vikingnews

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The relief of walking without troubles

HOOF HEALTH

EMBRYO STRATEGY

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Cover photo
A line of VikingRed cows walking without problems in Strömsrum, Sweden.

Editorial

Hoof Health
- does it really matter?

As the new head of Business Development, I feel proud of being a part of a company owned by farmers and known worldwide by its compromise to breed for healthy and functional dairy cows and to bring specific and longterm solutions to the dairymen. It doesn't matter where your farm is; it can be Denmark, Spain, Argentina, Portugal, Norway or the United Kingdom, we are there and we can help you improve your herd.

I'm especially overwhelmed by the fact that the focus for this issue of VikingNews is Hoof Health, and that is no coincidence. We firmly believe that Hoof Health does matter; that is why we have had Hoof Health as a trait in Nordic Total Merit (NTM) since 2011 and why hoof trimmers across Sweden, Finland, and Denmark have recorded more than 4 million unique registrations related to hoof health the past 15 years. The reason for all this work is that hoof health related problems are the single most expensive challenge dairy farmers face today.

VikingGenetics has a philosophy of going directly after the traits in our breeding program, instead of believing in indirect indicators. By having this approach, we have been able to show unmatched results in reducing hoof health related matters.

In this issue of VikingNews, you can also read about how VikingGenetics has started to prepare the semen production of our VikingRed and VikingJersey breeds in the United States. You will also know more about our plans to increase the support and service level to the Norwegian Holstein and Jersey farmers and as we always do: present our genetics from the headquarters, this time to a very enthusiastic and positive group of farmers from Chile.

So yes, Hoof Health matters and we hope you will enjoy the articles we prepared for you in this issue of VikingNews.

I'm also glad to tell you that we are going to have more news about VikingGenetics in our social media channels: Facebook, Blog, Instagram as well as on our new website. From now on, we will only print VikingNews twice a year; June and December, but you can find all our stories around the world on our other channels.

Thank you for following us!

David Stenkær Ravnkilde,
Head of Business Development, VikingGenetics

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Making use of innovation and technology, VikingGenetics is implementing an embryo strategy to give American dairymen accurate and suitable solutions for their herds.

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Norwegian farmers want quality at its best

The demand for our best bulls in Norway is pretty high compared to other markets abroad," Peter Holm Weinkouff, Export manager for the Norwegian market, states. Norwegian farmers ask for the best bulls from all three breeds.

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VikingGenetics goes mobile

Take a look at our new global website - now available from your smartphone.
www.vikinggenetics.com

Improving Hoof Health like no other

Hoof health is a key for success of dairy producers. With our NTM and the Hoof Health Index we are helping dairymen around the world taking their business to a higher level.

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Breeding advisors at work

A life without hoof problems – is it possible?

Good hoof health is one of the main issues for good animal welfare and profitable production on a dairy farm. At the same time, it is difficult to effectively control hoof health because of multifactorial nature of most of the lesions. Only optimal set of measures including housing, feed and animal management as well as genetic improvement of disease resistance will bring hoof problems to an acceptably low level.

By Dr. Evgenij Telezhenko - PhD, Department of Biosystems and Technology, Swedish University of Agricultural Sciences, Alnarp, Sweden.

Dairy farmers around the world face serious problems with hoof issues in their livestock. The problem is usually called lameness but in reality, it is much deeper than just a number of lame cows.

The number of cows suffering from hoof diseases is actually much greater than the number of lame cows.

In countries, using grazing based systems cows have to walk very long distances on tracks with often poor quality, and spend significant time standing on concrete during the milking time.

The harsher environment together with great metabolic pressure and generally decreased robustness of the modern dairy cows due to intensive selection on milk production has made hoof health an escalating problem,

which is difficult to solve.

The common attribute for the majority of hoof diseases is their multifactorial nature. That is the reason why the problem cannot be solved by one simple action. To effectively control hoof diseases, the complex of various measures is needed. Cow comfort is often being discussed in connection with hoof health, where the main focus is on decreasing of time standing on hard, unhygienic surfaces. Farmers should consider which factors force animals to stand longer: it could be uncomfortable stalls, often and unnecessary regrouping, inappropriate organization of milking etc. Hoof trimming routines are another key factor for both preventing and treatment of hoof diseases.

The concern about feed management to prevent laminitis related lesions used to be associated with prevention of rumen acidosis. However, more recently, the body condition score is getting greater attention. It seems that in the beginning of the lactation when animals lose a lot of fat, the fat is also lost from the digital fat cushions, which play an important role in hoof shock absorption, and therefore the risk of traumatic lesions may dramatically increase.

However, under non-optimal management conditions we still can find individuals which would have relatively good hoof health. We also know that there are differences between breeds regarding resistance to hoof diseases. These facts are explained by the presence of genetic variation. And, where there is genetic variation, there is room for genetic improvement. On the other hand, the genetic resistance to hoof diseases can be caused by several various factors such as immunity, conformation, resistance to metabolic stress, hoof horn quality, behavior, regeneration ability etc.

Moreover, those factors may build complicated interactions and in some cases, deficiency of one may be compensated by presence of another. It is almost impossible to isolate single most important factor behind the genetic resistance to hoof diseases and that means that direct selection on hoof health is the most all-inclusive and efficient tool.

Different research groups in the Nordic countries, Canada and The Netherlands, also confirmed the supremacy of direct selection for hoof health.

As with all the other elements of the control of hoof diseases, the genetic resistance cannot alone compensate major failures in housing and management, as well as optimal housing and management will give the best possible results when a suitable genetic material is used. Even if heritability of genetic resistance is relatively low, there is a significant variation among the sires, so it is possible to make a good genetic improvement on a farm within relatively short time. ●

» The common attribute for the majority of hoof diseases is their multifactorial nature. That is the reason why the problem cannot be solved by one simple action «

To effectively control hoof diseases, the complex of various measures is needed.

Reliable registrations for Hoof Health a key to success

The Hoof Health index is calculated based on records made by hoof trimmers in Denmark, Sweden and Finland in the first three lactations and they collect electronically data for 10 hoof disorders.

By Uliana Langeland, International Marketer, VikingGenetics

One of the biggest advantages of the NTM (Nordic Total Merit) is its unique and complete cattle database. In the Nordic countries, each cow has a unique Identification (ID) from birth to slaughter. All data used to calculate the breeding values for different traits in NTM are collected in just one database.

A big proportion of herds participating in the recordings ensures high-reliability data. For health traits we have more than 90% of cows – approximately 900,000 cows - included in the database. Therefore, behind our Hoof Health index is a huge amount of reliable data.

Hoof health registrations started already in 1995 in Sweden as a project. Standardized Hoof Health registrations have been an intergrated part of the breeding plan since 2003 and today we have almost 15 years of experience in breeding for better hoof health.

Hoof health data is collected electronically for 10 hoof disorders grouped into seven sub-traits. For four of the sub-traits the registration are put in three classes: no disease, mild case, severe case, and the data for three other sub-traits are registered in two classes: no disease, disease. Data is highly reliable because it is collected for all animals on the herd (both healthy and sick animals).

It is important to note that data are available from different production systems and all management levels.

