

Genomics fast tracks herd performance

Dairy farmers: Shane and Lauren Gardiner

Region: South Australia

Topic: Genomics



In the past two years, Shane and Lauren Gardiner have used genomic testing to confirm parentage details, improve the genetic merit of replacement heifers, make culling decisions earlier and run more milking cows.

The couple manages a 250-cow dairy for Lorebeck Partnership at Mount Gambier in South Australia. The Lorebeck herd split calves in February and August and is run on 70ha of irrigation and 110ha over winter.

Shane decided to try genomic testing after hearing about the technology and how farmers were using the data to make better breeding and culling decisions at a DairySA Innovation Day in Mount Gambier in 2015.

“Our heifer replacement rate is about 25 per cent so we were always culling heifers – genomic testing appealed because it ensures you are making more informed culling decisions to improve the genetic merit of your herd,” Shane said.

“In our first year we genomically tested 180 head which included the heifers which were already in calf and the 2015 drop replacement heifers and young stock.

“The first thing the genomic testing did was sort out parentage questions – we had reasonable accuracy on parentage at 95% per cent but it was still an issue. Mismothering at calving can be an issue and some years can be worse than others but genomic testing clarified the parentage of the calves straight away.”

The results also gave the Gardiners the genetic merit of animals for a number of traits such as Balanced Performance Index (BPI), somatic cell count, fertility and longevity.

“The initial figures were great but the young heifers we tested which were already in calf had already been committed as replacements. We couldn’t use their genomic data for further culling decisions within that age group, but it gave us a picture of where they stood.”



Lauren Gardiner's family use genomic testing to confirm parentage details, improve the genetic merit of replacement heifers, make culling decisions earlier and run more milking cows.

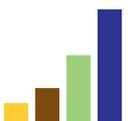
Sampling

The Gardiners now sample all heifer calves identified as replacements as they come into the calf shed.

Tail hair samples are sent off in batches to coincide with the DataGene deadlines for processing. The turnaround time on samples being sent off and receiving results is about six weeks.

Peter Williams from DataGene said increasing numbers of dairy farmers were routinely testing each drop of heifer calves. The information can be used to identify elite heifers to be joined to sexed semen or for flushing. Surplus heifers with lower genetic merit could be joined to a beef bull or sold.

“We aim to sample 90 to 100 heifer calves a year but it really depends; some years we can have a run of bull calves,” Shane said.



Shane said analysing the genomic test results as soon as they were available helped identify which heifer calves were surplus to requirements.

Choosing replacements

“We start looking at the genomic information on parentage, daughter fertility, mastitis resistance, survivability and BPI,” he said.

“We’ve found that heifers which are above breed average for daughter fertility and mastitis resistance are positive for BPI.

“For example, I’ve currently got 52 spring drop heifers in the calf shed, from which I want 38 replacements, which means I need to cull 14.

Shane said he identified the 14 poorest animals in terms of daughter fertility, mastitis, BPI and survivability by sorting the genomic results through Searchpoint – an online genetic information management system available through his genomics service, Clarifide. It allowed him to rank animals from highest to lowest based on their genomic traits.

Animals in the bottom 10 per cent for a particular trait were flagged with the trait in a red box which made it easy to quickly identify which animals were performing poorly in a number of traits and needed to be culled.

“Taking out the animals at the bottom always lifts the average for the remaining heifers and is a key step in making genetic progress,” he said.

“Our 2015 drop heifers had an average BPI of 82 but after culling the bottom 15-20 per cent, the average for the remaining heifers rose 18 points to a BPI of 100.”

Early decisions

Having access to genomic data on heifers at an early age has allowed the Gardiners to make culling decisions much earlier than was previously possible and the benefits have flowed through the entire herd.

“We used to run a portion of our heifers through to 350kg before we culled them, just so we could make sure we were happy with our decisions before mating,” Shane said.

“Using genomic data from young calves means we now make our culling decisions before the heifers reach 120kg and this has meant we can sell our surplus heifers a lot earlier. At one stage this allowed us to direct our surplus heifers to the export market where there was a good premium.

“Selling our surplus heifers earlier means we have been able to run 14 more milking cows which has increased our overall milk production.”

Long-term gains

With genomic data on all heifers born from 2014 onwards, Shane is looking to accelerate the rate of genetic gain in the herd by joining his tested heifers to genomically tested bulls to breed replacements.

The Gardiners use only AI in their breeding program and any mature cows identified for culling are inseminated to beef sires so their progeny have no chance of entering the herd as replacements.

“The reliability of genomically tested bulls has improved as more bulls have become available and we are making better bull selection decisions,” he said.

“Using genomically tested bulls will compound the genetic gain we are achieving by using genomics to identify our replacement heifers.

Shane uses DataGene’s Genetic Progress Report to track the rate of genetic gain in the herd.

“We are seeing the benefits in our Genetic Progress Report graphs for BPI, fertility and mastitis since we started selecting for heifers using genomics – the slight hiccup was the 2015 drop calves whose dams were already in calf when we began genomic testing.”

Shane said the rate of genetic gain in the herd would continue to accelerate in the future and he believed there would be market for the herd’s genomically tested surplus heifer as replacement stock for other dairy farmers.

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