

How genetics contributes to profit on our farm

IMPROVING
HERDS

Sam McCluggage,
Western Victoria



Genetics Case Study

Sam and Christine McCluggage have invested heavily in artificial insemination (AI) and sexed semen. Their efforts have dramatically increased the value of stock sales and lifted the performance of the milking herd.

We farm at Allansford in Western Victoria and milk 700 Holstein cows. Our home farm, 'Ballyvernstown', is 319 ha. We also have two run-off blocks – 'Clonleigh' at 210 ha and 'Rosyth Park' at 100 ha – that are used to grow out young stock.

I've been dairy farming for 20 years and started with 180 Holstein, Jersey and crossbred cows on 100ha. We've slowly grown our herd over 15 years and kept the number stable for the past five years. We've chosen to have a closed herd so we rely on breeding our own replacements. Keeping a closed herd has been an important biosecurity tool and also means we have full histories on all our cows.

We run our milkers as one herd and have a seasonal calving pattern because we are totally dependent on rainfall. Last season, our herd averaged 8,100 litres/cow and 590 kg of milk solids.

Our herd has used only Holstein genetics for the past 18 years. We are big users of AI and sexed semen. We have used 100% AI on the cows for the past five years. I don't like having bulls in the milking herd for OH&S reasons and as the herd has grown we had to run more bulls.

Farm stats (April 2018)

HERD SIZE

700 cows in a closed herd

BREED

Holstein

FARM SIZE

Home block Ballyvernstown 319 ha plus two run off blocks: Clonleigh 210 ha and Rosyth Park 100 ha

CALVING PATTERN

Seasonal with calving in March, April and May

DAIRY

40-unit swingover

STAFF

5 full-time, 2 part-time and 1 casual

FEEDING SYSTEM

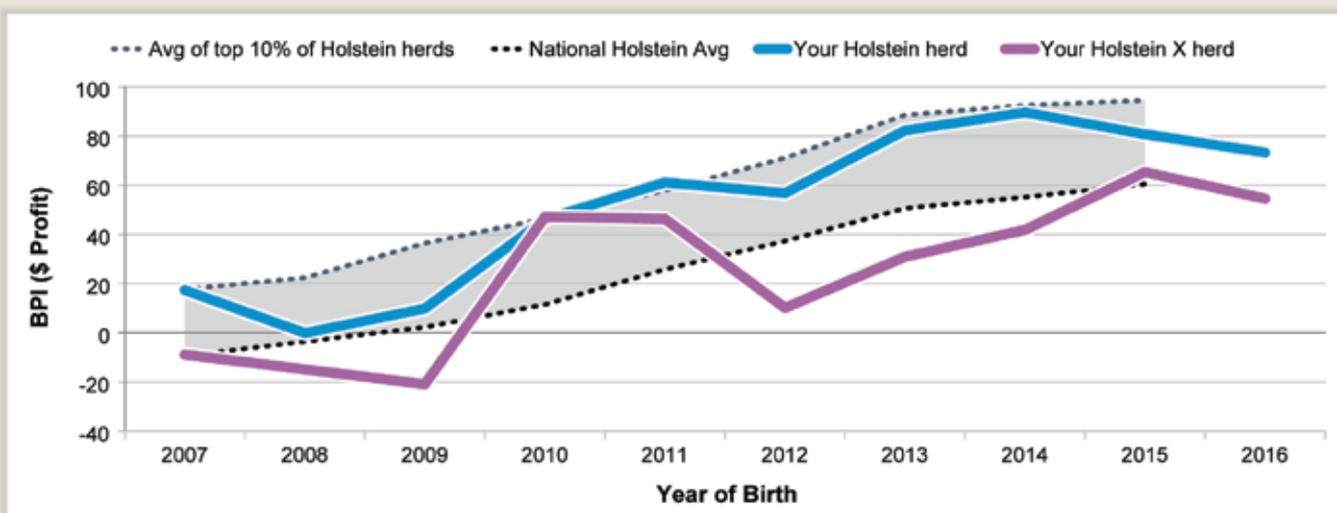
Average grain feeding at 2.4 t/cow/year to supplement dryland perennial ryegrass and clover pastures. Cut own silage and hay and buy in hay when needed



"Our higher BPI cows have proven they are more profitable. We need to be breeding and keeping heifers with higher BPI figures."

– Sam McCluggage

Genetic Progress for Balanced Performance Index



The Balanced Performance Index (BPI) reflects the economic drivers of net profitability for the range of dairy farming systems in Australia. Traits include production, survival, type, mammary, milking speed, temperament, cell count, fertility and feed efficiency.

BPI and profit

Our ImProving Herds results have clearly shown that high genetic cows – based on Balanced Performance Index (BPI) – are more profitable than the cows with the lower BPI figures in our herd.