In NTM besides the Hoof Health index, there is also another sub-trait that is connected to hoof health - 'Feet & Leg problems' under the General Health. This sub-trait has focus on sick cows, where data is collected by veterinarians when the cow is treated for the sickness. This data is 100% connected to a cost for the farmer because the cow has a clinical disease case. 'Feet & leg problems' sub-trait adds information on leg disorders. ●

4 million records

Since the start of electronic registration system the amount of data has been rapidly increasing during the last five years. Last year we collected more than one million records.

Facts

- The challenge with health traits is that they are difficult to measure objectively like milk yield or conformation.
- Much effort has been put in relation to standardizing the definition and recording of diseases.
- Electronic hoof trimmer data are the newest source of disease data.
- The Nordic countries have developed and implemented an efficient online registration system.
- Farmers show a high level of commitment to providing registrations as they can rely on it to improve management in their herds.

TOP 10 management tips for better hoof health

1 Hoof trimming

Keep cows' hooves properly shaped once or twice a year. Optimal - once at dry-off & around 100 days in milk. Heifers: 3-4 months before calving.

2 Stall & walkways

- Keep the stall and walkways clean, dry and free from sharp objects.
- Housed systems - use rubber mats in critical areas;
- Grazing system - avoid mud by spreading sand on the walkways and lanes.

3 Feeding

Ensure well-balanced nutrition and use of proper feeding management practices. Avoid rapid feed changes.

4 Comfort

Prevent cows from standing still for too long. Limit fixing to shorter periods. Seek the shortest possible waiting time at milking.

5 Hoof care

Keep hooves clean and dry.
Rinse with water.

6 Lounging & Rest

Provide adequate lounging space and sufficient time for animals to rest and relax (10-14 hours per day). Soft bedding is essential.

7 No stress

Ensure minimal stress, especially for first calvers. Stress can reduce the animal's resistance to disease.

8 Climate conditions

Avoid heat stress, use fans (also over the cubicles). Apply water spray system already at 20 degrees C.

9 Footbaths

Footbaths with calcium hydroxide help keep hooves dry.

10 No rapid changes

Accustom gradually heifers to cubicles and to housing conditions in time before calving

vikinggenetics.com/hoofhealth

Sources: SEGES, Penn State Extension, Progressive Dairyman

How much reduction in hoof disorders can you expect?

Performance of daughters of a bull with EBV 120 vs. 80 for sub-indices in Hoof health index

Being treated in the same way, some cows will have hoof problems, and others will not. Some of the cows will recover easier, while others will have hoof problems more often and with greater severity. Why is it like this?

By Uliana Langeland, International marketer VikingGenetics

Even though the heritability of hoof health may be rather low (about 4%) compared to other traits, it has been confirmed that the prevalence of hoof disorders is considerably lower in progeny of sires with favorable hoof health breeding values.
How much reduction in hoof diseases can you expect from selecting a sire with a breeding value (EBV) 120 for Hoof Health on sub-index level?

Looking at the bull's effect on the genetic ability of daughters to resist various hoof disorders, we can show the difference between an EBV 120 bull compared to an EBV 100, which can represent the population average.

Regarding Sole ulcer, Verrucose dermatitis, Interdigital hyperplasia, Cork screw claw - for a VikingHolstein, the daughters of the bull with EBV 120 will have 60% less cases of disease compared to the bull with EBV 100.

HOOF DISORDERS	BULL WITH EBV 120		
VikingHolstein **VikingRed** **VikingJersey**	% Difference from population average		
Sole Ulcer	-57%	-51%	-22%
Sole Hemorrhage	-16%	-32%	-11%
Heel Horn Erosion	-22%	-33%	-13%
Digital Dermatitis + Interdigital Dermatitis	-24%	-31%	-31%
Verrucose Dermatitis + Interdigital Hyperplasia	-58%	-75%	-43%
Double sole + white line	-21%	-31%	-4%
Cork screw claw	-57%	-47%	-21%

This table shows the reduction in cases of disease when using a bull with EBV 120 compared to using a bulls with EBV 100 in Hoof Health Index.

For the other six hoof disorders (Digital dermatitis, Interdigital dermatitis, Sole hemorrhage, Heel horn erosion, Double sole, White line disease), a bull with EBV 120 will decrease cases of disease by 16-24% compared to the bull with EBV 100.

While a bull with EBV 120 has a positive influence on the level of hoof health by decreasing the disease and the costs related to those, a bull with EBV 80 will actually increase the disease and cause the decline in the genetic level of hoof health.

It is important to keep in mind that there is a difference between bulls and thereby selecting the right genetics is crucial to ensure the high genetic level for hoof health in your herd. By relying on NTM in your breeding goal, you are always breeding for improved profit. ●

Choose the right bulls

Research shows that the level of sole ulcer differs a lot from farm to farm. For example, in the United Kingdom, cases of sole ulcer affect approximately six dairy cows per 100 annually, but the range on UK farms is wide: 0-54.8 cases per 100 cows per year.

The improvement in hoof health is directly reflected on the level of costs for the farm. One severe case of sole ulcer in the Nordic countries is estimated to cost 1,300 euro. Assuming that the current level of sole ulcer on the farm is equal to the population average. We can calculate how much the farmer can save by using the bull that is superior in hoof health.

That means that a herd with 500 cows that has 50 cows (10% of cows) with severe cases of sole ulcer can save about 40,000 euro per year, by using a bull with EBV 120 for Sole ulcer, while a herd with 500 cows and 150 cows (30%) of severe sole ulcer cases can save around 120,000 euro.

Hoof health investment pays off

The Lykousminde farm owned by Jens Lykou Petersen is located in the Southern Jutland region in Denmark, around 30 kilometers away from the coastline. Chresten Petersen has been working on this farm as a farm manager for the last nine years and at present he takes care of 400 Holstein cows.

By Uliana Langeland, International marketer VikingGenetics

The farm produces 12,214 kg Energy Corrected Milk (ECM) per cow. Improving hoof health is their key focus areas. "It is important for us to have cows that are coming to the robots. The cows that do not have good hooves and health, are not coming to the robots by themselves. So that is why hoof health is very important to us", says Petersen.

Together with management practices, like hoof trimming four times a year and using calcium dioxide every second week in the robot for washing hooves, the Lykousminde farm relies on genetics as an important long-term solution for improving hoof health in the herd. Today the herd has 21 VH Clark daughters. VH Clark, a proven bull with NTM +26, is one of the top performing Holstein bulls when it comes to hoof health.

With around 6,000 daughters (providing information on milk yield) and reliability of 98% for hoof health, this VikingHolstein bull has exceptional genes for improving hoof health. With EBV 130 for Hoof Health, VH Clark represents the top 0.1% of Holstein bulls (1 out of 1,000). More specifically, EBV 144 for digital dermatitis means that VH Clark is 1 out of 30,000 bulls.

