

# *Economic Survey* 2018-19



**Dairy**NZ 

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# Introduction

The 2018-19 DairyNZ Economic Survey is the fourteenth annual survey of New Zealand dairy farmers using dairy farm business data from DairyBase®.

The Economic Survey of Factory Supply Dairy Farmers was first published in 1963-64 by the New Zealand Dairy Board. In 1988-89 the survey was undertaken by Livestock Improvement Corporation (LIC) and then Dexcel in 1999-2000, when the name was changed to Economic Survey of New Zealand Dairy Farmers. From 2005-06 DairyNZ published the survey under the new title DairyNZ Economic Survey.

DairyNZ is the industry good organisation, representing New Zealand's dairy farmers. Funded by a levy on milksolids and together with government investment, our purpose is to deliver a better future for New Zealand dairy farmers and help them successfully navigate through change. We aim to do this by leading innovation in world-class dairy farming and by working always in the best interests of New Zealand's dairy farmers. DairyBase® is owned and managed by DairyNZ on behalf of the dairy farmers of New Zealand.

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This publication is a reference compilation of dairy farmers' key financial data. DairyNZ have endeavoured to ensure that the information in this publication is accurate, but does not accept liability for any error or omission. No persons involved in data collection, processing, analysis or editing will be held accountable. Data in this document can be used for other purposes provided it is correctly referenced. The correct reference for all data contained in this document is: DairyNZ Economic Survey 2018-19.

This year the Economic Survey has been rebuilt as an online and interactive publication, with direct download of summary data where possible as Microsoft Excel files. A pdf version is available as a companion.

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## Executive Summary

Milk payout received by farmers in 2018-19 decreased 20 cents to \$6.42 per kilogram milksolids (MS). Milk production per cow and per hectare increased. Operating expenses per kilogram milksolids remained similar to the 2017-18 season, however operating profit per hectare decreased to \$2,154. Operating return on dairy assets dropped slightly to 4.0 percent. Total return on assets increased by 0.7 percent points to 0.5%. Equity decreased with reductions in capital values.

## Owner-operator Summary

Operating profit of \$2,154 per hectare in 2018-19 was down 3.8 percent on the previous season. The milk payout received of \$6.42 per kilogram milksolids was down 20 cents (-3%) on the price received in 2017-18. Both milksolids per cow (+5%) and milksolids per hectare (+7%) increased in 2018-19. Livestock income in 2018-19 increased to \$0.47 per kg milksolids. Gross farm revenue of \$6.98 per kilogram milksolids in 2018-19 was down 25 cents. Farm working expenses (FWE) of \$4.25 per kilogram milksolids was 5 cents higher compared with last season. Operating expenses decreased 3 cents to \$5.10 per kilogram milksolids, though still not far below the record high of \$5.17 in 2013-14.

The cash available for living and growth in 2018-19 was \$213,109 per farm, the highest level in five years. Following a large capital expenditure, changes in debt and drawings, a cash deficit of \$14,958 was recorded. The operating return on dairy assets decreased to 4.0 percent in 2018-19 and the total return on assets was 0.5 percent. Total return on equity was -3.4 percent. Equity levels decreased 8.7 percent (-\$363,884), with the positive growth in equity from profit more than offset by the decrease in asset values and small increase in liabilities. Total liabilities as a percentage of total assets (debt to assets ratio) increased to 53.4 percent at the end of the season. Closing term liabilities per kilogram milksolids decreased to \$24.92.

## Owner-operator Summary Table

	2017-18	2018-19
<b>PHYSICAL KPIS</b>		
Peak cows milked	430	424
Effective hectares	151.4	146.0
Milksolids sold per cow	376	395
Milksolids sold per hectare	1,067	1,145
Cows per FTE	148	146
<b>PRICES</b>		
Payout received \$ per kg milksolids	6.62	6.42
<b>CASHFLOW</b>		
Cash operating surplus	678,172	446,701
Discretionary cash	230,881	208,906
Cash available for living and growth	208,127	213,109
Cash surplus	-42,275	-14,958
<b>PROFITABILITY</b>		
Dairy gross farm revenue per ha	7,715	7,991
Dairy operating expenses per ha	5,477	5,837
Dairy operating profit per ha	2,238	2,154
Dairy gross farm revenue per kg milksolids	7.23	6.98
Farm working expenses per kg milksolids	4.20	4.25
Dairy operating expenses per kg milksolids	5.13	5.10
Dairy operating profit per kg milksolids	2.10	1.88
Business profit before tax per all effective ha	810	1,077
<b>RETURNS</b>		
Operating return on dairy assets	4.3%	4.0%
Total return on assets	-0.2%	0.5%
Total return on equity	-4.4%	-3.4%
<b>WEALTH CREATION</b>		
Growth in equity	-238,662	-363,884
Growth in equity from profit	85,385	63,675
Growth in equity from capital	-324,047	-427,560
Growth in equity %	-5.7%	-8.7%
<b>RISK</b>		
Closing term liabilities per kg milksolids	25.31	24.92

## 50:50 Sharemilkers Summary

Operating profit per hectare for 50:50 Sharemilkers (herd owning sharemilkers) recorded an increase (+8%) to \$775 per hectare in 2018-19. Lower milk payouts received (-4 cents per kilogram milksolids) were partially offset by a 9 percent increase in kilogram milksolids produced per cow. Operating expenses per kilogram milksolids decreased 13 cents to \$3.00. Production per cow and hectare increased from last season. The average cash available for living and growth increased to \$134,715 per farm. With increased capital expenditure, drawings and debt, a cash deficit of \$12,622 was recorded in 2018-19. Operating return on dairy assets was at 12.4 percent for sharemilkers, while total return on assets was measured at 18 percent. The level of debt to assets increased to 61.6 percent at close, while term liabilities of \$3.78 per kilogram milksolids was similar to the previous season.

## 50:50 Sharemilkers Summary Table

	2017-18	2018-19
<b>PHYSICAL KPIS</b>		
Peak cows milked	391	452
Effective hectares	137.2	151.3
Milksolids sold per cow	376	410
Milksolids sold per hectare	1,072	1,222
<b>PRICES</b>		
Payout received \$ per kg milksolids	3.21	3.17
<b>CASHFLOW</b>		
Cash operating surplus	169,323	213,273
Discretionary cash	113,174	148,021
Cash available for living and growth	132,051	134,715
Cash surplus	-12,736	-12,622
<b>PROFITABILITY</b>		
Dairy gross farm revenue per ha	4,070	4,447
Dairy operating expenses per ha	3,352	3,673
Dairy operating profit per ha	718	775
Dairy gross farm revenue per kg milksolids	3.79	3.64
Farm working expenses per kg milksolids	2.42	2.44
Dairy operating expenses per kg milksolids	3.13	3.00
Dairy operating profit per kg milksolids	0.67	0.63
Business profit before tax per all effective ha	967	951
<b>RETURNS</b>		
Operating return on dairy assets	11.5%	12.4%
Total return on assets	1.6%	18.0%
Total return on equity	-2.9%	36.7%
<b>WEALTH CREATION</b>		
Growth in equity	6,473	34,397
Growth in equity from profit	53,694	70,311
Growth in equity from capital	-47,221	-35,914
Growth in equity %	1.6%	7.4%
<b>RISK</b>		
Closing term liabilities per kg milksolids	3.81	3.78



# 1 Background

The 2018-19 DairyNZ Economic Survey summarises a sample of dairy farm data from the DairyBase® database. DairyBase® is available to all levy paying New Zealand dairy farmers. Annual surveys prior to 2005-06 were undertaken by Livestock Improvement Corporation (LIC) and Dexcel using a random sampling procedure stratified by region and herd size. In contrast, participation in DairyBase® is voluntary and at this stage contains farms with above average milk production levels. For this publication, groups of farms were selected that closely match the average regional herd size, hectares and milksolids production as published in the New Zealand Dairy Statistics 2018-19.

