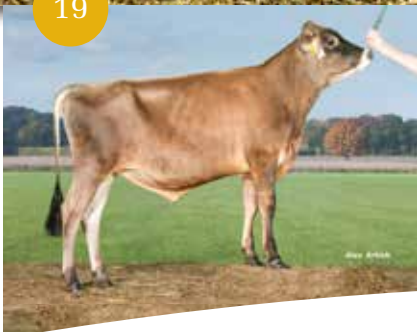




Skottorp - 720 cows and 11,550 kg ECM

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By Sara Wiklert Petersson,
 Sales Manager, VikingGenetics

Welcome to a new year with VikingNews

This issue is full of articles from around the VikingWorld. You will find an article from our Chairman Lars-Inge Gunnarsson and from Vadsbo Mjöl – one of the largest organic herds in Sweden, but also from Jersey herds in South Africa. Take the chance of learning more about sexed semen and the latest news in breeding evaluation.

In 2015, the export sales for VikingGenetics increased once again. We are grateful for that and it reminds me of what the former Export Director Manager, Göran Malmberg used to say – “it takes time – the cows have to show their performance in the country first”. That is very much the reason for the increase now – the Viking cows around the world that make customer happy! No matter the breed.

Viking distributors often organize farm days in herds that have used Viking semen. I would like to thank all of you that do open your herds for those events and sharing your results. We do our utmost to keep improving our genetics and to make our customers happy also in future!



vikingnews

LAYOUT AND PRODUCTION: vahle+ nikolaisen.

PHOTOS: Alex Arkink, Elly Geverink, Elisabeth Theodorsson, Tiina Tahvonen and employees by VG.

COVER PHOTO: Lars-Inge, owner of Skottorp and chairman of VikingGenetics, and Monika, who is responsible for the animals and breeding.



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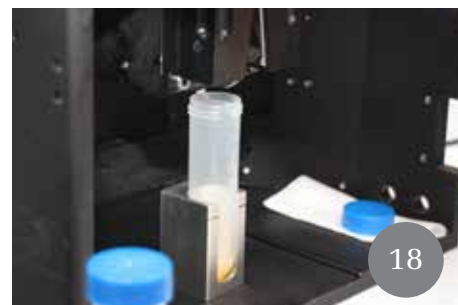
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ProCROSS more profitable at high herd management levels

More live calves, less reproductive cost, a higher survival rate and a similar, even higher production. With these characteristics, the first generation Montbéliarde and VikingRed crosses are more profitable than purebred Holstein cows, according to research at the University of Minnesota on eight large-scale high performance dairy herds.

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Research and Development

– always benefit the farmers

Genomic selection, feed efficiency and male fertility are core focus for VikingGenetics' R&D. Cattle breeding has undergone a revolution the past five to eight years with the introduction of genomic selection.

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10 years old and still going strong

The Docka cow is one of the good old cows that is still going strong and was classified 91 points after her 8th calf!

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Only 6% difference in fertility between sexed and conventional doses

Farmers should be less worried about the fertility of their cows as differences in fertility between sexed and conventional semen has been reduced. This is a clear progress!

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Skottorp – 720 cows and

By Camilla Rosman, Marketing Manager, VikingGenetics

Skottorp farm is owned and run by Lars-Inge Gunnarsson and his family, and Monika Andersson is in charge of the herd. They have had high focus on easy calvings for many years and it has showed results. Continuous breeding for mastitis resistance has made the cell score of 720 high-producing cows to stay below 100,000! Constant focus on bulls with high NTM has made Skottorp one of the most important suppliers of bull calves to VikingGenetics.

Breeding strategy

The goal for 2016 is 12,000 kg ECM. Age at first calving is 23.7 months and it is important to have them calf as early as possible. “It is too expensive to have young stock just for fun,” Lars-Inge says. All heifers stay in the herd and are used in milk production. “We are not afraid of having high recruitment,” Lars-Inge explains. “Feet and legs are important and crucial traits for good production and we believe a lot in the new hoof health index”, Monika says. Easy calvings are

very important because it helps the cow to recover after calving, she starts to eat and produce and get in calf again. Today there are only 3% difficult calvings in the herd. A result of this is that most of the cows get on their feet quickly after calving and start to produce milk. The herd consists of 80% Holstein and 20% VikingRed and the quota stays the same, even though the Holstein cows are milking 1400 kg more on average per year, but the fact is that the VikingReds are healthier and stronger.

Meat production is a large part of the total income

All bull calves are kept for slaughter. Another 150 beef crosses are bought in the autumn. Cows that are on the slaughter list are fed for 3-5 weeks before going to slaughter. There is also a herd of 150 suckling cows on the farm.

Milk recording is the perfect tool

“We are very rigorous with reporting everything in the herd because if you don’t, you fool yourself with the results. The milk recording is very important for follow up on results and compare with history, and compare their own farm with other farms in same size. It is a good tool to keep employees updated and focused on being even better. It becomes a competition which is positive!” Monika says.

“Feet and legs are important and crucial traits for good production and we believe a lot in the new hoof health index.”

MONIKA ANDERSSON



One of the challenges in a big herd is the big pressure of infections, especially among the young calves. Therefore, all calves are put outdoor in pens and stay healthy.

EDF- European dairy farmer

Lars-Inge is a member of the EDF (European Dairy Farmers) – a group of progressive and visionary dairy farmers looking for inspiration, and it serves as a platform for the exchange of ideas, experience and knowledge on an international level. “Being a part of the EDF group is a great opportunity, and it gives me lots of good input to use in my own herd”, Lars-Inge says.

Cows of today have the genetic capacity to milk more than this

“Cows of today have the genetic capacity to produce more than they do; we just need to use their full capacity. Milk is what we are paid for and we can never relax.” Lars-Inge says. “No business person can do that and no

11,550 kg ECM



The employees at Skottorp are a very important part of the result and the high production of the cows. Here is Andrzej Wcisto busy milking.

farmer who wants to stay on the market, can do that. Cows have the genetic capacity, we just need to give them the right conditions. We need to give them the best silage, the best management as young calves and heifers and look after them even more carefully”, Lars-Inge says.

A big proportion of bulls to VG comes from Skottorp

Since Skottorp always has used high NTM bulls, a lot of heifers and bulls are tested genomically because of high pedigree indexes. Over the last two years four bulls have been sold to VikingGenetics, and that is quite a lot since genomic selection has decreased the

“Cows of today have the genetic capacity to produce more than they do; we just need to use their full capacity. Milk is what we are paid for and we can never relax.”

