

# Genomics building a new tradition for the Carpenters

IMPROVING HERDS

Garry and Bev Carpenter  
South Riana, Tasmania



## Genetics Case Study

Tasmanian dairy farmers Garry and Bev Carpenter (Garerley) always want the daughters of the cows they run to be better than their mothers.

Their attention to detail in breeding high quality and productive cows has been sped up by embracing technology like sexed semen and genomics. And their quest has only been heightened with the input of their daughter, Jayde Lee, who works with a genetics company in Melbourne.

The Carpenters may be best known for successfully running robotic dairies, but they have always been sticklers for making sure their cows are the right type but also productive.

Their herd 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, and compared their performance in terms of production, longevity and financial contribution to the farm business.

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

The study found the top 25% of the 520-cow herd produced 867 more litres of milk, 60 more kilograms of fat, and 48 more kilograms of protein per cow per year than the bottom 25% of the herd.

## Farm stats (September 2018)

### HERD SIZE

320 cows

### BREED

Holstein

### FARM SIZE

240 ha with 200 ha milking area

### CALVING PATTERN

Split calving

### DAIRY

26-a-side double-up herringbone

### STAFF

One permanent, six casuals

### FEEDING SYSTEM

Pasture with grain

### HERD TESTING

Until last year



*"In the early days, you used to get a few failures with breeding but now days, the science is so great that you know more and progress your breeding aims more quickly."*

Garry Carpenter, Tasmania

The extra milk production from the top BPI cows resulted in an extra \$569/cow/year in milk income after feed and herd costs compared with the bottom group.

Garry said he knew there was a range of performance in his herd but the extent to the variation was surprising.

“I was surprised but it is good to know because it is extra income for no extra work by using a balanced breeding goal, and high-quality genetics,” Garry said.

“It also costs no more to raise a good calf than a bad calf so why wouldn’t you raise a good one?”

The Carpenters started with just 20 cows back in 1988 in a seven-unit herringbone dairy, and gradually built up their business, adding another farm within two years and then buying out the neighbour.

The dairy was run alongside potato growing, and at its height, being a potato grower was exciting, Garry said.

“The potato industry was up on research and development and it was great, but then the industry stalled,” he said.

“We bought a 40 ha beef property and converted it to a dairy farm.

“In the early days, you used to get a few failures with breeding but now days, the science is so great that you know more and progress your breeding aims more quickly.”

Garry has largely been tasked with running the pastures and growing grass, while Bev has taken the reins of the breeding including the artificial insemination (AI).

The Carpenters run a number of farms and apply similar breeding philosophies to each.

They have used genomic testing in the past, have dropped out in the past 12 months due to a busy schedule, but will return to using it again, convinced by the benefits.

The real winner for the Carpenters was being able to positively identify the parentage of their heifers through genomic testing.

“When we started getting bigger and bigger, our heifer identification pretty much became null and void,” Garry said.





“You might have eight or ten heifers calving down and the same time and even though they are isolated, it can be really hard to work out whose calf is whose.”

In the past, the Carpenters took tail hair samples and used the genotypes to confirm parentage before making decisions about their replacement heifers.

Now, the Carpenters also value being able to identify early which heifers to keep as replacements and which to sell.

“It is important to be able to pull those tail hairs as soon as possible, so we can offload the ones we don’t need as soon as possible, preferably when they reach 120-180 kg and are suitable for export,” Garry said.

### Choosing the right sires

The Carpenters have always been aware of the BPI, but are now concentrating on fertility for their breeding focus.

“Fertility is our major issue at the moment, so as much as production pays the bills, empty cows cost money,” Garry said.

“We want our cows to get in calf at the moment, and if they do that, they are going to have reasonable production anyway.”

### Choosing the right sex

The Carpenters have also been fans of sexed semen and will this season calve down “a heap of heifers” joined this way.

The heifers they join to sexed semen have all been genomically tested, to try to maximise the spend on the more expensive sexed semen over heifers that already show genetic merit.

“The genomic tests give us the confidence to use this more expensive semen,” Garry said.

“Your best genetics should be your youngest females.

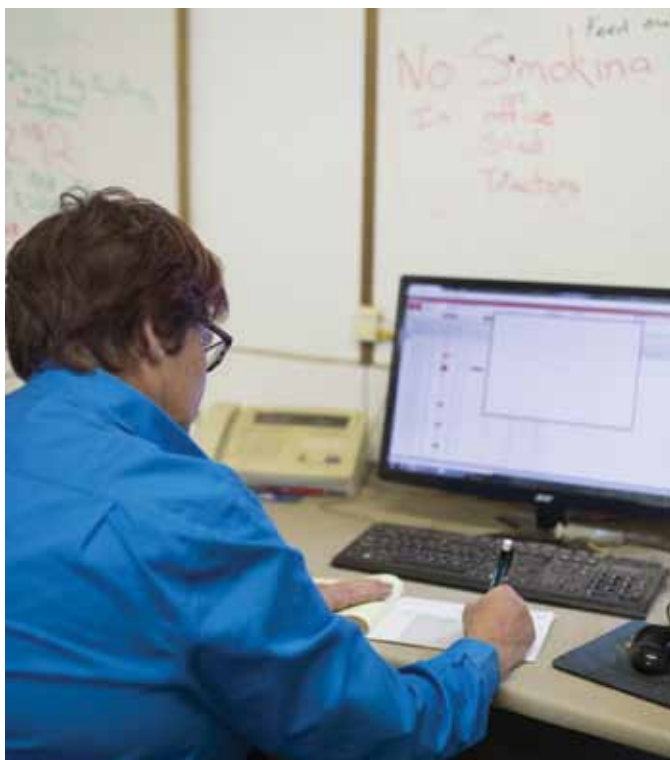
“If the daughter of a cow is not better than its mother, then you are not selecting the right ones and you should put your best bulls over your heifers to keep the rate of genetic improvement moving ahead.”

All cows are artificially inseminated, with semen from a team of five to six bulls chosen for specific herd goals, the most recent of which has been to lift fertility. Cheaper semen is used for mop-up.

What the Carpenters don’t have to worry about too much is type, with their constant attention to structural correctness meaning their cows are rarely foot trimmed.

“I reckon we have only had a hoof trimmer in twice in the 30 years we have been dairying, and once we used a bloke because he dropped in looking for work,” he said.





Bev Carpenter uses genomic results to identify the higher BPI heifers to breed replacements using sexed semen.

“For us, it is about using bulls that will breed cows with good feet, legs, udders and conformation, and now, more recently, we are looking at fertility and somatic cell counts.”

“We have mixed and matched the technology that has been available and used the genomic science but we don’t want to lose some cow families as we know they have performed.

“That’s not to say the science isn’t very valuable and it does speed up the process.”

**“If the daughter of a cow is not better than its mother, then you are not selecting the right ones.”**

– Garry Carpenter

## 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 as 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 BPI in a herd outperform cows in the bottom 25% for production, fertility, longevity and contributed on average an extra \$300 income over feed and herd costs.*
- *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, Agriculture Victoria, DataGene, Holstein Australia and the National Herd Improvement Association of Australia (NHIA).*


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