

Expansion goals achieved with a dairy dry lot

Farm systems transition case study

Farm location

Tickawarra Farm, owned by Reagan and Sherrie Hamilton, is a 1090ha property located near Wakool in the western Riverina region of New South Wales.



Farm history

Reagan and Sherrie Hamilton have come a long way in the dairy industry in a very short time. In 2018, as young sheep farmers and shearers with no previous dairying experience, they purchased a small dairy farm near Wakool in the western Riverina region of New South Wales.

They started milking 10 cows through the 20-a-side herringbone parlour, aiming to use the milk to rear some calves. Once the heifer calves they reared entered the milking herd, they soon had more milk than needed so began selling about 500 litres per day to a processor whose tankers passed by their gate.

“We got the first milk cheque and we thought – gee, this is alright!” says Reagan.

The Hamiltons bought 65 more cows and started to consider themselves dairy farmers. However, they then had to endure tough times as conditions were dry and with irrigation water out of reach at \$600 per megalitre they were unable to grow any forage.

By the end of 2019 it still hadn't rained, so Reagan and Sherrie advertised to sell all the cows but could not find a buyer.

Then in early 2020, it started to rain and the outlook became positive again. They purchased more cows and quickly realised that they had outgrown their small dairy farm. Without hesitation they sold it and purchased a larger grazing farm in the area which was equipped with a 44-stand rotary dairy parlour.

Consider phase

Soon after settling in at the new farm, the Hamiltons were given an old horizontal mixer wagon in working order. After harvesting their first maize crop in April 2021, they used the mixer wagon to prepare maize-silage based partial mixed rations, which they fed out under fence lines.

The Hamiltons increased the herd to 300 cows and began to consider investing in a concrete feedpad that would enable them to feed out mixed rations with less wastage, better handle wet weather conditions and further increase cow numbers and production per cow. They estimated that such a feed-out facility would cost A\$1.5 million to build. However, by chance, in late 2021 a nearby dairy farm came up for sale which already had a concrete feedpad in place, integrated in a dairy dry lot. The farm also had a 50-stand rotary dairy parlour. So, never ones to let a good opportunity pass by, Reagan and Sherrie sold their farm and purchased 'Tickawarra Farm' and some nearby cropping blocks.

“We were at the stage where if we were going to get any bigger, we had to build a feedpad, and this was here and ready to go,” says Reagan.

Timeline



The dairy dry lot is designed for 800 cows, providing over 50m² loafing area per cow. It measures 200m long (runs north-south) by 250m wide, and comprises two earthen pens (eastern and western) with a concrete feedpad that runs north-south between them. The feedpad comprises a 6m wide central feed alley, with a 4.5m wide cow feeding alley each side with grooved concrete. At 200m long, the feedpad has sufficient bunk space for 500 cows at 0.8 m per cow. It is on a 1.5 per cent slope to facilitate flood washing of the cow alleys. The cow/feed barrier is post and rail, which at this stage is not fitted with sprays to cool cows in hot weather while eating. Each pen is elevated 2m above the feedpad and well sloped for effective drainage. The western pen has a steel framed shade structure measuring 150m long by 12m wide, with a skillion roof and gutters. Underneath this structure, cows are provided with a compost bedded pack made of woodchips. The remainder of the western pen and all of the eastern pen have a well compacted clay base underneath an earthen surface.



The Hamiltons purchased 350 cows with the farm, to which they added the 300 cows from their previous farm. The Hamiltons kept their cows separate from the other cows and ran them as a separate herd for the first 4 months after they arrived. They adapted very quickly to the dairy dry lot system.

"They never even took a backward step," said Reagan.

Reagan and Sherrie have made some substantial upgrades in the dairy parlour. In December 2022, they installed a new 25,500L vat. New cup removers, clusters, pulsators and an automatic teat sprayer have also been fitted. In early 2023, Reagan and Sherrie concreted the area between the feedpad and the dairy holding yard. They did most of the work themselves, as they have their own concrete truck.



Operate phase

Cows are run in two groups and fed different mixed rations to production. Grain and canola meal is fed in the dairy. Using a year-round calving system maintains a very flat monthly milk flow. The herd is currently averaging 28–32 litres per cow per day with a 4.95 per cent fat test and 3.9 per cent protein test. The bulk somatic cell count is around 150,000 cells/ml over most months of the year but can exceed 200,000 cells/ml during wet conditions. To help ensure that good reproductive performance is sustained, the Hamiltons fitted collars on cows for heat and (AI detection twice per day. Two rounds of sexed semen are followed by one round of conventional semen.



The daily routine is as follows:

- The first group of cows is brought in at 4:30am for milking, followed by the other group.
- While each pen is vacant it is ploughed and a batch of feed is prepared and delivered to the feed bunk.
- By 8.00am, all cows are back on their pens with feed in front of them.
- Calves are fed once per day.
- At lunchtime feed is pushed up.
- At 2:30pm the first group of cows is brought in again for afternoon milking, the pen is ploughed again and another batch of feed is prepared and delivered to the feed bunk. This process is repeated for the other group.
- By 6.00pm, all tasks are completed.
- Cow feeding alleys are flood washed once per week.

Over the winter months, the Hamiltons have found it a big challenge to keep the dairy dry lot sufficiently dry for cows. The system works best if cows are turned out and grazed over the wettest period. Yet whenever cows have been turned out to graze, their production has tended to fall two litres per day. The Hamiltons also found that when cows were put out on a grazing rotation in the wet spring of 2022, they developed very sore feet. If it is wet and there are more cows to treat for mastitis, the Hamiltons have an additional person to assist each milking.

