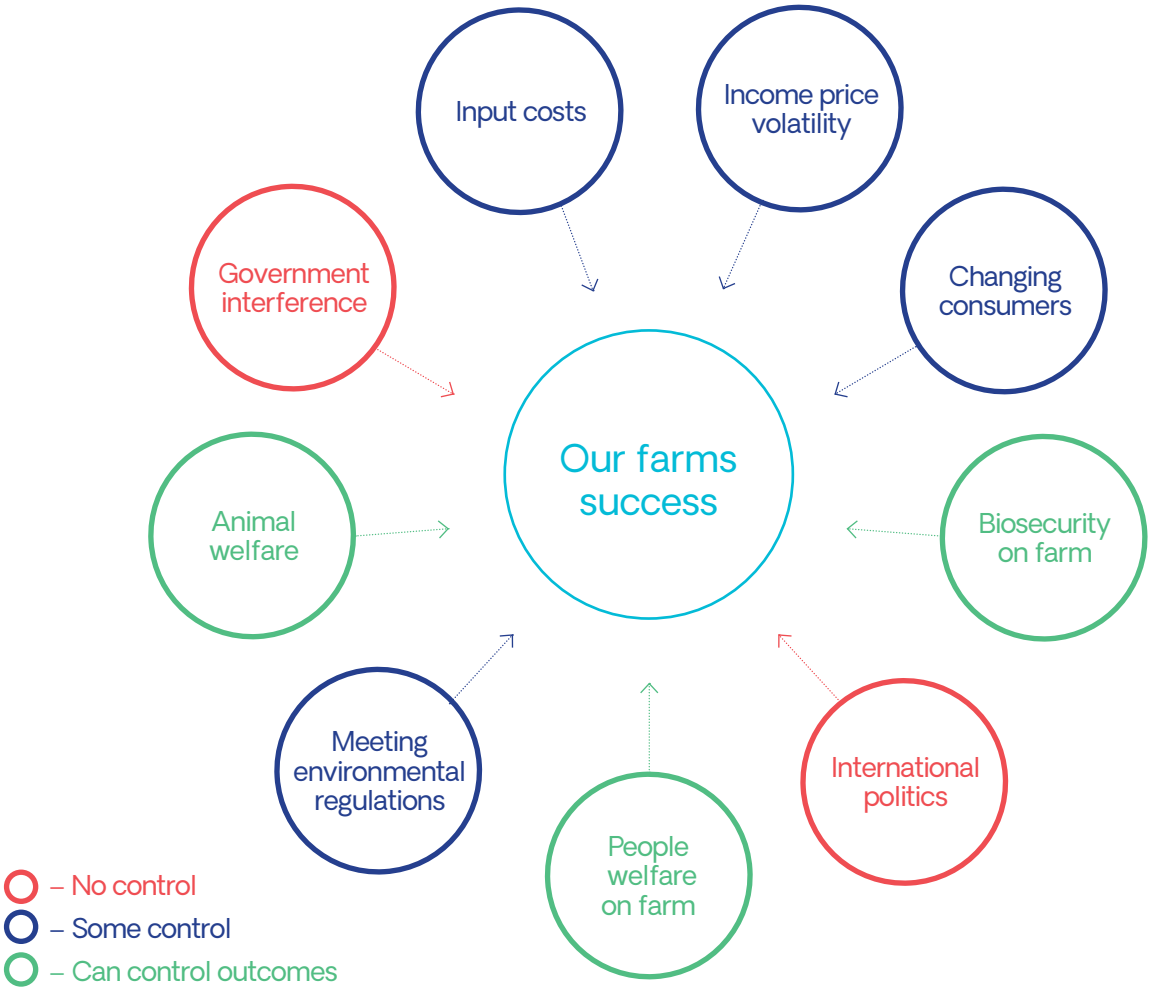
Farmer case study

A New Zealand dairy farmers experience with hedging milk price

The purpose of this case study is to provoke New Zealand dairy farmers to think about the multitude of risks they face and to consider a way to reduce one – milk price volatility.

We were lucky enough to speak with Cantabrian dairy farmer Marv Pangborn, to understand his views on risk and what steps he has taken to manage milk price risk within his business.

Risk perception



How do you think about risk in your business?

