



**Rachael Parkes & Ged Mullins** *Ellerby Dairy Farm*  
 Ellangowan  
 near Clifton, Queensland  
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**Local climate**

*BOM Historical Data – Clifton*

Mean Monthly Max Temp °C  
 (Nov - Feb)

**27.0 – 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/m<sup>2</sup>**

Mean annual rainfall

**697mm**

*(650 at farm) Higher proportion in Summer*

Av Max Monthly 9:00am Relative Humidity%

**70 – 73%**

*Feb – July*



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**COMPOST PACK BEDDING COW SHELTERS**

**Semi-compost shelters in dry lots with open central feedpads**



*The farm was visited Monday 16th April 2018, and the Case Study below is a summary of Rachael's interview and observations during the site visit.*

**Background**

Rachael and Ged run a mixed breed commercial herd of 1,000 milking cows, near Clifton, on the Darling Downs in Queensland. The farm has black soil flats with the dairy and sheds on a sandy ridge.

They use dry large lots with roofed shelters for the milking herd. The system is 100% TMR, mostly from contract purchased feed. The cows are fed a TMR of silage (corn, barley, soya bean and wheat) and concentrate (grain and canola) with no hay.

**Reason to build the shelter**

To mitigate heat stress in summer, provide better cow comfort and gain a subsequent increase in cow health and production.



## Construction

The farm has 4 X 4ha dry lots/loafing pens, each with a roofed 30m x 60m shelter. Each shelter eave height is approximately 4.5m and 10m in the centre, with a full-length vent in the roof and can hold approximately 250 cows per shelter and per drylot. The shelters have no fans and are orientated North-South, mainly to suit the slope. Rachael believes that the sun helps dry the pack and the cattle can follow the shade into the dry lot when sun is entering the pack in the morning or evening. The feeding bunks are approximately 20m from the shelters on concrete pads with nib walls. The watering points are midway between the shelters and the feeding pads. Between each pair of dry lots, there is one feeding laneway/feed bunk, with a concrete pad either side to service each dry lot.

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## Shelter utilization

The shelters are utilised full-time by the milking herd. The cattle also utilise the dry lot, where a considerable amount of defecation/urination occurs. There is always a breeze and the cows can choose whether they lay inside or outside. They will all generally lay inside in wet weather and outside at night, especially during the hot weather. The sheds have been designed to be able to convert to free stall barns if needed, but to date there has been no need.



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## Operation

The 1,000 cows are divided into four herds, with three herds divided on production, and one high SCC herd.

The beds are cultivated twice per day, taking approximately 15 minutes per shed. The bedding is partially removed once per year and spread on the paddocks. No new bedding is replaced and the beds are now 100% dry manure solids.

The initial pack was started using sand bedding, but all packs are now dry manure solids, only composting occasionally and are rarely hot or steamy when cultivated. This is more accurately described as a bedded pack shed that occasionally composts. The pack is cultivated to 30cm with a tined implement, twice daily (morning and lunchtime) and three times daily in wet weather.

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The cows seem very comfortable, lay down well and are generally chewing their cud if standing. The pack is mostly dry and comfortable and occasionally wet when rain blows in. There is a bigger issue in prolonged wet weather when cows walk in mud from the dry (wet) lot. The cows are generally spread evenly in the shelters and only bunch up when buffalo fly season starts.

The 2ha loafing pens are dry scrapped when necessary, approximately twice monthly, with the dry manure from the pack and dry lot areas used to fertilise the farm.

## Costs

### Capital investment

Approximately \$1,300/ cow, and all construction labour was out-sourced.

Cow bed maintenance takes approximately two hours of labour per day and uses approximately 40 litres of diesel per day.

In extreme wet weather, the cows carry wet material on their feet in from the lot onto the pack.



## Issues

The initial neck rail to the feed alley was rubbing the top of the cows' necks. The new rails are now offset to allow the cows a bit more room, and the rail is round instead of angular.

In extreme wet weather, the cows carry wet material in from the lot onto the pack on their feet. This system could be adapted with the use of a concrete apron around the shelters, but this issue has been managed to date by extra tilling of the pack.

There has been a *Streptococcus agalactiae* mastitis issue, but this was probably introduced with cows and not an issue with the pack. Environmental mastitis is rare.



## Outcomes

Rachael and Ged are very satisfied with their sheds they started with two sheds and have replicated the system. The design has not changed, except the neck rail on the feed pad.

Since using sheds, compared to using open drylots and feedpads, production has increased by 3 litres/cow/day while the culling rate, mainly from reproduction and mastitis issues, has halved. SCC has remained about the same, with similar milking management as previously.

Rachael and Ged explain that the cows now cope better, especially in extreme wet and hot conditions. There is an increase in cow comfort, although this is hard to measure, but the cows use the

shed area without being locked in. Extra labour in this system is minimal. Feed wastage has also been reduced by 10% compared with troughs and dry lots only. There is very little lameness and hooves are trimmed annually if required.

They are very happy with this system and it works well in their relatively dry environment. They also like the sustainable nature of this system as opposed to a full freestall barn and will continue to expand using this system, but will look at some way of improving the air flow in the shelters. The dream is to have all classes of stock housed in this way.



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### FOR MORE INFORMATION

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