Status on practical breeding program in VG

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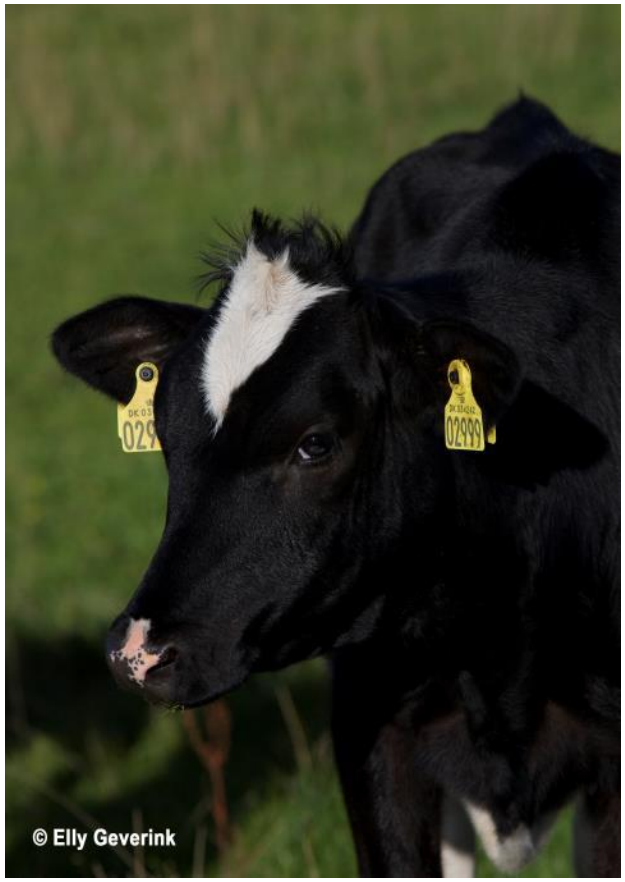
Topics for this presentation

- Status on current breeding plan setup
- LD project
- Waiting bull system
- Publication of indexes
- Inbreeding
- Strengths and weaknesses



Current breeding plan VG - 2014

< 10 best approved as elite bulls

All born calves in screening

3.000/2.000/550 selected based on NTM, and genomically tested

240/275/65 bought based on GEBVs

175/200/55 approved as young bulls (2000-2500 doses)

25-30/20-25/12-15 used as GenVikPLUS-bulls

Registration of daughters for 4 years = breeding values for the bulls

Genetic progress

- Goal - 3 NTM units per year
- Average NTM per year
  - Selected bulls
  - Bulls alive shown in brackets

	VikingRed	Holstein	Jersey
2011	16 (153)	24 (134)	13 (43)
2012	20 (192)	29 (175)	15 (46)
2013	23 (219)	34 (181)	18 (58)

Generation interval

	VikingRed	Holstein	Jersey
GVP/PB as sire of sons (%)	52/48	95/5	46/54
1 lact/later lact. as bulls dams (%)	(42/58)	65/35	65/35
Flush activity – heifer/cows	95/5	95/5	90/10

- Value of blending information on females is limited for our selection

Semen sale per category (%) - first 11 months of 2013

	VikingRed	Holstein	Jersey
X-Vik	3,2	6,0	11,9
Proven	43,3	13,6	50,3
GenVikPLUS	29,2	53,9	13,5
Young Bull	23,9	22,4	24,0
Import	0,4	4,1	0,3

Female test activity

- LD project
- All females tested on LD-chip
- Private initative from farmers
  - We suggest which animals to test
  - Price from 47-50 Euro (+ work fee)
  - Discussion of subsidy system
  - ASMO is a special case
- Activity highest in Denmark and Finland
  - A problem especially for VikingRed
- Some farmers start to consider to test in order to make better selection on farm (beef semen, X-Vik)

LD project

Preliminary effect from including females – Information from NAV

- About 4,000 females tested in VR and VJ - ½ of them with production data

	RDC	JER
Production	X	XXX
Udder health	XX(X)	XXX
Body	XX	XXX
Feet & legs	-	X
Mammary	XXX	XXX
Milking speed	XXX	XXX
Temperament	-	-