The purpose of DairyBase® is to improve the financial understanding and performance of dairy farmers using a benchmarking approach and is designed to link the physical and financial performance of farms. DairyBase® contains financial data from annual farm accounts, as well as physical data supplied by the farmer and estimated current market values of fixed assets. The DairyBase® support centre, accredited accountants and other rural professionals enter the data on behalf of their clients and the data is validated within DairyBase®. Farmers wishing to benchmark their farm performance have access to a wide range of statistics in DairyBase®, including (where numbers permit) regional, district, herd sizes and production system data.

## 2 Survey Description

### 2.1 Survey Methodology

Groups of farms that closely match the average regional herd size, hectares and milksolids production, as described in the New Zealand Dairy Statistics 2018-19 were selected for this publication. The initial pool of herds included 515 Owner-operator and 204 50:50 Sharemilker (herd owning Sharemilker) herds, validated and committed to the DairyBase® database for the 2018-19 financial year. This excluded:

- multiple herds operating under one business identity, and
- herds with less than 100 cows.

Businesses were then excluded for the following reasons:

- businesses with a significant change in land area during the year, and
- extreme outlier data.

The aim of the sample was to align the regional and national average herd sizes, hectares and milksolids production for each of these two ownership structures while retaining a reasonable number of farm businesses in each region. These regional and national averages are available in New Zealand Dairy Statistics 2018-19 publication.

The final number of herds included in this survey comprised 260 owner-operator and 122 50:50 sharemilker herds. Of the owner-operator herds, 193 (74%) were North Island herds and 67 (26%) from the South Island. Of the sharemilker herds, 87 (71%) were from the North Island and 35 (29%) were South Island herds.

### 2.2 Ownership Structure Definitions

An owner-operator receives 100% of the milk revenue and either owns, or leases, both the herd and the land. In contrast, a 50:50 sharemilker owns the herd but not the milking land, and receives 50% of the milk revenue. Although the definition of sharemilkers used in this survey is 50:50, in practice they may receive between 40 percent and 60 percent of the milk revenue. Herds with variable order sharemilkers, and farm owners with sharemilking arrangements, were not included in this survey.

### 2.3 Sample Unit

The data used in this survey reflects the total dairying enterprise of each business. Where businesses have multiple ownership types, such as partnerships and trusts, the accounts of all entities are consolidated and entered as one.

### 2.4 Survey Weights

National averages in this report have been weighted by the regional proportion of herds reported in the New Zealand Dairy Statistics 2018-19. Simply averaging the regional data shown in this document will not produce the same result as that shown for New Zealand. Herd size is defined as the peak number of cows milked at any time during the year. Total herds are used as the weight for owner operators, because owner operators represent the whole business unit. The national average for 50:50 sharemilkers is weighted by the regional proportions of sharemilkers.

**Table 2.1:** Regional Distribution of Herds: Dairy Statistics 2018-19

	New Zealand herds	% of all herds	Owner-operator herds	% of Owner-operator herds	50:50 Sharemilker herds	% of 50:50 Sharemilker herds
Northland	947	8.3%	615	9.5%	221	6.6%
Waikato	3745	32.9%	1960	30.1%	1215	36.5%
Bay of Plenty	858	7.5%	502	7.7%	217	6.5%
Taranaki	1588	14.0%	863	13.3%	533	16.0%
Lower North Island	1018	9.0%	656	10.1%	234	7.0%
West Coast-Tasman	513	4.5%	379	5.8%	94	2.8%
Marlborough-Canterbury	1273	11.2%	786	12.1%	343	10.3%
Otago-Southland	1430	12.6%	746	11.5%	474	14.2%

## 2.5 Herd Size Distributions

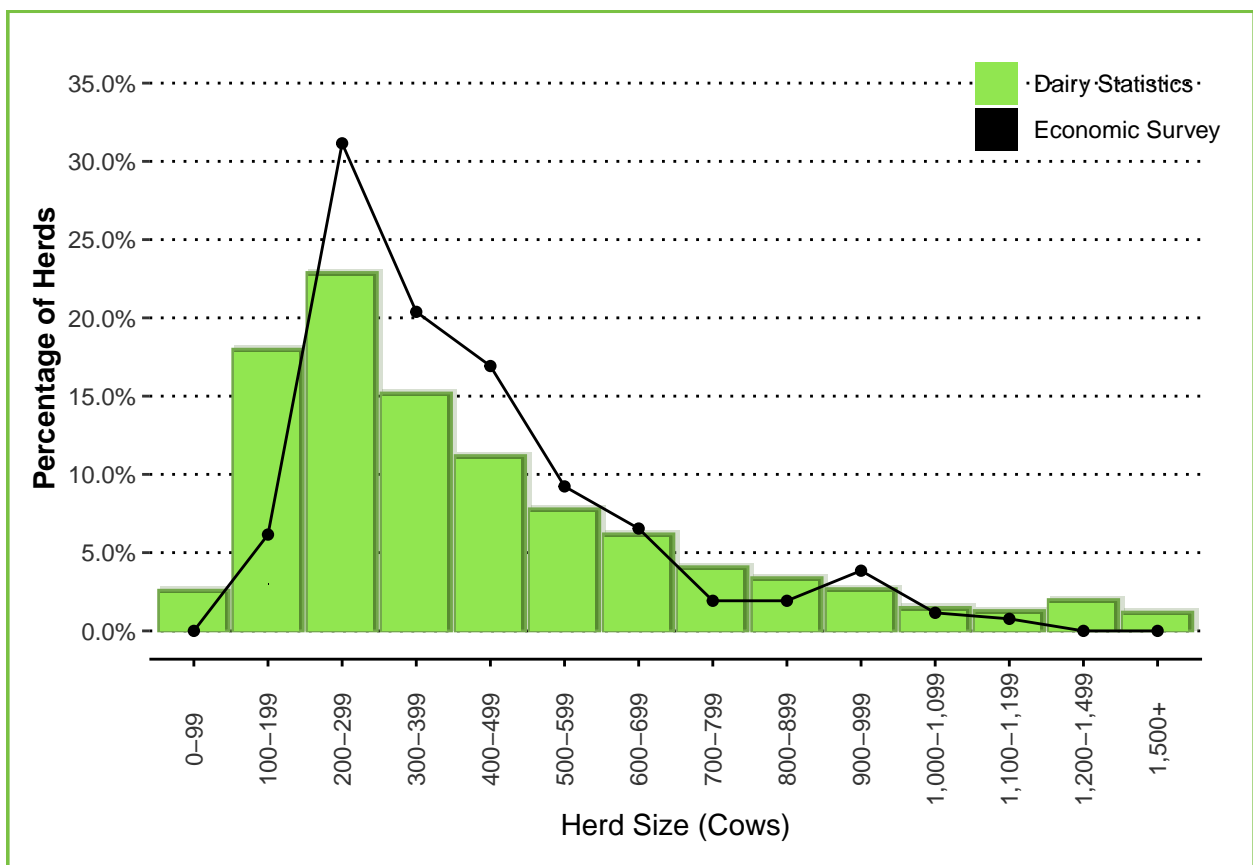
The average DairyNZ Economic Survey owner-operator herd of 424 cows was eleven less than the New Zealand Dairy Statistics 2018-19 national average herd size of 435 cows.

A comparison of the owner-operator herd distribution between the DairyNZ Economic Survey and the New Zealand Dairy Statistics 2018-19 shows the DairyNZ survey:

- excludes herds under 100 cows;
- is over represented by herds between 200 and 600 cows; and
- is under represented by herds between 100 and 200 cows, between 700 and 900 cows, and 1200+.

