

Succeeding through the seasons

Part 2: Dairy cows in drylots

Ian & Karen Litchfield, Mayrung, NSW

Summary of changes made to feeding system

In response to increased temporary water prices, Ian and Karen developed two drylots in 2008 and moved from a pasture-based production system to a hybrid feeding system where cows graze annual pastures from April to November and are then fed a mixed ration on the feedpad until March. As cows no longer had access to paddocks and trees over summer, shade sheds were established in the drylots to reduce the impact of heat stress.

Feedpad design and management

The drylot was built after a trip to the US in 2007. The US design guidelines at that time included the following recommendations:

- Minimum loafing pad area of 55 to 60 m²/cow
- Minimum shade area of 4 to 5 m²/cow
- Minimum eave height of 3.7 m to maintain ventilation through shade sheds
- Proper construction begins with proper site drainage design – the area under the pen shades should be 300-600 mm higher than the pen surface and a minimum grade of 2.5% is required to shed runoff and minimise problems with mud and odour.

At the time the drylot was designed, the US recommendation for managing these areas was: "If you do not want to maintain pens on a daily basis, do not build a drylot dairy." Ian and Karen use a landplane to mix and dry out fresh manure pads twice a day. The entire loafing pad is worked each morning, while only the areas around and under the shade shed are worked

Key Points

- Investment in drylot (\$280/cow) supports move away from maintaining perennial pasture over summer
- Providing shade is a critical part of developing a drylot and has reduced the impact of heat stress
- Maintaining the loafing area is another critical requirement for successful management of drylots
- Forage quality is critical – poor quality affects profitability.
- Cows can be treated individually.

Farm profile

Herd: 500 pure bred Holstein cows.

Calving pattern: Calve for four weeks in March, May, August and November.

Farm size: Effective milking area of 150 ha, total farming area 420 ha; 1,019 ML of water entitlement and 900 ML deep bore extraction licence.

Dairy: 50-unit rotary dairy, milk meters and individual feeding.

Production: 4,658,462 L/year (2010/11).

Predominant pasture: Annual ryegrass with clover.

Summer crop: Maize for silage.

Feeding: Pastures supplemented with feed in the dairy and on the feedpad.

Feeding system classification: Type 4 – A 'Hybrid System' where pasture is grazed for less than nine months of the year and a PMR is provided on a feedpad for the balance. Concentrates are fed in the dairy (up to 3.46 t of wheat, canola and lupins).



Karen and Ian Litchfield

in the late afternoon. This maintenance takes about an hour in the morning and 30-40 minutes in the afternoon. When it is wet, a scarifier is used instead of the landplane.

For further reading about design criteria, see 'Guidelines for Victorian Dairy Feedpads and Freestalls' (DPI 2010) and 'Cool Cows' (Dairy Australia 2008).

Ian and Karen are happy with the investment they have made in the drylot. At \$280 per cow, they feel it was money well spent.

Ian says the feedpad has the following benefits:

- Supports the move away from perennial pasture to feeding more conserved forage
- Reduced feed wastage.
- The feedpad allows cows to be grouped according to stage of lactation.

He would make the following changes if he were to build the drylots over again.

- More slope on the north-south drainage (increasing it from 0.2% to 0.4%).
- Larger drains
- Bigger sheds
- Increase the size of the drylots to fit 300 cows in each.
- Concrete and flood wash the apron where cows stand while feeding.
- Direct pad drainage to a storage separate to the reuse sump

