vikingnews

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GoldenCross®

- an effective crossbreeding concept suitable for all systems

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Cover photo
Josh Philp with his GoldenCross cows.

Innovation and sustainability, not empty words at VikingGenetics

How can we find the right balance between productive and healthy, climate friendly cows? How can we contribute to reducing greenhouse gases to alleviate climate change? Those questions are taking up more and more media space today, we listen to discussions about them around the world and the answers proposed are often linked to two words: innovation and sustainability.

Innovation and sustainability have been a part of the VikingGenetics philosophy for over 120 years thanks to visionary dairy farmers. They understood that pooling their experiences would provide plenty of answers and therefore began to register performance of individual cows as early as in 1900 when they joined forces to create a **unique registration system**.

In this issue, you will find articles that demonstrate our commitment to sustainable dairy farming. Cows that need less feed to produce milk, meaning lower methane emissions. The Natural Resources Institute Finland (LUKE), the Nordic Cattle Genetic Evaluation (NAV) and the University of Aarhus in Denmark together with VikingGenetics have been doing research for a **Saved Feed Index**, that will be ready soon (first part introduced August 2019).

We are very proud of our performance outside our home. VR Tokyo NTM +22 is the number one bull in Australia, leading the Balanced Performance Index (BPI). What's more, our VikingJersey daughter proven bulls top the ranking list in the United States (USA). VikingJersey bulls take up top 10/10 positions on the Expected Future Inbreeding list so they offer great outcross pedigrees. The best high-performance bull is VJ Huzar NTM +17 with high rankings in many of the categories, including fertility and pregnancy rate, udder health and solids.

We also have leading positions in the United Kingdom where VikingJerseys dominate the Top Proven Jersey Bull lists where VikingJerseys comprise nine out of 10 top bulls on the Spring Calving Index, £SCI, eight out of 10 top bulls on the Autumn Calving Index, £ACI and five out of 10 top bulls on Profitable Lifetime Index, £PLI. While in Germany, VikingHolstein bulls are dominating the new health index, RZ health with VH Bradoc as number one and 12 other bulls on top 15 list.

Innovation and sustainability are more than ever making sense at VikingGenetics!

Enjoy your reading!

David Stenkær Ravnkilde, Chief Business Development Officer, VikingGenetics

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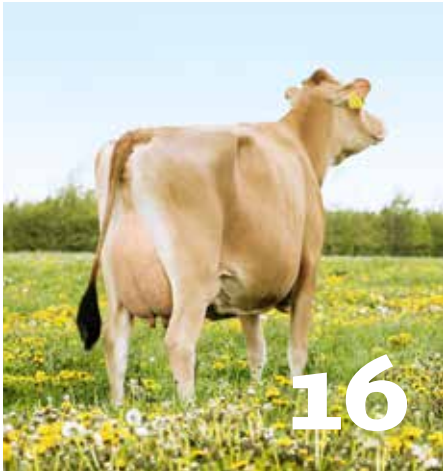
GoldenCross is a three-breed rotational cross-breeding system combining VikingHolstein, VikingRed and VikingJersey. It is an effective crossbreeding concept that is suitable for all systems, especially pasture-based production.



VikingJersey leader in Udder health

The VikingJersey cow has had a major impact on the Jersey breed globally and is the leader regarding their performance for udder health.

GoldenCross® Is the Future

Josh Philp farms with his parents at their property "Riverbank" in Garvoc, Victoria, where they milk 720 GoldenCross cows on 441 ha.

What is GoldenCross®

GoldenCross is a three-breed rotational crossbreeding system combining VikingHolstein, VikingRed and VikingJersey. It is an effective crossbreeding concept that is suitable for all systems, especially pasture-based production.

For dairy farms adopting grazing system or systems with seasonal calvings, fertility is a key factor for success. Moreover, many farmers would like to achieve a high level of production but, at the same time, have fewer problems with their cows. GoldenCross can offer a solution to these issues.

Many Australian dairy farmers have seen the benefit of the two-way cross. In this system generally Holstein and Jersey breeds are used, and the first generation of the two-way cross cows offer improvements, but farmers find that the benefits level out going into generation 2 and 3. Therefore, they are looking for the next solution to continue increasing their herd profitability. VikingGenetics has created the GoldenCross® crossbreeding program to further boost the benefits of crossbreeding. GoldenCross is a three-way crossbreeding system using VikingHolstein, VikingJersey and VikingRed.

One of the great benefits of crossbreeding is heterosis. Heterosis is the increase of favourable characteristics of a hybrid organism over those characteristics of its parents, when two unrelated breeds are crossed. Research has found that heterosis has the greatest improvement in traits like Vitality, Fertility, Health and Survival. There can also be a small increase in production. The effects of heterosis are the opposite of inbreeding depression. Read more about heterosis on page 8. VikingGenetics has been rigorously testing and breeding for improved health traits in our bulls for 40 years. Data shows that Sweden, Finland and Denmark, where VikingGenetics bulls are used almost exclusively, have the lowest use of antibiotics in the world. At the same time, they also have the highest milk production in the EU. Therefore, by using VikingGenetics bulls in your crossbreeding program you can be confident that your herd will not only be healthy, but will produce, and will produce well. In addition to the achieved heterosis, each breed brings something different to the cross. ●

HOW TO GET STARTED WITH GOLDENCROSS®

Getting started with GoldenCross® is easy and you can see the benefits in just a few generations.

By Eric Thompson, VikingGenetics Australia

The Australian dairy industry is made up of a number of different purebred and crossbred cows. Our national herd is predominantly purebred Holstein, followed by purebred Jersey. What might surprise some is that the third largest identified group of dairy cows under herd test in Australia is a two-way cross between the two most popular pure breeds. This group of dairy cows is simply referred to as the Holstein/Jersey-cross.

Many dairy farmers are a bit unsure of what to do with these crossbred cows, and manage the herd and its breeding plan without focus. Many continue to develop the herd with Holstein sires to grade the herd back up to pure Holstein or continue going back and forth between the two breeds resulting in very inconsistent results. Many benefits can be achieved by adding a third breed - VikingRed - in the cross, and keeping up with a systematic rotation of the breeds.

Why to add VikingRed?

VikingRed is the strongest red cow in the world. The breeding comes from a strong base of over 200,000 cows in the Nordics that are herd and health recorded and scored for conformation. It is very hard to find a stronger cow to breed with your Holstein and Jersey cows.

A Super Combination

When you combine the three breeds in a three-way continuous rotation you achieve steady and high heterosis effect, and inbreeding is not an issue as you are using a different breed in each mating. Continuing the systematic rotation of the three breeds in the mating plan, you can get the strong health effects of the three Viking breeds.

The Result

The end result is a herd of medium sized cows that have optimum health with superior tolerance to the weather extremes of heat and cold. They are ideally suited to walk long distances between the pasture and the shed because of their economical frame size and strong feet with dark hooves. What GoldenCross farmers have found is that by crossing the three breeds they get the production from VikingHolsteins, the components from VikingJersey and the health traits from VikingRed.

Herd Uniformity

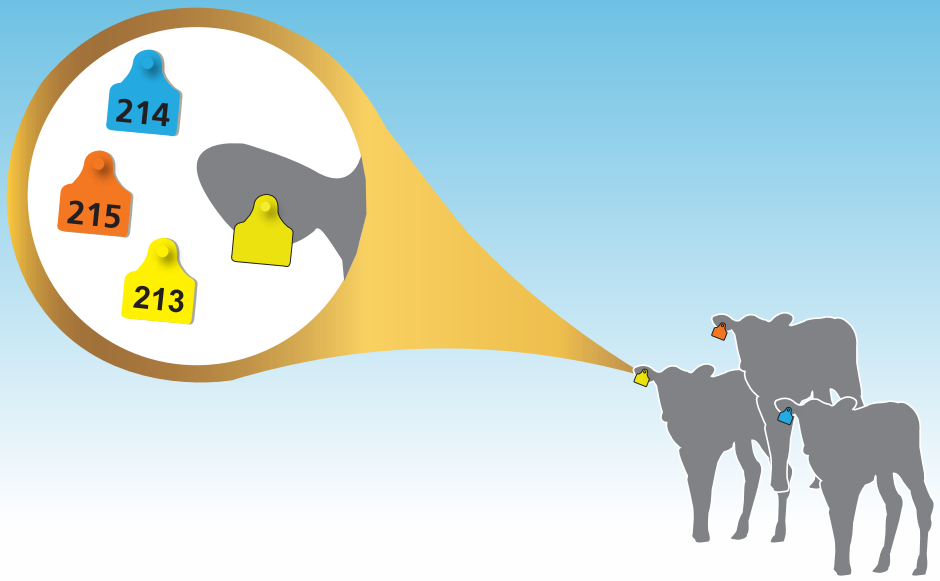
The VikingGenetics sires selected for Australia are well suited for GoldenCross crossbreeding. The selected VikingHolstein sires are medium to smaller in stature, VikingJersey sires are tall and virtually all VikingRed sires are suitable as they are medium sized.