XXX means ~5 percent units gain in reliability

LD Project VG three dairy breeds

- Implementation LD test on females stepwise from 20 thousands in 2013 to half a million LD test in 2020

  - VikingRed: 10.000 test - 5.000 spring and 5.000 autumn
  - Holstein: 10.000 test - 5.000 spring and 5.000 autumn
  - Jersey: 7.500 test - 4.000 spring and 3.500 autumn

- Higher reliability on VikingRed and VikingJersey breeds by including female information in reference

- Fast implementation of new traits like Hoof Health in selection program

VG subsidy in LD project 2014

- VikingRed: Farmer pay 32-35 Euro – VG subsidy 15 Euro
- Holstein: Farmer pay 37-40 Euro – VG subsidy 10 Euro
- Jersey: Farmer pay 27-30 Euro – VG subsidy 20 Euro

LD Test – Contract test of all females

- Herds selected to this part get the genomic tests on a special price and agree on following:
  - Participate in milk recording
    (numbers of milk recordings per year ?)
  - Registration of hoof health
  - Full registration of veterinary diagnosis
  - All females younger than 40 months to be genomically tested
  - Give VG access to all phenotypic data in the herd
  - Accept VG ownership of genotypes
  - Give VG first right of testing all bull calves in the herd
  - VG can contract tested females for two first flushes

Number of bulls

Number of bulls

- From the merger into VikingGenetics without genomic seletion and up till now
- Three bull stations have been closed the past couple of years
- Today VikingGenetics owns four bull stations
  - Assentoft, Bovlund, Skara and Hollola

Year	Number of bulls
2008	3,032
2009	2,740
2010	2,232
2011	1,913
2012	1,712
2013	1,692
Future	?

Waiting bull system

- More and more semen use is on GenVikPLUS bulls
  - Some differences from breed to breed
  - Export still mostly focus on daughter proven bulls

- We do not have to keep all bulls alive until they have daughter proof
- A risk decision for the board – Hans Stålhammar did calculation
- VikingRed as an example

Stability of NTM - level

RDC November 2013 EBV's versus May 2011 GEBV's

Level Nov. 2013	Level of GEBV, May 2011							
	-8	-4	0	4	8	12	16	>20
10	13	43	62	88	73	57	20	2
11-12			3	8	4	7	6	1
13-14			2	3	3	8	1	1
15-16			1	2	2	6	3	1
17-18			1	1	4	8	4	1
19-20					2	4	1	2
21-22						2	2	2
23-24					2	1	2	
25-26								
27-28							2	
				0/104	1/45	1/30	1/7	1/5

Present daily plan for VikingRed

Tjur	namn	ntm		fnamn x mfnamn
92671	3-2671 Buckarby	30		O Brolin R x Peterslu
92986	3-2986 VR Game	27		Gunnarstorp x ST Hal
36678	9-6025 VR Cigar	27		Cirkel x R Alfa
46303	22-6303 VR Borsse	25	G	Buckarby x Toivo
99517	3-9517 VR Ultimo	24	G	Ullimulli x Gunnarsto
92912	3-2912 VR Leroy	24		Långbo x Peterslund
99515	3-9515 VR Hambo	23	G	R Haslev x G Edbo
37264	9-6053 VR Giant	23	G	VR Gibson x R Alfa
92483	3-2483 V Föske	22		Miqur x Gårdö
99547	3-9547 VR Boxer R	22	G	VR Berg x Gunnarsto
37304	9-6054 VR Rankin	22	G	Record x R Facet
92983	3-2983 VR Gobel	22		Gunnarstorp x S Majo
46605	22-6605 VR Vauhti	21	G	Vret x Hyãñtylãên Pi
99561	3-9561 VR Polaris	21	G	Pell-Pers x S Adam
46301	22-6301 VR Uudin	21	G	Ullimulli x Ooppium
46645	22-6645 VR Tivoli	20	G	VR Taku x Heisalan P

