

World first for UK as breeding tool to help tackle bovine TB is launched

# Breed for better resistance

UK producers will be able to breed replacement that have greater resistance to bTB as of April's bull proof run, with the launch of a genetic index called TB Advantage. We spoke to a leading geneticist to find out more about its potential

text **Ann Hardy**

**A** genetic index has been launched to help UK producers to breed dairy replacements with better resistance to bovine tuberculosis.

The first index of its kind in the world, TB Advantage has been developed by the University of Edinburgh, Roslin Institute and Scotland's Rural College (SRUC). It gives an indication of an animal's genetic susceptibility to bTB, highlighting those that may be more prone to infection or – at the other extreme – those that have a higher degree of resistance to the disease.

## Future benefits

It will be expressed on a scale that typically runs from –3 to +3, similar to many genetic indexes that producers are familiar with. If bulls are selected with a high score for TB Advantage, producers will breed better bovine tuberculosis (bTB) resistance into their herds and accumulate those benefits in future

generations. Almost all Holstein bulls – both daughter-proven and young genomic sires – will have an index, and female Holsteins that have been genotyped will also be scored for TB Advantage.

“Tackling any problem through breeding is a long-term approach and can yield worthwhile rewards,” says AHDB Dairy's head of genetics Marco Winters.

The organisation will publish the TB Advantage index as part of the routine genetic evaluations three times a year. “But the index is not a silver bullet and it should be used alongside all the existing bTB control measures – such as biosecurity and routine testing – that are already in place,” he adds.

“Whether producers should choose to add the TB Advantage to their breeding criteria is a matter for each individual and will depend on whether they're in or close to a TB-affected area, or whether they feel that having progeny



Marco Winters: “Index highlights animals that are more resistant to bTB infection”

by a bull with a better TB Advantage will give them some commercial benefit,” he says.

## Breeding strategy

Mr Winters also emphasises the importance of using the index as just a small part of a broader breeding strategy. “As with any single-trait index, it should be used in the context of a much bigger picture because too much emphasis on any one trait is likely to be to the detriment of others,” he says. “Bulls should be initially filtered on PLI and then short-listed on the range of traits that are important to the business.”

The impact of the index across the national herd is difficult to predict. “It depends on the uptake of the index by producers, as well as epidemiological factors that are outside our control,” says Mr Winters.

“But we can say that for every point of a bull's TB Advantage, 1% fewer daughters are predicted to become infected during a TB breakdown.”

The difference between daughters of the best (+3) and the worst (–3) bulls is around 6%. And this means that, on average, six fewer cases of bTB could be expected per 100 cows in one generation if the best bulls are chosen instead of the worst.” |

## How reliable is the TB Advantage index?

The TB Advantage index is calculated by using data from animals that react to the official bTB skin test and are sent to slaughter, as recorded by the APHA (Animal and Plant Health Agency). Because there are close to 650,000 animal records used in the analysis, breeding patterns can be established and more resistant bloodlines identified.

Genetic indexes are published with a reliability figure which gives an indication of how likely the index is to change as more information is added. The reliability for the TB Advantage ranges between 20% and 99%, with an average reliability of 65% for bulls with UK daughters, and 45% for those

with a genomic index only. Although the reliability of genomic predictions for the TB Advantage is currently less than for some other indexes, it can still be used a part of a herd's breeding strategy and has shown to be valuable in predicting future performance.

The index was developed with support from Defra, the Welsh Government and the Agriculture and Horticulture Development Board (AHDB).

➔ Further information on bTB control measures, TB Advantage and other aspects of bTB can be found at The TB Hub at [www.tbhub.co.uk](http://www.tbhub.co.uk).