

# Managing feed over runs of poor and average conditions: implications for equity and liquidity

## Key points

- This analysis investigated strategies to manage difficult dairying conditions, including poor seasons, high supplementary feed prices and a low milk price, compared at different levels of starting equity.
- Maintaining herd size and decreasing supplementary feed intake and milk production was the most effective strategy to limit decreases in net cash flow in years of poor conditions. But cash flow recovery was delayed when conditions improved because of a milk production penalty from reduced body condition.
- Maintaining herd size and milk production resulted in large negative annual cash flows. However, this strategy placed the herd in a position to rapidly recover when conditions improved.
- A farm with low equity has large interest payments. Low cash flows in difficult years can increase the risk of these businesses not being able to service debt.



## Introduction

Using borrowed funds enables farm managers to improve and expand their businesses. But farm debt increases the use of cash in a business because principal and interest must be paid in years of good and bad operating conditions. This makes businesses with a high level of debt more vulnerable to liquidity, or cash flow, problems. In Victoria, the increased frequency of years with below average annual rainfall since the year 2000 has resulted in seasons of decreased feed availability and subsequent increases in feed costs. Milk price has fluctuated throughout this time and occasionally, a low milk price has coincided with poor seasonal conditions and high feed prices.

Adverse conditions occurring simultaneously within a year, or in consecutive years, pose the greatest tests of the ability of a business to survive. This study examined the impact on equity and cash flow of some strategies used to manage poor operating conditions. Seven

scenarios were developed that included two seasonal operating conditions and three feed management options. The impact on net cash flow and changes to the business balance sheet for each scenario was assessed over a 5-year period in which poor operating conditions were experienced in two consecutive years.

## Case study farm

A family-run dairy business in south west Victoria was used as the base system. The farm had 244 ha of milking area and an additional 145 ha of leased land, which was used to run all young and dry stock. The milking herd of 420 Holstein-Friesian cows had a single calving period from May to July with an average lactation length of 305 days. Annual milk production was 3,363,000 litres with 133,000 kg of fat (3.9%) and 110,000 kg of protein (3.3%). Grazed pasture consumption on the milking area was 5.1 t DM/ha and supplementary feed comprised 52% of metabolisable energy requirements of the lactating cows.

## Operating conditions

The annual operating conditions examined were either poor or average based on probability distributions for milk price, supplementary feed prices and grazed pasture consumption, developed using historical data (Table 1). Average operating conditions was where milk price, feed prices and pasture consumption were the 50th percentile of their distributions. Poor operating conditions was where milk price was low (2nd percentile), supplementary feed prices high (95th percentile) and seasonal conditions were poor (5th percentile of the distribution for pasture consumption).



**Table 1. Prices and grazed pasture consumption under average and poor operating conditions.**

Input price/yield	Average operating conditions	Poor operating conditions
Milk price (\$/kg P+F)	5.87	4.90
Wheat grain (\$/t DM)	285	336
Pellet (\$/t DM)	377	426
Maize grain (\$/t DM)	387	548
Cereal hay (\$/t DM)	242	324
Silage (\$/t DM)	186	277
Grazed pasture consumption (t DM/ha)	5.1	3.8

## Feed management strategies

Farmers, farm business consultants and extension officers were consulted to identify feed management strategies used by dairy farmers in years of poor seasonal conditions and prices such as those experienced in 2002/03, 2006/07 and 2007/08 years. The strategies identified were summarised into three broad decisions:

- **Maintain:** Maintain herd size, metabolisable energy intake and milk production from the base year, which had average conditions.
- **Sell:** Sell 25% of the herd, while the remaining herd maintains metabolisable energy intake per cow and milk production per cow from the previous year.
- **Decrease supplementary feed/cow:** Decrease metabolisable energy intake by 20% from the base year, with milk production per cow and body condition decreasing as a result of decreased feed intake.

Combinations of feed management decisions over the two consecutive years of poor conditions were developed to give seven scenarios (Table 2). The decision combinations reflect the assumption that decisions made in the first year of poor conditions determined what decisions could be made in the second year of poor conditions.