Refer to Figure 2.1.

**Figure 2.1:** 2018-19 New Zealand Owner-operator Herd Size Distributions



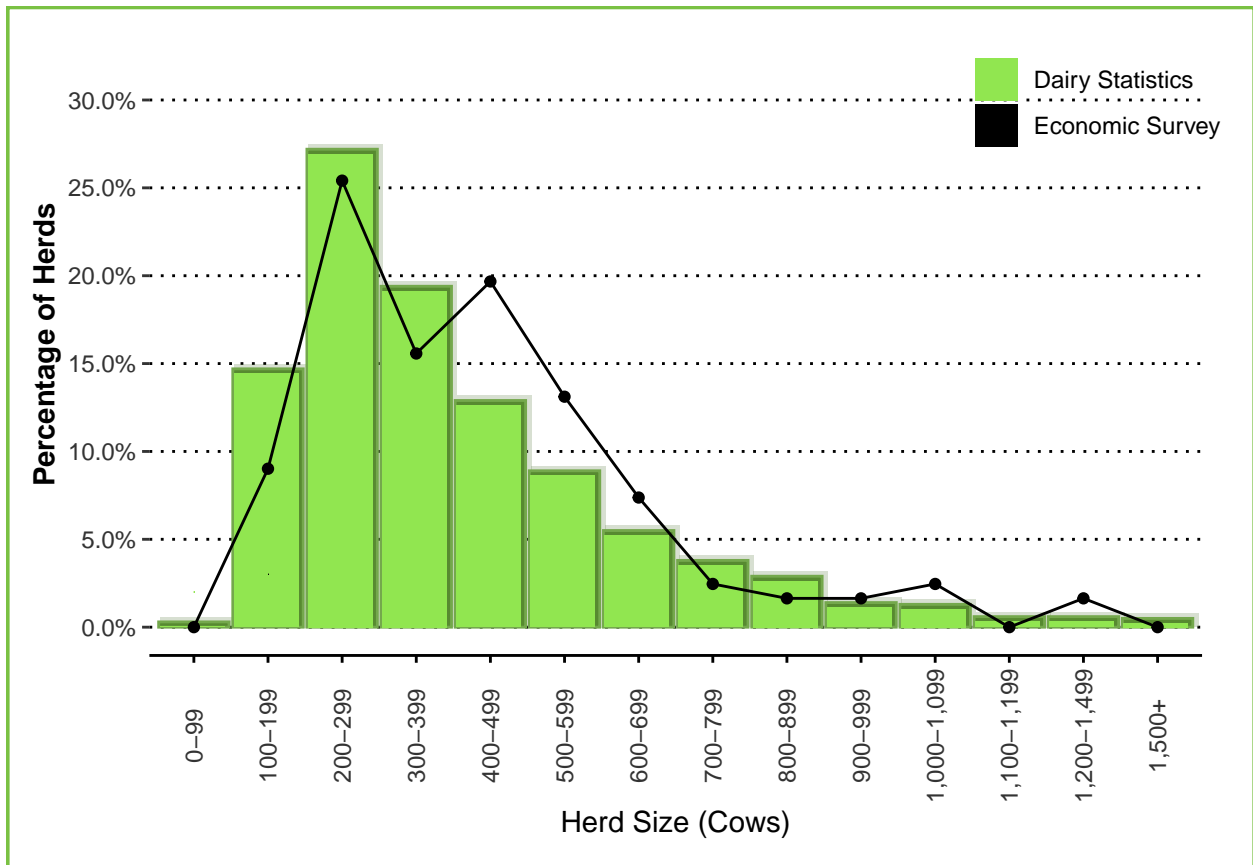
The DairyNZ Economic Survey national average herd size for 50:50 Sharemilkers of 452 cows is larger than the 398 cows recorded in the New Zealand Dairy Statistics 2018-19.

Compared with the New Zealand Dairy Statistics 2018-19 the DairyNZ Economic Survey:

- excludes herds under 100 cows;
- is over represented by herds between 400 and 700 cows;
- is under-represented by herds between 100 and 200 cows and between 700 and 900 cows.

Refer to Figure 2.2.

**Figure 2.2:** 2018-19 New Zealand 50:50 Sharemilker Herd Size Distributions



## 2.6 Survey Regions

This survey uses geographic regions and districts as defined by the 73 Territorial Local Authorities. These districts are amalgamated into eight regions, five in the North Island and three in the South Island.

**1 Northland**

1. Far North
2. Whangarei
3. Kaipara
4. Rodney
5. North Shore City
6. Waitakere City
7. Auckland City

**2 Waikato**

8. Manukau City
9. Papakura
10. Franklin
11. Waikato
12. Hamilton City
13. Waipa
14. Otorohanga
15. Waitomo
16. Thames/Coromandel
17. Hauraki
18. Matamata/Piako
19. South Waikato
20. Taupo
21. Ruapehu

**3 Bay of Plenty**

22. Western Bay of Plenty
23. Tauranga
24. Rotorua
25. Kawerau
26. Whakatane
27. Opotiki
28. Gisborne
29. Wairoa

**4 Taranaki**

30. New Plymouth
31. Stratford
32. South Taranaki

**5 Lower North Island**

33. Wanganui
34. Rangitikei
35. Hastings
36. Napier City
37. Central Hawke's Bay
38. Tararua
39. Manawatu
40. Palmerston North City
41. Horowhenua
42. Kapiti Coast
43. Porirua City
44. Upper Hutt City
45. Lower Hutt City
46. Wellington City
47. Masterton
48. Carterton
49. South Wairarapa

**6 West Coast-Tasman**

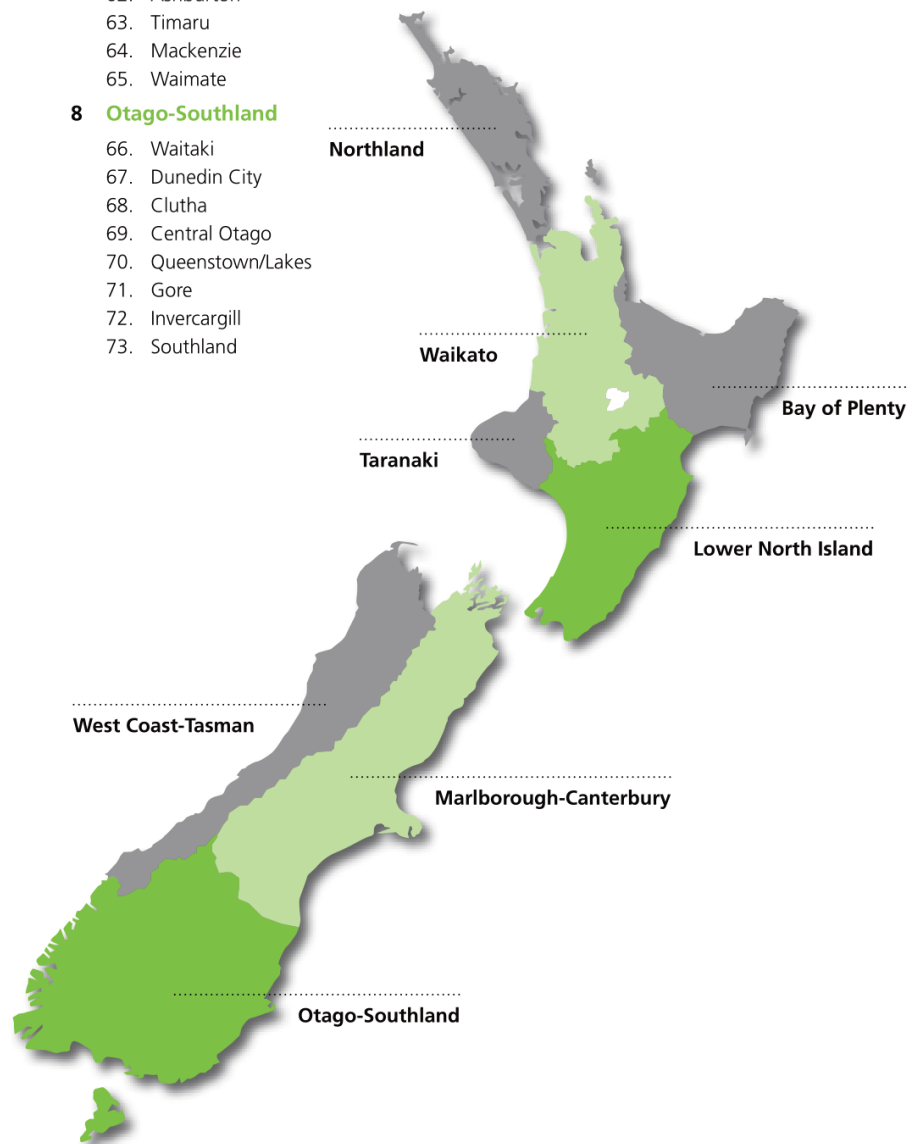
51. Tasman
52. Buller
53. Grey
54. Westland