So how do you get started with GoldenCross?

What does a GoldenCross breeding system look like and how do you achieve it? This depends on what you are starting with and we will go through a few of the most common scenarios below.

If you already have Holstein x Jersey cross cows, then you are already 2/3 of the way into the programme. You simply pick 1–3 top VikingRed sires, depending on how you like to breed and the size of your herd, and mate them to your crossbred cows. If you only have pure Holstein, Jersey or Red cows and want to do GoldenCross, then you pick what breed you want to start with. It doesn't matter which breed you pick to start with, the only consideration would be the cow size. If you have very large Holsteins and want to dramatically reduce the size of the cows, then use VikingJersey. If you want to

You need to use 3 different coloured ear tags:
Blue tag – VikingHolstein
Orange tag – VikingRed
Yellow tag – VikingJersey



reduce size less dramatically use a VikingRed sire. If you want to start crossing your pure Jerseys, you should pick smaller stature Holstein sires with good calving ease traits.

Maintaining the correct rotation of breeds is easy
Here are some examples of the possible mating and tagging with different breeds:

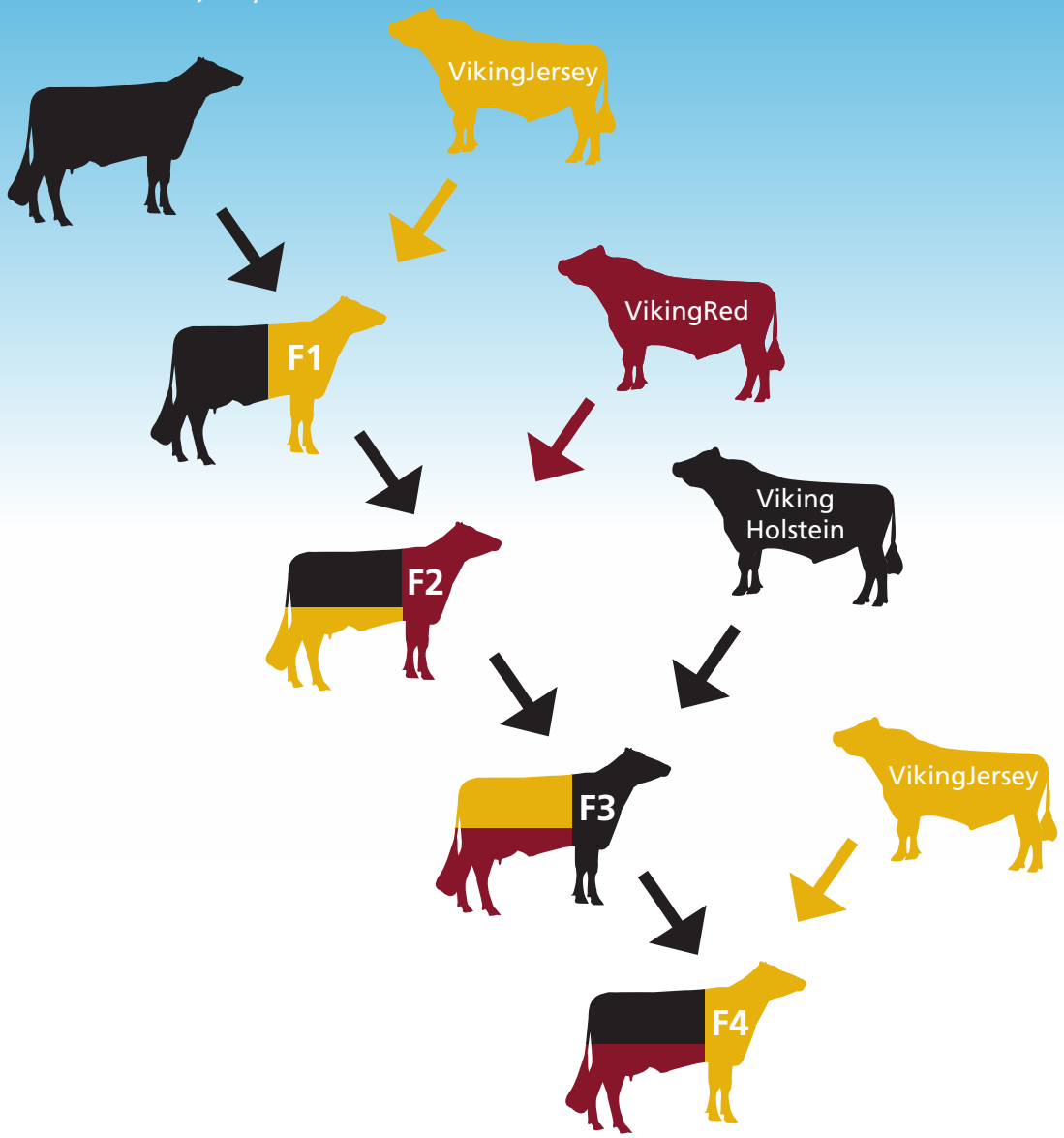
- A purebred Holstein cow is mated with a VikingRed sire. The heifer born should be marked with a yellow tag to indicate that it should always be mated with a VikingJersey sire to maintain the three breeds in her offspring. Her offspring are then tagged with blue tag to always be mated with VikingHolstein (reverting back to the original breed that you started with), and their offspring tagged with an orange ear tag to always be mated with VikingRed (second breed used originally) and the next generation should be then mated back to VikingJersey (third used breed) and the rotation carries on with the three breeds, in the same order, for future generations.

- A purebred Jersey cow is mated with a VikingRed sire. The heifer born should be marked with a blue tag to indicate that it should always be mated with a VikingHolstein sire to maintain the three breeds in her offspring. Her offspring are then tagged with yellow tag to always be mated with VikingJersey (reverting back to the original breed that you started with), and their offspring tagged with an orange ear tag to always be mated with VikingRed (second breed used originally) and the next generation should be then mated back to VikingHolstein (third used breed) and the rotation carries on with the three breeds, in the same order, for future generations.

- A purebred Red cow is mated with a VikingHolstein sire. The heifer born should be marked with a yellow tag to indicate that it should always be mated with a VikingJersey sire to maintain the three breeds in her offspring. Her offspring are then tagged with an orange tag to always be mated with VikingRed (reverting back to the original breed that you started with), and their offspring tagged with blue ear tag to always be mated with VikingHolstein (second breed used originally) and the next generation should be then mated back to VikingJersey (third used breed) and the rotation carries on with the three breeds, in the same order, for future generations.

- Jersey x Holstein cross cow is mated with a VikingRed sire.The born heifer calf is now carrying the three breeds. The future mating should be then done with the original breed in the mix, which in this case is Holstein. Put a blue tag in its ear, so that for the rest of

Example of the mating plan when you start of with a Holstein cow and a Jersey sire.



her life you know she needs to be mated to a VikingHolstein sire. If the original breed used was Jersey (Jersey x Holstein cross), then the calf would get a yellow ear tag and would be mated to a VikingJersey sire.

