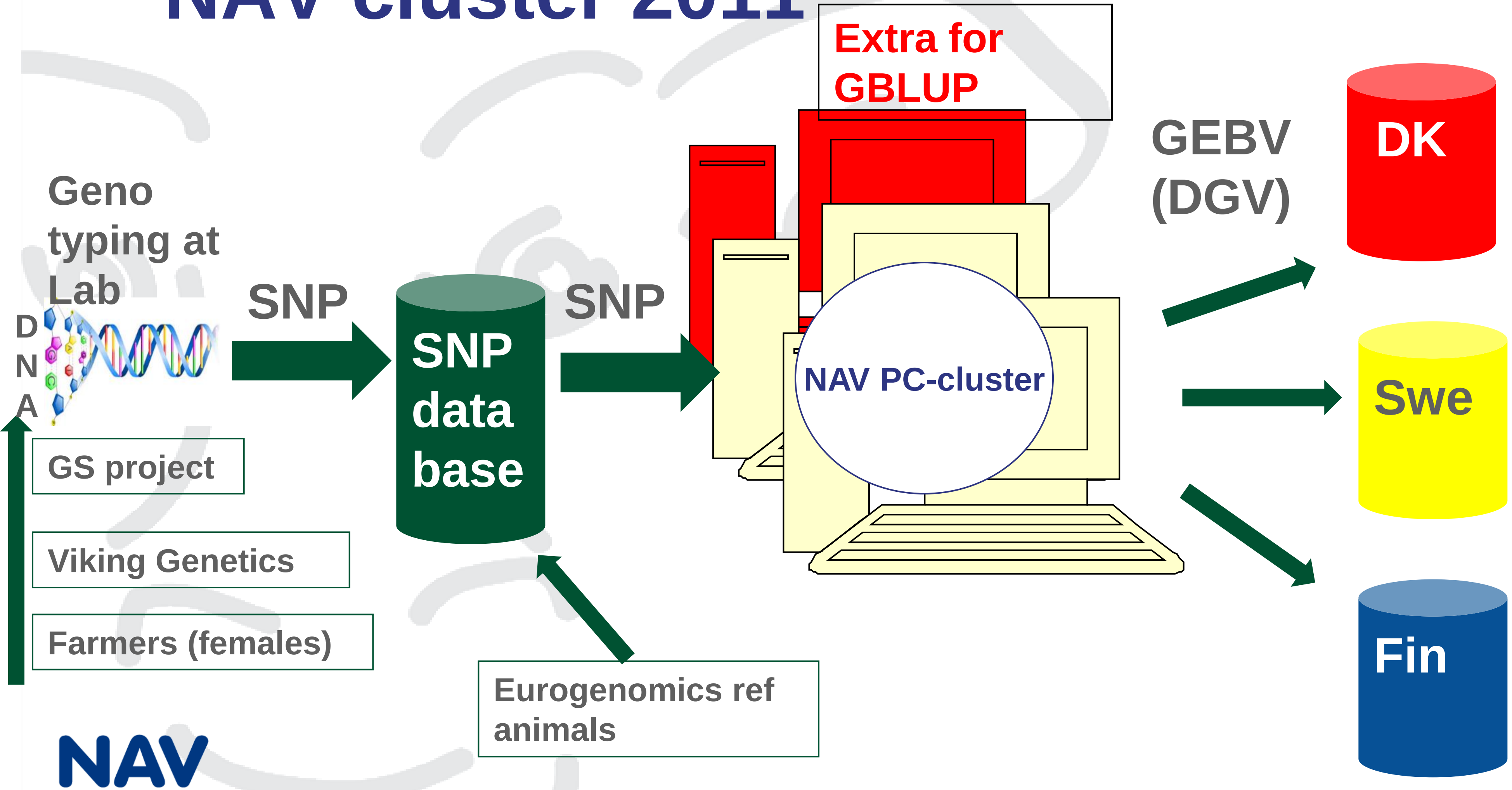
- **Procedure under development**
- **GEBVs will not be calculated – combine wrong pedigree and genotype**