I have been a NZ dairy farmer since 1987, coming from a family where it appears that the previous eight generations have been farmers as well. However, I started my working life as a rural banker. A family history in farming and surviving downturns both as a lender and as a farmer have made me become somewhat conservative in my sixth decade. But, like most New Zealand farmers who have built larger farming businesses from small beginnings, we took risks to grow the business. We now milk 1,200 cows and farm over 500 hectares – along with growth has come debt.

I have also spent the last 17 years as a lecturer in farm management at Lincoln University. Last year, as part of that role, I was asked to identify the risks to our business. The chart above outlines some of the areas that in my view may affect our success.

These perceived risks have been categorised into areas where we have no control (government interference and international politics), areas where we are able to have some effect on outcomes (environment and understanding consumer change) and areas where we have a fair level of control (people welfare on the farm, animal welfare, biosecurity, costs of inputs and income volatility).

I have always been a great fan of Doug Avery (Author of the Resiliant Farmer), who says something like "concentrate on what you can control." With this in mind, we watch the uncontrollable, do what we can with the areas where we have some control, but concentrate on the areas where we can influence outcomes.

Although I could discuss all these areas, a problem for dairy farmers since the demise of the Dairy Board has been milk price volatility. As the graph shows, milk prices have ranged from $3.90 per kg of milksolids to $8.40 per kg of milksolids during the period 2006/07 to 2018/19. Fortunately, since 2016-17 prices have been more stable (all over $6 per kg milksolids), but many of us still have nightmares about the $3.90 year. (See Fig. 21 next page)

Farmer case study

FIG. 21

Fonterra New Zealand Milk Price (Nominal)

Source: Fonterra

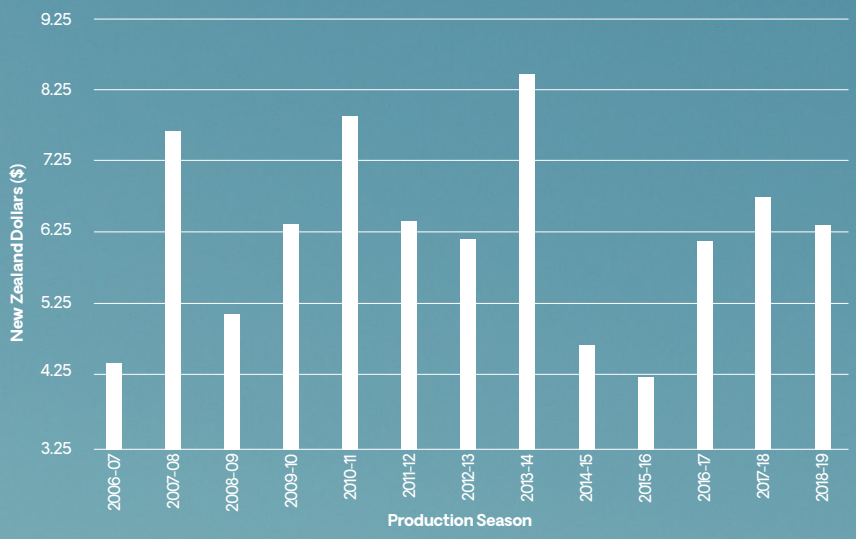


FIG. 22

Cash costs per kg milk solids

Source: Marv Pangborn

Cash costs	Per kg milk solids
Operation costs	$3.00
Interest	$1.23
Tax (based on %5.50 milk price)	$0.24
Drawings	$0.12
Break even cost (does not include capex or principal repaid)	$4.59

FIG. 23

An Example of Risk Management Strategy – Hedge Bands

Source: Marv Pangborn

	Futures Market	%Hedged
	$7.40	90%
	$6.60	80%
Milk Payout 10 year Average	$5.90	60%
	$5.10	40%
	$4.30	20%