- Simply tag the heifer calves with the coloured tag that identifies the breed she needs to be mated to. No matter who is managing and mating your cows at any time, they will know what breed of sire to mate with the cow because of the tag colour.
- The brighter coloured tags are used so the cow ID numbers you write on the tag with a permanent black marker are easy to read.
- Alternative tagging method: Some farmers (usually large herds) have only the one coloured tag already pre-printed with ID numbers ready for the rush of heifer calves. This is also easy to work with as you just write a H (=VikingHolstein) J (=VikingJersey) or R (=VikingRed) after the ID Number with the permanent marker to show which breed she needs to be joined to in the rotation. ●

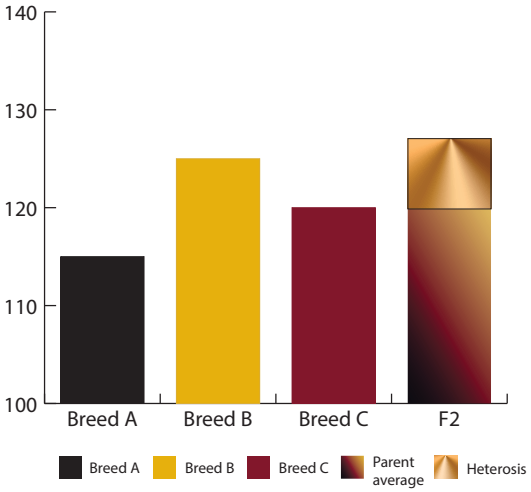
HETEROSIS – YOUR FREE GIFT

Enjoy the free benefits of heterosis when using GOLDENCROSS®

Heterosis gives you natural resistance against the effects of inbreeding. Your herd will remain healthy and long-producing. By using a three-way cross you can achieve steady heterosis of 86% in your herd. This way the genetic heritage of your herd remains stronger.

What is heterosis?

Heterosis is created when two unrelated breeds with different genetic heritage are crossed together. The lower the relationship between breeds, the higher the heterosis that you get. **The effects of heterosis are the opposite of inbreeding depression** which is a decline in performance of dairy cattle. Research indicates that heterosis can really improve traits like Vitality, Fertility, Health and Survival. There is also an indication that heterosis can increase production compared to the parent average.



Heterosis is the extra added genetic value that is generated above the parent average.

When we have breeds that share the same breeding goals, we can get improved results from crossbreeding. As an example, we have two dairy breeds and we cross them together (eg. VikingHolstein and VikingJersey), we will keep the desired traits in dairy production but as an **added benefit the crossbred offspring will have improved fertility and health traits.**

Counteracting inbreeding

Pure breed populations face the threat of inbreeding depression because animals are starting to become more closely related to each other. **Inbreeding depression is a big threat in purebred populations** because it effects negatively on traits connected with survival and overall fitness, e.g. reproductive rate, health and disease resistance. Hence, it increases the risk of recessive lethal diseases and defects, reduces the performance of your cows and also reduces the adaptability to production environments.

The opposite of inbreeding depression is hybrid vigour (heterosis) where we have animals whose parents are not related at all. This increases fertility, health and even production because this crossbred animal doesn't get the possible negative traits in one breed population (eg. possible hoof health issues typical for Holstein).

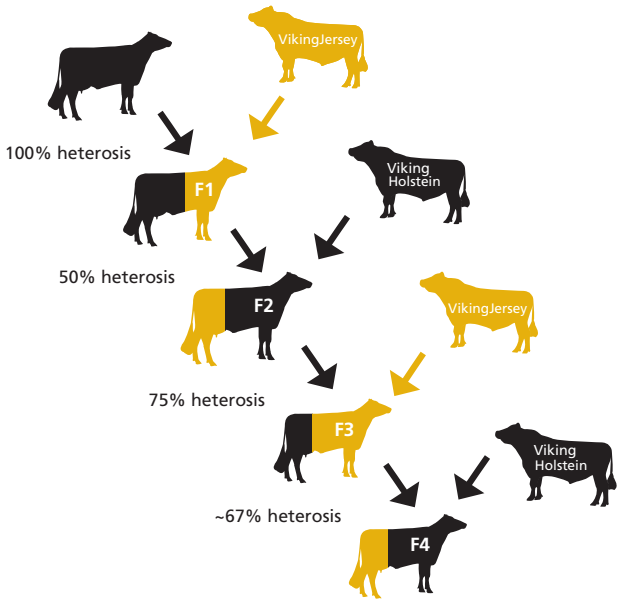
The main point in crossbreeding is to get all the good traits and lose the bad undesired ones!

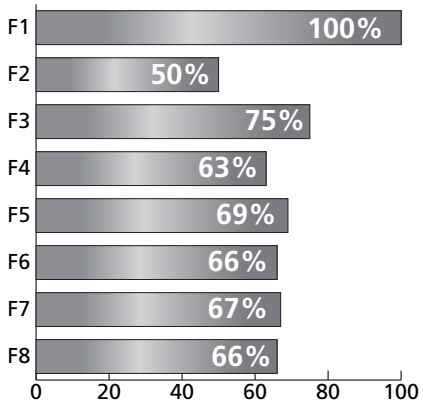
Two-way or three-way rotation?

The simplest model of rotational crossbreeding is the two-way cross where two different breeds are crossed. The next generation is called F1 and if the offspring from this cross is mated back to one of the original breeds, this is called **a backcross**. The highest level of heterosis is always in the first generation and the level decreases in following generations. When F1 cows are backcrossed, in generation F2 the heterosis is halved compared to the level in the F1. The heterosis rises again in the F3 generation but then levels to 67% in few generations. Below you can see an example of a Holstein and Jersey cross and the development of heterosis level in different generations.

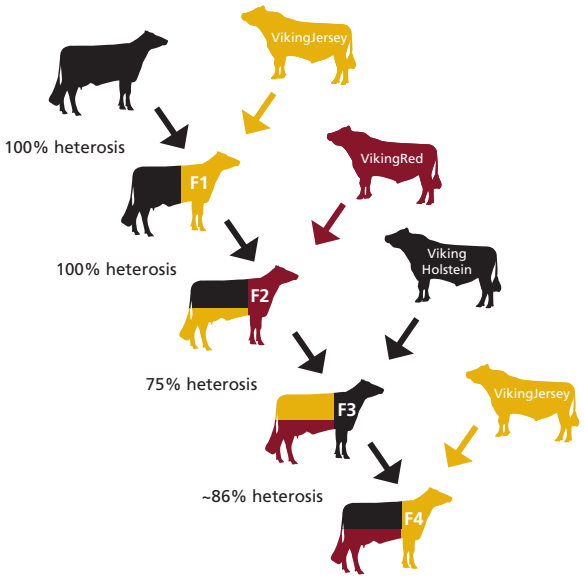
The three-breed crossing can be seen as the optimal crossbreeding system as the heterosis stays higher than in two-way crossbreeding. With four-way crossbreeding even higher heterosis can be achieved but maintaining the correct rotation gets more complicated and it's harder to find breeds that complement each other well and are unrelated populations. Therefore, the four-way crossbreeding is not recommended. In three-way crossbreeding the first generation is also called F1, but instead of starting the backcrossing with the cows, the cows are mated to a third breed. The heterosis stays at 100% for the first two generations, but then drops when the first backcrossing is made to one of the original breeds in F3 generation. After a few generations the heterosis level steadies at 86%. Below you can see an example of a GoldenCross cross and the development of heterosis level in different generations. ●

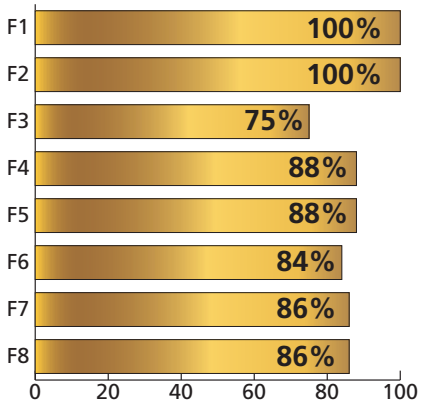
Two-way cross





Three-way cross





Benefits of using GoldenCross®

So, why are we crossing breeds? By crossing breeds you introduce the best traits of each breed into their progeny and you get what is called a heterosis effect, or hybrid vigour. Heterosis or hybrid vigour is the increase of favourable characteristics of a hybrid organism over those characteristics of its parents when two unrelated breeds are crossed. What research has found is that heterosis improves traits like Vitality, Fertility, Health, Survival and Lifetime production.