LARS-INGE GUNNARSSON, CHAIRMAN OF VIKINGGENETICS

Facts:

Owner:

Lars-Inge Gunnarsson and his family. Lars-Inge is the chairman of VikingGenetics

Employees:

16 persons including family members

Cows:

720 cows, 80% Holstein, 20% red

Production:

11,550 kg ECM

Milking three times per day

Farm:

1500 hectares

Other:

Age at calving:

23.7 months



The dam of VH Blogg – one of the top bulls at VikingGenetics. A very good 4th lactation cow that had her first calf at 22.4 months old and produces 12,200 kg ECM today with a calving interval at 12.3 months and all recordings in best cell score!

number of bulls bought radically! The latest four bull calves sold from Skottorp are the following:

VH Gaga, gNTM+33

(VH Gavin x D Limbo x Rakuuna)

VH Blogg, gNTM +29

(VH Brilon x D Jul x O-Man)

VH Sharp, gNTM+28

(VH Sprite x D Etoto x O-Man)

VH Blixten, gNTM+26

(VH Bostrup x VH Bull x V Exces)

2015 in figures

Most used bulls in 2015

The world is changing. Earlier a few bulls gave a lot of royalty to their owners, today many breeders share the royalty money, and no single breeder gets a fortune! There are very few bulls today that are used in more than 30,000 inseminations, while a few years ago single bulls could be used in more than 100,000 doses. Only young bulls are in the top of the use in the home market, while on the export market, still proven bulls are most used, even though the trend is towards more young bulls



A group of nice daughters by VH Graftit, most used VikingHolstein bull on export 2015

VikingHolstein

Table 1. Top 10 most used bulls on export market in 2015

Name	Sire x MGS	NTM	No of doses
VH Graftit	B Goldwyn x O-Man	+20	20,317
VH Peder	Planet x V Elo	+21	18,477
D Sol	P Shottle x T Funkis	+11	17,351
VH Rudolf	Rakuuna x Ramos	+15	15,060
B Rock	Ramos x Rubytom	+7	14,242
VH Miracle	Massey x Roumare	+18	13,869
VH Salomon	D Sammy x O-Man	+16	12,577
VH Basten	D Banker x T Lambada	+13	12,501
D Obsess	O-man x D Novalis	+8	10,385
VH Strong	Stol Joc x O-Man	+11	9,079



A daughter by VJ Husky, most used Jersey sire on export market 2015

VikingJersey

Table 2. Top 10 most used bulls on export market in 2015

Name	Sire x MGS	NTM	No of doses
VJ Husky	DJ Hulk x DJ May	+14	15,000
VJ Link	Legacy x Q Hirse	+18	14,700
VJ Hilario	Q Hirse x Q Impuls	+17	10,900
DJ Zuma	Q Zik x FYN Lemvig	+13	9,900
VJ Lure	DJ Lirsk x Q Impuls	+14	9,600
VJ Stiz	VJ Zummit x DJ May	+15g	9,400
DJ Broiler	JAS Bungy x FYN Lemvig	+1	9,300
DJ Holmer	Q Hirse x FYN Lemvig	+8	6,600
VJ Hihl	VJ Husky x DJ Zuma	+18g	6,100
VJ Rodme	VJ Hubert x DJ May	+19g	5,500



V Föske daughter from Australia.

VikingRed

Table 3. Top 10 most used bulls on export market in 2015

Name	Sire x MGS	NTM	No of doses
V Föske	Miqur x Gårdö	+14	34,093
Gunnarstorp	Kelli x Syd Abru	+13	22,053
VR Cigar	R Cirkel x R Alfa	+13	21,651
Pellpers	Flarkbäcken x Botans	+11	18,606
VR Donato	R David x R Admiral	+21	17,550
VR Dalton	R Degn x R Admiral	+24	17,502
A Linné	Orraryd x SYD Abru	+4	12,915
VR Bill	R Bangkok x B Jurist	+10	11,550
VR Solero	Sörby x Orraryd	+9	8,057
Buckarby	O Brolin x Peterslund	+22	7,110

Breeding programme 2015

VikingHolstein

During 2015, 2,800 bull calves were DNA-tested and 117 of those decided for purchase, which is 4% of the tested calves. In our barns today, we have 97 bulls from the selection in 2015. In addition to those, we have also bought 8 bulls in Germany and in USA in our cooperation with the German company NOG. The 97 bull calves have 61 different sires and 40 different maternal grandsires, and this shows the big difference in the way we use sires of sons today, compared to the time before genomic selection. 80% of the bull dams are genomically tested, which shows the advantage to do a genomic test of all females to get breeding value with higher accuracy.

Most common sires of sons in VikingHolstein in 2015 are VH Odense, Balisto, Overbay, Reflector and VH Gant.



In 2015, we genomically tested 5,920 bull calves in total and bought 260 of them - or 4%.

VikingJersey

In 2015, 520 bull calves were DNA-tested. Out of those, we bought 44 bulls, which is 8% of tested bull calves. In average, these bulls have a gNTM of +22,3. The 44 bulls have 20 different sires and 20 different maternal grand sires.

Most common sires of sons in VikingJersey in 2015 are VJ Hjort, VJ Lurik, VJ Hihl, VJ Lutz and VJ Lappe.

VikingRed

During 2015, VikingGenetics DNA-tested 2,600 VikingRed bull calves and 99 of them were bought, which is 4% of tested calves. 73% of the bull calves have a dam that is genomically tested. 31% of the calves were from ET. Average gNTM for the purchased bull calves is +29 and they have 52 different sires and 37 different maternal grand sires.

Most common sires of sons in VikingRed in 2015 are VR Wand, VR Vilde, VR Viro, VR Babylon and VR Enigma.



VR Wand - the most used sire of sons in VikingRed in 2015.

Strong ET work in Viking

By Johanna Aro, sire analyst VikingGenetics

2015 was a great year for the ET work in VikingGenetics and a lot of new things happened. A new embryo flushing station started in Skara, OPU* embryo production started in Hollola together with LUKE (Natural Resources Institute Finland), establishing a fresh embryo network in Finland (start in Sweden in January 2016). We have also made contracts with two private Danish farmers to start embryo production of VG heifers in Denmark in January 2016.

**OPU= ovum pick up, taking eggs directly from the ovaries. Can be done on very young animals and also on pregnant animals.*



First OPU calves born in Finland. Both were bull calves and they are already waiting for their genomic test results. The embryos were produced by using two different bulls, VR Upton and VR Hagar. As soon as we get the genomic results, we also know which one is the sire.



Lorraine, (VR Ultimo x G Edbo) in front of the office in Hollola, Finland.

VikingGenetics International 2015

By Sara Wiklert Petersson, Sales Manager, VikingGenetics

The sales for VikingGenetics on export markets increased by 10% in 2015. The sales for sexed semen, went up 20% compared to 2014 and the main breed is VikingRed.

ProCROSS helps increase the sales of VikingRed

The main breed is still the VikingRed that represents 42% of the export, and had an increase of +17% from 2014. The ProCROSS concept is one of the reasons, and more than 50% of the VikingRed sales are through this concept and it is increasing at high speed. This also shows in our top market 2015, US, where the good results in the ProCROSS herds lead to lots of new customers. Our sales in US have increased by more than 50% during 2015 and made it into the best year for VikingRed. The number of ProCROSS herds of using Viking-Holstein as the Holstein breed has also increase due to the health traits.

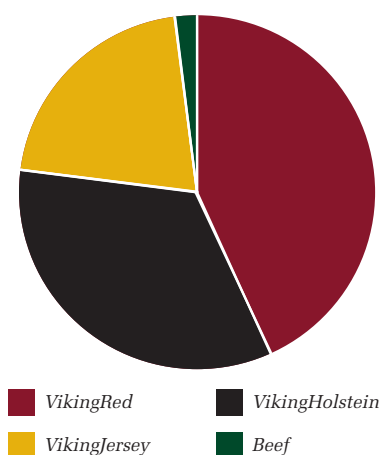


Figure 1. The proportion of the sales 2015 for VikingRed, VikingHolstein, VikingJersey and Beef

Table 1. Top markets for export in 2015

Australia

USA

Norway

Great Britain

The Netherlands

France

Poland

South Africa

Chile

Spain

Main markets for Red, Holstein and Jerseys

The main markets for VikingRed are USA, Great Britain, Australia, Netherlands and Italy. The markets where we sell most Holstein are Poland, Australia, Spain and US. The best Jersey markets are South Africa, France and Great

Britain. France does not have a large Jersey population, but the influence from the VikingJersey is really high. (Table 1.)