10 out of 16 are GVP-bulls

Presented for the committees and board

- Risk of a bull to get a breeding value based on daughter proof that is higher than the lower level on the daily plan
- Lower limit of bulls on the daily plan = 22 NTM units
- Annual genetic trend = 2 NTM units per year
- Under estimation of GEBV = 4 NTM units
- Number of bulls to keep alive

Birth year	Limit 5%	limit 10%	limit 20%
2009	46	31	18
2010	46	31	19
2011	54	38	24
2012	63	47	32

Publication rules

Proposal for new publication rules for indexes

- Eurogenomics
  - Proposal to exchange of genotypes of YBs in Eurogeneomics (EG) to improve reliabilities in GMACE
  - All EG partners may send exchanged genotypes to Interbull
  - All exchanged candidates send to Interbull may be published

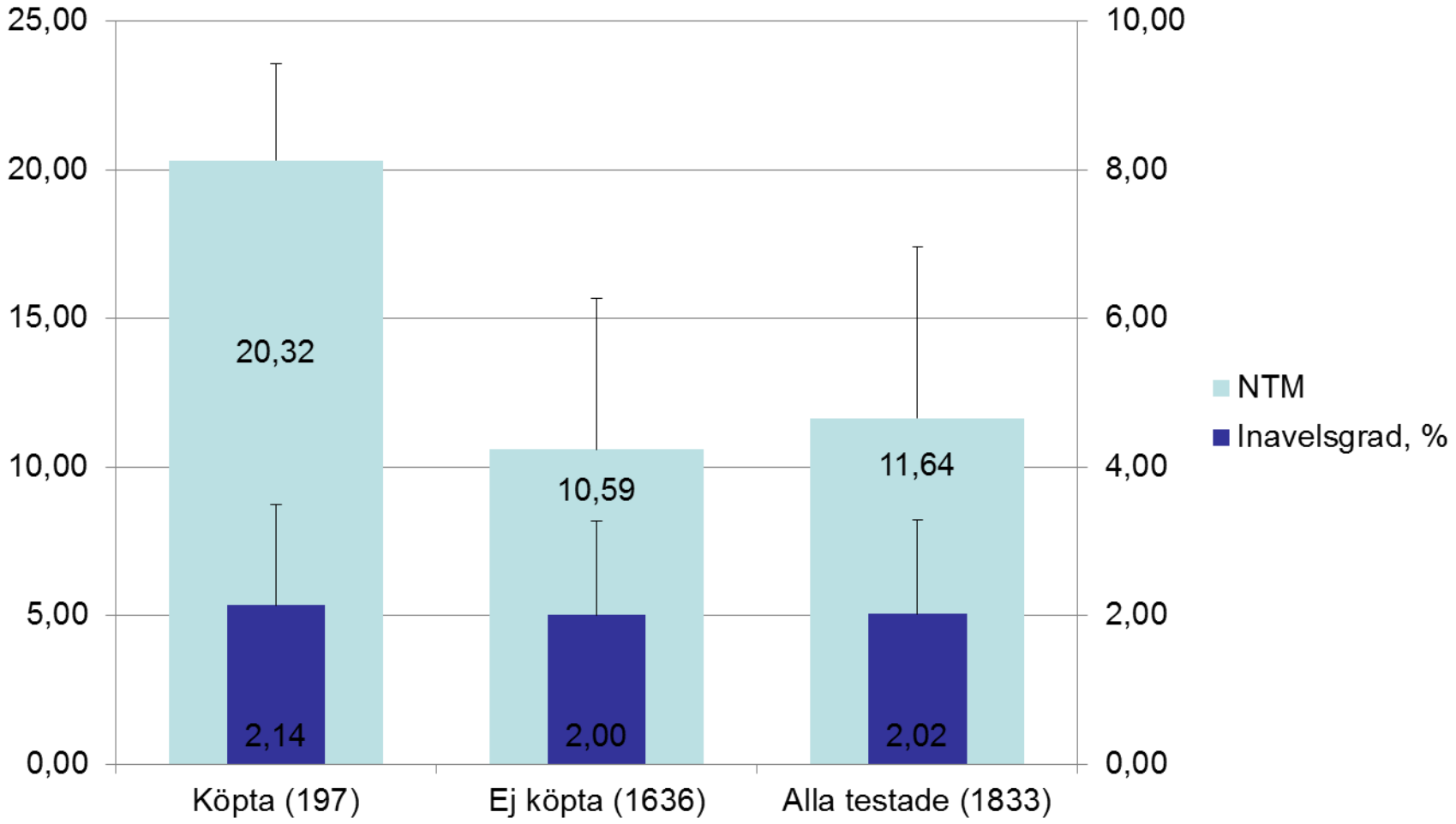
- Reduce generational interval
  - Present 17 months rule reduces opportunity to use young top bulls as sires of sons
  - Lower generational interval can improve genetic progress
- Marketing
  - If all our competitors publish from 10-12 months of age it seems like VG always comes later with new top bulls