Research has also found that by using a three way cross system like VikingGenetics GoldenCross (VikingHolstein x VikingJersey x VikingRed) the average heterosis is 86%, while in a two-way cross the heterosis in the second generation will be 50%, and will level out at around 67% in future generations. Hence you would expect a three way cross herd to be more profitable than the same herd run as a two way cross. GoldenCross farmers state that by crossing the three breeds they get the production from VikingHolsteins, the components from VikingJersey and the health traits from VikingRed.

GoldenCross is a three-way cross that combines different characteristics from **VikingHolstein**, **VikingRed** and **VikingJersey**, all of which complement each other. All three breeds are in the top positions for health and production traits among their peers worldwide and have been bred in the Nordic countries where health testing and record keeping is arguably the most detailed in the world.

Studies on GoldenCross

A study conducted by **Dairy Australia**, the national service body for the Australian dairy industry compared the different crossbreds and purebred herds on a pasture-based system. The researchers analysed data from more than 23 million lactation records from almost 900,000 cows on 18,207 farms. The study showed that in terms of the three-way cross, there is no significant difference in volume of milk; however, the protein and fat percentages, the survival (how long the cows are in the herd), conception rate (CR), the six weeks In Calf Rate (6wICR) of the three breed cows outperformed the backcross animals (two cross system). Researchers from SEGES in Denmark, Ruth Bonlokke Davis, Anders Fogh and Lisa Hein have found that three-way cross cows, when compared to Holstein cows are healthier, have less reproductive disorders, less metabolic disorders, better hoof health, and fertility is better with results showing calving intervals 15 days shorter for GoldenCross cows.

How can it be possible to have higher gross margins on the same amount of milk ? The answer is that a GoldenCross cow is more fertile. This means that the cow lives longer in the herd and the effect is that she depreciates less each year. That change in depreciation cost is pure profit into the farmer's hand", one of the researchers says.

If you manage your farming system appropriately, you make fewer replacements to keep your herd together, so this is less money in rearing costs. Within a herd that requires 25% replacements, is $500 per cow, per year cost in replacement. So, together the reduced depreciation plus reduced rearing costs are extra income for the crossbreeding cows. Among the conclusions regarding three-way crossbreeding, three of them can be emphasized: the long-term commitment brings the best results, the smaller size of the cows brings benefits and the importance to select only the best bulls of every breed.

GoldenCross Farmers Say

GoldenCross is being used in many parts of the world. Below are a few quotes from farmers on what they think about their GoldenCross herds:

Josh Philp who milks 720 GoldenCross cows at Garvoc, in Victoria says: "What I have seen, and I am confident to say, is that VikingHolstein adds the high milk production, VikingJersey increases the components (fat and protein) and VikingRed contributes the general health, hoof health, udder health and fertility," and continues, for me, the colour of the cow is not important, it doesn't matter, what really matters is that they get in calf, produce milk (components and litres) and are healthy."

Kim Ellebaek Hansen, a Danish farmer, who has been using the GoldenCross system for many years states "In my mind, the three key benefits of GoldenCross cows are Longevity, Health and Reproduction. If reproduction is one of your main headaches, I am sure you will see early results if you choose to use GoldenCross."

"With cross breeding, the kg/ milk solids per cow may have dropped slightly compared to our straight Friesians, but they do not need as much feed and the "Not in Calf" (NIC) rates are significantly better. A few years ago, I broke down our 14% NIC rate and found the Friesians contributed 28% and the VikingRed crosses contributed only 5%," says Bev Phelan, Dairy Plains, Tasmania.

GoldenCross®
Is the future

Josh Philp farms with his parents at their property "Riverbank" in Garvoc, Victoria, where they milk 720 GoldenCross cows on 441 ha. Josh, his wife Lilli, together with Josh's parents Barry and Vicki, are known in the area to approach their farming business progressively and with professionalism, often sharing what they learn with other farmers in the district through discussion groups.

Barry and Vicki came to the farm from New Zealand in 1996 and started milking NZ Fresians. After struggling with herd health issues and trying to breed a smaller cow, they introduced a two-way cross with Jerseys. In 2008, Barry started to research a more systematic way of breeding to create the cow he was looking for, and this is when he discovered GoldenCross.

GoldenCross is a three-breed cross that combines different characteristics from VikingHolstein, VikingRed and VikingJersey, all of which complement each other. All three breeds are in the top positions for health and production traits among their peers worldwide. They have been bred in the Nordic countries, where testing and record keeping is arguably the most detailed in the world.

Josh, is a second-generation believer in the GoldenCross System. He has said, "We wanted to create a healthier herd because we had a lot of problems with mastitis and hooves. During the process of working with GoldenCross we have also seen an overall lift in our herd's performance"

After more than ten years using the GoldenCross System, Josh is well aware of the strengths that each breed contributes to the three-way crossbreeding system developed by VikingGenetics.

"What I have seen, and I am confident to say, is that VikingHolstein adds the high milk production, VikingJersey increases the components (fat and protein) and VikingRed contributes the general health, hoof health, udder health and fertility", says Josh.

By combining the three VikingGenetics breeds you'll get a cow of medium size and all different colours. "For me, the colour of the cow is not important, it doesn't matter. What really matters is that they get in calf, produce milk (components and litres) and are healthy", says Josh.

The Philp family has a clear goal for the future, to create a sustainable business that guarantees the success of the farm. When asked about the future Josh responded, "We want to have a sustainable herd, where we can support our family and five employees. We don't try to "fix" things anymore, we are pleased with the herd we have created, now we just have to maintain consistent improvement, and GoldenCross will provide this."

Josh Philp with this GoldenCross herd.

» For me, the colour of the cow is not important, it doesn't matter, what really matters is that they get in calf, produce milk (components and litres) and are healthy «

Josh Philp "Riverbank" in Garvoc, Victoria

Herd Statistics

I calculated the production statistics per cow (720 cows):

6155 ltrs 278 kg F (4.5%) 222 kg P (3.6%) SCC 110

Anna Norgren, Business Development Manager at VikingGenetics, has assisted Barry and Josh make breeding decisions for more than ten years. She explains, that when she sits down with Josh to select bulls for the coming season, they start with bulls that are the best on the market for traits like fertility, calving ease, and health traits. One of Josh's goals is to keep cows at a medium size, so that certainly comes into it too.

With the GoldenCross program you don't have to worry about inbreeding and keeping track of pedigrees, in fact it is the easiest breeding system to understand once you get started.

For more information on how you can improve your herd and your profitability using GoldenCross please contact VikingGenetics on 0206713007. ●

PUT GENETIC DIVERSITY AT THE CORE TO AVOID ECONOMIC LOSS

Genetic diversity is something a successful dairy cattle breeder really should consider when planning the next generation of dairy cows. It is no secret that inbreeding - the mating of related animals - is an invisible, costly and growing hazard for dairy farmers all around the world.

By Verónica Löfgren, Marketing Department, VikingGenetics

In a well-coordinated and planned breeding programme, a large number of sires of sons with different pedigrees used in the breeding programme play an essential role in avoiding inbreeding. So, asking which is your top bull? is by no means a silly question. At VikingGenetics we have set a clear goal of the number of sire of sons with different pedigrees to use every year to guarantee genetic diversity and, at the same time, enable genetic gains and a sustainable breeding programme.

In countries with a high production of milk and a vigorous dairy industry such as the United States, the very best bull would be the hero of the market. The study "Effects of Inbreeding on Production and Survival in Jerseys" by J. R. Thompson, estimates that the level of inbreeding in the United States dairy population is increasing and many factors have contributed to this rise. "The main factor is that the AI (Artificial Insemination) industry has significantly reduced the effective number of males in the population, and relationships between males have increased over time. " According to this research, by focusing on the very best top bulls, the different AI companies have compromised genetic diversity and increased the level of inbreeding.

Peter Larson, Breeding Manager for VikingJersey, explains that a high merit bull can be sold by many different AI companies where there is "tough" competition and all of them tend to use the same genetics by using the same bulls or the same high merit dams. "There are several American based companies running a Jersey programme and all of them use the top bulls as sires of sons, to breed the next generation of bulls and cows," he says. "The use of sires of sons is not coordinated and the risk of inbreeding is increasing. Money and test capacity could be spent more wisely by focusing on breeding outcross lines, instead of main stream bulls," Larson adds.