**Table 2. Feed management decisions in poor and average conditions for the scenarios analysed.**

Seasonal conditions/ Scenario	Year 1 Average	Year 2 Poor	Year 3 Poor	Year 4 Average	Year 5 Average
1	Base	Maintain	Maintain	Maintain	Maintain conditions used in base year
2	Base	Maintain	Sell cows	Buy cows	Maintain conditions used in base year
3	Base	Maintain	Decrease supplementary feed	Increase supplementary feed	Maintain conditions used in base year
4	Base	Sell cows	Maintain smaller herd size	Buy cows	Maintain conditions used in base year
5	Base	Sell cows	Decrease supplementary feed	Increase supplementary feed and buy cows	Maintain conditions used in base year
6	Base	Decrease supplementary feed	Maintain decreased supplementary feed	Increase supplementary feed	Maintain conditions used in base year
7	Base	Decrease Supplementary feed	Sell cows and maintain decreased supplementary feed	Buy cows and increase supplementary feed	Maintain conditions used in base year

## Equity

Each scenario was analysed for two starting equity positions to represent two levels of debt. Starting equities of 45% and 70% were selected to represent a business with low and reasonable equity. An annual balance sheet was used to assess the annual equity position and to chart the change in equity over the 5-year period.

## Assessing financial performance

The performance of the base system and different scenarios was estimated using whole-farm discounted net cash flow budgets over a 5-year period. The key measures of cash flow and equity were:

**Net cash flow before tax (\$)** = Annual gross cash receipts minus cash variable and overhead costs minus lease cost and personal drawings minus debt servicing (principal and interest)

**Cumulative net cash flow (\$)** = (Annual net cash flow year 1 + annual net cash flow year 2 + annual net cash flow year 3, etc.)

**Equity (\$)** = Value of total managed assets (\$) minus total liabilities (\$)

$$\text{Equity (\%)} = \frac{\text{Equity (\$)}}{\text{Total managed assets (\$)}}$$

## Results

Choosing to sell cows as a strategy to manage poor operating conditions had the greatest negative effect on net cash flow (scenarios 2, 4, 5 and 7) (Figure 1). The savings in feed, shed, herd and labour costs from reducing herd size did not compensate for the even larger decreases in milk income that came from the smaller milking herd.

Maintaining herd size and milk production from the base year (scenario 1) resulted in the highest cumulative net cash flow after 5 years. During years of poor operating conditions, the extra feed costs required to maintain the base year milk production and body condition resulted in large annual negative cash flows. However, as herd numbers and body condition had been maintained, cows were best placed to take advantage when conditions recovered.

Maintaining herd size and reducing supplementary feed intake (scenarios 3 and 6) was the most effective strategy to limit the decrease in annual and cumulative net cash flow in years of poor conditions. While milk production per cow declined because of decreased metabolisable energy in the cows' diet, the subsequent savings in feed costs resulted in the highest net cash flow when operating conditions were poor. However, cash flow recovery was delayed when average conditions returned because there was a milk production penalty as body condition recovered.