Most sold bulls in 2015

The sales of genomically proven bulls are increasing and today represent

24% of the sales on export. But still, 76% of the sales on the export market are proven bulls. The pattern is the same for all three breeds. It is a big difference from the VikingGenetics home markets, where the sales of daughter proven bulls today is only 3% of the total sales.



ProCROSS cows at Hoekstra Dairy, California, USA.

”An open breeding programme - always with our farmers in focus”

By Claus Langdahl, Holstein Breed Coordinator, VikingGenetics

Our members are the fundament

The fundament for the whole breeding programme are loyal members that use our best genetics on their best dairy cows to make the next generation of bulls and bull dams. This fundament is the basement and we have to protect it!

More focus on ET

The past years, more focus has been put on embryo transfer (ET) on the best females, where we contract the farmers to either sell the heifers to VikingGenetics, or flush the heifer in their home herds – all in all 400 Holstein flushings per year in our three countries in the Holstein breed. This has to be put in relation to the number of bull calves that we buy every year, which will be about 125 in 2016, same as 2015. It is clear that this ET-activity will increase the quality of the bulls, which will benefit all the farmers in better profit.

VikingGenetics owns bulls in other countries

The quality of the Holstein breed is very high in many countries, and we use the best foreign bulls also in VikingHolstein breeding programme. A new activity in VikingGenetics is that we now also buy bulls in other countries. Earlier, we have informed about the cooperation with German NOG, where we get

the genomic breeding values from 5,000 German bull calves every year. This has meant that VikingGenetics now owns bulls in Germany but also in USA/Canada. These bulls have the same high level in gNTM as the bulls we buy in Denmark, Sweden and Finland and they are bought as a good complement to our own line up.

Below is an overview of the bulls that we have in USA/Canda today owned by VikingGenetics:

VH Ramis – a son by Racer, on the cow Woodcrest Mogul Anna (Mogul x Freddie) from Blondin farm. VH Ramis has produced the first doses now which will be used for flushings.

VH SextonP – a polled heterozygotic son by Silver on the cow Butlerview Pixie (Supersire x Colt P Red), also from the Blondin farm.

VH Yieppie – a son by Yoder on View-Home MCC Alabama (McCutchen x Robust) from View-Home farm. The Robust cow is also the dam to Monterey, and from the same family we also have bulls like Powerball P and Missouri.

VH Stan – a son by Supershot on Stantons Freddie Cameo (Freddie x Lucky Star) from Stantons farm. From the same Freddie cow, we also have the previous sire of sons S Casual and Checkers

Are you interested in genetics?

Look at NAV webpage! Just make sure you have plenty of time - it will catch you!

What is NAV?

NAV started in 2002, and the common breeding evaluation and a common NTM in all three counties started when VikingGenetics was established in 2008. NAV is owned by SEGES in Denmark, FABA in Finland and VäxaSverige in Sweden.

All the time there are different projects going on at NAV and people from universities together with employees at SEGES, FABA and VäxaSverige work together with the different tasks that can make breeding evaluation better in the future.

Lots of information on the web - www.nordicebv.info

If you are interested in breeding, and for those of you who are not familiar with NAV webpage, it is a recommendation to go there. You will find NAV bull search, NAV Interbull search and genetic trends. You will also find information about latest

evaluation, articles, presentations and webinars. All publications are done in Swedish, Danish, Finnish and English. Just make sure you have plenty of time before you enter!

The screenshot shows the NAV Bull search interface. At the top, there's a search bar with 'VH Graft' entered. Below the search bar, there's a table of results. The table has columns for 'Bull', 'Sire', 'Dam', 'Birth date', 'Birth country', 'Index type', and 'Index value'. The results show several bulls, including 'VH Graft', 'VH Graft P', 'VH Graft P2', 'VH Graft P3', 'VH Graft P4', 'VH Graft P5', 'VH Graft P6', 'VH Graft P7', 'VH Graft P8', 'VH Graft P9', 'VH Graft P10', 'VH Graft P11', 'VH Graft P12', 'VH Graft P13', 'VH Graft P14', 'VH Graft P15', 'VH Graft P16', 'VH Graft P17', 'VH Graft P18', 'VH Graft P19', 'VH Graft P20', 'VH Graft P21', 'VH Graft P22', 'VH Graft P23', 'VH Graft P24', 'VH Graft P25', 'VH Graft P26', 'VH Graft P27', 'VH Graft P28', 'VH Graft P29', 'VH Graft P30', 'VH Graft P31', 'VH Graft P32', 'VH Graft P33', 'VH Graft P34', 'VH Graft P35', 'VH Graft P36', 'VH Graft P37', 'VH Graft P38', 'VH Graft P39', 'VH Graft P40', 'VH Graft P41', 'VH Graft P42', 'VH Graft P43', 'VH Graft P44', 'VH Graft P45', 'VH Graft P46', 'VH Graft P47', 'VH Graft P48', 'VH Graft P49', 'VH Graft P50', 'VH Graft P51', 'VH Graft P52', 'VH Graft P53', 'VH Graft P54', 'VH Graft P55', 'VH Graft P56', 'VH Graft P57', 'VH Graft P58', 'VH Graft P59', 'VH Graft P60', 'VH Graft P61', 'VH Graft P62', 'VH Graft P63', 'VH Graft P64', 'VH Graft P65', 'VH Graft P66', 'VH Graft P67', 'VH Graft P68', 'VH Graft P69', 'VH Graft P70', 'VH Graft P71', 'VH Graft P72', 'VH Graft P73', 'VH Graft P74', 'VH Graft P75', 'VH Graft P76', 'VH Graft P77', 'VH Graft P78', 'VH Graft P79', 'VH Graft P80', 'VH Graft P81', 'VH Graft P82', 'VH Graft P83', 'VH Graft P84', 'VH Graft P85', 'VH Graft P86', 'VH Graft P87', 'VH Graft P88', 'VH Graft P89', 'VH Graft P90', 'VH Graft P91', 'VH Graft P92', 'VH Graft P93', 'VH Graft P94', 'VH Graft P95', 'VH Graft P96', 'VH Graft P97', 'VH Graft P98', 'VH Graft P99', 'VH Graft P100'.

ProCROSS more profitable at high herd management levels

PROCROSS
MONTBELIARDE / HOLSTEIN / VIKING RED
VIKING RED / HOLSTEIN / MONTBELIARDE



Source: University of Minnesota

More live calves, less reproductive cost, a higher survival rate and a similar, even higher production. With these characteristics the first generation Montbeliarde and VikingRed crosses are more profitable than purebred Holstein cows, according to research at the University of Minnesota on eight large-scale high performance dairy herds.

About eight years ago, eight elite herds in Minnesota started to participate in this University of Minnesota crossbreeding study. Dairy farms with an average production of 30,410 lbs. of milk (about 14,000 kg) with 3-times daily milking. Nevertheless, these dairy producers (with 275 to 1,940 cows) were disappointed with the health, fertility, and survival of their pure Holstein cows. They were aware of the greater profitability for 2-breed crossbreds of Holstein with Montbeliarde and Viking-Red breeds compared to pure Holstein cows from a previous field study in California. For several years, researchers of the University of Minnesota analyzed all data of the crossbred and purebred cows on the eight dairy farms. They published scientific conclusions at the end of 2015 about the success of crossbreeding on these high-performing dairy herds.