**7 Marlborough-Canterbury**

50. Nelson City
55. Marlborough
56. Kaikoura
57. Hurunui
58. Waimakariri
59. Christchurch City
60. Banks Peninsula
61. Selwyn
62. Ashburton
63. Timaru
64. Mackenzie
65. Waimate

**8 Otago-Southland**

66. Waitaki
67. Dunedin City
68. Clutha
69. Central Otago
70. Queenstown/Lakes
71. Gore
72. Invercargill
73. Southland



## 2.7 Production Systems

Farms are categorised into one of five production systems based on the timing, purpose and amount of imported feed use, both purchased as supplements and grazing off for dry cows. Young stock grazing policies are excluded when categorising herds into the five production systems described below.

### System 1: All grass, self-contained, all adult stock on the dairy platform

- No feed is imported. No supplement fed unless harvested off the effective milking area and dry cows are not grazed off the effective milking area. Approximately five percent of owner-operator herds.

#### **System 2: Feed imported, either supplement or grazing off, fed to dry cows**

- 90-99% of total feed is home grown feed. Variation in percentage as most cows are wintered off in high rainfall areas or cold climates. Approximately 25 percent of owner-operator herds.

#### **System 3: Feed imported to extend lactation and for dry cows**

- 80-89% of total feed is home grown feed. Approximately 40 percent of owner-operator herds.

#### **System 4: Feed imported and used at both ends of lactation and for dry cows**

- 70-79% of total feed is home grown feed. Approximately 20 percent of owner-operator herds.

#### **System 5: Imported feed used all year**

- 50-69% of total feed is home grown feed, though could be less than 50% in some cases. Approximately 10 percent of owner-operator herds.

This publication makes reference to low, medium and high input systems. These are defined as:

- **Low:** system 1 and system 2,
- **Medium:** system 3,
- **High:** system 4 and system 5.

## **2.8 Operating Profit Adjustments**

Non-cash adjustments for resources used but not accounted for by cash income or expenditure are made when calculating the operating profit. A summary of these adjustments is shown below. For more detail refer to the DairyBase® Operating Profit Adjustments document. The value of change in dairy livestock numbers is calculated and added to net dairy cash income to form gross farm revenue. Note: this is the value due to change in livestock numbers. The reason for this adjustment is that the revenue from net dairy cash income can be affected by decisions to change the herd size due to adverse events. For example, in drought years more stock are sold and therefore revenue through net livestock sales will be considerably higher. Similarly, in years following a drought livestock will be purchased to increase numbers to a more normal level. The adjustment offsets these changes with a value for change in livestock on hand.

- **The value of change in dairy livestock** is calculated as follows: closing less opening livestock numbers, valued at closing herd scheme values (Inland Revenue).
- **Labour adjustment** – comprising two components: unpaid management based on the size of the herd and time worked, and unpaid labour valued at a market hourly rate.
- **Feed inventory adjustment** – closing less opening supplementary feed on hand, valued at a standard 34 cents per kilogram dry matter in 2018-19.
- **Owned support block adjustment** – valued on an assessed regional market lease rate per hectare.
- **Depreciation** – as recorded in the annual set of accounts.



## 2.9 Asset Values

DairyBase® calculates market values for land and buildings by using the most recent rateable valuations for each farm and adjusting these to 1 June 2018 and 1 June 2019 market values using sales data supplied by Quotable Value and REINZ plus discussions with regional real estate agents and valuers. Opening and closing livestock values for each year are calculated using the Inland Revenue herd value scheme NAMV (National Average Market Values) for the appropriate age group of animals.

Plant, machinery and vehicle values are recorded at book value.

Off-farm assets and investments are shown as market values.

## 2.10 GST

The financial data is GST exclusive as these transactions are neutral to the farm operation.

### 3 Physical Analysis

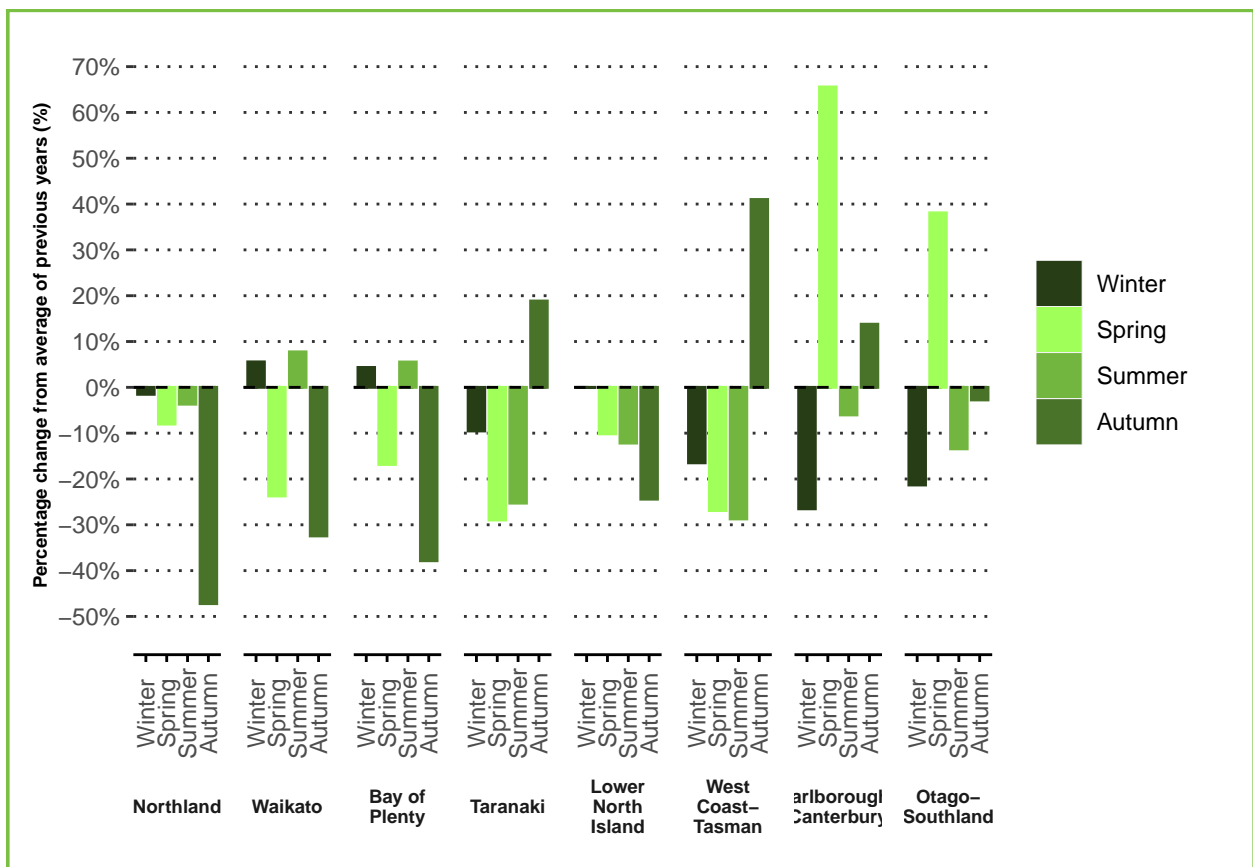
#### 3.1 Introduction

The DairyNZ Economic Survey reports the trends in financial performance of dairy farms but not all the trends in physical performance. While not presented, there are key physical indicators of milk production such as days in milk, cow condition, reproductive performance, soil fertility, and fertiliser use data available from Dairy-Base®. It is the combination of the physical performance of the farm reflected through milksolids production, the cost of production and milk prices that drives the financial results.