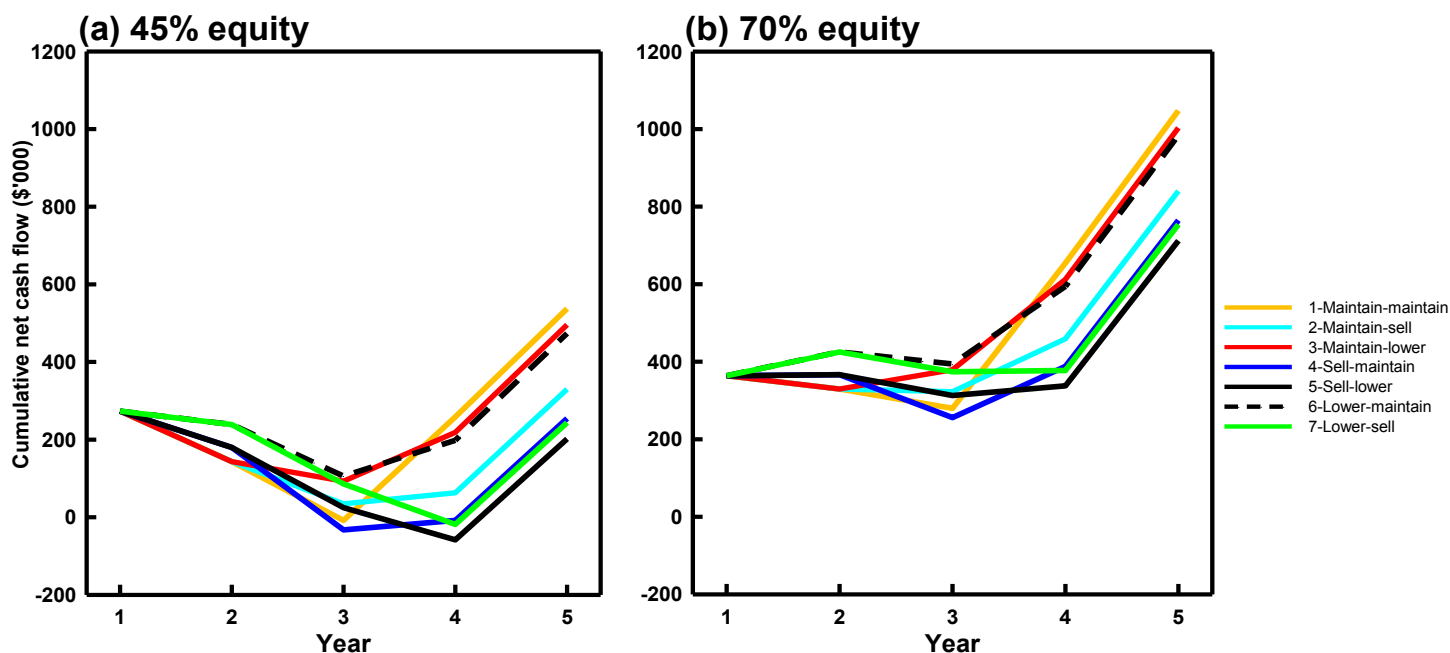


Figure 1. Cumulative net cash flow over 5 years for all scenarios with a starting equity of (a) 45% and (b) 70%.

The results from this study indicate that in consecutive years of poor operating conditions, a farm with low equity has a higher chance of potentially defaulting on a loan than a farm with higher equity. Half of the scenarios with a starting equity of 45% recorded negative 5-year cumulative net cash flows compared with none of scenarios when the case study farm started with an equity of 70% (Figure 1). At low equity, the farm ended the 5-year period with larger debt and as a result had larger interest payments.



Changes in the equity levels of each scenario followed a similar pattern to that for cash flow. Scenarios that maintained the base herd size (scenario 1, 3, 6) had the highest equity levels after 5 years compared with scenarios where cows were sold (scenarios 2, 4, 5, 7). Selling cows boosted annual net cash flow in years of poor conditions, but at the expense of reducing farm equity.

All scenarios at both levels of equity, except scenario 5 (45% equity), had higher equity levels in year 5 relative to year 1. The increase in equity was from overall reduction in debt compared with the base year as principal repayments continued to be made despite the consecutive years of poor conditions.

## Summary

- Selling cows had the largest negative impact on net cash flow.
- Maintaining herd size and reducing supplementary feed intake was the most effective strategy to limit cash flow decreases.
- Maintaining herd size and milk production resulted in large negative annual cash flows. But, this strategy placed the herd in a position to rapidly recover when conditions improved.
- The larger annual interest payments required by a farm business with low equity results in a higher chance of defaulting on a loan due to poor conditions, compared with a farm business with high equity.



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## Further information

Contact person: Christie Ho  
Agriculture Research Division  
Department of Economic Development, Jobs,  
Transport and Resources  
Phone: (03) 8341 2424  
Email: [christie.ho@ecodev.vic.gov.au](mailto:christie.ho@ecodev.vic.gov.au)

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