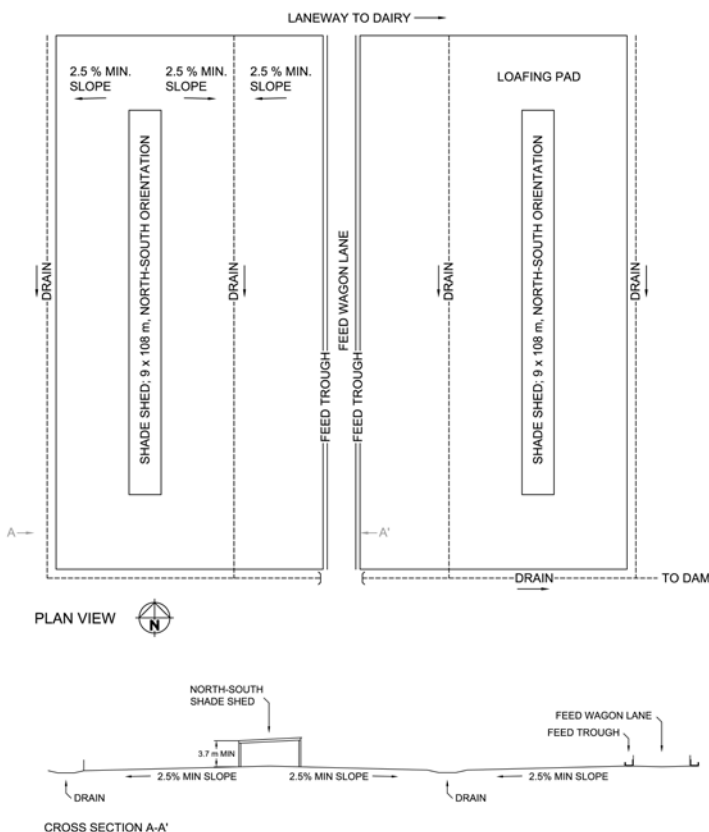
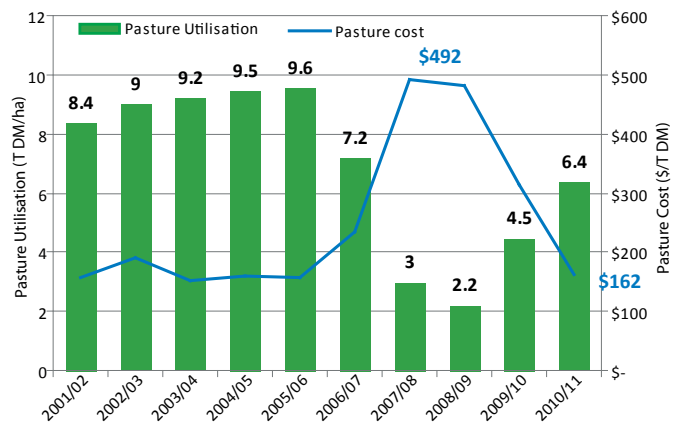


Figure 1: Layout of the Litchfields' drylots.



Graph 1: Pasture utilisation and pasture cost.

Avoiding heat stress

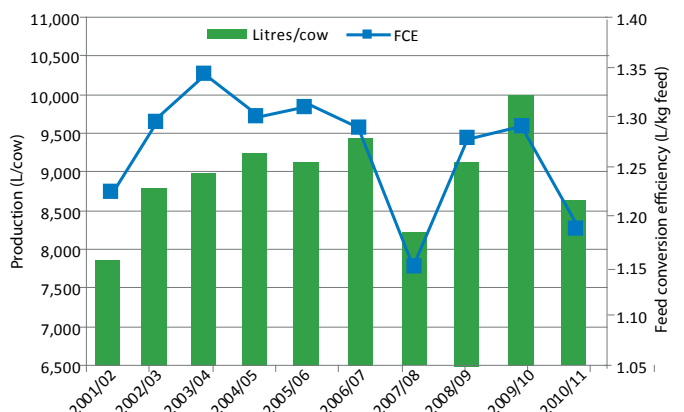
Ian believes the shade sheds have reduced the impact of heat stress on his cows. Ian says "During bad heat stress events, we now see a 2 litre per cow drop where we might have previously seen 4 litres". The drylot and shade shed combination offers the Litchfields benefits such as:

- Cows don't need to walk far in the heat.
- Cows are close to the dairy where the yard has been equipped with sprinklers. During hot periods, the cows can walk back to the yard to cool down under the sprinklers.
- Dry matter intake and production remain steady as the cows are no longer stressed on hot days.
- Reproductive performance has improved through the hot months.