To ensure a healthy breeding programme, the only solution would be for AI companies in the US to agree on a voluntary basis to compromise on the use of bulls. The Nordic countries, Denmark, Sweden and Finland, have a National breeding programme for Holstein, Jersey and RDC (Red Dairy Cattle), managed by VikingGenetics. In the case of VikingJersey,

Minimising inbreeding in a herd gives less loss of production and greater survivability.

approximately 40 bulls are selected to be part of the yearly breeding programme; and no more than three sons will come from the same sire (family).

"At VikingGenetics we use new bulls from 20 different sires of sons or family lines every year," Larson says. What is more, sires only stay on the active marketing list until such time the managers of the breeding programme decides the sire has contributed enough to the gene pool in the population (normally for only 6-9 months).

Keeping a close eye on the number of sires of sons is not the only strict control VikingGenetics uses to design the breeding programme. Saija Tenhunen, breeding specialist at VikingGenetics explains that there is a high-quality support programme that focuses on population management to avoid inbreeding.

"We also offer our own breeding tool VikMate, which enables us to control inbreeding and genetic gain at herd level. If mating plans are created in VikMate, we can limit the increase of inbreeding in a herd and find the most suitable sires based on the traits of interest. As such, we focus on controlling the problems caused by inbreeding at both population level and herd level," she says.

What does inbreeding cost you?

Inbreeding can cause many undesirable effects that reduce profitability. Inbred animals have lower fertility, reduced milk production and a higher risk of contracting diseases resulting in a shorter productive life as well as more stillborn calves or born with abnormalities. The Council on Dairy Cattle Breeding (CDCB) based in the United States, calculated the financial cost of one percent of inbreeding depression to better understand why it is important to prevent inbreeding.

Table 1 shows the size of the inbreeding depression for different traits per 1% increase in inbreeding. A conservative estimate of how much 1% increased inbreeding would influence the Lifetime Net Income is minus US$ 24.60 per cow by the year 2017.

In US Jerseys, the average inbreeding percentage in heifers born in 2018 is 8.09%, which will cause a considerable drop in production as well as in lifetime profitability.

A better measurement of calculating the effects of inbreeding is actually to look at future inbreeding instead of observed inbreeding per se. According to CDBC, in December 2018, the expected future inbreeding among heifers born in US in 2019 is 8.1%, while the future inbreeding percentage for heifers from VikingJersey bulls would instead be 4.7% on average. That effect is possible because of the different lineages in the Danish Jersey population compared to the US Jersey population.

Importance of genetic diversity

With closer relationships between animals in a population, the risk of genetic defects increases.

"When undesirable recessive genes appear in the homozygous state, the condition is often fatal. Such fatality may occur very early in embryonic development and look like a failed conception to a dairy producer. If the genes are semilethal, and the individual does survive, it may be totally unprofitable," Bennet G. Cassell, Extension Dairy Scientist, of the Virginia Tech states in studies about Inbreeding.

Accordingly, genetic diversity is an important consideration when dairymen select genetics to improve their cattle, especially when the level of inbreeding is rather high. Complete pedigree information dating four or five generations back is needed to manage inbreeding well, Cassell argues.

Choose outcross bulls

Where to find outcross bulls with a good ranking has become an open question for more and more dairymen, especially among Jersey breeders in the US.

In each breeding population, the most successful pedigrees will become influential. Offering outcross bulls of high merit to the global markets comes with the added bonus that they are easier for any dairyman to select and use. This is an advantage that VikingJersey's breeding manager emphasises when talking about the Nordic offer. "We have a better chance of finding an outcross bull among all the family lines we have in our VikingJersey breeding programme," Larson says. "All females are registered and 95% are pure Jersey while all bulls are minimum 99.5% pure. VikingJersey bulls are measured for any increase in inbreeding per generation and we are under 1% per generation - the limit recommended by the Food and Agriculture Organization of the United Nations (FAO).

"Inbreeding levels would most likely drop quite a lot when using Danish bulls in the US," Tenhunen adds.

"We can lower inbreeding at herd levels when combining DK and US lines together. When we minimise inbreeding in a herd, there is less loss of production and greater survivability," she says. ●

TABLE 1: EFFECT OF INBREEDING DEPRESSION PER 1% INCREASE IN INBREEDING

	%
Milk Kg	-63.9
Fat Kg	-2.37
Protein Kg	-1.89
Productive Life	-0.26
Somatic Cell Score	0.00
Daughter Pregnancy Rate	-0.13
Heifer Conception Rate	-0.08
Cow Conception Rate	-0.16
Liveability	-0.08

Source: The Council on Dairy Cattle Breeding (CDCB). August 2017.

VikingJersey leader in udder health

The VikingJersey cow has had a major impact on the Jersey breed globally and is the leader regarding their performance for udder health. Viking cows are well known around the world for their extraordinary health, excellent fertility, high solids and functional conformation.

By Joakim Hansen, Marketing Department, VikingGenetics

Mastitis is one of the costliest diseases that can happen to a cow. It reduces their yield due to illness and might even cause permanent damage to udder tissue.

For the dairyman, it brings veterinary bills for treatment and medicine. Milk must be thrown away due to medicine use. And at last, the cow takes up more of your time, increasing the labour load.

For so many reasons, when creating the breeding strategy, selecting for an optimal performance for udder health is crucial. Since a healthy udder increases yield, while reducing cost, choosing the best genetics for udder health results in an improved bottom line.

VikingJerseys are by far outperforming the competition when it comes to udder health on a global basis. The Council of Dairy Cattle Breeding (CDCB) has compared the top 100 Jersey bulls for udder health in the different national scales, by country of most daughters and the results are great news for VikingJersey.

It is clear that the VikingJersey (represented in the DFS category for Denmark, Finland & Sweden) is ranking among the top in every evaluation scale. 76 on NLD, 50

on USA, 63 GBR – 459 in total compared to USA's 276.

And while these results on so many evaluation scales are very impressive, it might not even be the most impressive part.

Throughout all evaluation scales VikingJersey bulls (DFS) do not have a single bull in the bottom 100 for udder health. The Nordic dairy breeders were the pioneers in breeding for health traits 40 years ago while eliminating bad health traits in the breed.

Other countries are performing well and have a strong position in the top 100 bulls like the Nordic countries do, although, all of those countries are also very well represented in the bottom 100 bulls for udder health. Table #2 shows no consistency for other Jerseys populations.

The key factor for the VikingGenetics breeding programme is that farmers get what they select for, and in the case of the VikingJersey, there is a positive genetic trend for all health indices, fertility and longevity included. This high-performance profile has been able to be developed thanks to all the data registered by Nordic Jersey breeders.

The reliability of the breeding values rests on a large reference population with accurate data. There are 70,000 Danish Jersey cows registered on the three domestic markets. Almost all of them are part of a milk recording system, and their health status is monitored and recorded. ●

TABLE 1. JERSEY BULLS IN TOP 100 FOR UDDER HEALTH (SCS) BY COUNTRY OF MOST DAUGHTERS, DECEMBER 2018

Evaluation Scale	Number of bulls in top 100			
	CAN	**DFS**	NZL	USA
AUS	1	32	34	33
CAN	0	51	14	35
CHE	0	57	13	30
DFS	0	66	12	22
GBR	0	63	14	23
NLD	0	76	8	16
NZL	1	20	51	28
USA	0	50	11	39
ZAF	0	44	6	50
All Scale	2	**459**	163	276

Source: The Council of Dairy Cattle Breeding (CDCB) - Dec. 2018

TABLE 2. JERSEY BULLS IN BOTTOM 100 FOR UDDER HEALTH (SCS) BY COUNTRY OF MOST DAUGHTERS, DECEMBER 2018

Evaluation Scale	Number of bulls in bottom 100					
	AUS	CAN	NZL	USA	ZAF	DFS
AUS	6	7	28	57	2	0
CAN	4	7	26	62	1	0
CHE	4	5	30	60	1	0
DFS	4	6	30	59	1	0
GBR	4	6	22	67	1	0
NLD	4	6	25	64	1	0
NZL	6	9	27	56	2	0
USA	2	4	19	74	1	0
ZAF	3	4	42	50	1	0
All Scale	37	54	249	549	11	0

As seen in the table, not a single VikingJersey (DFS) bull is represented in the bottom 100 for udder health, meanwhile you see that USA bulls are very heavily represented in this table.