Hoof health cannot be ignored

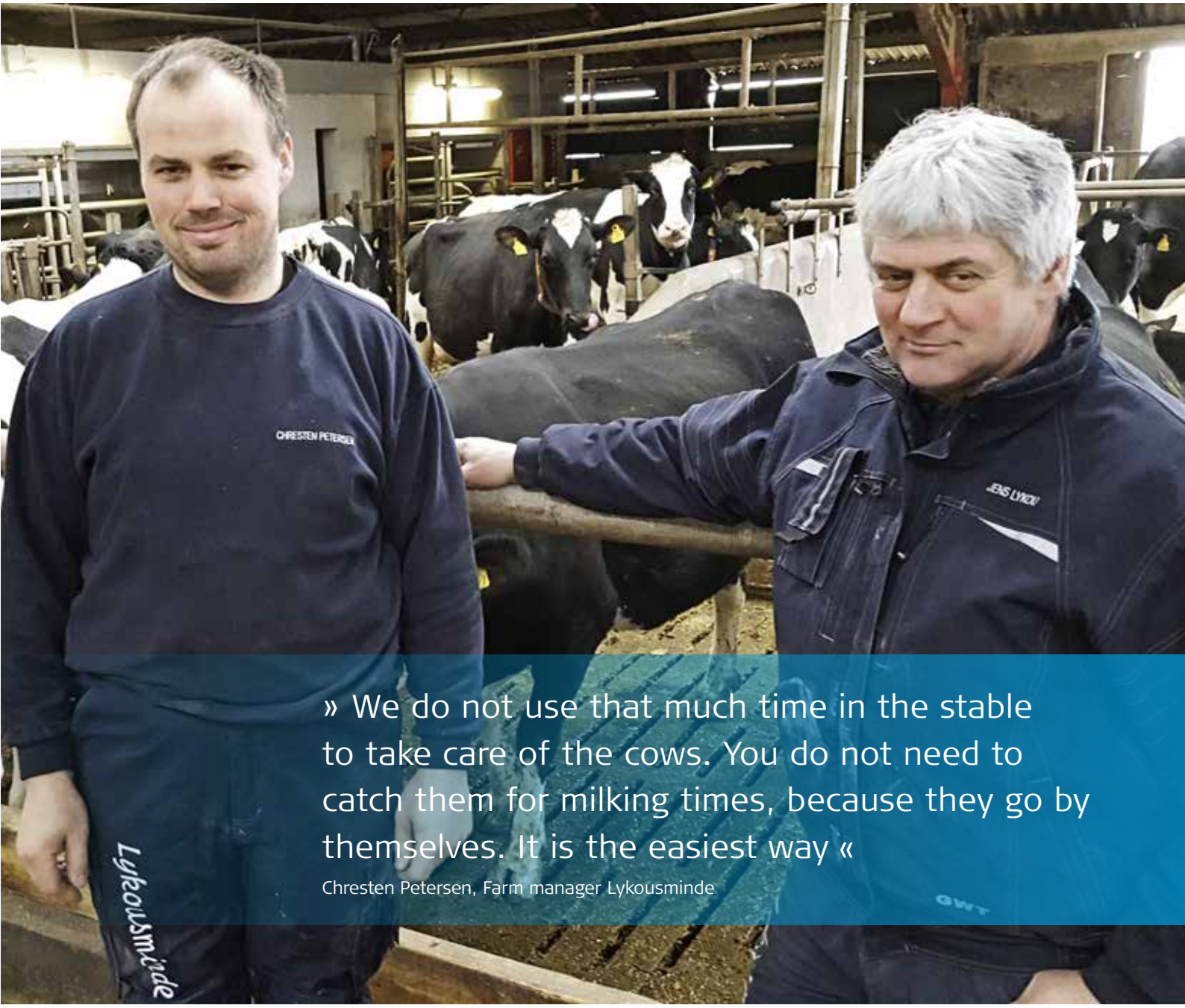
Hoof problems have a large economic impact on dairy operation. Therefore, it is important to keep in mind that it's not treatment and veterinary costs that should be associated as the leading cost of lameness. Several other areas charge considerably more money. Research shows that fertility problems, reduced milk yield and culling are the major sources of the expenses connected to lameness: 87% of total annual cost in a dairy herd.

"The three major reasons for culling your Holstein cow are problems getting her pregnant, hoof health problems and too large frame. Our VH Clark bull has superior daughter fertility at 126, body capacity 84 and world champion in Hoof Health 130. That is the true secret behind cows with a long productive life", Claus Langdahl, Holstein Breed Coordinator at VikingGenetics, states.

	VH Clark daughters – 1st calves (17 cows)	Average for herd – 1st calves (119 cows)
Production ECM kg	34	33
Conception rate	67%	N/A
Cell count	43,000	149,000

No compromise on production and efficiency

When breeding for better hoof health, there is no need to compromise on production and efficiency in the herd. The owner and employees at the Lykousminde could not agree more. "Breeding for healthier cows is more important than focusing too much on production. When cow hooves and legs are good, the production will come by itself", comments Chresten. "We have gone from around 11,000 kg – 5 years ago



Chresten Petersen, Farm manager Lykousminde (left) who is together with Jens Lykou Petersen, the owner of Lykousminde.

to 12,300 kg, and it is coming from new cows that have good legs and good overall health", he adds.

The Lykousminde farm is just another example to prove that giving hoof health a high priority in the breeding strategy would definitely yield some good results. Most important is that investment in genetics pays off more and more with each generation of cows. Genetic improvement is permanent and does not require any extra effort from dairymen.

"We can really see the difference. Last December one out of four cows in our herd had digital dermatitis but none of them were VH Clark daughters. I don't see these cows during the day, I don't feel them", comments Chresten. "We do not use that much time in the stable to take care of the cows. We do not need to catch them for milking times, because they go by themselves. It is the easiest way", Chresten sums up. ●

Lykousminde in numbers

- **400 VikingHolstein cows**
- **Production:** 12,214 ECM kg
- **Fat:** 3.9%
- **Protein:** 3.4%
- **Employees:** Nine with two extra employees during the busy season.

Hoof Health - closely longevity, fertility and

A dairy cow's health and well-being is a complex system where everything interacts. Correlation between hoof health and NTM (Nordic Total Merit) is 35% for Holstein. That means when the NTM index is increased by one unit, hoof health is improved by 0.35 index units.

Longevity 38% related to hoof health
Cows with good hoof health stay longer in the herd. Daughter fertility, hoof health, general health and udder health are key drivers of longevity. A long-lasting cow is a healthy, trouble-free cow with higher lifetime production. That means lower costs and better profit for dairymen.

General health 25% related to hoof health
Cows with strong hooves are less susceptible to other diseases, like reproductive and metabolic disorders.

Daughter fertility 23% related to hoof health
Lameness has a negative effect on dairy cattle fertility. Any time a dairy cow has cycling problems, not getting pregnant or losing a pregnancy, this results in higher costs (feed and reproductive costs) and a net loss for the farm. Research shows that fertility costs are the main category in annual cost of lameness for a dairy farm – accounting for about 40%.