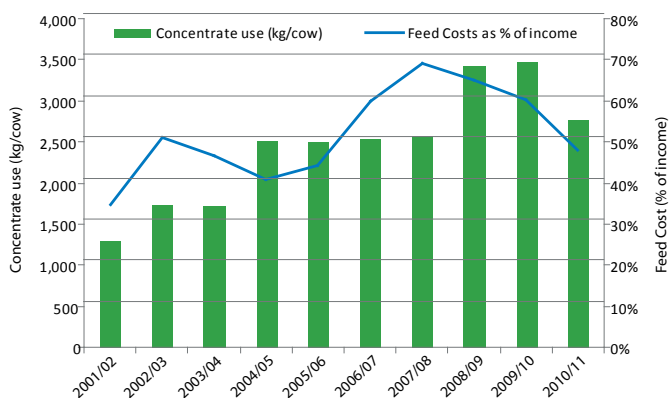
Feeding Strategy

Graph 1 shows the amount of pasture utilised per hectare and the cost of pasture per dry tonne since 2001. The cost of pasture reached a peak of \$492 per dry tonne in 2007/08 and was more expensive than the average cost of concentrates and purchased forages at the time.

When it comes to feeding, Ian and Karen try to fully feed cows according to production. The herd is split into two groups and they have milk meters in the dairy which allows them to feed grain to production.



Graph 2: Production per cow and feed conversion efficiency.



Graph 3: Concentrate feeding rate and feed cost as a percentage of income.

Graph 2 highlights the impact poor quality forage had on production per cow and feed conversion efficiency in 2007/08 and 2009/10. “In the spring of 2007 there was a lot of panic buying in the market and we ended up buying expensive forage of poor quality. This is one of the major lessons we learnt through the drought – always buy quality where possible.”

In the spring of 2010, wet weather delayed the start to the silage making season and this resulted in a larger than normal crop being harvested but of poor quality. Both events impacted on production per cow and feed conversion efficiency and highlighted the impact that forage quality has on production.

Graph 3 shows the increased use of concentrates through the drought. Milk production and concentrate feeding peaked in 2009/10, with 10,000 litres per cow and 3.4 tonnes of concentrate respectively and at a feed conversion rate of 1.29 litres per kilogram of feed.

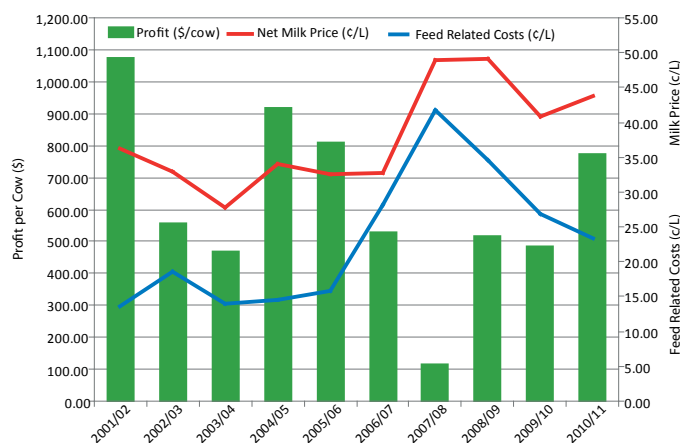
Business Performance

Since purchasing the property in 2000, Ian and Karen have experienced variable climatic conditions together with volatile milk prices and fluctuating input costs. Despite this, they have average a return on assets of 8.5% over this period.

Graph 4 highlights the volatile business conditions, which shows profit per cow, milk price and feed related costs over the past 10 years. Profit has been in the range of \$118 to \$1,077 per cow, while milk price has ranged from 27.9 to 49.2 ¢/L per litre, and feed-related costs have ranged from 13.6 ¢/L in 2002 to 41.8 ¢/L in the worst of the drought years (2007/08).

Asset accumulation and growth has also continued throughout this period, with assets growing by 300% and equity growing by 184%. Graph 5 depicts equity, asset value and return on assets since 2001. It also highlights the volatility in returns, while at the same time showing a steady increase in assets and equity.

The table shows the capital investment Ian and Karen have made in their farming enterprise since they purchased their first



Graph 4: Profit per cow, milk price and feed related costs.

farm in 2000. The enterprise has grown to 422 hectares, with 1,024 ML of water entitlement and 800 ML bore extraction licence, milking 580 cows.

Table 1 History of capital purchases, development and growth.

Year	Capital Purchases & Development	Herd size
2000	Bought 'Kariana' – 184 ha	184
2006	Bought 'Pineview' – 109 ha, 362 ML	167
2007	Built rotary dairy	297
2008	Developed drylots and built shade sheds	360
2009	Bought 'Yargunyah', 129 ha, 800 ML Bore	431
2011	Upgrade drylots	580

Labour Efficiency

Ian and Karen have always been effective with their own time and that of their employees. Historical data in Graph 6 shows that their labour efficiency, measured as litres per labour unit (full time equivalent), has always been good.