More production, less cost

A total of 2,265 cows (Montbeliarde x Holstein, VikingRed x Holstein and pure Holstein cows) finished a first lactation and the results are crystal-clear. The crossbred cows produced similar for fat and protein production, the Montbeliarde x Holstein cows produced even 3% more fat and protein. In conformation, the crossbreds had less stature (height), a more slope rump and a greater body condition score than the pure Holstein herd mates. The fertility was better as the crossbred cows have less open days resulting in a shorter calving interval. In combination with the lower stillbirth rate, the number of live born calves from the crossbred cows was higher. An advantage with a value of ten thousands dollars, calculated the University of Minnesota.

Higher survival

Significantly more crossbred cows survived to a second lactation. 84% of the Montbeliarde x Holstein cows calved for the second time, 4% more compared to the purebred Holsteins.

Differences in SCS and udder health problems were not found. They tend to surface more during second and later lactations. The researchers keep collecting data for analysis in the future when cows had the opportunity to complete at least three lactations in the eight dairy herds.

This will include a calculation of economic return of the crossbreds versus the pure Holsteins. However, results from first lactation suggest the Montbeliarde x Holstein and Viking Red x Holstein cows should be more profitable than their pure Holstein herd mates because they gave birth to more live calves, required less reproductive cost, and had higher survival rates. Furthermore, the crossbreds produced at least as much milk solids as their pure Holstein herd mates and returned to peak production sooner for their second lactations.

From 2-breed to 3-breed

The eight dairy farms continue to crossbreed. The 2-breed crossbred is the first step in the transition to the ProCROSS program. In the 3-breed rotation with Holstein, Montbeliarde and VikingRed only proven A.I. Bulls, with daughter performance are mated to the heifers and cows. The University of Minnesota will stay tuned!

Table: technical scores (Source: University of Minnesota)

	Holstein	Montbeliarde x Holstein	Viking Red x Holstein
Number of cows	1134	548	583
Age at calving (months)	23.9	23.8	23.7
Milk (kg)	10,970	10,954	10,537
Milk (lb)	24,185	24,150	23,229
Fat and protein (kg)	741	760	749
Stillbirth (%)	9	4	5
Body Condition Score	3.2	3.7	3.45
Stature	5.4	4.6	3.8
Rump angle	6.1	7	6.6
First service conception rate (%)	38	43	47
Days open	125	113	117
Survival to 2 nd calving (%)	80	84	83

Research and Development, R&D – always benefit the farmers

By Sören Borchesen, Head of R&D, VikingGenetics

Genomic Selection (GS), Feed Efficiency (FE) and Male Fertility are core focus for VikingGenetics R&D. Cattle Breeding has undergone a revolution the past five to eight years with the introduction of GS. The result is a doubling of the genetic progress from two NTM units per year to four NTM units per year. Farmers in Finland, Sweden and Denmark have really understood the advantage of using young, genomically selected bulls, a fantastic development and an important step for ensuring higher genetic progress and better profitability for the farmer.

New challenges

The shift in cattle breeding caused by GS towards the use of young breeding candidates, challenges cattle breeding in new ways. We select the best young bulls and young bull dams, and we have to ensure the best semen quality and high semen production from young bulls at an age of 10 months.

Higher reliabilities, the key issue

The big scoop in GS is to get sufficiently high reliabilities for Genomically Enhanced Breeding Values, GEBV, on a newborn calf. Next step in development will be to get even higher reliabilities.

More genotyped females

Adding females in the reference population has shown positive effects on reliability on GEBV. Lowering prices on genomic tests in combination with higher reliabilities will make GS more efficient and grow benefits for farmers.

SNP marker information – more knowledge – increased reliabilities

With more knowledge and the effect on single traits, it will add extra reliability on GEBV and provide us with more effective tools to ensure future genetic progress. Sequencing of the whole cattle genome has exactly the aim to give us basic knowledge in this field.

Improvement of the statistic models

To make improvements of the used statistic models, it is also necessary to improve reliabilities on GEBV.

New Breeding Schemes

GS in combination with use of embryo techniques and sexed semen works in practice. Cattle breeding moves towards more use of laboratory systems. Nevertheless, phenotypes from herds with high registration level will also in future be needed to get reliable genetic proofs.

Feed Efficiency, FE, need cutting edge technology

Feed intake covers approximately 70% of the costs on a dairy cow. Better FE reduces yearly cost per cow. Improvement in a cow's efficiency can reduce the amount of needed feed and also reduce emission of Methane and NPK.

Our aim is to publish genomic breeding values for FE within the next three years. VikingGenetics works together with partners to develop equipment for measuring individual feed intake in a commercial herd. An index including direct registration of feed intake will have much higher reliability compared to an "Indirectly calculated index" based only on correlated traits like milk production and conformation traits.

Future Cattle Breeding

In the future, cattle breeding will be more accurate and efficient resulting in higher genetic progress. New genomic tools, sensor techniques, digitalization of registration and new equipment to do the measuring of new traits; Feed intake and cow behavior and performance are some developments that we can expect to come through the next 10 years.



Søren Borchesen



Viking bulls do well in South Africa

By Seppo Niskanen, Export Manager, VikingGenetics

Daan and Elna Landman's dairy farm is in Tsitsikamma region in Eastern Cape in South Africa. The area is beautiful and lies between the Indian Ocean and a range of mountains that runs parallel to the sea with large areas for grazing.

Big trust in Nordic data collection

Daan Landman has used Viking bulls for 20 years. He started to use Danish Jersey bulls in 1996. He has visited Denmark many times and seen the efficiency of breeding in Viking countries. "I can trust your data collection system and that is the most important" he says and continues: "With that information you have possibilities to breed many traits what others cannot do."

Jersey, Holstein and crosses

The herd consists of Jerseys, Holsteins and crossbred animals. Both Jersey and Holstein do very well in dairy production both as purebreed as well as crossbred. All the heifers are inseminated by Jersey semen in order to ensure that there are no calving problems. "All the heifers calve at the age of 24 months without problems," Daan says.

Efficient breeding in VikingGenetics

The efficiency of breeding can easily be seen. "The next generation is better than the previous one" tells Daan. They want to keep most of the heifers in their own herd to see the results and expand the herd. The number of bulls they use is not very high but they use large numbers of doses per bull. With genomic bulls the number of doses is a little lower and the number of bulls is higher.

Milk production based on grazing

The average daily production in the herd is about 18 kg milk/cow. Daan is happy with the production level as it is based on grazing. All the cows get low levels of concentrates but the main part of the cows' diet is grass in the pasture and silage (maize and grass). Holstein cows as expected produce high levels of milk and the Jerseys have higher components. The average fat is 4.2% for Holsteins and 5.0% for Jerseys. Protein is 3.5% for Holsteins and 4.0% for Jerseys.

Hoof health index - an important tool

Some of the paddocks are quite far from the milking parlor, and cows have to walk long distances every day. This means that feet and legs are very important. Hoof trimming is done but now with the hoof health index on the Viking bulls and selecting for hoof health the number of trimming is expected to decrease.

Fertility and health in top

Daan is also very happy for the fertility of his cows. They use 1.4 straws per heifer per pregnancy and 2.1 straws per cow per pregnancy. This is the combination of good genetics and herd management.