#### 3.2 Rainfall Summary

NIWA supplies daily climate data for various points across New Zealand with their Virtual Climate Station Network. These data are collated into district-level averages for each month, weighted for areas where more farms are located. Within each region, mean rainfall for the October to December (spring), January to March (summer), April to June (autumn) and July to September (winter) periods was calculated. The variation in the mean regional rainfall from ten-year-weighted averages is shown in Figure 3.1. Overall, New Zealand experienced a drier year than the ten-year average. Marlborough-Canterbury and Otago-Southland had a wetter spring than recent years. The North Island regions, with the exception of Taranaki, experienced a drier than normal autumn.

Figure 3.1: Variation in rainfall

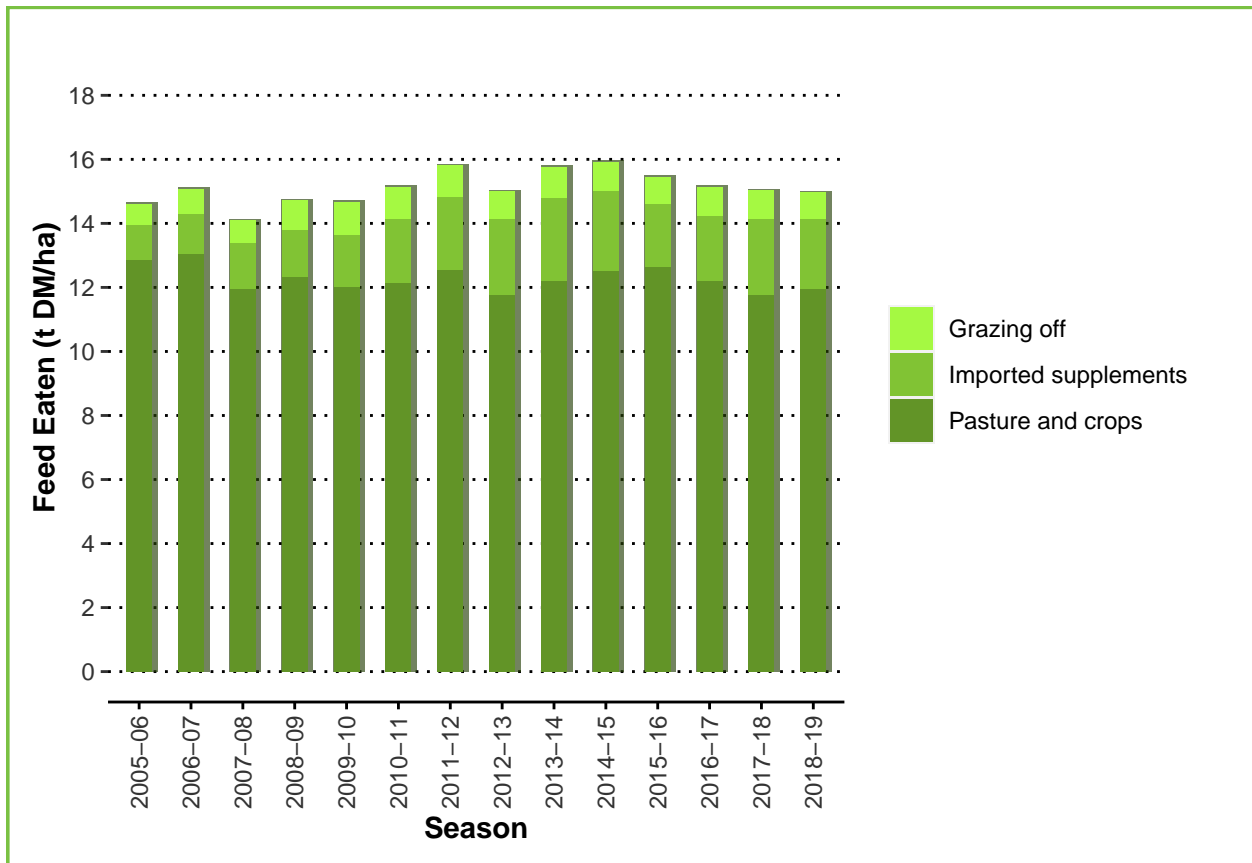


### 3.3 Feed Use

Pasture and crop eaten, grazing off farm, and imported feed were estimated from DairyBase data. Pasture eaten has been relatively constant for the last decade while grazing off farm has tended to increase slowly. Imported supplements have shown more variation from year to year as farmers adjust behaviour on-farm in response to volatility in milk prices and seasonal conditions, though costs have trended upwards (Figure 3.2).

Increases in milk production have occurred from increased feed levels, particularly palm kernel extract (PKE), maize silage and in recent years fodder beet. In 2018-19, grazing off accounted for approximately 6 percent of total feed eaten, imported supplement (14%) and pasture and crops (80%) are the primary feed components in the diet of dairy cows.

**Figure 3.2:** Trends in feed use



### 3.4 Partial Productivity

Milk production on the average Economic Survey dairy farm increased 5 percent (kg MS per cow) in 2018-19 to 395 kilograms milksolids. Figure 3.3 and 3.4 show that milk production per cow and per hectare both increased from last season.