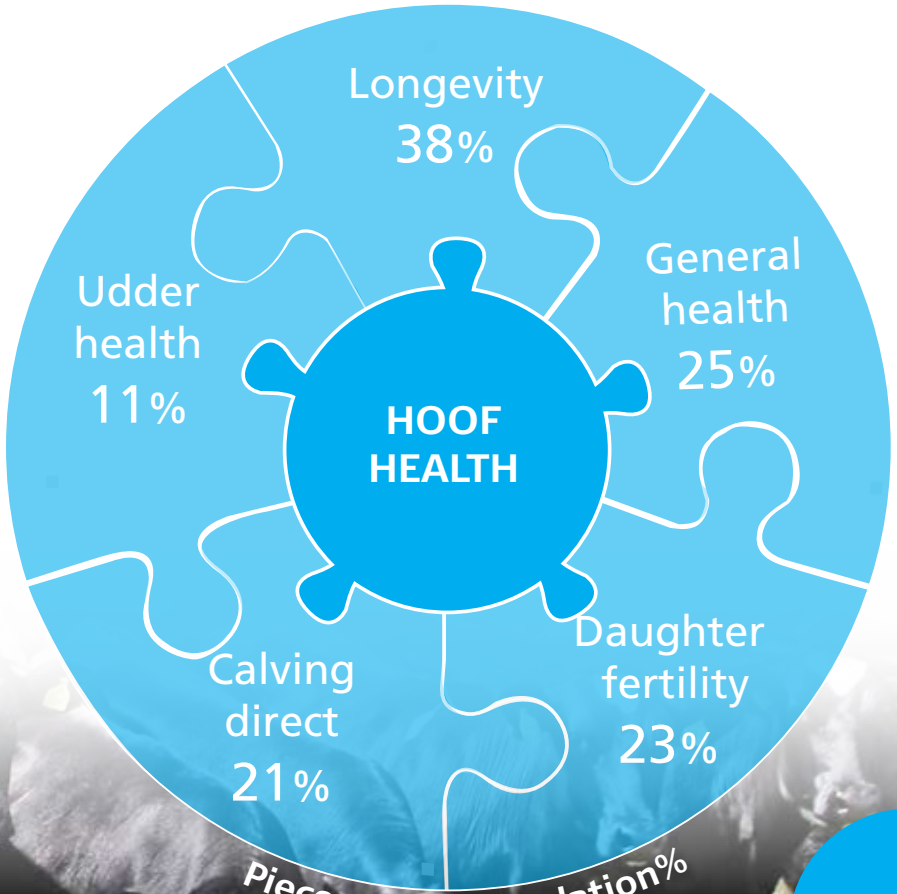
Calving direct 21% related to hoof health
Hoof health is also connected with calving ease (sire effect) - bull's offspring's genetic potential to be born easily and alive. Difficult calving has a negative impact on cow's health and ability to get in-calf during later lactations.

Udder health 11% related to hoof health
Cows with strong hooves have stronger resistance to mastitis.

High correlations with longevity, fertility and health traits mean that if you breed for improved hoof health, you would also achieve progress for the traits that are related to hoof health. Hoof Health has no correlation to production, which means you can breed for better hoof health without getting decrease in production. Interesting that there is a strong, negative correlation to Frame (-20%). That means big cows = more hoof health problems. ●

related to other health traits

Put your pieces together!



High correlations with longevity, fertility and other health traits mean that if you breed for improved hoof health you would also achieve progress for the traits that are related to hoof health.

Improving Hoof health **like no other**

Hoof health is a key for success of dairy producers. With our NTM and the Hoof Health Index we are helping dairymen around the world taking their business to a higher level.

By Claus Langdahl, Holstein Breed Coordinator, VikingGenetics

Today, the hoof health index is used on a full scale, and it is a tool that we actually take for granted. We are so familiarized to this information on the bulls in our breeding programs but also on the individual animals when the breeding plan on the herd level is decided.

Thanks to a huge number of reliable registrations from hoof trimmers, it is possible to describe hoof health from the breeding perspective and to achieve a really good strength behind the index.

Hoof health has heritability at 4%, which is on the same level as, for example, udder health that has been a part of breeding with good results. Without doubt, there is a significant genetic variation between animals, meaning a big difference between the most healthy and the poorest animals. This information is gold for the dairy producers; because there is no doubt that there is economic interest behind the goal of improving the animals.

Studies behind the index

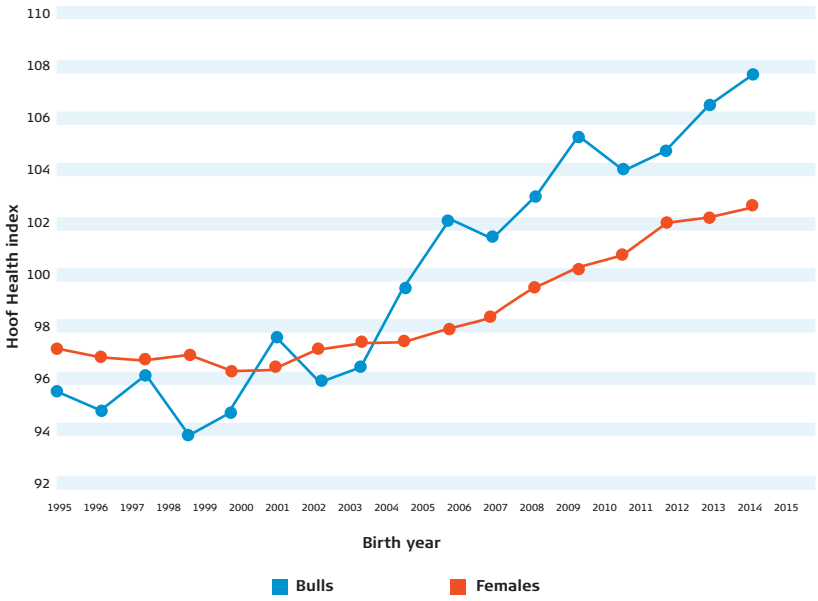
Most people have probably forgotten these two old bulls: VAR Etlar and V Curtis. They were used around 2003-2005 which was before we had the information on hoof health. VAR Etlar had a very good breeding profile, but was not that good for longevity. V Curtis, on the contrary, performed really well on longevity. Today, thanks to the advances of science in the genetic field and our registration system, we know that these two bulls are almost exact opposite of each other when it comes to hoof health.

With today's hoof health index, VAR Etlar has 72, while V Curtis has an impressive index of 123; this is definitely the reasons why today we cannot find VAR Etlar in pedigrees of the good bulls from VikingGenetics, while we often see V Curtis. He is the sire to D Cole, which then is sire to VH Clark – known as one of the best daughter proven bulls on NTM and especially strong for hoof health.

Hoof health included in NTM

The hoof health index has a weight of 8% in NTM for Holstein, and thereby stands for 35% of the maximum genetic progress achieved for hoof health. Even though, there are a few other countries in the world that have some form of hoof health index, it is only at VikingGenetics that the index is included in the total merit index to secure the constant genetic progress for hoof health.

FIGURE 1. AVERAGE INDEX FOR HOOF HEALTH BY BIRTH YEAR AND SEX FOR HOLSTEIN



Main conclusions

- With the Hoof health index, you get a unique tool to improve hoof health through breeding.
- There is a large variation between the best and the lowest performing animals.
- You should use NTM to select the bulls as the first step and then rely on the hoof health index if you wish to have more focus on this trait.
- There is a lot of money to save if you choose the best bulls for hoof health.

Prior to the introduction of the hoof health index, conformation of feet and legs was the indirect indicator for hoof health, and there is a 24% correlation between these two traits.

Especially bone structure and hock quality say something about hoof health.

However, it is quite clear that breeding for better feet and legs is not an effective tool to improve hoof health, even though it is the only tool available in other places in the world.

It is also important to note that there is no correlation between milk yield and hoof health. That means that we can breed for better production and improved hoof health at the same time.

Genetic progress

Data collection for the hoof health index started already back in 2003, but the quantum leap was achieved in 2011 with the beginning of electronic registrations. More than one million data records are collected on an annual basis. At the same time, the index was included in our Nordic Total Merit index with the current weight of 8%.

Figure 1 shows the genetic progress for Holstein that was achieved for the trait since 2000 and until today.

