

The Netherlands is one of the first countries in the world to add new selection tool

Dutch launch ho of health index

The April index run saw sires given breeding values for hoof health and six hoof diseases for the first time in the Netherlands. Using a sire with a hoof health index of 104 compared to 100 could save breeders and producers €5 per animal each year.

text **Florus Pellikaan**

In fact, just how important good legs are is something that all breeders and producers know. Hoof complaints are now one of the main health problems in Dutch dairy herds. “If you want to improve your hoof health tomorrow, you have to take management steps today,” says CRV researcher René van der Linde. “But our initial research shows that breeding can definitely help here too.” Until April this year, however, producers were unable to select for hoof health, although they have been able to do so for other health characteristics for some time. “CRV does not score any data on hoof complaints itself, so we had to set up a complete infrastructure to input hoof health data collected by hoof trimmers,” explains Mathijs van Pelt from CRV’s Animal Evaluation Unit (AEU), which calculated the breeding values. “All the signals are now green and all sires with hoof trimmed Dutch daughters will be given breeding values for hoof health.”

Breeding values

Hoof trimmers have been scoring hooves for 10 different hoof diseases and three other characteristics since 2006. Six conditions are used for calculating the hoof health index and the underlying breeding values for the specific diseases. These are the hoof conditions that are found most frequently, and are the most heritable. They include digital dermatitis, interdigital dermatitis, heel erosion, sole ulcers, white line disease and interdigital hyperplasia or growths.

For the first four, hoof trimmers also rate how serious they are, but with white line disease and interdigital hyperplasia they only note whether they are present or not.

Breeding value estimation uses a number of selection requirements to avoid ‘noise’ in the data gathered: at least 20% of the cows present must be trimmed, for example, and operations with more than three hoof conditions per cow on average are not included when estimating breeding values.

To enable them to publish a reliable hoof health index even if the number of trimmed daughters is low, as is the case with new breeding animals, AEU’s experts use predictors. These are the five external leg characteristics: legs, legs rear view, legs side view, hoof (foot) angle and locomotion. Legs and locomotion are in particular, with genetic correlations between 0.30 and 0.58, good predictors for the various hoof disorders.

The AEU compiles a breeding value for each individual hoof



UK index is on its way

Work in the UK is ongoing to further expand lameness indices. “Breeders have locomotion and feet and legs indexes to aid selection at the moment,” says SAC geneticist Eileen Wall.

“We are working to further develop these by firstly examining lameness treatments records and how they could be used in the wider breeding indices, and the results are promising.

“Integrating additional data from vets and foot trimmers could also be included and would help to develop an index, similar to that that’s just been introduced in the Netherlands, in the future,” she adds. “So watch this space.”

condition based on the hoof diseases and external leg characteristics scored. The hoof health index is the result of a formula containing compiled breeding values for the six hoof conditions. The different diseases are weighted based on financial losses, heritability and the correlation with the other complaints, so the breeding value for digital dermatitis is weighted the heaviest. The breeding values for the individual hoof complaints and the hoof health index are on a relative scale, with an average of 100 and a standard deviation of 4 points. In April, around 170,000 hoof trimmings in the Netherlands were used to produce the hoof health index for sires. Giving around 15 hoof trimmed daughters for a young breeding animal. Including the external leg characteristics, this makes the reliability 60%. With 30 hoof trimmed daughters, reliability is around 70%. “To be more reliable, and faster, more operations will need to be involved with the linked foot trimming from rural business support or cattle foot trimming associations,” says Mr Van Pelt.

Practical question

The big question when launching a new index is, of course, what effect it has in practice. “If a sire scores 104 for all diseases and the total hoof health index, that will give you around 10% fewer cases of lameness in total in just a single generation,” says René van der Linde. “On average, we can say that, if you use a sire with a hoof health index of 104 instead of 100, that could save you five euros per animal each year because there are fewer cases of lameness,” Mr Van der Linde adds.

Enough data from hoof trimmed cows is available to calculate a hoof health index for most Holstein sires with Dutch daughters. Black-and-white sire Grandprix heads the list of Dutch bulls in the UK with a hoof health index of 107 and a feet and legs breeding value of 104. Although the genetic correlation between legs and hoof health is reasonably high, at 0.62, these are still two different characteristics. Breeding for good legs is no guarantee of better hoof health.

The hoof health index of Grandprix is based on daughters foot trimmed in the Netherlands, he also has an above-average score for healthy hooves in Sweden, based on the daughters scored there. |