Genotype different categories

- Reference bulls have to be 100%OK
- Genomic selected bulls used for insemination – double check introduced by VG
- Candidates (bull calves or females)

- We know from a Danish experiment in 2009/10 that we on average have close to 10% pedigree errors in production herds

NAV cluster 2011



Geno typing at Lab

DNA

GS project

Viking Genetics

Farmers (females)

SNP

SNP data base

Eurogenomics ref animals

SNP

Extra for GBLUP

NAV PC-cluster

GEBV (DGV)

DK

Swe

Fin

Genotyped bulls

Birth year	HOL		RDC		Jersey	
	HB	No HB	HB	No HB	HB	No HB
2007	356	94	219	0	55	4
2008	313	525	257	30	47	33
2009	292	847	238	341	58	130
2010	189	946	191	805	40	210
2011	2	(502)	33	(436)	0	(124)
Total all years	**6727**	**3120**	**5594**	**1188**	**1329**	**501**

Selection intensity increases by birth year

Genotyped bulls

Birth year	HOL		RDC		Jersey	
	HB	No HB	HB	No HB	HB	No HB
2007	356	94	219	0	55	4
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Total all years	**6727**	**3120**	**5594**	**1188**	**1329**	**501**
After 2nd May	**+268**	**+467**	**+97**	**+425**	**+11**	**+128**

Genotyped females

Birth year	HOL	RDC	Jersey
<2007	508	126	100
2007	240	120	70
2008	433	219	100
2009	595	375	127
2010	768	558	85
2011	135	83	1
Total	2679	1481	483

Genotyped females

Birth year	HOL	RDC	Jersey
<2007	508	126	100
2007	240	120	70
2008	433	219	100
2009	595	375	127
2010	768	558	85
2011	135	83	1
Total	2679	1481	483
after 2nd May	+625	+407	+58

Genotyped females, RDC

Birth year	DNK	FIN	SWE
2007	30	66	24
2008	57	132	30
2009	70	250	55
2010	129	339	90
2011	17	56	10
Total	336	895	253

Genotyped females, HOL

Birth year	DNK	FIN	SWE
2007	166	22	50
2008	318	33	74
2009	377	91	121
2010	505	171	92
2011	88	37	10
Total	1827	374	460

Reliability genomic information	
RDC	0.30-0.40
Holstein	0.40-0.50
Jersey	0.20-0.30