Aspects related to earlier release

- Continue random testing
- Availability of semen
  - Best bulls will not be used as YB, but be sold directly as top bulls / GVP
  - Only few or zero doses available at first index release
  - Important to inform and teach farmers that best bulls will not be present at daily plan
- Semen price structure
- Semen quality
- Process getting started – many partners will be involved

Inbreeding

What happens when we decide which bulls to buy



Sires of sons - Holstein

- Where do we find the outcross bulls
- Genomic test 200 foreign bulls each year
- Foreign bulls on the list of sires of sons
  - Balisto (Bookem x Watson) +48
  - Sundance (Sudan x Planet) +39
  - Boss (Bookem x Man-O-Man) +38
  - Big Point (Bookem x Man-O-Man) +36
  - Fageno (Fidji x Ruacana) +35
  - Sargeant (Freddie x Planet) +34
  - Olympic (Jarvis x Oman Justi) +31
  - Alonso (Atlantic x P Shottle) +31

Most outcross bulls

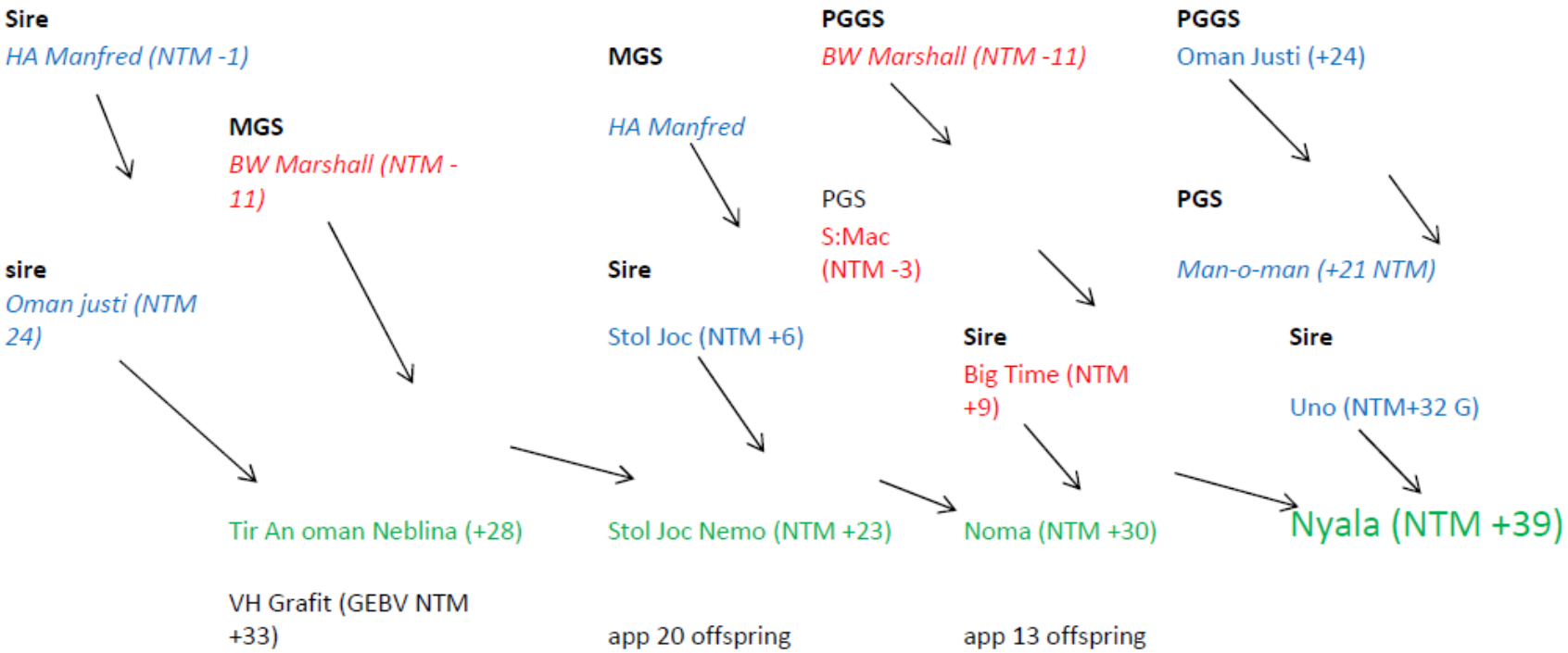
- VH Gejser (VH Gotfred x RGK Flak x V Exces) +32
- VH Albion (Ammus x D Banker x V GroovyBL) +31
- VH Vaski (S Viikinki x Turbo x Naksos) +27