427,400 Kg Ms				HEDGE	50%				
Market Price	**$8.00**	**$7.50**	**$7.00**	**$6.50**	**$6.00**	**$5.50**	**$5.00**	**$4.50**	**$4.00**
50% @ Market	$1,709,600	$1,602,750	$1,495,900	$1,389,050	$1,282,200	$1,175,350	$1,068,500	$961,650	$854,800
50% Fixed At $6.00	$1,282,200	$1,282,200	$1,282,200	$1,282,200	$1,282,200	$1,282,200	$1,282,200	$1,282,200	$1,282,200
Total Income	$2,991,800	$2,884,950	$2,778,100	$2,671,250	$2,564,400	$2,457,550	$2,350,700	$2,243,850	$2,137,000
Break-Even Costs*	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916
Tax**	$262,328	$232,410	$202,492	$172,574	$142,656	$112,738	$82,819	$52,902	$22,982
Free Cash**	$874,556	$797,624	$720,692	$643,760	$566,828	$489,896	$412,964	$336,032	$259,100

				NO HEDGE					
Market Price	**$8.00**	**$7.50**	**$7.00**	**$6.50**	**$6.00**	**$5.50**	**$5.00**	**$4.50**	**$4.00**
Income	$3,419,200	$3,205,500	$2,991,800	$2,778,100	$2,564,400	$2,350,700	$2,137,000	$1,923,300	$1,709,600
Breakeven Costs	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916	$1,854,916
Tax	$382,000	$322,164	$262,328	$202,492	$142,656	$82,820	$22,984	$0	$0
Freecash	$1,182,284	$1,028,420	$874,556	$720,692	$566,828	$412,964	$259,100	$68,384	-$145,316
Difference	-$307,728	-$230,796	-$153,864	-$76,932	$0.00	$76,932	$153,864	$267,648	$404,416

Breakeven cost = $4.59/Kg ms - tax of 0.25 = $4.34 For this example
Stock sales not included
Capex not included
Depreciation of $200,000 included for calculating tax
Fonterra dividend not included

What did you want to achieve by managing milk price risk?

Other than the obvious reason to control the volatility of milk prices, there are several important aspects to consider. If you desire more security over the price you receive and you know your cost structure, a hedging programme allows a farmer to predict profits and produce more reliable budget forecasts. When these forecasts are entered into a cashflow budget, you will also have more certainty over the cash inflows. With a more secure cashflow you are better able to make strategic decisions. And finally, if profits are more likely, then covering 'unexpected chance events' (e.g. a major machinery breakdown) should be easier.

How did you develop your milk price risk management policy?

There are a few key pieces of information needed before proceeding with a hedging policy. First, a farmer needs to determine their risk profile and business objectives. If an individual's objective is always to maximise profit, and their business can handle the risk of the 'ups and downs' of milk prices, then they probably do not need to participate in the futures market. However, if they are like me and willing to give up the high prices to avoid the low prices, then hedging at an acceptable level could be attractive.

Secondly, a farmer will need to know their break-even point for milk price. This is accomplished by following the process below. Fig. 22 represents our business, which consists of a 50/50 sharemilker and a contract milking arrangement. These are characteristics that are unique to our business.

The next step is to determine the level of free cash desired. Free cash in this example is defined as gross farm income less operating costs, less tax, less interest, less drawings or the money that you have available for capital expenditure, to pay down debt, for education, travel, etc.

When we began looking for ways to make our business more secure, we settled on a free cash goal of $500,000.

Finally, it is wise to have a policy to stop impulsive selling (usually due to fear of a price crash). The policy (Fig. 23) was prepared by an advisor several years ago and, although possibly out of date, it is an example of following a policy when selling milk futures contracts. In this example, there is little reason to sell a large percentage of production at low prices. As the price increases the level of milk sold to lock in a price is increased.

How do you evaluate the impacts of potential hedging decisions?

We review potential and actual hedging situations in a simple spreadsheet similar to the table above. This table is based on our expense structure, with a hypothetical hedge policy of 50% of production sold at $6.00.

The table above shows that there is no difference if the milk price and the hedge are the same ($6.00). However, as the milk price increases the farm leaves 'money on the table' in exchange for security. But, more importantly, if the milk price drops to as low as $4.00, the farm is still profitable, and the difference between the hedge position and the unhedged position gets quite large.

What do you feel are the key take-out's for others ?

- You really need to understand your farm, risk profile, financial situation and personal objectives
- Locking in a price through hedging does not suit everyone – particularly if you cannot stand the thought of 'leaving money on the table'
- There are a range of firms and products available to manage price risk
- It is very important to follow a process like that described