

InSire

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Your choice for profit



***'It's in the genes.'* These words are not only used for people with remarkable characteristics, but are also true for proven bulls.**

The genetic information of an animal is spread on the DNA in thousands of genes. Genetic markers are small recognisable pieces of DNA that lay close to the genes. They have approximately the same transmitting ability as the genes in question. A marker therefore provides information about those genes and the genetic potential of an animal. CRV is currently working with 60,000 markers that display the full spectrum of the genetic material. From thousands of bulls – with a known and reliable index – the indexes have been connected to the discovered markers. In this way, the effects of the markers have been estimated. For example, if a young bull's markers have been mapped out, then the

effects of these markers can be added together and in that way provide information about the genetic potential of the animal. With this extra information, the reliability of the predicted index (based on parent average) is significantly higher. The selection of animals on the basis of marker information is called marker selection or 'genomic selection'.

Breeding programme

In order to make full use of marker selection in developing the next generation of top bulls, CRV will implement substantial changes to its breeding programme.

- **Doubling of the selection size**
CRV will select 1,000 red-and-white and black-and-white

With research, we are able to continually improve how we 'look' at genes and unravel the potential of a bull. Will it be an average animal or the next list topper? InSire bulls are selected for their high genetic potential. The result – better cows in the herd.

young sires in the Netherlands and Flanders each year.

This number was 500. This doubling will result from more intensive use of bull dams and contracts for more sires from bull dams on research farms.

- **More intensive selection**

Of the 1,000 selected young sires, 200 will be sampled. That means a selection intensity of one in five. It was previously one in two.

- **Greater variation in bloodlines**

With the additional marker information, the capacity of new cow families with alternative pedigrees will be known earlier and more

comprehensively and can, therefore, be better utilised.

- **More focussed breeding of bulls for different breeding goals**

On the basis of marker information from young sires, predictions can be made about the extent to which they will transmit the desired traits (for example, a high protein percentage or lots of milk).

InSire stands for marker selected young sires. We know a lot more about InSire bulls than we know about the regular young sires. Only bulls with the highest genetic potential are allowed to be labelled InSire and will be used in the CRV sampling programme.

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What are the advantages of using InSire bulls?

High genetic level

Markers provide extra information about the genetic potential of an animal. This additional information is available early on. InSire bulls are strictly selected on this basis and only the very best will be sampled. The average quality of the daughters of InSire bulls that you will be milking on your farm in a few years will, therefore, be improved.

Health and longevity

Marker information is particularly valuable with traits that have a low heritability, such as fertility, udder health and longevity. Reliable indexes for these traits require information from lots of daughters over a longer period of time. For young animals, the marker information already provides a reasonably reliable index.

Sires for different breeding goals

With genomic selection, CRV is in a better position to breed bulls that meet a diversity of breeding goals for different markets and farmers. The producer can select bulls that coincide well with their business.

Outcross pedigrees

CRV is looking at a broader scope of potential bull dams. Unusual pedigrees, outcross bloodlines that are rare within the Holstein population, as well as younger animals can be identified to search for that 'needle in a haystack' – that single perfect cow that will provide the next generation of bulls.

Success and genetic progress

With marker selection, the young sires sampled by CRV are twice as likely to break through as a proven bull and with this they will provide more rapid genetic progress. The genetic progress is expected to increase by 35%. CRV is ushering in a new era in cattle breeding.

Reliability of InSire bulls

InSire bulls have a high reliability compared to normally sampled bulls. The marker information adds approximately 15% to the reliability of a young sire. The higher reliability provides more certainty that the InSire bull will

make good on the parent average index and that the offspring will perform well.



Delta Elodia (by Ramos) and Delta Else (by Stadel) at the donor station in Terwispel. Only the very best animals receive opportunities as a bull dam.

Example

Breeding values (parent average including the marker effect) and the separate marker effect for two full siblings (Paramount x Dustin) achieved for various traits are shown in the box.

Bull calf A (Paramount x Dustin)

Marker-effect production

+749 +10kg fat +16kg protein

InSire-proof*

+2,212 +55kg fat +64kg protein

Marker-effects other traits

frame	+2.8	InSire-proof	107
udder	+3.4		111
feet & legs	+1.2		110
total score	+3.9		113
udder depth	+0.6		105
longevity	+46		391

Bull calf B (Paramount x Dustin)

Marker-effect production

+156 -6kg fat +4kg protein

InSire-proof*

+1,619 +40kg fat +52kg protein

Marker-effects other traits

frame	-1.4	InSire-proof	103
udder	-1.2		106
feet & legs	-1.2		107
total score	-1.3		108
udder depth	-3.9		100
longevity	-44		302

* Pedigree-index + marker-effects

The markers of Paramount son A indicate that he inherits 749 kg of milk more (+2,212) than expected based on his parent average.

Paramount son B inherits feet & legs 1.2 points lower (107) than expected based on his parent average.

InSire six packs

We are making the choice easier for our customers by grouping the InSire young bulls in different packages, each containing six sires. These 'six packs' have a reliability of no less than 90%.

- **Longevity and Health**

The InSire six pack 'Longevity and Health' offers producers top genetics for long-lasting, high-producing and healthy cows.

- **Milk and Conformation**

With the 'Milk and Conformation' package, you breed for very high milk yields. Above all, the frame, udders and feet and legs will receive a lot of attention.

- **Health and Fertility**

This package is perfect for producers who want fertile, trouble-free healthy cows in free-stall housing or in grazing systems.

- **Vitality and Health**

The InSire six pack 'Vitality and Health' is made for producers whose calves should be vital and easy to handle and whose cows should be healthy and trouble-free.

- **Components**

Higher and higher prices are being paid for high fat and protein components. In this six pack, emphasis is placed on milk components.

- **Udders and Feet & Legs**

This InSire package offers top genetics for functional udders and feet and legs. The herd will produce milk 'problem-free'.



And the result? With an InSire six pack you will achieve both the fastest and greatest genetic progress.

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- **Tomorrow's top genetics today**
- **Reliable young sires**
- **Rapid genetic progress**
- **Outcross pedigrees**
- **Variety in breeding goals**

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