Source: The Council of Dairy Cattle Breeding (CDCB) - Dec. 2018

Breeding for a sustainable future with climate friendly cow

By Joakim Hanssen, Marketing Department, VikingGenetics

We hear it on the news, more and more often – the world is under pressure, the climate is changing, and we have to act now before it is too late.

The beef and dairy industry get its fair share of the blame for the environmental challenges we face, even though you could argue that other things weigh more heavily – such as the use of fossil fuels. However, we still believe we need to do our part and we are doing this in the best way we can - through breeding.

That is another area where VikingGenetics is the pioneer. We started breeding for healthy and productive animals 40 years ago. This has had the bonus that we now have the lowest use of antibiotics in cattle in the European Union (EU) and the world, because we don't need it. Our cows have a natural defence against diseases in their genes. The widespread use of antibiotics in cattle and other food producing livestock in different parts of the world has resulted in a severe global health issue with multi resistant bacteria.

Now we are beginning to broaden our scope and to breed the most climate friendly cows possible.

At VikingGenetics we are proud that we are already breeding some of the world's most climate friendly cows, due to the very high productivity of the Nordic cow population. With higher production per cow, individual farmers need fewer cows to meet the demand of end consumers, thereby reducing the total number of cows in the world.

Our aim is to produce more climate friendly cows that need less feed to produce the milk, because lower feed intake means lower methane emissions.

And while this is great, we don't want to settle for just breeding a high producing cow. Because as human population numbers grow, so too will the demand for dairy products and meat, and we therefore also need to make cows more climate friendly on an individual level.

How then, can we make cows more climate friendly on an individual basis? Namely be producing cows that need less feed to produce the milk, because lower feed intake means lower methane emissions. This autumn, VikingGenetics is launching a new index, the Saved Feed Index, which will enable us to select bulls who breed daughters that use less feed. On average, 6% of the energy a cow eats, goes to produce methane, although this can vary from 2-12%. By breeding cows that eat less, we can reduce methane emissions.

By monitoring 5,000 cows, our researchers have found that around 20% of this total variance is due to genetics, making methane emission something that you can actually breed for. The best part is that this trait has no negative correlation with any other breeding trait, which makes it possible to breed for more climate friendly cows, without any negative side effects on the rest of your breeding goals. In the near future, we will not only be able to breed for the healthiest and highest producing cows, but also for the most climate friendly cows. ●

Saved Feed Index
- first part released in August 2019

For the past two years, The Natural Resources Institute Finland (LUKE), the Nordic Cattle Genetic Evaluation (NAV) and the University of Aarhus in Denmark together with VikingGenetics have been working on developing a Feed Efficiency Index that can stand out from other ones available on the market – an index that dairy farmers around the world can trust.

By Camilla Rosman, Marketing Department, VikingGenetics

Dairy farmers around the world know that the biggest cost on farms is feed for the herd. Breeding for a cow that is more efficient in converting feed into milk kg will soon be possible with the new index VikingGenetics is about to launch.

After collecting a great deal of data in the most modern way, the cooperation between LUKE, NAV, the University of Aarhus and VikingGenetics has resulted in the index called "Saved Feed Index" of which the first part was published by VikingGenetics in August 2019. Dairy farmers will be able to use the Saved Feed Index to select bulls that breed daughters that consume less feed.

The **Saved Feed Index** will actually consist of two indices; **Maintenance** and **metabolic**. Maintenance is how much energy is needed for purely subsistence feeding, not for any production. Data registered from Denmark include body weight, and from Finland girth width. Correlated conformation traits are also input; stature, body depth and body width.

The Metabolic index is the element of feed needed for production. This is called the "residual feed intake". This part will be reinforced when we introduce data from Cattle feed intake (CFIT), obtained via 3D cameras installed above the cows in feeding areas. The cameras recognize each cow by their back conformation and measure the pile of silage in front of each cow before the cow begins to eat, and when the cow has left the feeding trough. This technology gives us the exact feed intake of each individual cow. CFIT is currently at the research stage and as soon as we have enough data, it will be included in the metabolic part of the Saved Feed Index.

More climate friendly cows into the bargain

By breeding cows that eat less, farmers will also lower the methane emissions because less feed intake means lower methane emissions. Research regarding greenhouse gases indicates that, on average, 6% of the energy that a cow eats, are spent on producing methane. However, this varies from 2-12% depending on how efficient the cow is in converting feed into milk. ●

VikingRed offers free genomic test for international females

The VikingRed breeding committee, that is in charge of the VR breeding programme, is coordinating an ambitious plan to increase reliability and make the largest red breed more competitive by offering free genomic testing of females around the world.

By Auli Himanen, Breeding Manager VikingRed

At the beginning of 2019, the VikingRed breeding committee took an important step to assure profitability for farmers using red dairy cattle, especially VikingRed. They decided to make an offer for free genomic testing of international females. The offer was sent to all member organisations of the International Red Dairy Breed Federation, European Red Dairy Breeds and World Ayrshire Federation.

The aim is to bring red populations around the world together and enable them to profit from the large reference population NAV (Nordic Evaluation Centre) has for red breeds containing more than 9,000 progeny

proven sires and over 40,000 females. "Our vision is to make red breeds more competitive in the future," says Auli Himanen, Breeding Manager for VikingRed.

She adds that the plan is addressed in particular to those red breeds that do not have genomic testing as yet, to have an opportunity to rank their females. "At home, breeders are using genomic testing more and more as a valuable selection tool within the herd, and that has created more value in their farms," she says. Last year more than 22,000 red females were genomically tested in Denmark, Finland, and Sweden.

She adds that the genomic value of the tested females will have high reliability since they have a genetic linkage to the NAV reference population. "Breeding values will be published in all the same traits that NAV publishes for Nordic animals meaning index values for yield, health, fertility, type, functional traits and NTM (Nordic Total Merit)," Himanen says.

Free genomic test also available for Viking Export Markets

Himanen explains that the free trial is also available for Viking export markets through Export managers at VikingGenetics. "They can also invite other associations who are not members in these organisations to participate in the project. As testing is coordinated by the organisations, they will choose which animals to include," she says.

One example of cooperation was with German Anglers and RSH a few years ago with superior tested females in our reference. This now also includes genomic testing of bull calves for a breeding scheme to give Angler good opportunities for selection and semen production of high-quality sires.

More recently, DataGene in Australia made a contract about a project for the exchange of data to define if the correlation between Nordic and Australian red populations is high enough to create a joint reference group.

More information about GenVik testing is available at the VikingGenetics website www.vikinggenetics.com.

Participants in the project are invited to send an email to GenVik@vikinggenetics.com to request further information about what to do next. The offer is available to the end of 2019. If you have any further questions, please contact Auli Himanen, VikingRed Breeding Manager, auhim@vikinggenetics.com. ●

VR Tokyo

(VR Tuomi x V Föske x Sale ET)

VR Tokyo daughter no 12282496 Nisutar from Hurvi Taisto ja.

If you are looking for high reliability and NTM, VR Tokyo will be a very good choice with +22 in NTM and 2244 milking daughters. With VR Tokyo you will get great production (121) with a high amount of kg milk, fat and protein. The daughters will furthermore be tall with good body condition, have very easy calvings and live for a long time.

Unfortunately, his dam did not have a full lactation, but she produced 5.0 % fat and 4.0 % protein when in production. She was classified 84 in body, 78 in feet and legs and 87 in udder.

The great maternal grand dam had five calves and produced more than 78,500 kg.
The breeder is Göran Carlsson in Sweden.

Beta Casein: A2/A2 Kappa Casein: AA

VR Wild

(VR Wookie x VR Crone x VR Filip)

VR Wild.

If your goal is to combine high yield (121) and top components (fat-% 129 & protein-% 125) with fast milking speed and good udder health, then you should use VR Wild. He also gives great longevity and conformation.