DJ Broiler daughter in the herd in South Africa.



Daan Landman watching his DJ May and DJ Zuma daughters.



Happy VikingJersey farmers in Scotland

By Seppo Niskanen, Export Manager, VikingGenetics

Boquhan Farm

Boquhan farm in Kippen in Scotland produces both milk and beef. The farm is owned by Robert Graham and herd manager is Steve Jones. They milk 240 purebred Jersey cows and uses bulls from VikingJersey. Beside that they also breed 40 Limousine cows.

A few years ago, the owners and workers decided to develop the production, and during the last few years there has been a lot of changes and the milk production has increased from 5,400 kg to 6,800 per cow.

"We wanted to increase milk production but keep high components at the same time – and we've succeeded!" Steve Jones says. Fat content is 5.96 %.

Daughter fertility is important and Steve is telling us proudly: "to decrease the age at first calving has been a big cost-saver. The average age today for first calf is 24 months and it works very well."



Steve Jones is herd manager at the Boquhan Farm. Here he is with VikingGenetics distributor in Scotland, Rorger Trehwella.



Alderston Jerseys

The Alderston Jersey herd is located in Scotland close to Edinburgh where they milk about 260 pure-bred Jersey cows. Most of them have a Danish pedigree, first from importation of Danish heifers, and now they use many different sires from VikingGenetics – including many young genomic sires.

The milk production of Alderston Jerseys is one of the highest in the whole UK with about 24 kg milk/cow/day, which results in an average production of 7,300 kg, fat content 5.5% and protein 3.9%. The average age at first calving in the herd is 24 months.

Genomic bulls improve the herd

Andrew Hastie owns the herd together with his father, Gordon, and brother, David. They started using genomic bulls about four years ago and the first generation is now in production. "The cows look good and they are very productive, so the decision has been right", Andrew says. About 80% of the services are made with genomic bulls now.

Andrew explains that the most popular bulls this year have been VJ Husky and VJ Hilario of the proven bulls, and the genomic sires VJ Hihl, VJ Lukowa, VJ Libero and VJ Rodme have been used a lot. The lasting effect of Q Impuls can easily be seen in the herd, since they used almost 300 doses of Impuls a few years ago.



Roger Trehwella is looking at the cows with Andrew Hastie from the Alderston Jerseys.



Vadsbo Mjolk – breeding for the invisible cow

Milking 1300 cows in organic milk production makes it important that your cows are working well. All cows that take extra time, are cows that you should not have in the herd. Henrik Larsson, herd manager, and Marie Gustafsson, responsible for breeding and insemination in the herd, explains all about the challenges and successes in the largest herd in Sweden. Breeding goal at Vadsbo Mjolk; an average sized cow, cows that take care of themselves and get pregnant easily.

Five years to get on track

In 2009, 700 heifer calves were bought and milking started in 2009. Two years later, they were milking 1000 cows. One whole herd with 250 milking cows were bought in the start. "It takes about five years from full barn to a production in balance. We are there now! Today we can focus on the details," Henrik says.

Genomic tests on all females

Vadsbo Mjolk started genomic test of all heifers in the summer of 2015 to be able to identify heifers. There is room for not selecting 150 heifers per year, and knowing which heifers not to select is important. "We save a lot of money not keeping them since we send all our heifers to a heifer hotel", says Henrik. Recruiting 33% every year is a goal, and that is achievable. We use about 10% X-Vik on best heifers and 20% beef on the cows with the lowest

NTM. Beef crosses and heifers with low NTM are sold for slaughter and today meat price is good and an important part of the total income.

60% VikingRed, 40% Holstein

The herd consists of 60% VikingRed and 40% Holstein. That is how it ended up when they bought the 700 heifer calves and the 250-cow herd. The share seems to stay the same and each cow has to prove to stay in the herd, and that has nothing to do with the breed. "Even though the Holsteins milk 1000 kg more per year compared to the reds, the red cows have the advantage of be-

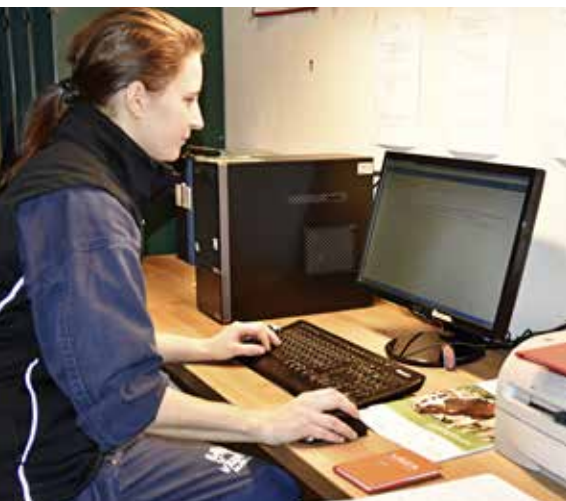
ing healthier and not so weak," Marie says.

Breeding strategies

In a large herd, cows are treated as a group, not as individuals. "Our main focus when selecting bulls is daughter fertility. A cow can be as good as anything, but if she does not get pregnant, then other things don't matter," Marie says. Calving interval is 12.0 months and it is no problem using more than one straw per heat if that is necessary. "The cost of an extra dose is a minor cost compared to more days open," says Henrik. "Therefore, we do not look

"It takes about 5 years from full barn to a production in balance. We are there now! Today we can focus on the details"

HENRIK LARSSON



Marie has just recently been introduced to the new mating program and is happy with it.



Henrik Larsson, herd manager, and Marie Gustafsson, responsible for breeding and insemination in the 1300 cow herd.

Facts:

Vadsbo mjölk is a subsidiary to Vadsbo växtodling, owned by eight farmers

Employees: 22 employees including administration and maintenance

Cows: 60% VikingRed, 40% Holstein

Production: 9,100 kg ECM

Rotational milking parlor, 60 cows. Two times milking.

Other: 2500 ha, 300 ha grazing Organic farming.

8% clinical mastitis

Age at calving: 25 months
Calving interval: 12.0 months

at number of straws/pregnancy; the important figure for us is calving interval. We start with the cows as early as possible after calving and want all cows pregnant as fast as possible."

It is very important that cows are not too big. "Big cows seem to not last very long", Henrik says. "We want the herd to be even, so when choosing bulls we look for taller VikingRed, and smaller Holstein. Breeding advisor, Eva Hultman, from VäxaSverige has just introduced the new mating program in the computer and Marie is very happy with the new version.

Since the production is organic, cows need to be on full pasture for three months and another two months outdoor. This means high quality of pasture and routes to and from pasture and good feet & legs are extremely important.

Future

"We are right now expanding to 1400 cows, but after that it is hard to increase without making a lot of rebuilding – like more calving pens, new calf barn etc. The work now is to tune in every corner", Henrik says. "In breeding, it is important to stick to your goals, even if you have some problems in the herd from time to time," Marie says.

VikingHolstein – much more than a Holstein

By Ann Norgren, VikingGenetics Australia

In January, VikingGenetics Holstein breed coordinator, Claus Langdahl, visited VikingGenetics Australia and held presentations where both farmers and industry people attended. The title of the presentation was "Leaders are those with followers – 30 years of selection for health traits".