Females are being steadily improved with the increased pace in the period after 2011, when the index was included in the Nordic Total Merit index.

For the bulls, there is an even more clear and positive development. The progress has actually been about one unit per year during the last few years that looks very promising also for the females.

As more generations get reliable registrations, it would be good to assign more weight for hoof health in the NTM index, so we could achieve additional progress during the coming years.

Hoof trimmer working. VikingGenetics has more than 4 million electronic registrations regarding Hoof Health.

Does it make a difference for your herd?

Having a positive genetic progress for hoof health means a lot for your dairy business (together with the selection of the good bulls for this trait). The hoof health index combines seven sub-indices, where sole ulcer has high focus due to its big economic impact – actually estimated to be 1,310 EURO for a severe case - for more details look at www.vikinggenetics.com/hoofhealth. ●

No compromise
on production and efficiency

By Uliana Langeland, International marketer VikingGenetics

When breeding for improved hoof health, you do not need to compromise on production and efficiency in your herd. It is known that health traits have a negative correlation with production. However, even though there is no correlation between hoof health and production, you can breed for both better hoof health and higher milk yield, as both production and hoof health is taken into consideration in the Nordic Total Merit (NTM) scale. Nordic bulls do not show genetic decline in hoof health despite great progress for production traits.

Choosing high NTM bulls is the first step for success because that will ensure a balanced breeding in your herd with high production and good health. If you have a wish to have extra focus on hoof health, then as the second step, you should select the bulls with the highest index for Hoof Health. ●

VIKINGHOLSTEIN TOP 5 BULLS ON HOOF HEALTH (WITH > +10 IN NTM)

Ranking	Bull name	Hoof health EBV	NTM
Top 1	VH Clark (proven)	128	+26
Top 2	VH Outkast (genomic)	123	+26g
Top 3	VH Bundis (genomic)	121	+29g
Top 4	VH Lomee (genomic)	121	+28g
Top 5	VH Solaris (genomic)	119	+27g

VIKINGRED TOP 5 BULLS ON HOOF HEALTH (WITH > +10 IN NTM)

Ranking	Bull name	Hoof health EBV	NTM
Top 1	R Haslev (proven)	127	+11
Top 2	VR Bentley (genomic)	126	+20g
Top 3	VR Rankin (proven)	121	+15
Top 4	VR Borsse (proven)	121	+14
Top 5	VR Fillari (genomic)	121	+12g

VIKINGJERSEY TOP 5 BULLS ON HOOF HEALTH (WITH > +10 IN NTM)

Ranking	Bull name	Hoof health EBV	NTM
Top 1	VJ Pick (proven)	131	+10
Top 2	VJ Juris (proven)	125	+15
Top 3	VJ Janko (proven)	124	+25
Top 4	VJ Link (proven)	118	+15
Top 5	VJ Zulu (proven)	116	+12

HOOF HEALTH MATTERS!

#hoofhealthmatters

Nicole and Adam Walpole – Bearii, North East Victoria, Australia

"We use VikingGenetics because we have realized that Viking proofs provide data with the highest reliabilities, which deliver us the most rapid improvement for important traits, like hoof health.

For us, healthy feet are crucial because our cows need to walk several kilometers every day."

VIKINGGENETICS®

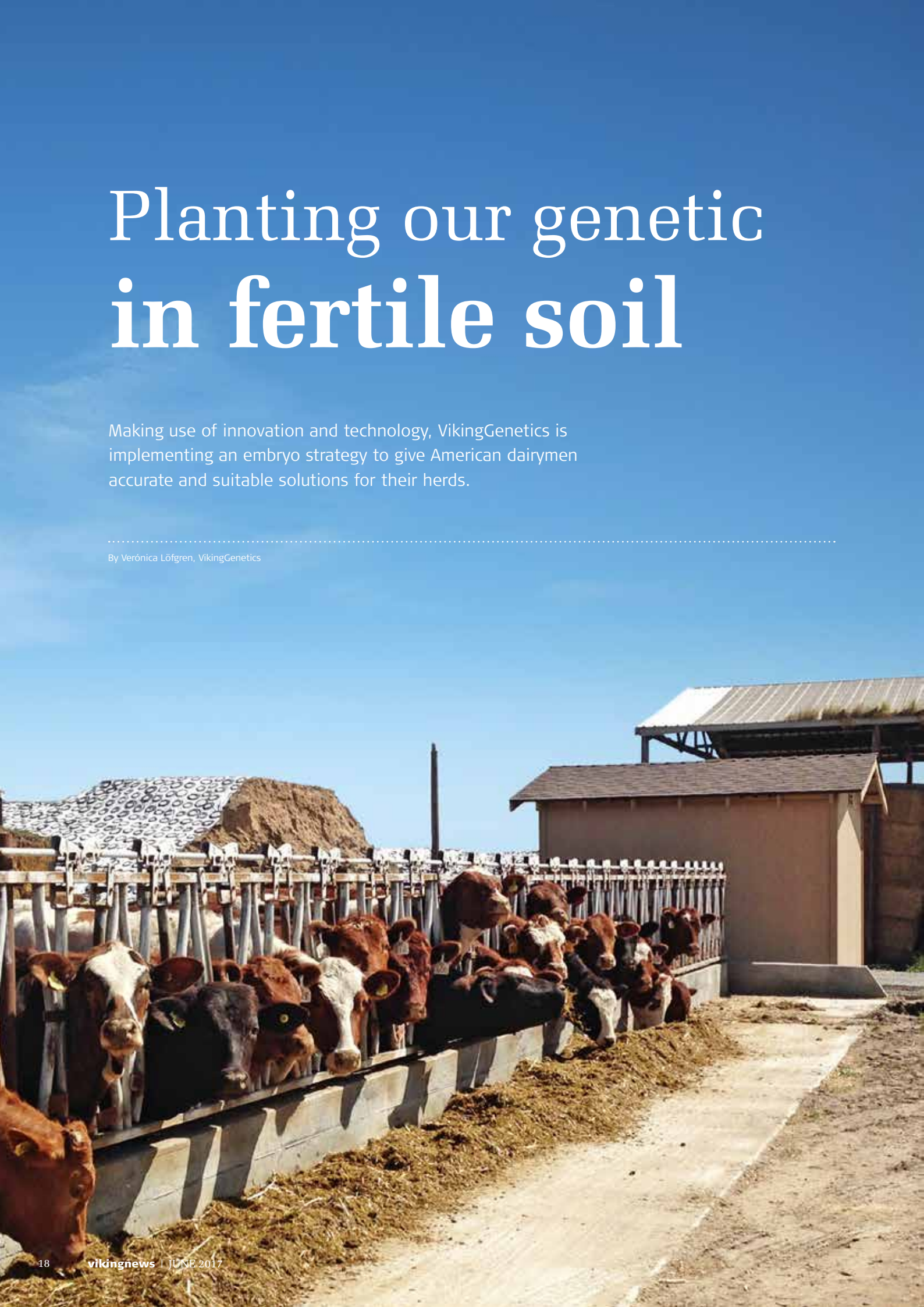
Breeding for what truly matters

To learn more visit www.vikinggenetics.com/hoofhealth

Planting our genetic **in fertile soil**

Making use of innovation and technology, VikingGenetics is implementing an embryo strategy to give American dairymen accurate and suitable solutions for their herds.