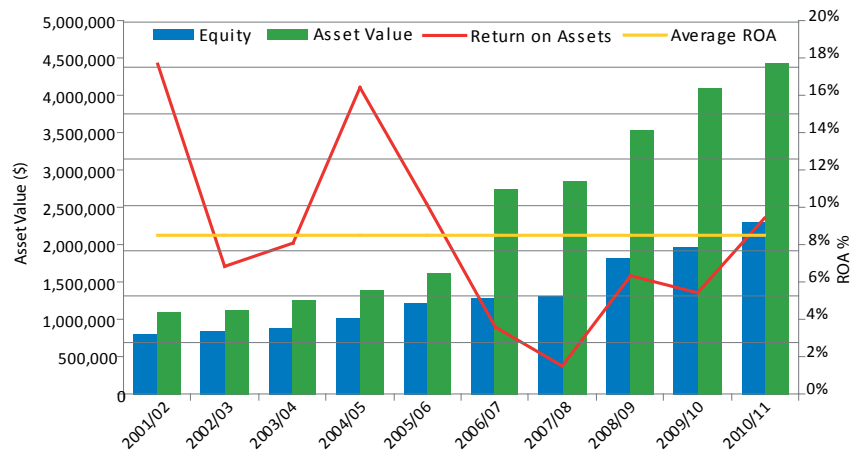
The construction of the rotary dairy in 2007 and the use of technology within the dairy have resulted in an upward trend in labour performance.

While the cost of labour has moved up on a cents per litre basis, it is still considered to be low. This is despite the introduction of the drylot feeding system, which requires a PMR to be fed to the cows twice daily and for the drylot to be groomed on a daily basis. Labour time is saved in moving cows to and from paddocks and in irrigating perennial pastures through the summer.

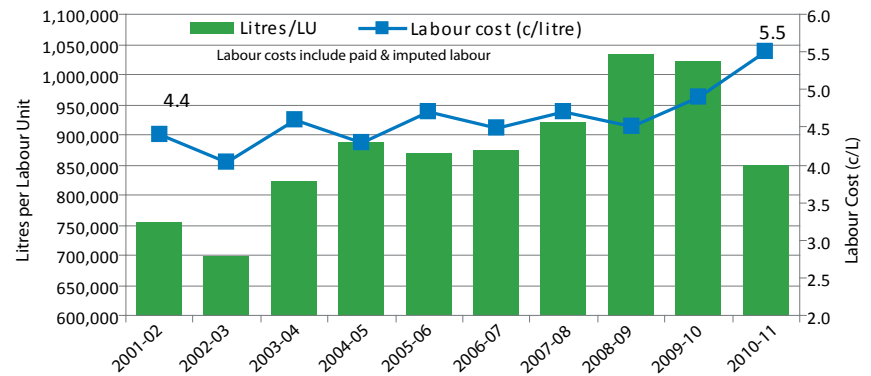
The introduction of technology in the dairy and the drylot has allowed Ian and Karen to focus more on individual cows from a feeding, animal health and reproduction perspective. Cows are grouped according to milk production and reproductive state and can be fed and managed accordingly.

Future Plans

- Milking 720 cows (600 cows all year-round) within two years.
- Build a third drylot and shed.
- 100 hectares on 'Pineview' developed and laid-out to flood irrigation.
- Maize silage will play an increasing role in cow diets.
- Grow some perennial pasture to increase grazing in shoulder periods of early summer and early autumn, which will allow fresh cows (November and March calving cows) to get some pasture in their diet.
- Concrete feedpad and feed wagon lane.
- Elevating staff to managers (reduce Ian and Karen's role in dairy).



Graph 5: Equity, asset values and returns over 10 years.



Graph 6: Litres per labour unit and labour cost.

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This case study has been prepared by Brian Crookart from CRC Agrisolutions for the Future Ready Dairy Systems project, November 2011. The project is supported by the Dairying for Tomorrow program, through funding from the Australian Government's Climate Change Research Program and Dairy Australia.