When VR Wild was bought, he was a superior bull calf in the population. He has kept high gNTM and ranks 4 among VR sires right now. His dam has been flushed twice and VR Wild is from the first flush. The dam was identified as a top female when the herd entered the LD project to perform genomic test of all the females in the herd. They immediately got two flush contracts: the dam of VR Wild and the dam of VR Frodo. VR Wild's family has had success earlier as well because Viking also bought a bull calf out of the grand dam. Today VR Wild's half-sister has been flush twice on a Viking flush contract.
The dam has more qualities than just making great calves. On average, she has produced 10,900 kg milk with 4.64% fat and 3.77% protein over 1.6 years. On top of that she is classified 90-81-91 and she was also in the Danish National Show in July 2019.
The breeders are Nita and Jakob Gade, Denmark.

Beta Casein: A2/A2 Kappa Casein: AB

VR Fanof P

(VR Flake x VR Ejstrup x R Facet)

VR Fanof P.

If you are looking for polled cows, you have the opportunity to breed them now with the best polled red sire of the world. VR Fanof P is heterozygous polled and ranks no 6 of all VikingRed sires. He has high components (protein kg index 118, fat kg 113) and good figures in all fertility traits (Daughter fertility 112). He breeds average size with great feet and legs and udders suitable also for robot milking with fast milking speed (121).

When you speak the name VR Fanof P out loud, you almost say "We are fan of Polled". VR Fanof P is out of a dam who just had her 5th calf and is still going strong. The previous top sire from the same herd is VR Donato who has been one of the most sold VR sires on the export market for some years.
VR Fanof P will be available also as X-Vik.
The breeder is Torben Stolshøj Pedersen, Denmark.

Beta Casein: A2/A2 Kappa Casein: AB

VikingHolstein, master of udder health

VikingGenetics has more focus on improving udder health than any other company in the world and is the leader when it comes to genetic level for udder health.

By Claus Langdahl, Senior Breeding and Product Manager, VikingGenetics

Mastitis causes direct financial losses to dairy farmers no matter where in the world you farm. It reduces milk yield, the milk can be contaminated with antibiotics and unable to be sold, plus associated veterinary and antibiotic labour costs, a higher culling rate and occasional fatalities. To avoid extra charges on dairy farms, prevention of mastitis infection is the best approach. By breeding for higher Nordic Total Merit (NTM), you automatically get fewer mastitis cases in your herd. The Udder health index has the third highest economic weighting in NTM; only production and fertility have a higher weighting.

In the Nordic countries, we use both the direct measure, Mastitis, and the indirect measure, SCC, where the latter is only an indicator of mastitis. Mastitis registrations come from veterinary and farmer records on clinical mastitis. In other countries where Holsteins are more dominant, mastitis cases are usually not recorded, and if they are they are only recorded by the farmers, not veterinarians.

Choosing the right bull has a significant effect. In table 1, you can see the number of daughters with mastitis in relation to the bulls index for mastitis resistance.

Sustainable genetic improvement

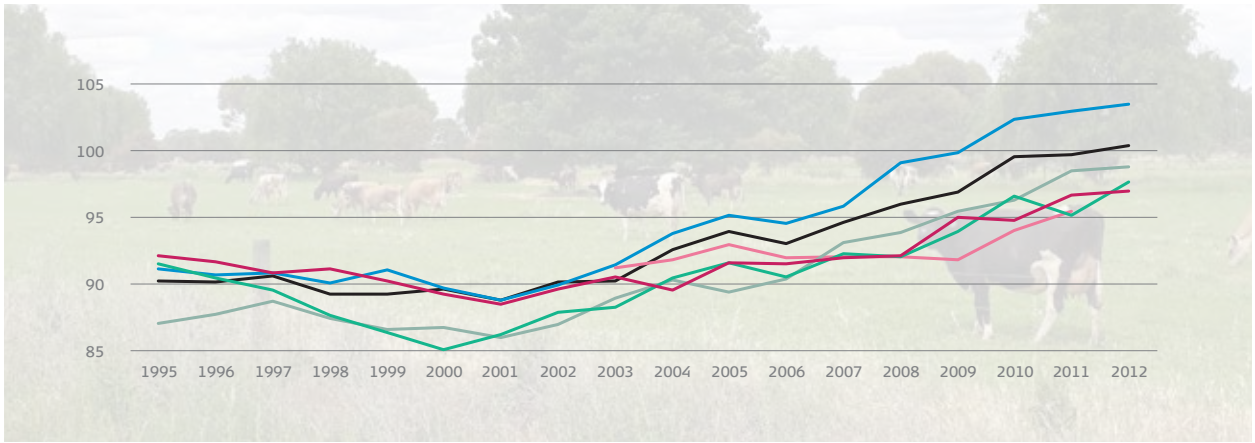
From 2002 to 2012, the Nordic countries have improved udder health by 13.5 index units. These results mean 3.5 cases of mastitis in a 100 cow herd.

The graph below shows the genetic level of major Holstein populations. VikingGenetics is on average four units higher in udder health than the second best and almost ten units better on average than many of the major European countries. ●

TABLE 1: EFFECT OF BULLS WITH DIFFERENT BREEDING VALUES ON AN AVERAGE DAUGHTER

Breeding value	80	90	100	110	120
Mastitis %	17.4	14.7	12	9.3	6.6

FIGURE 1: GENETIC TREND MASTITIS IN MOST SIGNIFICANT HOLSTEIN POPULATIONS



Source: Interbull data 2018 on proven bulls

VH Bradoc.

Germany goes "healthy"

The April index run of Germany announced an interesting change in their focus. Germany introduced a new overall health index and are next in line to see the value of cost reduction also from a breeding perspective – a focus that the Nordic countries and VikingGenetics have had for over 40 years.

RZhealth, as the new index is called, is a combination of udder health, hoof health, reproduction and metabolic diseases.

Ranking

When looking at the ranking of bulls on this index it is quite clear that VikingHolstein occupies a unique top position. The top list is dominated by VikingHolstein bulls with VH Bradoc (VH Blush x VH Bynke) the leader. As shown in table 1, 12 of the top 15 are from VikingGenetics.

One sub index looks like this;

- Udder health: 7 of the top 15 bulls are from VikingGenetics, with VH Oonsun (VH Optimal x Rodgers) no. 1 and VH Bradoc close behind
- Hoof health: VH Oxel (VH Op x D Orange) is the no. 1
- Reproduction: 7 of the top 15 bulls are from VikingGenetics with a shared no. 1 position between VH Best (VH Bliss x VH Salomon), VH Bradoc and VH Gaucho (VH Griffin x VH Peder).

Components

Besides this new focus on health, they have also added extra weighting to components. Here too, the VikingHolstein bulls are impressively placed.

- Fat% index: 5 of the top 10 bulls are from VikingGenetics with VH Faur (Fageno x VH Grafit) and VH Gambler (VH Grate x VH Lyrik) as no. 2 and 3
- Protein % index: 7 of the top 15 bulls are from VikingGenetics with VH RulerRC (Red Power x VH Goblin), VH Gambler and VH Faur as no. 1, 2 and 3. ●

Great genetic level among polled VikingHolstein bulls

The number of polled VikingHolstein bulls is constantly growing and so is their genetic level. 10% of purchased bulls the last year have been polled and the homozygotic polled (PP: 100% polled offspring) are starting to show up also at high level. The average NTM of the purchased polled bulls is gNTM +33. ●

TABEL 1. AVAILABLE POLLED VIKINGHOLSTEIN BULLS

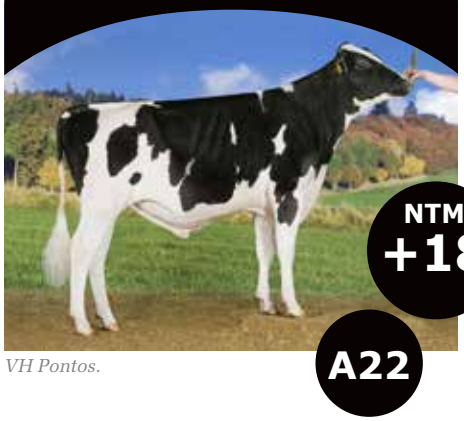
Navn	Far	Morfar	gNTM
VH Laval P	Louxor	Powerball	+31
VH MixPPRC	Mission RCP	Powerball	+19
VH MeP Red	Mission RCP	Brekem	+24
VH Monty P	Milford P	Balisto	+29
VH Arrow P	Adagio P	Ocean PP	+25
VH Perth P	Pledge	Powerball	+26
VH Comxa P	Commander	Xacobeo	+13
VH SnoozP	Style P	Saleen	+25
VH Bill P	VH Bosman	Parker P	+21
VH Mandy P	Milford P	Anton	+19
VH Sebeo P	Superhero	Style P	+22
VH Phil P	VH Pogba P	Rodgers	+22
VH Liege P	Lemon P	Go Now RC	+17

(RC = red carrier, P = 50% of the offspring become hornless, PP = 100% of the offspring become hornless)

VH MixPPRC with gNTM +19, gives 100 % hornless offspring (PP), and is red carrier.