- Last selection run in Holstein
  - 23 bulls bought
  - NTM from +27 to +45
  - The bull with +27 is a VH Ravnkil x VH Clark x Ligö
  - Second lowest with +30 in NTM

- Can we sell the doses from this VH Ravnkil bull?

Strengths and weaknesses

How to make a topindex heifer



- Mac and BW Marshall were never used in Europe
- Average relationship between BW Marshall and Oman Justi is ~17%
- Average relationship between Man-O-Man and Neblina is ~35%

Some times we wonder….

- Sterngold
  - Stol Joc x P Shottle x BW Marshal
  - NTM +13 – IB proof

Sterngold

HOLDNKM000000000255954	VH Starman	20120711	34	Sterngold	Planet	aproved after genomic test
HOLDNKM000000000255771	VH Scout	20120412	31	Sterngold	Mascol	aproved after genomic test
HOLDNKM000000000255766	VH Senate	20120331	31	Sterngold	Massey	aproved after genomic test
HOLDNKM000000000255787	VH Setter	20120528	29	Sterngold	D Banker	aproved after genomic test
HOLDNKM000000000255419	VH Seaman	20111120	29	Sterngold	D Ole	aproved after genomic test
HOLDNKM000000000255758	VH Scope	20120321	28	Sterngold	Massey	aproved after genomic test
HOLDNKM000000000255626	VH Shaka	20120111	28	Sterngold	Planet	aproved after genomic test
HOLDNKM000000000255392	VH Spokane	20110922	25	Sterngold	Planet	aproved after genomic test
HOLSWEM000000000048982	VH Sprite	20120327	37	Sterngold	Rakuuna	young bull
HOLSWEM000000000048986	VH Stanley	20120512	34	Sterngold	Oman Justi	young bull
HOLSWEM000000000048970	VH Speedo	20111123	34	Sterngold	Bissjön	young bull
HOLSWEM000000000048988	VH Starsky	20120505	33	Sterngold	Rakuuna	young bull
		12	31			

- CM
  - Sharky x C Outside x S Rudolf
  - NTM +14 – IB proof
- Cobra
  - Mac x Oman Justi x BW Mashal
  - NTM +7 – IB proof

CM						
HOLDNKM000000000256209		20121111	40	CM	Juwel	aproved after genomic test
HOLDNKM000000000256193		20120915	27	CM	Massey	aproved after genomic test
		2	34			
Cobra						
HOLFINM000000011089261		20130407	31	Cobra	Rakuuna	aproved after genomic test
HOLDNKM000000000256397		20121217	31	Cobra	D Cole	aproved after genomic test
HOLSWEM000443781802813	VH Collin	20130215	27	Cobra	S Ross	aproved after genomic test
		3	30			

2014 actions breeding – to summerize this!

- LD project – continued
- Systematic genomic test of HI females
- Improve ET activity and new reproduction tools
- Young bulls system – publication rules
- Adam
- Eva

Thank you