Reliability varies by trait

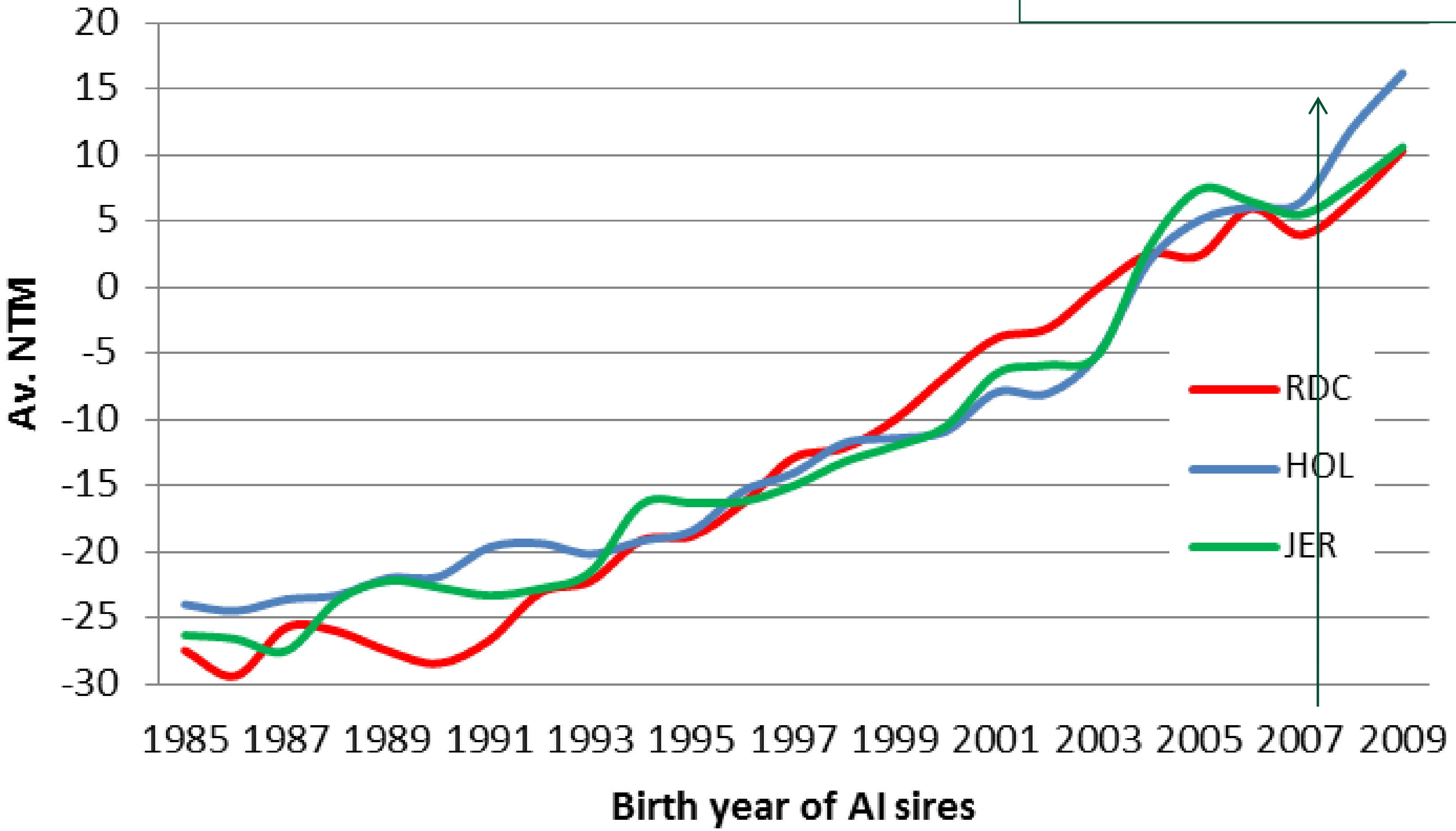
Aprox. standard deviation on NTM

	Holstein	RDC	Jersey
Young bulls only genomic information	7-8	6-7	5-6
Progeny tested bulls	10	10	10

Higher SD corresponds to higher reliability
Reliability on genomic information across breeds:
Holstein> RDC > Jersey

Genetic trend NTM

Genomic Selection started



Results – Top bulls

	HOL	RDC	Jersey- top 20
% Young bulls >20mth	60	37	27
% Progeny tested	40	63	73
Min NTM	+24	+20	+17

Bulls born Year 2009 – NTM

	HOL	RDC	Jersey
Mean - All	10.3	9.2	7.4
Mean - Selected	16.2	(about 12)	10.6

Significant selection done within all breeds – selection intensity will be stronger for all breeds in birth year 2010!

Genotyped bulls

Birth year	HOL		RDC		Jersey	
	HB	No HB	HB	No HB	HB	No HB
2007	356	94	219	0	55	4
2008	313	525	257	30	47	33
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Total all years	**6727**	**3120**	**5594**	**1188**	**1329**	**501**

