



Simon Rea

Naringal

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Local climate

BOM Historical Data - Warrnambool

Mean Monthly Max Temp °C
(Jan – Feb)

24.8

Mean no of days/year above 35°C

9.2

Mean daily solar exposure

19 Mj/m²

Mean annual rainfall

730mm

Higher in winter

Av Max Monthly 9:00am

Relative Humidity%

Above 74% all year

Above 90% May-Aug



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COMPOST PACK BEDDING COW SHELTERS

**Clear roofed
compost shelter**



Simon's farm was visited on the 15th May 2018 and this case study is a summary of Simon's interview and observations made during the site visit.

Background

Simon and his wife purchased the 225ha farm in 2010. Since then, improvements have been made, including the installation of a road underpass for the herd, a new 50-unit rotary dairy and more recently, a clear roofed, deep litter dairy shelter. Simon calves cows and supplies milk all year round, calving 75% of the herd in March, and 25% in Aug/Sept. There are 4 FTE labour units. They have a 100ha runoff block and are currently milking 560 cows twice daily.

Reason to build the shelter

The main reason to build the facility was to help shelter cows during the winter. It was also built to increase cow numbers specifically by increasing pasture use efficiency. This would be achieved by reducing pasture stocking rate during wet winters and reducing pasture damage. It would also be useful to keep cows cooler during hot summer periods.

Construction

The 3-year-old shelter is a 5 X span, 81 X 49m clear roofed structure, with 4m open sides and has a compost bedding area of 4,000m². The structure is rated to withstand wind speeds of 165kph. Cattle are fed a PMR on a feed pad and trough 40m from the shelter, surrounded by a large loafing area. Vents in the roof can be manually or automatically opened to allow hot air to escape when necessary. Shade cloth underneath the roof can also be extended if necessary, manually or automatically, to reduce solar radiation. The centre bay was designed to convert to a feeding lane if necessary, but feeding on the external feedpad has proved successful. The plastic roof has a life of 10 plus years, and costs approximately \$12,000 - \$14,000 to replace.

Simon built the shed on a North/South axis, mainly for convenience, but also likes the morning and afternoon sun to enter, and help dry the pack, giving it a dryer surface with the hope of fewer bacteria.



Vents in the roof can be manually or automatically opened to allow hot air to escape when necessary.



Shelter utilization

Generally, all the cows utilize the shelter most days and at nights, and if there are too many cows, preference is given to fresh cows. Depending on pasture availability, the cows graze pasture or are fed a TMR on the feedpad during the day and at night. With inclement weather in winter, sometimes all 560 cows are housed for 1-2 weeks, to provide the cows shelter and to stop pasture damage. The bedding space availability is approximately 7-8m²/cow for an average of 18 hours/day usage. In winter, pasture stocking rate can be halved, with half the herd using the shelter and supplementary feeding and the other half pasture and supplementary feeding for 24 hours,

then swapping the two herds. In hot weather, all cows utilize the shelter for the hottest period of the day with air temperatures in the shelter well below the outside temperature. A cooling breeze generally keeps good air movement in the shelter and cows rarely pant from heat stress. There are no fans used. Sometimes the shed is unused in summer.

PMR/TMR is based on home-grown maize silage, conserving 250 tonne DM/year stored in a gravel based bunker.

Sometimes an area of the shelter is cordoned off and used as a calf rearing facility.

In hot weather, all cows utilize the shelter for the hottest period of the day with air temperatures in the shelter well below the outside temperature.





Operation

Export grade pine wood chip bedding was initially installed to 500mm depth over a packed clay floor. The bedding is usually composting (heating), but will not compost if underutilized. The pack is tilled 1 – 2 times daily to about 30cm using a tined implement at speed and new bedding added when it starts to stick to the cows, or the SCC is increasing. The bedding is generally hot below the surface and usually steams when tilled. The compost pack is now probably more than 50% manure solids.

Approximately 10 semitrailer loads of bedding have been added over the 3 years, mainly to replace what cows have walked out.

When the whole herd uses the shelter full-time,, recovery of the pack is

assisted by increasing cultivation frequency and adding more wood chip.

Simon is removing the bedding completely from 1.5 bays/year, replacing the whole bedding over a 3-year period. The removed bedding is blended with dry manure solids from feedpad and spread directly onto the pasture.

Simon stresses the importance of having good and well trained staff; excellent milking management procedures; well maintained tracks, floors and dairy; feeding post-milking to keep cows standing and the bedding must be cultivated at least daily even when not in use and to have unrestricted natural air flow across the pack.

Costs

Capital costs

Structure \$200,000

Construction cost - \$80,000

Cost/cow

\$500

Operational

approximately \$22,000 in new chip bedding over the last 3 years

Issues

Cell count (BMCC) will increase if bedding becomes too wet. This is managed by more cultivation and adding wood chip when bedding begins to stick to the cows.



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Outcomes

The new shelter and feedpad has allowed Simon to better manage the farm during extreme weather events, particularly in wet weather and has enabled him to push their cow numbers to 560. This is mainly through improved pasture utilization. The milking herd has grown from 420 pre-shelter to 560 Holstein Friesian cows without a significant increase in land area or imported feeds. The cows seem to love it and are very comfortable.

The last 2 years have resulted in growing 10% more pasture, especially in spring, increasing annual dry matter production from 8.0 to 8.8 tonnes/ha, in spite of having wet winters. Production has increased from 200 tonnes to 315 tonnes of milk solids over this period, on the same area of land, with a minimal increase in bought-in feed and with an average production of 15,000 litres/day all year.

The BMCC is usually below 85, which is approximately half of what it was previous to the shelter being built. Simon also attributes this to the cows having less time in the winter wet pastures and mud, having quality staff and excellent milking management. Clinical cases of mastitis have also decreased.

The fertiliser value of the bedding that is spread on the pasture has reduced bought-in fertiliser use by two-thirds. In winter, the cows are not wet or cold, there is no slipping on bedding and cows feel safe, especially when on heat. Labour has increased as cow numbers increased and effluent management is easy and effective.



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FOR MORE INFORMATION

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