Hoof health index

The hoof health index created a lot of interest and discussion among the audience. Hoof health is a problem in many Holstein herds and most countries do not register this trait. Viking has done this for almost 10 years in Sweden, Denmark and Finland and since 2011, the hoof health index is included in the Nordic total merit index (NTM), making it possible to improve this through breeding. Claus showed how hoof health has a high correlation to longevity, but also daughter fertility and other diseases, but not such a strong correlation to feet & legs, which means that it is a completely different trait compared to the feet & leg index.

Viking countries have a unique registration system

The information from Claus made it clear for people in Australia to see the different direction Viking has been breeding our Holsteins for over 30 years and the depth and reliability in the Viking system. Farmers in Australia have already seen first generation with improvements in daughter fertility and general health.

VikingHolstein is more than a Holstein

The figures in the table below from Interbull (Dec 2015) shows a comparison between the main Holstein populations around the world and it shows clearly that Viking is the leader when it comes to health traits and the most economical cows.

Table 1. Comparison Interbull breeding values, Dec. 2015

Country	DNK	GER	NLD	AUS	USA	CAN
Protein	104.2	101.4	102.5	97.7	102.1	101.0
Udder health	101.2	95.4	96.6	95.7	99.6	95.8
Fertility	98.2	92.8	95.7	91.2	97.4	92.3
Calving ease (mat.)	101.8	98.0	97.9	-	101.9	97.0
Calving ease (direct)	100.2	94.5	97.0	93.9	96.6	97.0
Frame	103.2	109.4	109.4	106.1	112.1	116.8
Udder	103.2	102.4	103.0	96.9	108.0	106.7
NTM	+5.3	-5.3	-1.1	-4.2	1.9	-5.3

Claus Langdahl and Tony and Mette Dinnitis, Australian farmers happy with their VikingHolsteins.



Rakuuna success in Italy

By Claudio Mariani, Genesi Project, VikingGenetics' distributor in Italy

Fiorenzo Albini has its family dairy close to Milan, just 30 km west of the city. The farm is managed by his father and his brother, while Fiorenzo himself offers part-time work and the rest is dedicated to promotion of Viking and ProCROSS towards other farmers in his area.

For this reason, he was really interested when Rakuuna came in the sire directory: medium sized cows, with good production, good legs and udders and a really intriguing functional traits pattern. Definitely, the kind of bull he was looking for.

Highest producing cow in the herd is Rakuuna

Today at Fiorenzo's farm, they milk eight Rakuuna daughters; four are in third lactation, three are in their second and one is a first calver. The ME (Mature Equivalent) of all eight cows is 11,978 milk kg with 472 fat kg and 380 protein kg. The average days open are set 111, including all pregnancies of all lactations, so based on 19 records in total. Last official milk test was on January 27th and the Rakuuna's had an average of 36,5 milk kg, being on average at 188 days after calving. The highest producing cow in the whole herd is a Rakuuna in her third lactation, milking 50.4 kg and being in production 231 days after last calving. This cow has a ME of 14,553 milk kg.

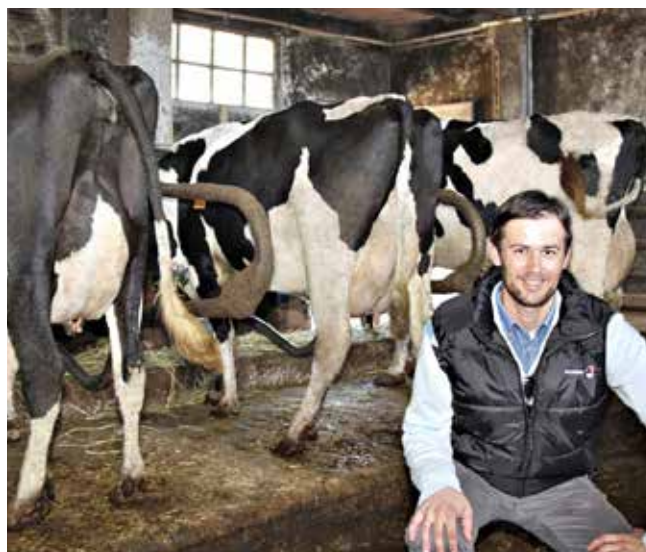
Healthy cows - higher production

"Some could be impressed by those records by daughters of a bull that was not known for having a high milk index", Claudio says. But please consider to things:

- Selecting for healthy cows will bring high production in general. The cow that stays healthy, can better express her milk potential.
- Viking has the highest milk average all over Europe, i.e. bulls with moderate milk index will give better results

than expected, because their index is calculated on a high producing reference basis

Since Fiorenzo is also well into the ProCROSS, it is interesting to notice a first lactation ProCROSS cow Redon x Orraryd (x Holstein) with a ME of 12,145 milk kg, 558 fat kg and 390 protein kg. She is +26.7% over the herd average for production, and only 53 days after calving she was already pregnant. No surprise at all.



Fiorenzo Albini with three of his eight Rakuuna daughters

Follow VikingGenetics on the social media

VikingGenetics is active on various social media platforms. Follow us on Facebook, get our tweets on Twitter, see beautiful photos on Instagram or get relevant information on our business on LinkedIn. We also have blogs for our three dairy breeds and for VikingGenetics in general.

Follow us on your preferred social media. Feel free to share/retweet our posts and send us nice photos. We might repost them.



10 years old and still going strong

701 Docka is one of the good old cows that is still going strong and was classified 91 points after her 8th calf! She is a nice cow with pedigree Orraryd x B Jurist, 2 of the most famous bulls in the SRB breed.

701 Docka has calved eight times, first time at 25,2 months old and calving interval is 12,1 months. Her production

is in average 10,291 kg milk with 4.0% fat and 3.4% protein, and lifetime production is so far 77 tons!

Her grand dam calved four times and produced 50 tons and

great grand dam calved six times and produced 57 tons!

701 Docka is now pregnant with VR Upton. What else do you wish from a cow?



701 Docka photographed in October 2015.



Marie Arvidsson and 701 Docka at the national show ELMIA in Sweden October 2015.

A fairy tale

There are 12 cows in the herd Nivala in Pudasjärvi, Northern Finland, and the owners are Arto and Eija Hinkula. Since Finland joined VikingGenetics in 2010, six bull calves have been tested from the herd, and four of them purchased. The most famous so far from the small herd is VR Faabeli and the other three are VR Tempus, VR Fenkoli and VR Pasuuna. Every one of them is out of different dams, three of them from the same cow family though.

The breeders have genomically tested the bulls and heifer calves, that have been picked by VikingGenetics. This shows that a good genomic result is not dependent on size of the herd, but depends on using the best bulls to the best cows. But for sure, this story is a real fairy tale and a huge success for the farm!

VR Faabeli – one of the four bulls that have been bought by VikingGenetics from the 12-cow herd in Northern Finland.



Only 6% difference in fertility between sexed and conventional doses

By Kasia Kupisiewicz, R&D, VikingGenetics



Kasia Kupisiewicz

When a farmer wants to decide the gender of the calf, he chooses sexed semen, semen cells carrying either male or female genes. When making a sexed dose, they are separated to provide the farmer with a calf of desired sex. It is a revolutionary technique used by many farmers world-wide. But as every method, it is not free of drawbacks and the two main issues are; sex rate and fertility.