Figure 3.3: Milksolids production per cow

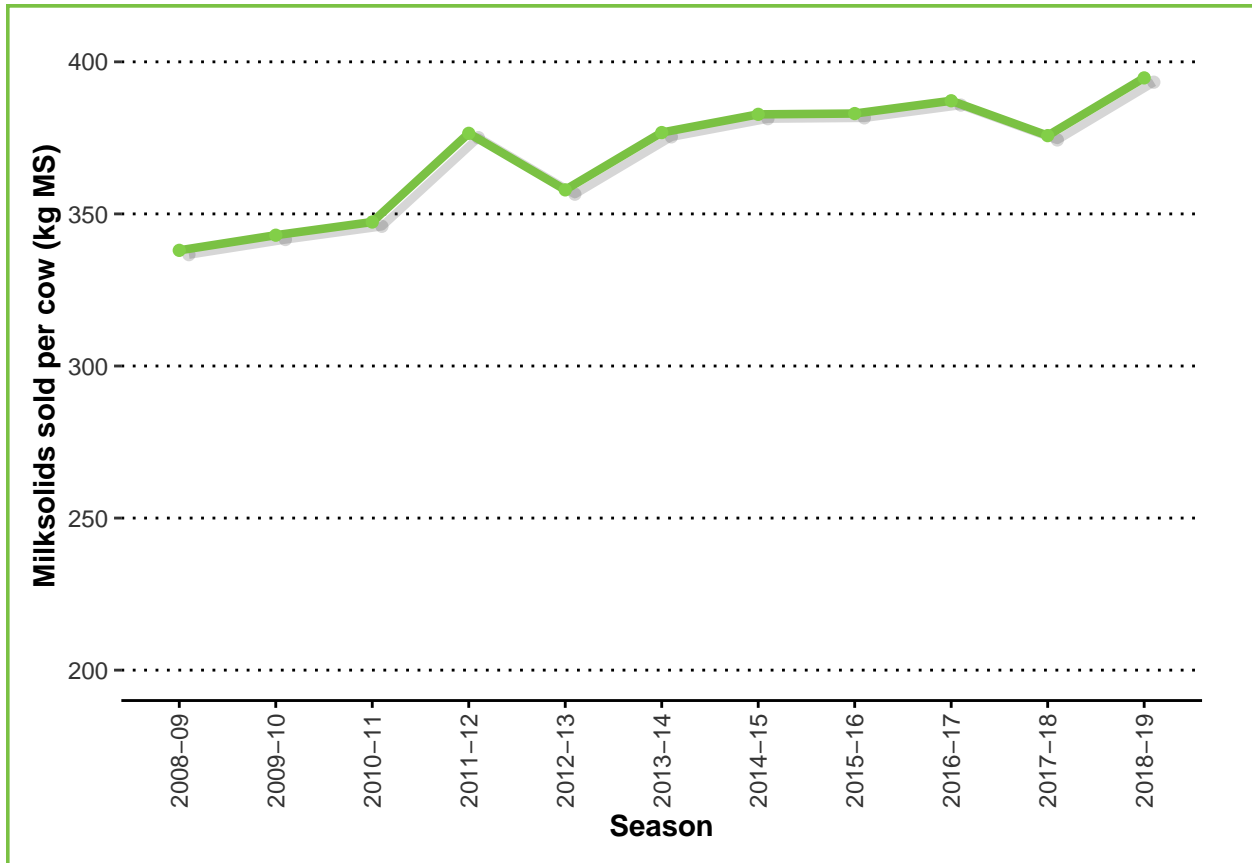
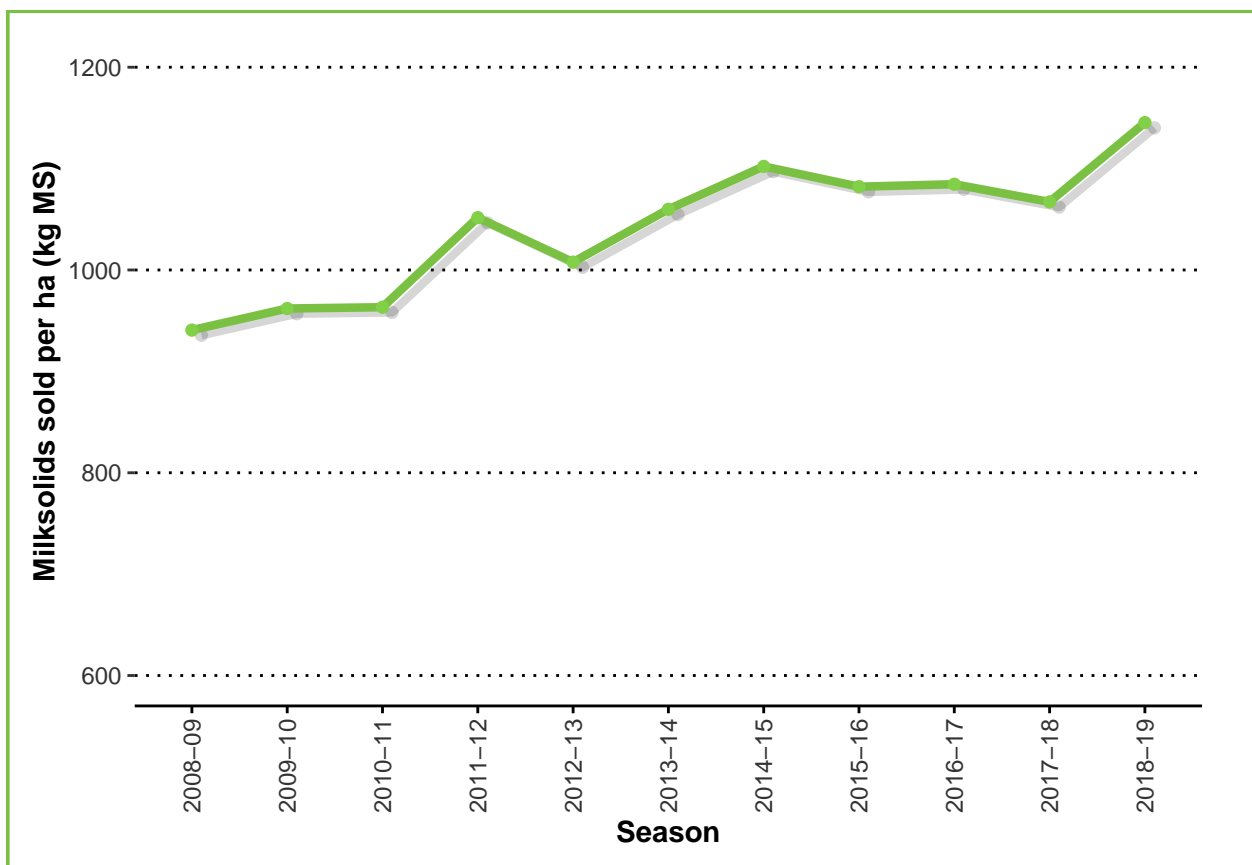
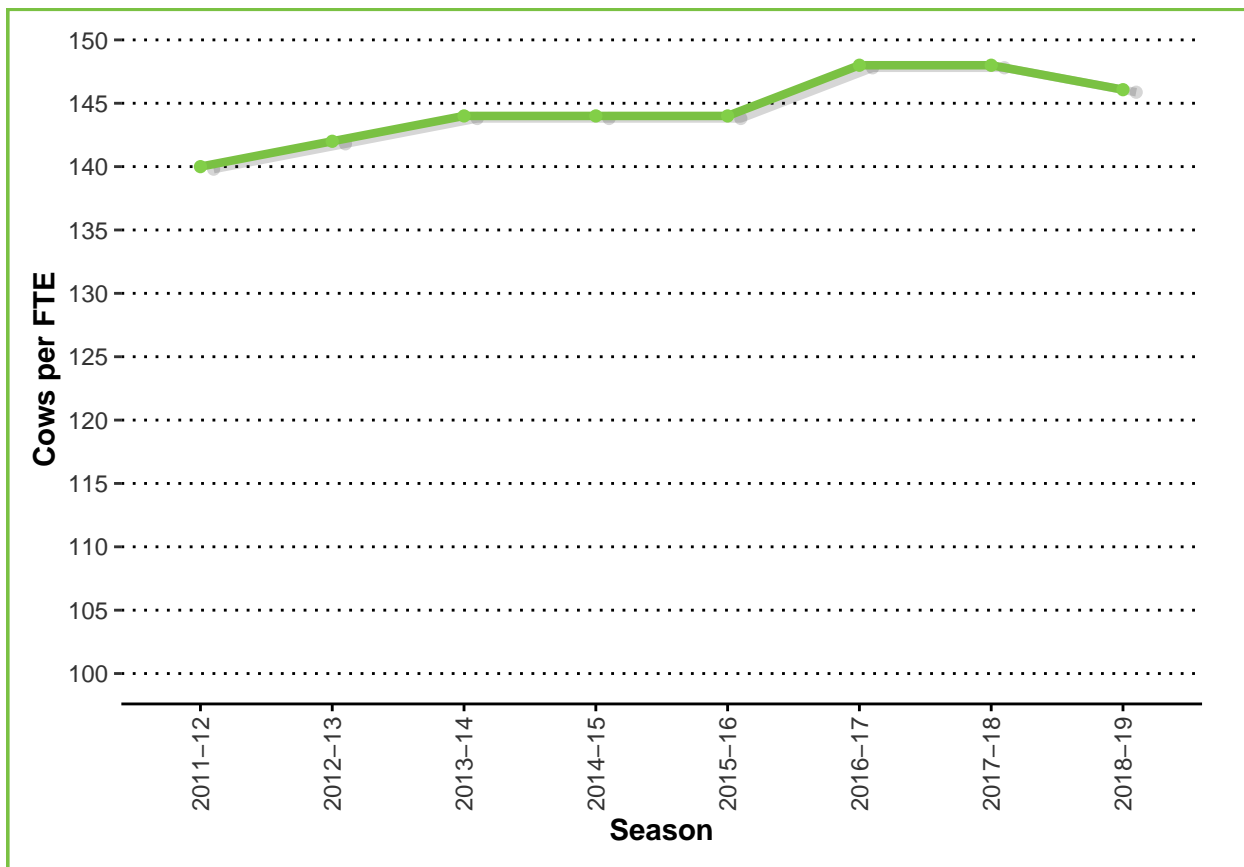