The top 25% of our herd, based on BPI, are producing an extra 377 litres of milk, 31 kg protein and 46 kg fat than the 25% of cows with the lowest BPI figures. The extra milk production from the top cows resulted in an extra \$356/cow/year in milk income after feed and herd costs compared with the bottom group. They also last three months longer in the herd, which is equivalent to a third of a lactation more.

When you consider those differences across a herd of 700 cows, it adds up to a significant benefit in having cows with high BPI and selecting high BPI bulls to breed replacements.

Our higher BPI cows have proven they are more profitable. We need to be breeding and keeping heifers with higher BPI figures.

Our breeding program

Our key criteria when selecting bulls is production. We want bulls to be positive for fat and protein percentages and have good daughter fertility. I look at all the key traits but we particularly want good udders and type.

We use the Good Bulls app to get a short list of the bulls I will consider for using over the cows and the heifers. Once I have a list of suitable bulls, I will talk to both Tim Sedgley and Graeme Heaver as these semen reps have been working with our herd for a number of years.

Our cow breeding program uses 600 doses of sexed semen and 800 doses of conventional semen with a synchronisation program using prostaglandin (PG).

We put our heifers through a Fixed Time AI (FTAI) program on the run off blocks, but we don't do them all at the same time; we run them through in small mobs.

Most of the fresh sexed semen is used in our heifer AI program. We get the best conception rate with fresh sexed semen, but the number of bulls available for sexed semen can limit bull choices and the selection pressure for traits such as BPI.

We weigh and monitor our heifers regularly once they get to around 200 kg and we grow them out on the run-off blocks in groups of 60-75. We have found the heifers do better in smaller groups and are easier to monitor. We keep the heifers in these mobs for synchronising and joining because one mob is a comfortable day's work between milkings and we want to make sure we minimise stress.

With a FTAI program, the heifers will go through the yards four to five times so I want them to be relaxed. By handling the heifers in batches, we end up joining 250-300 heifers in the different mobs over four separate days.

We then use Jersey bulls as mop-up bulls for the heifers.

Sexed semen is expensive so if I use it in the main herd, I:

- only use sexed semen for the first two rounds of joining, i.e. the cow has to have calved in the first month of calving
- only use sexed semen on younger cows, i.e. 2nd and 3rd calvers

- only use on cows that have no history of calving issues before or after calving
- only use it in cows that will be in the herd for the next 12 months.

We metricheck all cows soon after calving to make sure they have cleaned up. We don't want to waste sexed semen on a cow if she has a reduced chance of conception. We don't have the option of carrying a cow over because we are a seasonal herd.

Last season we joined 280 replacement heifers. We sold 60 and calved down 220; 140 calves were heifers. In the mature cows, we calved down 460 cows and had 310 heifer calves. All up, we had 450 heifer calves from 680 calvings.

Of 450 heifer calves born last year, we will sell the late calves that are sired by conventional semen (in the cows) or by mop-up bulls (in the heifers), which leaves about 300 heifer calves that we genomically tested as part of ImProving Herds. We have recently been accepted as a Ginfo project herd and will be testing every heifer every year from now on. We use genomic testing as a tool to help make decisions earlier on which heifers to cull, which can be invaluable if we have a dry season or there are strong export prices if we have surplus heifers.

This season we started calving on 2 March and by 18 April we had calved down 510 cows for a total of 375 heifer calves. That included 160 maiden heifers joined to sexed

semen (140 heifer calves, 10 bull calves and 10 losses). At the time of writing these notes we still have 220 to calve.

Genomic testing gives us a prediction on a number of key traits even before the heifer milks. If we have a surplus we can sort out who to sell and who to keep at a younger age.

Genomic testing has also proven to have real value in verifying the parentage of calves. We can all make mistakes when cows are joined in big numbers and then there is always a degree of mismothering when cows calve down in big numbers. Genomic testing gets rid of these errors.

Our herd size can vary from 630 to 730 cows depending on the season. We drop herd numbers back in a dry season, which then gives us an opportunity to put a lot more selection pressure on the herd. Having a large number of heifer calves also means we can ramp up cow numbers very quickly if we need to.

Ideally, we want 220-230 heifers going into the herd each year to keep the age of the herd down and genetic progress heading in the right direction.

Financial gains with sexed semen

Having 150 surplus heifer calves to sell has made a big difference to our income streams in the business with stock sales now making up 25% of the farm income, while milk accounts for 75%. It's been a big change – we traditionally relied on 90% of our income from milk sales and 10%





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).

from livestock sales based on cull cows and low-value bobby calves.

Making stock sales a growing part of the business has also been a valuable tool to manage income risk, which has been particularly important given the recent falls in the milk price.

We have reared our bull calves for the past six years to sell to local farmers for use as commercial bulls. There is also scope for us to identify some genetically superior bulls as potential mop-up bulls for use in our heifer joinings, which, in turn, could generate more heifer calves.

Increasing our income from the sale of surplus heifers and improving the value of our bobby calves has helped run our heifer blocks and cover the cost of genomic testing.

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