By Verónica Löfgren, VikingGenetics



Almost all in the agricultural world starts with planting a seed, and there is not so much difference now when VikingGenetics is starting one of its biggest plans. Recently, the company has launched a project to export embryos from the Nordic countries to be planted in heifers in the United States.

Johanna Aro is the VikingEmbryo coordinator, and she explains that all is a part of a whole project together with the sales team, to make sure always to have bull semen available.

Aro explains that the first embryo shipment was sent to California last November from Hollola, Finland, where VikingGenetics has the main Embryo station.

“By sending embryos and having the bull calves that we want, we will be starting semen production in the US, and we also reduce veterinary risks”, Aro emphasizes.

The first shipment has already started to be transferred to recipients. The company that is taking care of the procedure is connected to VikingGenetics’ distributor in the US, Creative Genetics, located in California.

“It was very valuable to see how they are taking care of this cooperation where we are sending embryos there”, Aro comments after her trip to the farm where the embryo project is landing.

“They are doing the transfers to heifers in a farm with a big ProCROSS herd - about 3000 cows”, she adds.

The breeding selection for the sire of sons that are going to see the light in the US, are also bulls that would easily suit the American market without losing the Scandinavian uniqueness on health. “We plan to increase our sales there, and these embryo combinations we are sending there, have a US profile, where high production and conformation is also in focus, but not to forget health and fertility traits, which are VG strengths”, she states.

"This project will definitely support our sales in The United States, which is one of our main markets, and where we have been welcomed with our high quality products", Sara Wiklert Petterson comments regarding the embryo strategy. ●

» By sending embryos and having the bull calves that we want, we will be starting semen production in the US, and we also reduce veterinary risks” «

Johanna Aro, VikingEmbryo coordinator at VikingGenetics

Johanna Aro, VikingEmbryo coordinator together with the staff of Creative Genetics, our distributor and key partner in the embryo project in the United States.

Norwegian farmers want quality at its best

"The demand for our best bulls in Norway is pretty high compared to other markets abroad," Peter Holm Weinkouff, Export manager for the Norwegian market, states. Norwegian farmers ask for the best bulls from all three breeds, but Holstein is the main heart in Norway, he adds.

By Verónica Löfgren, VikingGenetics

Facts about farmers in Norway

- Family run farms
- An average of 30-32 cows per farm.
- Norway has a quota system; farmers are only allowed 70-80 cows per farm.

Peter Holm Weinkouff is our Export Manager in the Norwegian market. He is full of positivity and enthusiasm about this Nordic country, and understands that the farmers in Norway are willing to get the best from our Nordic Total Merit Index (NTM).

"Farmers have very close relationships with each other and are very nice to work with. They are both curious and ambitious about genetic results, and admire our NTM system", the Export Manager explains. Since the sales of VikingHolstein grows every year in this Nordic country, a lot of effort will be put into this breed, as well as in VikingJersey.

The VikingHolstein conformation traits are something dairy farmers are looking at very carefully when choosing the sires. A lot of farmers are now changing from Norwegian red to VikingHolstein in order to adapt the herd to be milked by robots.

"The farmers want better conformation, and better udders, feet and legs because they are going from manual milking to robot milking. They need to improve the quality of the udders quite a lot", he explains.

Fertility, high milk components, and hoof health are highly demanded traits when farmers are choosing the fathers of the next generations.

Norway has approximately 220,000 dairy cows in total, and all cows are on pasture in the summer time. In Stavanger, the area that Peter is focused on, it would be typical to see 60 cows to one milking robot.

Arild and Hanne Hellend with their children. They are very focused on breeding and are passionate about their Holstein cows.

Solutions from VG

The dairymen in Norway have a high interest in taking the genomic test on females. A whole strategy for the farm can easily be defined by calculating the right information from the cows. "The genomic test is a great opportunity for them because they can choose which females they want to breed for dairy, and which ones for beef.

A high part of a dairy farmers' income is from beef, so that is why it is profitable to inseminate with beef bulls while beef prices are high, and maximize quality of the calves going to slaughter" Peter explains.

VikingGenetics has reduced the price for the genomic tests in Norway. As per 1 March the price is 45 Euro. And the good news doesn't end here. This summer, VikingGenetics is launching VikMate II - an upgrade of the VikMate program, which will also help the dairymen to decide which specific goals they would like to reach in their herds. ●

Juby Gård

Master in successful breeding

In a perfect mix between knowledge and passion, Christer Samuelsson – owner of the farm Juby Gård - has been able to breed several famous AI Bulls.

By Christian Bengtsson, Breeding department and Verónica Löfgren, Marketing department

Juby Gård in figures

- Production: 10,600 kg ECM
- Fat: 4.1%
- Protein: 3.6%
- Gård: 350 Ha, (plus 60 Ha wheat and 100 Ha forest)

The Juby Gård farm is located near Linköping, 6 km from Linghem city in Linköping, and is a mixed herd - VikingHolstein and VikingRed, 155 cows in total.

The owner of the farm Juby Gård, Christer Samuelsson is 64 years old with 36 years as a dairy producer. His passion for breeding and the knowledge acquired through almost four decades of experience in this field has left him outstanding results. At the farm Juby there is a long tradition of breeding, which has produced several AI (Artificial Insemination) bulls during the years.

The latest AI Bull is VR Capone that turned one year last June. The dam of VR Capone is 1865 Mode, who has a milk production of 11,331 kg ECM (Energy Corrected Milk) during the last 12 months. She has a total conformation score of 86 points. The dam of 1865 is 1613; she was recently rewarded as the most beautiful cow in Östergötland with a total conformation score of 89 points.

Samuelsson has always chosen the top AI bulls, first at Svensk Avel, now at VikingGenetics. And perhaps this is the secret behind the successful cow families. “I go for bulls that give problemfree and longlasting cows”, Samuelsson emphasizes. “I will always use bulls with good conformation and high NTM (Nordic Total Merit)”, he states.

Christer Samuelsson owner of the Farm Juby Gård in Sweden, together with one of his calves. He has a production of 10,600 kg ECM (Energy Corrected Milk) in his farm.

» I have always been very interested in breeding; I think every farmer has the chance to influence and decide which kind of herd they want to have, and it is important not to lose the passion, keep going ahead with your goal to breed for the kind of cow you wish to have «

Christer Samuelsson, Juby Gård

His strategy keeps giving him good results. Another exciting cow family on Juby farm is Xante. Here we find 1918 Xante who owns the title of being one of the most famous, international, red animals in the world. The sire of 1918 is the Norwegian sire Eggtroen and the grand dam sire is the Finish bull Tosikko. Further back in the pedigree we find the Danish sire R Alfa and Swedish B Jurist. 1918 has an NTM index of +17 and a total conformation score of 88 points. The latest 12 months she has been milking 11,524 kg ECM.

“I think it is very important not to forget the cow families that lie behind the good traits every farmer is looking for”, he emphasizes.

Another successful family on Juby farm is Valla. From the Valla family comes the former AI bulls J Valter, J Valon and, J Valör. All of them were AI bulls around the turn of the millennium. The family still produces good cows; one good example is 1930 Valla who has NTM +18 and a total conformation score of 88 points.