Figure 3.4: Milksolids production per hectare



Since 1990 the number of peak cows milked per full time equivalent (FTE) labour unit has increased from 83 to 146, a rate of about 2.5 additional cows per year. The increased use of technology, large South Island dairy herds and labour-saving techniques have driven this trend. In 2018-19, the number of cows per FTE decreased slightly to 146 from the previous season, refer to Figure 3.5.

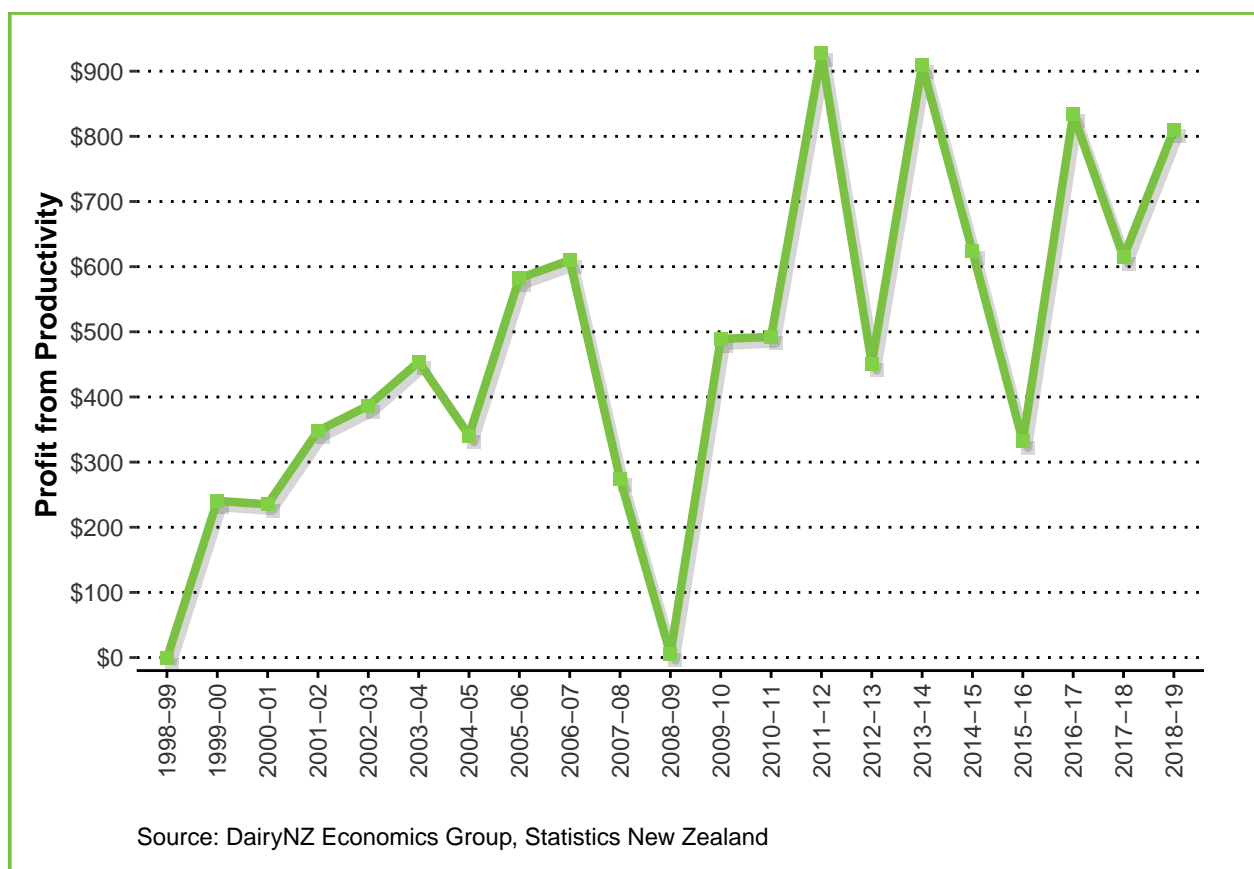
**Figure 3.5:** Cows per FTE



### 3.5 Profit from Productivity

Productivity improvements over time are essential to sustain or grow business profits and therefore to compete successfully with alternative uses for resources. DairyNZ has developed a measure for productivity based on operating profits. Operating profit from productivity (PFP) is defined as the difference between actual operating profit and the operating profit that would have occurred with no productivity changes since a base year (i.e. in the absence of milksolids production increases and with operating expenses per kilogram milksolids increasing annually at the rate of dairy farm input price inflation), see Figure 3.6. In essence, PFP is a measure of cost-efficient milksolids production increases since the base year valued at the end of year operating profit margin per kilogram milksolids. It excludes the cost of capital, although depreciation and changes in hectares are accounted for. The three main contributory components of PFP are milksolids production increases since the base year, operating expenses savings in inflation adjusted terms since the base year, and end year operating profit per kilogram milksolids (influenced by milk prices). DairyNZ and dairy farmers must increasingly focus on achieving cost-efficient milksolids production and PFP provides a means for monitoring the value of productivity gains over time.

PFP increased from \$614 per hectare in 2017-18 to \$810 in 2018-19 (1998-99 base year PFP = \$0/ha). Figure 3.6 shows the gains made in PFP were relatively steady from 1990-91 to 2006-07. However, sharper fluctuations in both milk prices and seasonal rainfall have caused PFP to be more volatile since.