VH Pontos

(Picanto x VH Bismark x D Onsild)



VH Pontos.

Striving to attain good production, good female fertility and super hoof health. Do you prefer cows with good width? Then have a look at VH Pontos.

VH Pontos is a super daughter proven bull with more than 4,200 milking daughters. He breeds powerful cows with super width, a very good female fertility at 111 and good production at 111. An overall strong profile.

His dam is an impressive VH Bismark daughter with an average production of 14,000 kg of milk and classified VG88.
VH Pontos was bred at the herd for Tronsmark Holstein in Denmark.

VH Sparky

(VH Suarez x VH Salomon x T Funkis)

VH Sparky.

Do you struggle with hoof health in your herd and do you want good fertile cows with appealing conformation? Try to have a look at VH Sparky.

VH Sparky is a very strong and popular daughter proven bull with almost 4,000 milking daughters. He breeds super hoof health at 118, very good female fertility at 116 and at the same time good production at 112 with super components. He has an appealing conformation profile. This is the bull that will give you hard working healthy cows that will last in your herd.
He comes from a really nice family. The dam has an average production of 12,500 kg with 4.52 and 3.71 and is classified VG86. Her dam reached lifetime production of 120,000 kg of milk!
VH Sparky was bred at the herd of Flemming Petersen in Denmark.

VH Ramsey

(VH River x Penley x Fanatic)

VH Ramsey.

Striving to attain unique health and fertility in your cows and at the same time keep a high production? And do you want calm and medium sized strong cows? Then VH Ramsey is a bull for you.

VH Ramsey is a bull that so clearly fulfills all needs to be nominated as VikingDefence bull. Hoof health at 115, udder health at 109 and general health at 110. In addition to these amazing skills, he also provides super female fertility (111), maternal calving (108) and production at 120. From a conformation point of view, VH Ramsey is also very appealing – medium sized cows with good width, strong feet & legs and balanced udders.
The sire of VH Ramsey is the well-known and highly used VH River (Reflector x VH Osmus x VH Zac). The dam has an average of almost 11,000 kg milk with 4% fat and 3.5% protein and is classified VG87. Her dam has an average production of almost 15,000 kg milk
VH Ramsey was bred at the herd of Anton Hammershoej in Denmark.

VJ Garant

(VJ Gislev x VJ Janko x VJ Hilde)

VJ Garant.

Is improved Udder Health, Daughter Fertility and components a part of your strategy? Then VJ Garant is the solution.

VJ Garant will improve percentages (Fat% 107 & Protein% 109), Udder Health (112), Daughter Fertility (109), Longevity (107) and the workability traits. Furthermore, his daughters are expected to be very tall with good body capacity and steep foot angles (115). Udder attachment will be exceptional and VJ Garant is a breed leader for shallow udders (131). Teat placement is ideal as well.

VJ Garant was bred in the Agerdal Jersey herd, owned by Palle Agerdal, Oestervraa, in the northern part of Denmark. VJ Garant is the first bull coming from Agerdal Jerseys, and he is topping the ranking in the VJ Gislev group. VJ Gislev is a VJ Hihl son and the highest-ranking Daughter Proven Jersey bull in VikingGenetics, with NTM +24.

The dam of VJ Garant, the VJ Janko daughter no. 937, has an average yearly production of 6,800 kg milk with 5.2% fat and 3.9% protein. The dam is scored VG88.

VJ Garant is heavily used as sire of sons. First son has just been bought by VikingGenetics. The gene distribution in VJ Garant is 62% Danish genes, 35% US and 3% NZ genes.

Beta Casein: A2/A2 Cappa Casein: BB JH1 Free Triple aAa: 510

VJ Choko

(VJ Lobo x VJ Havdal x DJ Kars)

VJ Choko.

Are you looking for outcross with high percentages and excellent type, - then have a look at VJ Choko.

VJ Choko will increase percentages, especially the protein percentage (107). He will also increase Daughter Fertility (104), Longevity (103) and Milking Speed (113) as well. Daughters will be tall (121), with a very nice type and steep foot angle (111). Udders will be extremely well attached, with strong ligament (110), ideal teat size and front teat placement (117).

VJ Choko was bred in the Balslev Jersey herd, owned by Christian H. Olesen, Ejby, Denmark. VJ Choko is the best son of VJ Lobo (VJ Lutz x DJ Hulk) and the dam is Balslev Havdal Hasta.

The dam, Balslev Havdal Hasta has been milking for 1.8 years, with a yearly average of 8,420 kg milk with 6.2% fat and 4.3% protein. Next dam has milked for 3½ year, with a yearly average of 7,740 kg milk with 5.6% fat and 4.0% protein.

Due to the special Danish pedigree, you will be able to use VJ Choko on nearly all other pedigrees. VJ Choko is a very succesful Sire of Sons. Until now VikingGenetics has bought 4 sons.

Beta Casein: A2/A2 Cappa Casein: BB JH1: Free Triple aAa: 426315

VR Tokyo – The #1 bull for BPI in Australia

The best production sire with outstanding levels of fat and protein

VR Tokyo (VR Toumi x V Foske x A Sale ET) is leading the Balanced Performance Index (BPI) in Australia with a BPI of $300, according to August proofs. There is no doubt this sire is one of a kind and a "must have" in a herd to increase the production of milk and milk solids.

"We always look to create value for farmers. And what we say regarding the performance of a bull is actually what the farmer gets. If a dairyman is paid by solids then we have the best bulls to suit that need," says Rex A. Clausager, Chief Executive Officer of VikingGenetics.

With a Total Nordic Merit of NTM +22, VR Tokyo combines a high level of production (122) with strong components 122 for fat kg and 121 for protein kg.

Speaking of Top Type, Tokyo is the #1 for Type Weighted Index (TWI) with an index of 106 Overall Type and 105 for Mammary. Also #1 in Longevity in Australia.

What's more, VikingRed Tokyo also has a remarkable health profile. He is #2 among the best bulls in Australia with a Health Weighted Index (HWI) of 194, peaking on Survival with 108 and a Daughter Fertility of 100. And number 1 when it comes to maternal calving with an excellent index of 124 on NTM scale.

VR Tokyo's breeder is Göran Carlsson from Linköping, Sweden. VR Tokyo has close to 3,000 daughters around the whole world, in ongoing production.

VR Tokyo is a top performer with a complete profile where production, type and health combine to make daughters with no weaknesses. ●

VR Tokyo daughter no 12254474 Niitty from Peltola Juha ja Les Sysmä

Suvi Johansson making acquaintance and saying farewell to one of the first VH Solvind daughters.

We are making more friends in Chile!

VikingHolstein is very popular in Chile thanks to its high milk solids, easy calvings and moderate size. In the picture you can see our Export Manager for Latin America, Suvi Johansson making acquaintance and saying farewell to one of the first VH Solvind daughters. The photo was taken in the farm Fundo Los Esteros, owned by the family Stolzenbach in Los Muermos, Southern Chile. Our Export Manager is now promoted to another position as a Product Manager for the VikingHolstein. ●

GOLDENCROSS®
VikingHolstein x VikingRed x VikingJersey

Maximize your herd performance with GoldenCross®

Choose GoldenCross with three strong VikingGenetics breeds in a rotational crossbreeding system to get the best results. High production from VikingHolstein, great solids from VikingJersey and superior health from VikingRed.

Read more: www.vikinggenetics.com.au

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breeding for what truly matters