"More hands make light work," said Sherrie.

With the extremely wet conditions in October 2022, the Hamiltons had to remove the cows from the dairy dry lot pens and put them on a paddock rotation. "Over six weeks from late October and through November, we had 460mm rain," says Reagan.

"The dairy dry lot is just not designed for that rainfall."

The dairy dry lot hadn't been cleaned out for five years when the Hamiltons took over the farm. They removed 7,500 tonnes of earth from the dairy dry lot in November–December 2022 and spread most of it where this year's corn crop will be sown.

Reagan and Sherrie find the dairy dry lot much easier to manage than a grazing system.

"You know exactly what you're feeding them and what you're getting back. We still do get some fluctuation in milk with the weather. That's the only thing that changes our milk."

The Hamiltons would not consider relying on rotational grazing.

"With the insecurity of water here, it would be too much of a risk," said Sherrie.

The Hamiltons double crop most of their cropping area when conditions are not too wet to sow and harvest on time, achieving a yield of about 30tonne/hectare. "Not having the cows compacting the ground is also a plus," said Sherrie. The Hamiltons are self-sufficient in forage. They grow wheat and barley (half for silage and half for grain), shaftal and ryegrass, lucerne and maize. Only canola meal, whole cottonseed, minerals and other additives, and half their total grain usage are purchased. At present, the Hamiltons have a reserve of about 15 months' usage of pasture silage and corn silage. If the 2023 spring/summer go well, the Hamiltons hope to have built up a reserve of over two years of silage usage.





The Hamiltons work very hard and take on advice readily. Sherrie describes Reagan as an 'ideas man' who is never afraid to have a go at something new. With her firm handle on their finances, Sherrie is able to ensure that the numbers stack up before major decisions are made. The Hamiltons have greatly appreciated the support that their advisors have given them. The advice of other dairy farmers in the region who have many years of experience successfully managing dairy dry lots has also enabled Reagan and Sherrie to advance rapidly along a rather steep learning curve. "Everybody has been really helpful, and hopefully we can make some good choices!" said Sherrie.

What would you do differently?

The Hamiltons are happy with the purchase of the farm and the improvements they have made to date. However, having looked at several loose housing facilities and freestalls locally and in the US, and considered the capacity to provide greater cow comfort during wet conditions and hot conditions, produce more milk and better control mastitis with these systems, they now see the dairy dry lot as a stepping stone to either a loose housing facility or a freestall.

Where to from here?

The Hamiltons' goal is to keep developing their dairy farm business while they are still relatively young, so that one of their growing children will have the opportunity to be involved. While Reagan and Sherrie consider a freestall to be an excellent system, they think that a well-designed loose housing facility with a generous loafing area (16–17m² per cow) would work very well for them. So they plan to build a loose housing facility with a compost bedded pack on the site of the eastern pen, running north–south alongside the feedpad. Accommodating 500 cows, the new facility will cost about A\$1 million.

"I think we will probably get an extra five litres a head easy, without changing any feeds, just by having cows more comfortable. I think that's very achievable."

Given the facility's north–south orientation, Reagan and Sherrie may install a retractable blind on its west side to protect cows from harsh afternoon sun in summer. Fans will be also installed to help keep cows cool and help the bedding dry. Sprays will be installed along the rail of the feedpad.

If the loose housing facility performs well, Reagan and Sherrie then plan to build a second loose housing facility for an additional 500 cows on the site of the western pen. However, if the first facility does not perform well, they may instead build a freestall elsewhere, oriented east–west. The shade structure will be removed from the western pen and re-configured on a nearby site as a maternity shed. The silage pits will also be concreted and the dairy parlour upgraded in 5–10 years' time.

For further information

Visit dairyaustralia.com.au and search 'National Feedpad and Contained Housing Guidelines'

Visit dairyaustralia.com.au and search 'Farm Systems'

Visit dairyaustralia.com.au/farmsystemevaluator



Overview

Farm			
Farm size (ha)	1090		
Grazing area (ha)	400		
Cropping area (ha)	690		
Production system	Dairy dry lot		
Dairy type	50-stand rotary		
Climate (BoM historical data for farm locality)			
Mean annual rainfall (mm)	3875		
Mean no. rain days/year	96		
Mean no. days/year $\geq 35^{\circ}\text{C}$	7.6		
Mean no. days/year $\geq 40^{\circ}\text{C}$	33.6		
Mean annual daily solar exposure (MJ/m ²)	16.9		
Conditions over summer	Dec	Jan	Feb
Mean temperature ($^{\circ}\text{C}$) at 3:00pm	28.2	31.2	30.1
Mean Relative humidity (%) at 3:00pm	25	22	27
Mean Temp. Humidity Index at 3:00pm	73	75	75
Mean wind speed (km/h) at 3:00pm	19.5	20.5	19.2
Mean daily solar radiation (MJ/m ²)	27.6	27.4	24.1
Herd			
Milking cow numbers	700		
Breed	Holstein-Friesian plus some crossbreeds and Jerseys		
Calving pattern	Year-round		
Production per cow per year (L)	9,000		
Infrastructure and equipment			
Infrastructure	<ul style="list-style-type: none"> • 2 dairy dry lots (one with centralised shade shelter) with central, concrete flood-washed feedpad • 50-stand rotary dairy 		
Equipment	<ul style="list-style-type: none"> • Mixer wagon and tractor • Tractor for push-ups • Electronic collars 		
People			
Full time equivalents (FTEs)	7.5		
Cows per FTE	94		

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Disclaimer

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