



The Garratt Family Farm
 "Argyle"
 Southbrook
 near Pittsworth, Queensland
 email.com.au



Local climate

BOM Historical Data – Pittsworth

Mean Monthly Max Temp °C
 (Dec - Feb)

29.1 – 29.9°C

Mean no of days/year above 35°C

5.1

Mean no of days/year above 40°C

0.2

Mean daily solar exposure

19.2 Mj/m²

Mean annual rainfall

697mm

(Predominantly in summer)

Av Max Monthly 9:00am Relative Humidity%

70 – 73%

Feb - Aug

COMPOST PACK BEDDING COW SHELTERS

Narrow compost shelter with feedpad, open feed bunk and dry lot



The Garratt family farm was visited Monday 16th April 2018 and the case study below is a summary of the interview with Peter and observations made during the site visit.

Background

Southbrook is near Pittsworth on the Darling Downs in Queensland. The farm is black soil, with the dairy and cow shelter built on a sandy ridge. They milk 230 Holstein Friesian cows, and use electronic ID collars. The summer period is full TMR, with PMR and ryegrass grazing during winter. The average production is 30 litres/cow/day. They grow all their own feed, making silage from forage sorghum and barley, as it is too dry to reliably grow corn.



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Construction

First to be constructed was the 160m x 5m concrete feed pad with skillion shade roof over the cow feeding alley built in a north-south orientation. The roof height is 3.6m at eave to 4.5m at the top. A gutter was fitted to pipe water away.

The second skillion roof shed was constructed two years ago, with a saw tooth design with first roof. Dimensions are 160m x 8m with a 160m x 2m awning to protect the pack from weather on eastern side. The floor is compacted earth/gravel with compost bedding approximately 300mm deep on top. Three water troughs are on eastern side with drain pipes to reticulate the waste water away from bedding.

The two year old shed is built on a sandy ridge above the black soil flats. Being built on a ridge is critical to capture the breeze.

The North-South orientation was convenient for the farm and sun helps to dry the pack. The cows can utilise the shade as it moves over the dry lot when the afternoon sun enters the pack. There is a 150mm wall separating the concrete feed alley and the compost bed and no wall on the outside of the compost pack. There is no barrier between the alleyway and the compost beds and no barriers between the compost bed and the dry lot, except where the troughs are mounted.



Reason to build the shelter

Due to the herd growth, the feeding system had changed to less grazing and more time on the feed pad using TMR. This also added to cow management issues, especially regarding herd health, heat stress and wet weather management. Building a roof over the feed pad and later expanding the roof to incorporate a compost bedding loafing area solved the herd health issue and also minimised the risks associated with extreme weather events.

Peter hoped to reduce clinical mastitis rates, which were a problem in dry weather and out of control in wet weather. He also hoped to be able to give the cows somewhere cool and soft to lay down, getting the cows off their feet in wet weather, thus reducing the incidence of foot rot and bruising.



Shelter utilization

The compost shelter is used for the milking herd only, being utilised full time in summer and hot weather (Christmas to mid-May), when using TMR. In winter, the cows graze ryegrass and get PMR daily and use the compost bed at night. If the weather is very wet, then the cows will use the compost bed full-time, with TMR.

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Operation

The pack was started with woodchip, but is now nearly 100% dry manure solids. It is now nearly always dry on the surface and composting well, being hot at 20cm depth. At this point in time, Peter does not intend to clean the pack out completely, but just keep it actively composting.

The pack is tilled once or twice daily, depending on use (taking 10min for each till) with a chisel plough to approximately 20cm depth and the alleyway is dry-scraped twice weekly (taking 30 min each time).

The pack moisture is monitored by assessing the pack structure after each tilling. If the pack surface is loose and dries quickly, the moisture content is considered to be OK. If tiller is bringing up wet clumps (described as cheesy), this is a trigger that the pack is too wet,

Peter may then add a load of sawdust and spread it over the whole area (summer only). Sawdust is becoming scarcer and Peter is looking for an alternative bedding material.

Peter thinks that the cows are very comfortable and use all the bed evenly. Sometimes they go outside onto the dry lot at night when the weather is hot.

Peter believes that the critical aspects of success using a compost bedding pack, include; initial siting to capture a good breeze, regular daily tilling, and assessing the pack moisture daily.

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Costs

Capital

The loafing shed and feed pad roof are constructed from second hand materials sourced from disused chook sheds. Both shed roofs cost \$30,000 for materials, plus the cost of pipe posts, concrete footings, galvanising, bolts, screws, guttering and tanks, and some additional labour, bringing total capital cost for both sheds to \$70,000. The concrete feed pad cost approximately \$90,000.

Operating

2-3 saw dust loads/yr, 90m3 per loads @ \$1,530+ GST delivered / load.

Tilling - 90hrs/yr tractor,
@ 60/hr = \$5,400/yr

Scrape manure off pad 52hrs/yr@
60/hr = \$3,120/yr



Issues

The compost bed gets high traffic and becomes wet where cattle access water troughs. Some rain occasionally blows in or comes in as mud on cows' feet, wetting the pack.

Birds build nests in the pipe taking water from the feed alley roof, sometimes flooding the pack. The openings have been screened, but need regular cleaning before rain events.

More pack area is probably necessary as cow numbers increase.



Outcomes

Initially, Peter had a feedpad only, with many cows laying on the pad during hot or wet weather. This resulted in a high level of mastitis and lameness. The compost shelter is now working well, with very little mastitis or lameness. SCC have remained the same (below 200), but clinical mastitis cases have decreased by 90% since using the compost pack shelter. Previously, clinical environmental cases increased with wet weather and it was not unusual to get 30 cases after rain. However, since using the pack, there may be only two new cases during a wet period. Lameness, especially footrot, was also quite common following rain, but is now quite rare.

Peter would like to improve his system by having the water troughs in the dry lot, further away from the pack. He would also like to reduce stocking density on the pack by building a lean-to into the dry lot and increasing the pack area. He will also put a gutter on exit to the dry lot to reduce mud. He may also install fans to cool cows in summer, especially if the climate gets warmer and more humid.

The Garratt family is very happy with the results and would never operate again at this intense level without a system like this to manage the environment for the cows.



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FOR MORE INFORMATION

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