Selection intensity increases by birth year

Bulls born Year 2009 – NTM

	HOL	RDC	Jer
SD – All	7.7	About 7	4.4
SD - Selected	5.9	About 5	3.7

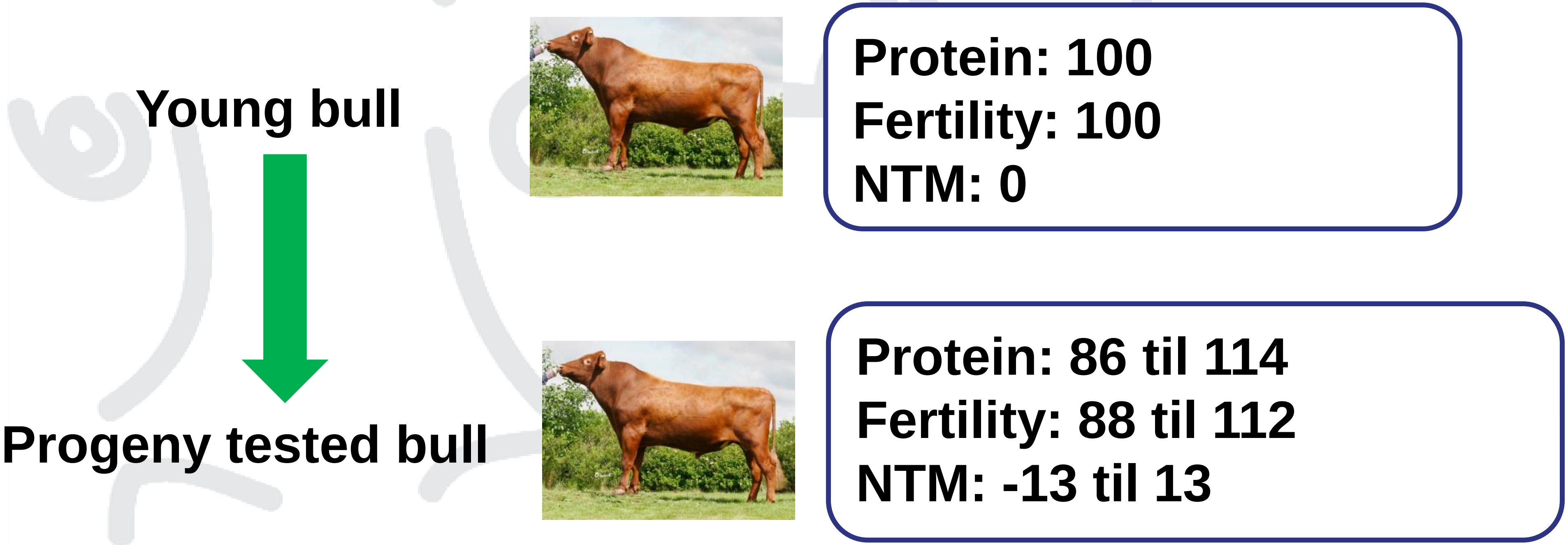
Significant selection done within all breeds – note the SD is lower within the selected animals (as expected)!

GEBVs from routine runs

Changes in GEBVs between subsequent routine runs (2 May and 9 August):

- EBVs updated (Feb versus Aug)
  - Used for DRP in GBLUP – effect on DGV
  - Used for blending with DGV
- More reference bulls
- Claw health in NTM

Expected changes transition from young genomic tested bull to a progeny tested bull (95%)



Young bull

Protein: 100
Fertility: 100
NTM: 0

Progeny tested bull

Protein: 86 til 114
Fertility: 88 til 112
NTM: -13 til 13

Example change in EBV bull getting daughters (EBV_{May} minus EBV_{Aug})

Change in EBV yield	Number of bulls
>-10	8
-8 to -10	11
-5 to -7	10
-2 to -4	19
-1 to+1	10
2 to 4	14
5 to 7	6
8 to 10	7
>10	2

The 88 HOL bulls has got lactating daughters since May evaluation, so the EBVs has still limited reliability based on daughters

NTM - heifers

NTM	GEBV-pedigree index	
	Correlation	Mean
HOL	0.40-0.60	-4 to -5
RDC	0.50-0.80	-4 to -5
Jersey	0.60-0.90	-4 to -5

Mean difference due to Bull Dam yield bias

Changes in EBV for genotyped heifers (66% within limits)

Pedigree

Protein: 100
Fertility: 100
NTM: 0

↓

GEBV

Protein: 90 – 102(Bull dam bias)
Fertility: 94 - 106
NTM: -10 til 2

Changes in EBV for genotyped cows

(so far only traits based on pedigree only – 66% within limits)

EBV

↓

GEBV

Protein: 100
Fertility: 100
NTM: 0

Protein:100
Fertility: 94 - 106
NTM: -3 til -3

How to understand standard deviation and reliabilities of EBVs

Reliability	Genetic STD	EBV STD
0 %	12	0
35%	12	7
50%	12	8.4
80%	12	10.7
100%	12	12

