PREDICTING HEIFER PERFORMANCE WITH GENOMIC TESTING

What is genomic testing?

Genomic testing using the Australian genetic evaluation system analyses an animal's DNA from a sample such as ear tissue or a tail hair, to predict future performance under Australian conditions. Heifers can be tested as young calves, so farmers can make early decisions about their future in their herd.

Genomic testing is available for Holstein, Jersey and Holstein-Jersey crossbred cattle.

Benefits

Genomic testing costs about $50 per sample and allows farmers to:

- save money on rearing costs by not rearing heifers that are unlikely to perform
- make more informed decisions on which heifers to sell, use of sexed or beef semen and/or purchasing of females
- significantly fast-track genetic improvement in the herd for traits of importance such as fertility, longevity, heat tolerance, type or A2/A2.

The typical cost of rearing a heifer to two years of age is between $1,300–$2,500.

In herds where no surplus heifers are available, farmers may also consider selling less desirable heifers and replacing them with higher quality, genotyped heifers. If doing so, it is important to consider biosecurity.

Genomic testing accurately determines animal identification and parentage and reduces pedigree errors. Pedigree errors occur in about 15 per cent of Australian dairy calves. Testing is also a straightforward way to establish pedigrees in many herds that do not have adequate records or do not have time to construct pedigrees.

DataGene estimates that around 15 per cent of calves are incorrectly identified at birth.

KEY MESSAGES

- Genomic test results predict a heifer's future performance
- Save money on rearing costs and make more informed mating decisions
- Samples are easy to collect
- Genomic testing of dairy females is increasing rapidly

Collecting samples

Samples for genomic testing are easy to collect and can be taken at the same time as routine husbandry procedures such as ear tagging or disbudding. To obtain Tissue Sample Units (TSUs) and pliers or hair sample cards, contact your genomic service provider.

Figure 1 Collecting an ear tissue sample for genomic testing using a Tissue Sampling Unit (TSU)

Results

Genomic testing using the Australian genetic evaluation system, produces a Balanced Performance Index (BPI) and Australian Breeding Values (ABVs) for each animal.

The ImProving Herds project found that on average, high BPI cows produced more milk solids and last as long or longer (Table 1) than their low BPI herd-mates.

Table 1 Average difference between high and low BPI cows for milk production in 27 Australian farms (ImProving Herds, 2018)

Compared to their lower BPI herd mates, high BPI cows	
Milk (L)	Produced 649 L/cow/year more
Fat (kg)	Produced 50 kg/cow/year more
Protein (kg)	Produced 38 kg/cow/year more
Fat (%)	Produced 0.29% higher fat percentage
Protein (%)	Produced 0.19% higher protein percentage
Productive life (months)	Lasted 8 months longer

Results will be sent to you by your genomic service provider or can be accessed on **DataVat**.

Reliable results

The reliability of genomic testing of young heifers is the equivalent of having seven lactations of data.

Genomic testing was developed by world class Australian scientists with data from Australian farms and cows. It makes an animal's Australian Breeding Values (ABVs) much more reliable than if you were to use the average of the parents. Results are independently generated by DataGene scientists.

Genomic testing in Australia

The use of genomic testing of dairy heifers is rapidly increasing in Australia. The most recent data shows that over the past 12 months, commercial genotyping of females in Australia has almost doubled compared to the total number in 2019/2020.

Some genomic service providers offer genomic testing using international evaluation systems (e.g. Total Performance Index or TPI in the USA and the Lifetime Profit Index or LPI in Canada) for both bulls and heifers. Note that only the Balanced Performance Index (BPI) and Australian Breeding Values (ABVs) have been validated to date on Australian dairy farms.

To get started, contact a genomic service provider. Genomic service providers currently operating in Australia include:

- Holstein Australia
- Jersey Australia
- Zoetis
- Neogen
- Total Livestock Genetics (TLG)
- ABS Global Australia
- Semex
- ST Genetics Australia
- Weatherbys Scientific Australia

FOR MORE INFORMATION

More information on genomic testing can be found at **dairyaustralia.com.au/genomics**

"Since we have been testing and having a bit more of a focus on the calves and their quality, it has meant we have put more effort into growing them well and feeding them well."

Huw Evans
Gippsland, 350 cows

"I use genomics to pick out the ones I am going to sell and export."

John Pekin
South-west Victoria, 330 cows

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