Sex rate

The most important question is how can we ensure that farmer will get the wanted sex of the born calf? Unfortunately, there is no guaranty for that. Before release, each sexed dose is quality-controlled and we measure so called “purity”. That means that we measure what the percentage of semen cells carrying wanted sex withing dose is. Only doses with “purity” 90% or more are released, meaning that if you order an X-Vik-dose, in nine out of ten births, you should get a heifer.

Fertility

Fertility is another concern and none of the farmers are willing to risk fertility to drop in their herds. A sexed dose contains only 2 million semen cells, compared to 15 million

semen cells in a conventional dose. This is the explanation why a sexed dose has lower fertility than conventional doses.

It has been a focus point for several years for scientists and manufacturers, to try to improve sorting method and fertility.

In February 2014, Viking Genetics started to use a new sorting method called “Ultra” and fertility of sexed semen has been increasing since then. The latest fertility results from the field show an average increase of 3.4%. That means that farmers should be less worried about the fertility of their cows as difference in fertility between sexed and conventional semen has been reduced from 10% to 6.6%. This is a clear progress and more work will be done to make sexed semen as fertile as conventional.

Slow milking cow

By Lars Nielsen, Breeding Manager, VikingGenetics



Lars Nielsen

Which bull is the right mating sire? A large majority of our dairy farmers are using mating plans when selecting bulls for insemination, and that is a very good choice. When using a mating plan, you have several options for optimizing the bull selection to fit the needs in your herd while maximizing genetic progress and keeping inbreeding on an acceptable level.

Of course, there is not only one optimal mating solution for each female. Farmers with high knowledge about the individual cow can also successfully correct the proposed mating sire if he or she has additional information not available for the computer program making the mating plan.

Best choice for a slow milking cow?

For example, we have a slow milking cow with positive pedigree index for milking speed. Milking speed is calculated with an animal model – and for that reason, the cow’s own registration is included in the index. However, if it is a young cow – her own performance is often still not included in her index

at the time of her first insemination in first lactation. “In this case, I recommend the farmer to use his or her own observation and choose among the recommended bulls, the bull with highest index for milking speed”, Lars says.

More accurate index if the female is genomically tested

If the female is genomically tested, the reliability of the milking speed index will be between 60% and 70%, which is quite high. “In this case, I would look more to the breeding value”, Lars explains. Also remember that milking speed of the offspring will not necessarily be average of the parents’ as we still have the mendelian variation.

In general, we can say that the quality of mating decisions in mating plans depends on the information available – genomic tests, classification etc. Use also your own observations if a cow has any specific weaknesses not available for the mating program.

Always choose bulls with high NTM

“As long as you choose the mating sire from bulls on daily plan level with high NTM, it is only positive to take as many parameters as possible into consideration. But if you start compromising too much on NTM level to find the “right bull” for a certain trait, it is more likely that you will get a weaker result”, Lars concludes.

VJ Falcao

VJ Hillum x DJ Zuma x DJ Lirsk

All in one package!



VJ Falcao

VikingJersey Svanninge Hillum Falcao, VJ Falcao, is bred in the Majsbjerggaard herd, owned by Torben Christensen, Denmark. VJ Falcao is out of Steensgaard Zuma Zara, bought by Torben Christensen, when he took over the Steensgaard herd (the second oldest herd in Denmark. Established in 1903).

Steensgaard Zuma Zara, VG86, has a yearly production of 9,100 kg milk, with 899 kg fat + protein.

VJ Falcao is the first and only VJ Hillum son to be marketed. VJ Hillum was a VJ Hilde (Q Hirse) out of a DJ Hulk.

VJ Falcao breeds a modern type of daughters with strong feet & legs and extremely well attached and shallow udders. Udder health and longevity are oth-

er of Falcao's trademarks.

Unfortunately, VJ Falcao is still too young to have semen available. He has just turned one year. Semen will be available from April this year.

VJ Falcao is named after the famous Colombian footballer Radamel Falcao, and we hope that the bull will get just as positive and great impact on the international scene.

aAa: 426 Cappa Casein: BB Beta Casein: A2/A2 JH1 Free

VJ Haley

VJ Husky x DJ Holmer x DJ Zuma

VJ Haley expresses the breeding goal!



VJ Haley

VikingJersey Dongsgaarden Husky Haley, VJ Haley, is bred in the Dongsgaarden herd, owned by Christian Halmø, Denmark. VJ Haley is out of a very high-producing cow family. The dam, Dongsgaarden Holmer Donna has a yearly average of 8,600 kg milk with 887 kg F+P. Next two dams are higher than 9,000 kg milk and 900 kg F+P per year.

VJ Haley not only breeds high production, he also breeds exceptional type (width and depth) and udders. Note the extremely well-attached fore- and rear udders. Udders are shallow and

teats are of ideal size and placement. Workability and health traits are very positive as well.

To sum up – VJ Haley expresses the breeding goal for VikingJersey!

aAa: 345 Cappa Casein: AB Beta Casein: A2/A2 JH1 Free

VJ Perez

VJ Pick x DJ Hulk x Q Impuls

Specialist in solids



VJ Perez

VikingJersey Hoeholt Pick Perez, VJ Perez is bred in the Hoeholt herd, owned by Morten Jensen, Denmark. VJ Perez is out of Hoeholt Hulk Hannah (VG 85), also the dam of VJ Luxor (DJ Lix son). Hoeholt Hulk Hanna has milked 3.7 years, with a yearly average of 868 kg F+P, with remarkable 4.74% protein. VJ Perez also breeds high protein yield and protein percentage. First three dams in the pedigree are higher than 6.4% fat and 4.5% protein.

VJ Perez is the first and highest-ranking VJ Pick son to be marketed. VJ Pick being the DJ Prima (Perimeter) out of Espe-Holm Impuls Joan.

VJ Perez is a specialist in high solids. In addition, he also

breeds excellent type and udders. Very well-attached udders with extremely strong ligament. And note that health traits are positive as well.

aAa: 423 Cappa Casein: BB Beta Casein: A2/A2 JH1 Free

VH Skipper

Sundance x All-In x Jurus

Sundance Kid and the Butch Cassidy's Wild Bunch



**gNTM
+40**

VH Skipper

Maybe he is an outlaw, this VH Skipper. He is for sure a Sundance (Sudan) Kid from an All-In (Jeeves) x Jurus (Jesther) dam. This is no doubt one of the most different sire line you can find among the top ranking bulls anywhere in the world. VH Skipper is from I/S Hedebrand in Aalestrup in Denmark. The dam was genomically tested already as a heifer and showed an outstanding level – the first sign that something big was emerging. She was flushed several times, but never with great success and VH Skipper is from her own calving. She has now produced in 1.3 years with an average above 12,000 kg and 930 kg fat and protein and classified VG87.

VH Skipper breeds impressive level of production with high components, udder health in top with 126, good functional conformation including a bit smaller sized cow than aver-

age and reproduction above average. A modern outlaw not ready to rob a train or a bank, but ready to bring money to your bank.

aAa: 243 Cappa Casein: BB Beta Casein: A2/A2

VH Radium

Rocky x Bookem x Man-O-Man

From the most successful cow family in recent years



**gNTM
+36**

VH Radium

VH Radium is from the famous Top Holstein herd Anderstrup Holstein, Skoerping in Denmark. He is from the most successful cow family in VikingGenetics during the last years. The dam is a full sister to VH Boogie and half-sister to the two very popular VH Bynke sons; VH Borst and VH Bigboy. The Man-O-Man grand dam is full sister to VH Mandel. Also VH Radium himself has a full brother, VH Ringo at the same level as VH Radium.