Samuelsson, a sort of keeper of tradition with passion for farm working, recommends the new generations not to lose passion in searching for a goodlooking cow. In the Nordic countries, you will always have the most healthy cows in the word, and to see that they are also beautiful is a passion we shouldn’t lose”, he summarizes. ●

VikingGenetics is going strong in Chile

Chile has traditionally been a strong market for VikingGenetics. Earlier the sales were mostly of VikingRed but during the last couple of years, the interest for VikingHolstein has also increased significantly, being now our most sold breed in this beautiful Latin American country.

By Verónica Löfgren, VikingGenetics

The Chilenian group with Export Manager Suvi Johansson, during a farm visit to Kårtorp Sörgården in Sweden.

In Southern part of Chile, the production system is grazing management, so farmers want medium-sized cows with good udders and strong feet and legs. Also Chilean dairies pay for solids, especially for protein, so the farmers are looking for genetics, which give them high fat and protein content of milk.

Suvi Johansson, export manager of VikingGenetics for Latin America, visited Chile in early March. She participated in a product launch week of Cooprinsem, Viking's representative in Chile.

During the campaign week, Johansson gave three presentations in different parts of Southern Chile, in total for nearly 300 farmers.

Johansson's presentations were about balanced Scandinavian breeding, with a focus on health traits; hoof health, udder health and general health as well as reliable data collection system, which makes breeding for health traits possible.

As a part of this strong relationship, a group of 10 VIP clients from Southern Chile came to visit VikingGenetic's facilities in Finland, Sweden and Denmark in late March. They learned more about our registration system and breeding programs for VikingHolstein, VikingRed and VikingJersey and they could see the great results of these programs in the bull parades. "The company has a large experience in genetic improvement in dairy cattle, and we were very delighted to know that the farmers have a direct impact on the objectives of this genetic improvement in cooperation with researchers", Domingo Ursua, a Chilean farmer with approx. 350 dairy cows.

Being especially interested in animal welfare the group also heard specific presentations about hoof health as well as animal health and welfare in different production solutions.

The final touch to the tour was added in farm visits. The Chileans visited nine farms of Holstein, Jersey and VikingRed and were really impressed by the production level of the herds, general management and cleanness of the farms and enthusiasm of the farmers. ●

Suvi Johansson and the group of farmers from Chile during their visit to different herds that use genetics from VikingGenetics in the Nordic countries.

VIP visit from Chile

- The tour included nine producers from Llanquihue province and the AI sales coordinator of Cooprinsem.
- The farmers are a part of the directory for farmers union Agrollanquihue, owning from 200 to 800 cows, both Holsteins and Red cows
- In Chile the Red cows are usually a mix of traditional Overo Colorado, Red Holstein and VikingRed.
- The group also learnt about VikingEmbryo program and visited LUKE center, where the ASMO heifers go to calve.

Growing demand for bulls of high merit in the UK

To find topranking outcross bulls has become an open question for more and more dairymen. In each breeding population, the most successful pedigrees will become influential. That is the case of VikingJersey with its outstanding performance in the market of the United Kingdom; the breed is getting more demanded.

By Verónica Löfgren, VikingGenetics

There is no doubt that VikingJersey (the Danish Jersey) bulls are the owners of the leading positions within the Profitable Lifetime Index (£PLI), according to the latest UK genetic evaluation results.

VJ Hickey is number one in the Top International Jersey Bulls ranked on £PLI, and the first four places in this list are also occupied by VikingGenetics bulls.

Moreover, VJ Tester is number one on the Top UK Proven Jersey Bulls, ranked on £PLI. Six VikingJersey are also in the first 15 places on the list.

"The VikingJersey benefits on two counts: first; offering exceptional health traits and second; recording addtitional health traits, which are not available from other countries. The VikingJerseys also score well in terms of high levels of fats and proteins which an increasing number of milk buyers are now looking for", Joanna Cox, Sales Manager for VikingGenetics UK explains.

VikingGenetics' emphasis is put on health traits, within them we also found longevity and fertility, as well as efficiency and total economics. The VikingJerseys are in the lead for all of these traits in the United Kingdom.

In general, the global demand for VikingJersey cows has increased in the last years; at the end of 2016, VikingGenetics' sales report states that VJ has grown sales by 20% in comparison with 2015.

"Our Jerseys have healthy hooves, good mammary, good longevity and natural curiosity making them suitable for modern production systems", Peter Larson, breeding coordinator for VikingJersey adds.

The Danish Jersey population today

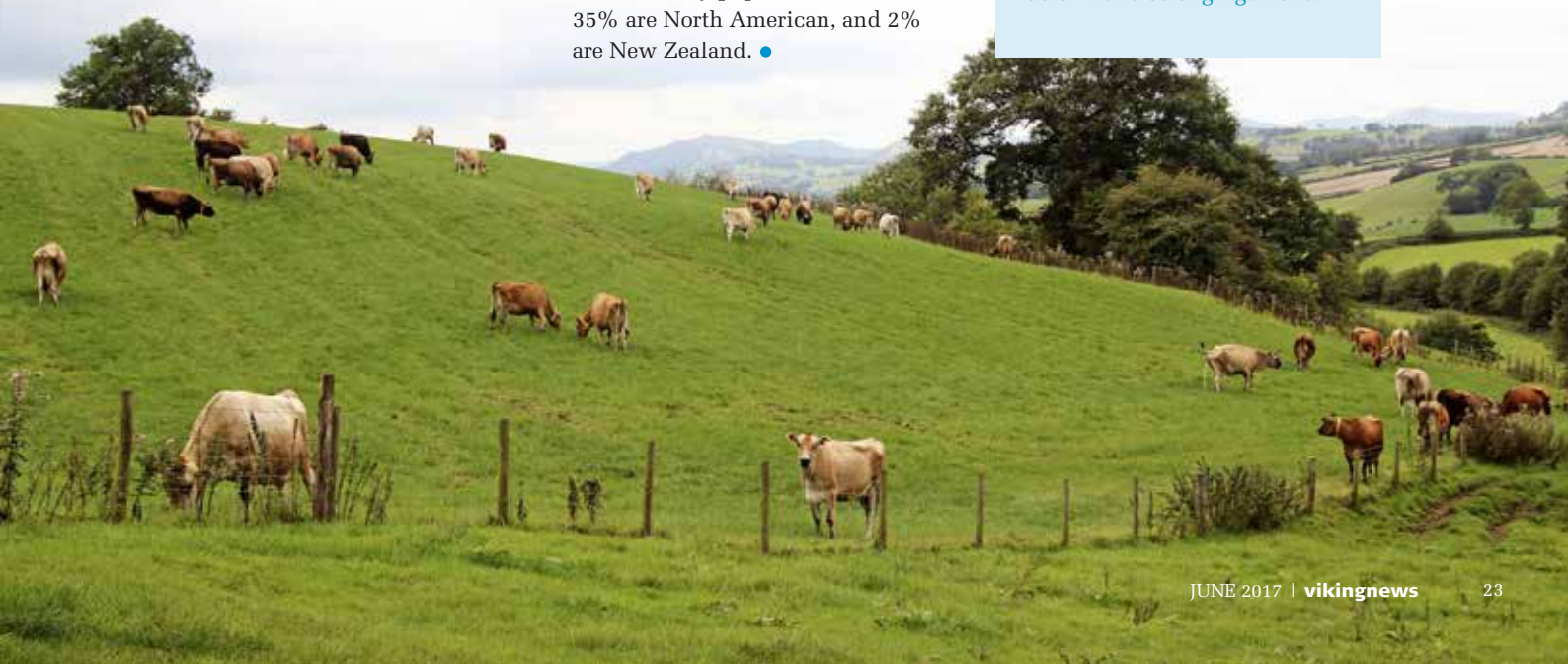
Average milk production of the 70,000 purebred Jersey cows in Denmark is 7,400 kg milk, with 5.95% butterfat and 4.16% protein.