EBV - expectation

- An unbiased EBV mean that the EBV have the same probability of increasing and decreasing when we get more information about the animal

EBV - expectation

- Assuming we have a NTM at +20 based on genomic information with a reliability of 40%
- When we get a more reliable EBV (lots of daughters) the reliability will increase and the EBV might change – note the probability of getting an EBV > +20 is 50% and below +20 is 50%

Genomic tested bull versus progeny tested – Holstein bulls

Birth year	NAME	NTM	True NTM $_{95}$	
2006	D Jul	+30	+20 to + 40	104 daughters
2009	VH Cadiz	+30	+14 to +46	Genomic test

- **Note EBV has 50% chance to increase or decrease for both bulls**
- **Note the decrease or the increase can be larger when the reliability is lower – we are not able to estimate the EBV so precise**

RDC and Jersey

- **Reliability on GEBVs for young animals are a bit less than for Holstein**
  - A bit lower reliability on EBVs for GenVikPLUS bulls
  - A bit lower reliability on EBVs for heifers
- **A bit bigger changes in EBVs for bulls, when a bull get a progeny group.**

Which animals to select?

Do as usual – select the animals with highest NTM

But take the lower reliability at GenvikPLUS bulls into account

5-8 GenVikPlus bulls has same expected change in EBV as one progeny tested bull

Focus less on single bulls and more on a group of bulls (5-8)

GEBVs development – ongoing in cooperation with reseach

- Test run conducted with HOL including cows own records in blending procedure
- Test runs including genomic information for reference bulls
- Test runs one versus two step procedure for genomic prediction
- Test runs using 800K genotypes
- Look at possibilities to do something for claw health (few reference bulls)

GEBVs future implementation – expectation (it is not possible to give excact dates yet)

- GEBV for Red Holstein
- NRF included in red reference population (has to be confirmed by Geno)
- Give reliabilities along with GEBVs
- Include genomic information in official EBV for genotyped cows
- Include genomic information in official EBV for reference bulls
- Claw health possible?
- Improvements in methods for prediction – including imputation

International

- Interbull GMACE pilot run – results hopefully discussed in Stavanger
  - International comparisons genomic tested young bulls,
  - note we can always do better by exchange of genotypes between countries having a genomic prediction
- Interbull validation tests for all traits and breeds

Update yield model

- Update genetic parameters
- Harmonization of models
- Improvements HV

Yield

Unexplainable results - very sensitive to single observations

- The major problem has been identified – seems to be residual correlations
- Not everything is 100% understood yet, but latest test runs looks better
- The project group recommend not to deliver results to Interbull test run in Sep11 but go for Jan12 – practice Feb 12

NTM follow up 4th May workshop

Focus

- Weight yield index
- Weight & optimum type traits
- Weight in NTM – Udder and milkability

NTM follow up 4th May workshop

Action

- *Each breed has to send clear proposal for changed weights or requests for further analysis to support decisions to NAV*
- *Final proposals for changes in NTM weights have to be given to NAV before 1 November 2011*
- *NAV Board will make decisions based on recommendations in November 2011*
- *Changes can be introduced in routine evaluation 2 February 2012*

Type what can we expect new project

Current evaluation started 2005

1. Harmonization fixed effects
2. Handling later lactation – genetic correlations – better recommendation for registrations in practice
3. Multi trait within group of traits e.g. udder conformation – use knowledge about correlation between traits in EBV calculation

Improvements routine autumn 2012

Projects in pipeline

- Fertility
- Calf survival
- Robot data

Other joint activities

- Joint genetic trend presentations
- Joint search data base Interbull EBVs
- Joint Classifier statistics

Questions?

NAV

Nordisk Avlsværdi Vurdering • Nordic Cattle Genetic Evaluation

EXTRA/backup

Expected changes in EBVs for progeny tested bulls using GEBVs (95%)

Now

© Elly Geverink

Protein: 100
Fertility: 100
NTM: 0

Future

Protein: 96 til 104
Fertility: 92 til 108
NTM: - 6 til 6

Imputation using LD and LA information