

Genomic testing boosts genetic progress

IMPROVING HERDS

Gary and Ros Zweck
Blyth SA



Genetics Case Study

Gary Zweck may not run a conventional dairy farm but his focus on production and making genetic progress to improve his herd's profitability provide a valuable insight to dairy farmers, based on an analysis by the ImProving Herds project.

The Zweck family milks 230 registered Holstein cows in a split-calving herd at Blyth, north-west of the Clare Valley, SA. Their 700 ha broadacre cropping farm has an annual rainfall of just 350 mm and is home to a dairy herd that is fed a total mixed ration (TMR) on a feed pad.

The Zwecks' farm was one of 27 dairy farms across Australia that recently underwent detailed analysis by the ImProving Herds project to investigate the contribution of genetics to dairy businesses.

The study identified the top and bottom 25% of each herd, ranked on Balanced Performance Index (BPI), the genetic index for profit used by the Australian dairy industry. These groups were compared for their performance in terms of production, profitability and longevity.

Ten years of historical performance data, plus recent farm financial data from the Zwecks' herd records were analysed to look at the difference in contribution to the farm business between the top and bottom BPI groups in the herd.

The study found the top 25% of the Zwecks' herd produced 876 more litres of milk per cow per year, 57 more kilograms of fat and 42 more kilograms of protein than the bottom 25%.

Farm stats (July 2018)

HERD SIZE

230

BREED

Holsteins

FARM SIZE

700 ha broad acre cropping with cows on feed pad

CALVING PATTERN

Split calving 60% autumn 40% spring

DAIRY

10-a-side double up herringbone

STAFF

Three

FEEDING SYSTEM

Total Mixed Ration

HERD TESTING

Every five weeks



"We are seeing increased production as more of the genomically tested heifers come into the herd and, in turn, have their own calves, the performance of the next generation of heifers keeps going up year after year."

– Gary Zweck

The extra milk production from the top 25% of cows ranked on BPI resulted in an \$532 more income per cow per year, after feed and herd costs, compared with the bottom 25% of the herd. On average, the top 25% of the Zwecks' cows also lasted in the herd eight months longer than the bottom 25%.

Mixed farming

The Zweck family has farmed in the Blyth area for more than 120 years with Gary's parents Don and Elva farming on the current block from 1962 and establishing their Donava Holstein prefix in 1970.

Gary, his wife Ros and son Justin grow mainly wheat and barley and cut oaten and vetch hay and silage.

"We grow all our own grain for the cows and keep about 600t of grain stored on farm," Gary said.

"Our milking herd gets 3 kg/cow/day of grain in the dairy at milking and is fed a TMR, while we graze our heifers on stubble from November to January.

"We milk up to 230 cows a year with 60% of the herd calving between February and May, and 40% calving between August and October and have two full-time staff, Andy and Daniel."

The Zwecks have maintained good records on their herd,

herd test every five weeks and began genomically testing their heifer calves in 2014.

"Not farming in a typical dairy area can create a few challenges because it's not as easy to chat to people about new technology and ideas in dairying," Gary said.

"Having the opportunity to take part in the ImProving Herds project was a great opportunity to learn."

Breeding

Their location means the Zwecks do not have access to AI technicians so Gary, Justin and Gary's father before him, undertook AI courses so they could run their own AI programs.

"Our bull selection has always looked at production and for cows that will last in our environment," Gary said.

"In the past we have worked with David James from World Wide Sires with bull selection and corrective mating and more recently we've been working with David Peglar from National Herd Development.

"We've been genomically testing our replacement heifers since 2014, which has given us a much broader understanding of our herd and its genetic merit.

"As a result, we are now looking for bulls that are strong for kilograms of protein, fertility and teat placement, which is a



trait we want to include so we can have the option of robotic milking in the future.

“One of the other advantages of genomic testing is the parent verification of the calves. In our experience it shows we were not as good as picking the dams of calves as we thought we were!”

All cows in the herd are Metrichecked after calving then undergo two rounds of AI with conventional semen followed by mop-up bulls that have been genomically tested so they have a known BPI.

“We’ve been using conventional semen in the cows but will be looking to use sexed semen in the cows in the future as conception rates are improving.”

All heifer calves are genomically tested using ear punch samples at 10 weeks of age; last year 110 samples were sent for testing.

When the results come back the heifers are ranked on BPI and type with the bottom 10% sold for export when they reach the required export weights.

The top 80% based on BPI and type are joined to sexed semen and the next 10% are joined to Wagyu or beef semen so their progeny don’t go into the herd.



Genetic progress

“In the first season or two of genomic testing we kept a few heifers by natural joining and it quickly became clear they were nowhere near the quality of the AI-bred heifers in terms of production and subsequently some have been culled,” Gary said.

“At that point we made a policy that if we bought natural bulls they had to be genomically tested so we knew their BPI.

“We’ve seen big changes since we started genomically testing our replacement heifers and using sexed semen on the top heifers.

“Last year, we had 61% female calves and 39% male calves, which included AI and mop-up sires.

“Having more female calves to choose from, combined with genomic testing to identify the better heifers, is certainly allowing us to improve the rate of genetic progress in the herd.

“We are seeing increased production as more of these genomically tested heifers come into the herd, and in turn have their own calves; the performance of the next generation of heifers keeps going up year after year.

“As more of these heifers come through the herd, the more selection pressure we can put on BPI in the future.”

ImProving Herds pays dividends



IMPROVING
HERDS

ImProving Herds was a three-year project that studied the contribution of herd improvement to Australian dairy businesses.

At the heart of the project were 34 inspiring Focus Farmers who agreed to put their farm, herd and financial records under the spotlight. Seven were Herd Test Focus Farmers and 27 were Genetics Focus Farmers. This is one of a series of case studies about their experiences of ImProving Herds Focus Farmers.

ImProving Herds has shown that:

- *The daughters of High Balanced Performance Index (BPI) bulls perform better under Australian conditions, across dairying regions and feeding systems.*
- *Cows in the top 25% for the BPI in a herd outperform cows in the bottom 25% for production, fertility, longevity and contributed on average an extra \$300 to farm margins.*
- *The benefits of using genomic breeding values to guide heifer selection decisions were demonstrated on the Focus Farms, where the performance of genotyped heifers aligned with their genomic breeding values.*
- *Information from herd testing gave Focus Farmers confidence to make data-driven decisions for routine management and to respond to high pressure events.*

Funded by the Gardiner Dairy Foundation, the project was a collaboration of Dairy Australia, the Victorian Government, DataGene, Holstein Australia and the National Herd Improvement Association of Australia (NHIA).

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