Today 63% of the genes in the Danish Jersey population are Danish, 35% are North American, and 2% are New Zealand. ●

VJ Quintana. With +26 NTM, this bull breeds high production of fat and protein.

An outstanding solids producer

VJ Quintana (+26 NTM) breeds high production of fat and protein and is fertility, udder health, and longevity improver. Daughters of VJ Quintana are expected to be tall, with an excellent conformation. Udders will be extremely shallow, high and wide rear udders with a strong ligament.



Head of Sales, Sara Wiklert Petersson during a visit to our distribuitor Mike Osmundson and family from Creative Genetics in California.

Our Export Manager for Latinamerica visited the south of Chile in the beginning of March. This wonderful farm is using genetics from VikingGenetics.

Sales Manager, Erik Thompson from VikingGenetics Australia attending two clients during the AgFest, Tasmania in the beginning of May.

PICTURES FROM OUR
INSTAGRAM COMMUNITY

@frukarinp has a colourful job at #vikinggenetics packing semen for all you guys/girls out there. #vikingred #vikingjersey #vikingholstein #semenstraws

Our #vikingholstein sire D Sol has left our bull station and is now a star in the sky. #rip #bull-semen

Cow no 456 on her way to pasture in the herd of @tantoniae. #vikingred #nordicnature #cowpassion

Chosen among the best ones! 12 new, curious and healthy bull calves arrrived to our station in Skara, Sweden. #vikingholstein #vikingred

VikMate II takes international mating plans to the next level

One of the big projects going on in VikingGenetics is the improvement of the mating program VikMate. In the upgraded version, VikMate II, each female will get an NTM value, calculated either from the pedigree or from genomic test.

By Suvi Johansson, Export Manager for Spain and Latin America

VikMate is a tool for dairy farmers to make optimal matings to create future generations, selecting the best bull for each female as efficiently as possible. Many of our international customers are already familiar with VikMate.

The Nordic Total Merit (NTM) is the main criteria in the selection of the best animals. All 14 traits combined in NTM have economical weights, which have an effect for profitable milk production. Therefore, it is logical that VikMate II, is optimizing the match according to NTM.

In the new VikMate II, each female will get an NTM value, calculated either from the pedigree or from genomic test. One of the most important improvements is the possibility to do strategic decisions in the breeding program. A user can choose from suggested herd strategies as for example: Default Strategy, ProCROSS, X-Vik for heifers, beef semen for low-end cows or tailor-make his own herd goals using different filters provided by VikMate II.

As its predecessor, VikMate II, allows control of inbreeding, but as an improvement also shows the inbreeding percentage of the future progeny. The new program gives three different bull suggestions, and shows expected level of each mating in all the traits included in NTM.

VikingGenetics has put a lot of effort in making VikMate II as user-friendly as possible. Therefore, importing the female data from the herds, as well as recognizing the bulls in females' pedigrees has had a lot of attention in the improvement process.

The new VikMate II will be available in summer 2017. ●

Less environmental impact with Jerseys

In connection with setting year 2025 goal for VikingJersey, topics about how environment can be influenced by those goals has been discussed.

By Peter Larson, Breed Coordinator VikingJersey, VikingGenetics

Studies regarding the environmental impact indicate differences between Jerseys and bigger sized cows. Over the last 15 years, Livestock Units have been used as measurement when calculating the number of animals allowed per hectare. This is based on Nitrogen emissions, where Jerseys produce less than other breeds.

Canadian results on phosphate now show the same tendency, and these results have been included when calculating phosphate quotes in Holland. Results on Green House Gas, GHG, emissions from Aarhus University, indicate less GHG from Jerseys, both when cows are fed concentrate or roughage. ●

European Jersey breeders meet in Norway

On 25-28 August, the Norwegian Jersey Cattle Association has invited European Jersey breeders for a short study trip in connection with a European Jersey Forum (EJF) meeting. The EJF meeting will be half a day meeting, where international co-operation and genomic testing will be discussed. ●

Ranking high in the US

VikingJersey bulls rank high in the United States after weight changes in US breeding values

In April, new weights were introduced when calculating American breeding values. Biggest change was that a negative weight on Milk (volume) was introduced for the first time, and the weight on protein was lowered slightly compared to the weight on butterfat.

Breeding will be directed towards milk that is more concentrated. This has positive effect on the ranking of VikingJersey bulls in USA. ●

Increased demand for sexed semen

Sexed semen is in high demand, about 30% of the semen sold is sexed, number is increasing every month, and VikingGenetics optimizes on X-Vik production to fulfil the demand. Most demanded are the youngest bulls like VJ Quintana, who is in X-Vik production. The use of genomic bulls is stable at 98%. ●

Increased interest in polled **genetics in VikingRed breeding scheme**

The demand of semen of polled sires has made us put more emphasis on finding good polled animals into the VR breeding scheme.

VikingRed.

By Auli Himanen, Breed Coordinator VikingRed, VikingGenetics

We have systematically genomically tested heifers and cows who have a polled sire in their pedigree or if the female is known to be polled. The females with the highest genomic values within the sire group have been tested for polled genes to ensure if they are a carrier and then they have been either purchased to VG facilities or made flush contracts to be flushed at home. The goal is to mate them with polled sires if possible.

Lately the polled sires have come mainly from Nora Prästgård or Andersta families. The most used bull has been VR Hel P gNTM +18, available also as X-Vik. Also VR Nail P gNTM +17 and VR Fonda P gNTM +13 have been popular as well.

Now we have three new sires coming into semen production, one of them being homozygous polled. The homozygous bull is out of Hel P with Valpas as MGS with still an unofficial breeding value. The others are heterozygous; VR Luke gNTM +23 (VR Lucky x Nora Prästgård) and VR Hjusticia x VR Gamst still with unofficial breeding value.

We are also aiming at testing several polled NRF (Norwegian Red) sires in our reference group to see if there are any candidates high enough to be used as sires of sons in the VikingRed breeding scheme. ●

Health traits, a seal **of quality for VikingRed**

When looking at the bull's evaluation data, it is not always easy to notice what is behind the scenes. But it is a fact when looking at phenotypic averages for VikingRed bulls that they are quite a bit lower in almost all health traits compared to other breeds, meaning fewer health problems. This is very favorable to farmers having pure red cattle but also for the ones using the ProCROSS concept.

Table 1. Average VR sire compared to other breeds

Frequency of diseases	Average VR sire with index 100	Average VH sire with index 100
Mastitis frequency %	8.2	12.8
Reproduction disease frequency %	2.6	7.0
Metabolic disease frequency %	3.1	4.9
Feet & leg disease frequency %	4.4	16.3

Source: NAV

The gain in genetic progress per year has been for hoof health and fertility about 0.7 index units/year, for mastitis 0.6 units and in general health 0.4 units. The progress in longevity has been the highest with 2.0 index units/year At the same time NTM (Nordic Total Merit) has developed +3,0 NTM-units/year. ●