So far, the dam has only produced for 150 days, but has already reached more than 7,000 kg milk and is classified VG88.

VH Radium is the kind of bull that everybody would like to have milking daughters

from. Animals with a good production including high components, reproduction and health at a super level, a very nice balanced conformation and milking speed and temperament way above average.

aAa: 324 Cappa Casein: BB Beta Casein: A1/A2

VH Grafit

B Goldwyn x Oman Justi x BW Marshal

New era for good old VH Grafit



**NTM
+20**

A nice group of daughters by VH Grafit.

VH Grafit (B Goldwyn x O-Man x BW Marshal) has been a great success both for farmers in VikingGenetics' home area as well as for farmers all around the world. He continues that success and becomes the most exported Holstein bull from VikingGenetics in 2015, so still a lot of impact waiting to come from himself.

Now a new era is about to start – the first two sons have now got the first daughter proof information and it is a really promising start for both of them.

VH Gavin (mgs D Onside) and VH Gregor (mgs V Exces) today have close to 200 milk-ing daughters and about 70 classified and start out with NTM +21 and NTM +22 respectively. Both

of them have been used a lot based on genomic information and both have several sons in VikingGenetics' barns.

One example of those is VH Geller (VH Gregor x VH Peder x D Orange) with NTM +35 from Hans Peder Kloster Eskildsen, Ulfborg, Denmark – a sire line containing the highest ranking bulls of the different years.

aAa: 234 Cappa Casein: AB Beta Casein: A1/A2

VH Bolus

Balisto x S Bolton x Mascol

Top Balisto son



VH Bolus

Who would have thought that it would be possible to find a Viking-Holstein bull with S Bolton as maternal sire? That is nonetheless the case with the top Balisto son VH Bolus. He is born in Finland at Pauli & Virpi Tirkkonen, Kaavi. An unusually strong cow family where VH Bolus' dam has +14 in NTM despite S Bolton's low level (-9) – a really high-producing cow classified 84.

VH Bolus gives tremendous production, 129, nice conformation where especially mammary is good (136) and good

udder health (114) and maternal calving (106). Protect him a bit in health in general and do not use him on heifers.

aAa: *Cappa Casein:* AB *Beta Casein:* A2/A2

VH Bernell

Bube x VH Salomon x Mascol

**Do like your neighbor?
– use VH Bernell**



VH Bernell

VH Bernell has now been around for more than half a year and he has been and still is a busy guy. High-ranking in so many national indexes around the world and on the NTM scale at +37.

He is born at the herd of Martin Alstrup Kristensen in Lønborg in Denmark. The VH Salomon cow has a production of more than 11,000 kg of milk with 920 kg of fat and protein in average per year. She is classified VG85.

No wonder VH Bernell is

popular when you look at his profile; production at 119, female fertility 116, udder health 115, mammary 121, hoof health 110 – imagine the progress this bull makes on all these traits that are so crucial for the Holstein breed to improve in.

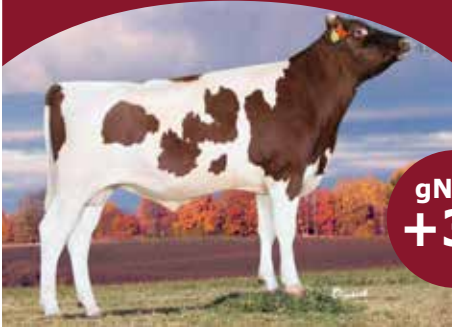
aAa: 432 *Cappa Casein:* BB *Beta Casein:* A2/A2



VR Lazer

VR Leroy x A Linné x Gunnarstorp

Best VR Leroy son



**gNTM
+30**

VR Lazer

VR Lazer comes from the famous Buckarby herd owned by Mikael and Åsa Berglund, Sweden. His dam out of A Linné is genomically tested and has produced 10,479 kg EKM in average over two years. MGD, also genomically tested, is a Gunnarstorp daughter producing 11,080 kg milk, 4.2% fat and 3.5% protein.

The dam is a strong cow with a nice conformation score, body 86, feet and legs 81, udder 87 and total score 86. VR Lazer also has a half-sister out of VR Uudin that did very well in her genomic test with gNTM of +25. VR Lazer was no. 2 among genomic sires in semen sales at home market

during 2015 with a total sale of 19,727 doses. He is the best son of VR Leroy that VikingGenetics has in our facilities and with gNTM +30 at the moment. He is a very balanced sire with nice production, good fertility traits, average size and great udder conformation.

aAa: Cappa Casein: AA Beta Casein: A2/A2

VR Fonseca

VR Favre x A Linné x R Alfa

Great production sire



**gNTM
+31**

VR Fonseca

VR Fonseca is the best of many sons of VR Favre that VikingGenetics owns, having gNTM +31 at the moment.

VR Fonseca comes out of an A Linné cow whose dam is also the dam of VR Cigar. The cow was flushed three times and gave several good bulls and heifers of which we can mention the full brother, VR Fountain, out of the same flush and also half sib VR Hilbert, one of the up-to-date sires of sons in the VikingRed breeding

scheme. The dam of Fonseca was classified 83-80-88-85 and had especially high components.

VR Fonseca is a great production sire with high components. He gives good functional traits, strong body and very good udder. He comes from Søren Røndbjerg, Denmark.

aAa: 432 Cappa Casein: AB Beta Casein: A1/A2

VR Umbro

VR Uudin x Alpu x Upsis

Great health and fertility



**gNTM
+29**

VR Umbro

VR Umbro comes from Viehko Co, Finland. He is a VR Uudin son out of a Rokkila Alpu cow. At the moment, he is sharing the podium for Uudin sons with VR Ultra.

The story behind MGS Alpu comes from an Asmo flush made by a Canadian sire Margot Calimero. The female result was mated with DuoStar Normadin ending up to MGS Alpu.

Umbro is a great udder health and udder conformation sire. He is also positive in all health and fertility traits.

aAa: Cappa Casein: AA Beta Casein: A1/A2

VR Hel P

VR Helix x Nora Prästgård x O Brolin

Polled genetics with high components



VR Hel P

**gNTM
+27**

VR Hel P is the best polled sire in VikingRed at the moment with his gNTM +27. The polled dam has been flushed five times and is now in third lactation. The production of second lactation was 10,787 kg milk with components fat 4.7% and protein 3.4% .

In the pedigree, the eyes are caught by the third grand dam, a very good Vest Bæk that gave 48 offspring. She is also the grand dam to VR Babylon and VR Pablo.

VR Hel P is a balanced sire with high components and very good type traits. Breeder is Søren Røndbjerg, Denmark.

aAa: Cappa Casein: AB Beta Casein: A2/A2

VR Taara

Turandot x Miqur x B Jurist

Proven pedigree



VR Taara

**gNTM
+19**

VR Taara is a progeny tested sire with NTM +19. He has good components and very good udder health as well as other health traits. His daughters are smaller than average with nice feet and legs and very good udders.

VR Taara comes from the Asmo ET program. He was bred by Luke Research herd, Finland. The dam, Timotei, was a very successful donor with 29 ET-calves born. She

was classified 81-85-88, total 86. Timotei comes out of Yli-Hinkkalan Onnenkukka cow family and was sold to a private herd after the first test lactation.

aAa: 543162 Cappa Casein: EE Beta Casein: A1/A1



A nice daughter by VR Taara

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- Good fertility
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