**Figure 3.6:** Profit from Productivity: Gains from 98/99



## 4 Prices Received and Paid

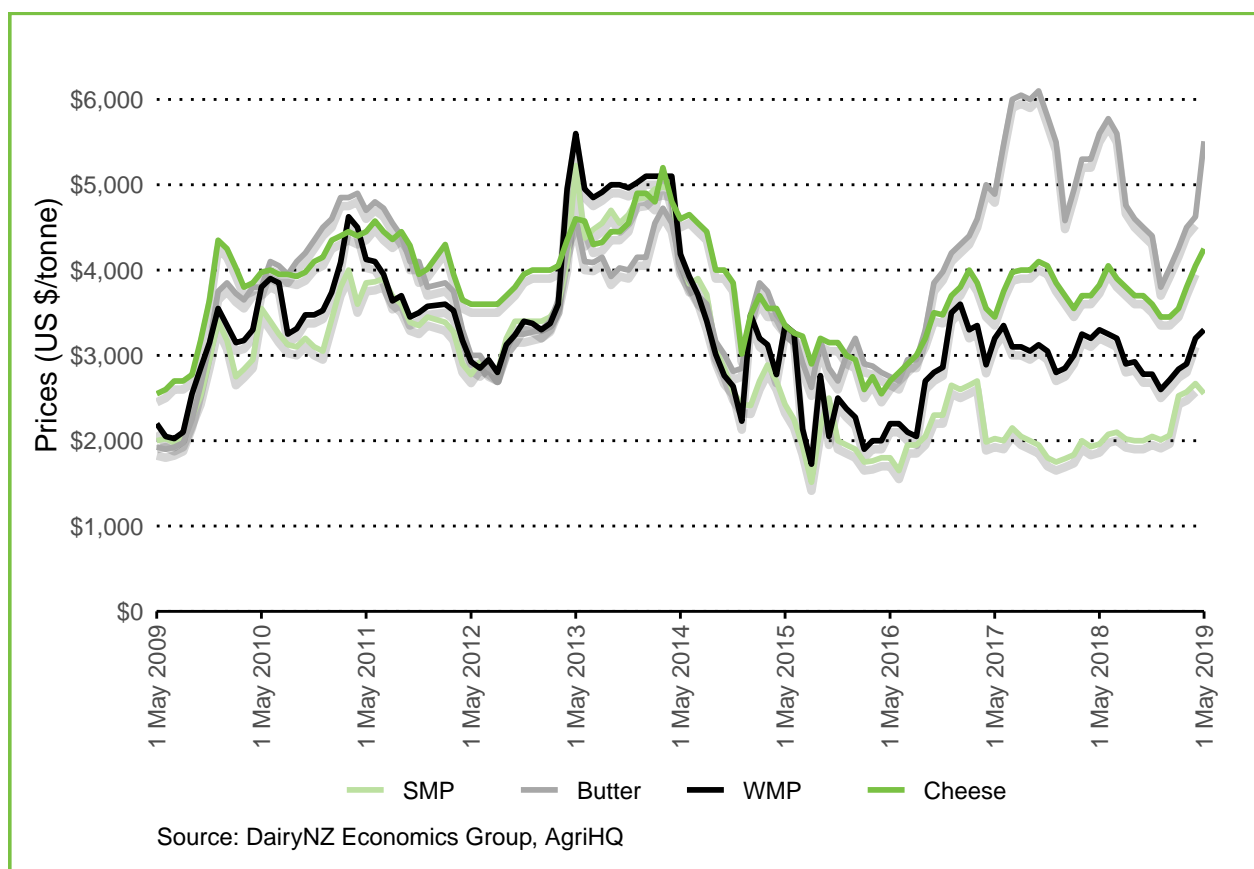
### 4.1 Milk Payment

Owner-operators received an average cash payout of \$6.42 per kilogram milksolids sold for 2018-19 (net of the industry good levy, but includes advances, final payments, and dividends). This was 20 cents less than 2017-18. Farmgate milk prices in June 2018 were positive as farmers started a new season, with the Fonterra forecast of \$7.00/kgMS.

International dairy prices for 2018-19 (as seen in Figure 4.1) were generally similar for powder products at May 2019 to levels in May 2018, despite fluctuations over the year. Whole milk powder (WMP) finished at \$3,300 (+\$0), and butter, finished at \$5,510 (-\$90), relatively unchanged with respect to the May 2018 prices. On the other hand, skim milk powder (SMP) finished strong at \$2,553 (+\$593) and cheese finished at \$4,250 (+\$425).

The NZD:USD exchange rate closed the 2018-19 season at the same level as it started, finishing at 69 cents with an average of 71 cents throughout the season, a similar average to 2017-18 (71 cents). The exchange rate in the last three seasons has been favourable for exporters and compares to 79 cents in 2014-15. Whole milk powder comprised 42% of New Zealand's dairy export earnings in 2018-19, which was the same in the 2017-18 (39%). Skim milk powder decreased to 7% of export earnings. Cheese export earnings decreased slightly to 12% of total dairy export earnings (from 13%), while butter increased for the third season in a row from 12% to 15% percent. Casein revenue declined to 8% (previously 9%). Anhydrous milk fat accounted for 10% of dairy export earnings in 2018-19 (previously 10%).

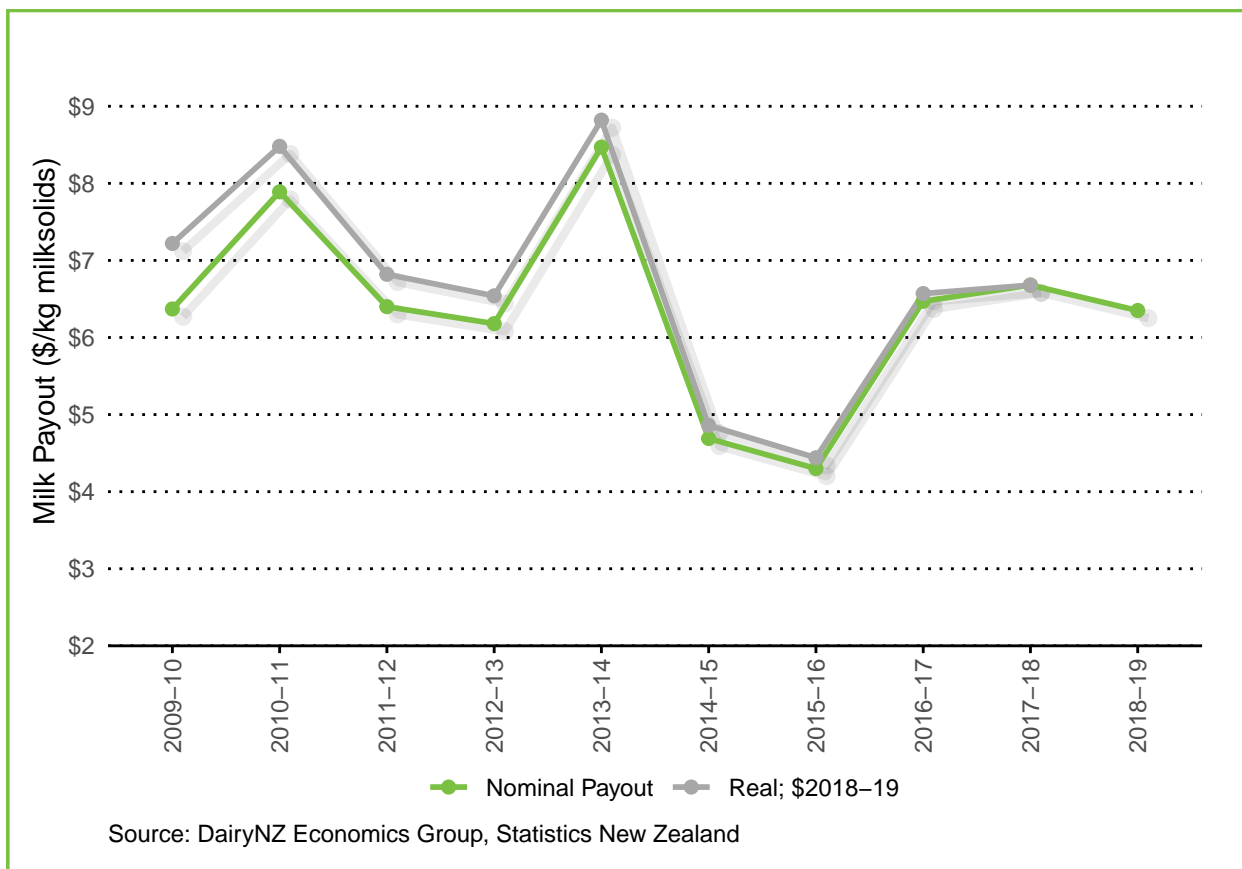
**Figure 4.1:** World Milk Commodity Prices (\$US per tonne)



The milk payout of \$6.42 per kilogram milksolids in 2018-19 was 29 cents below the decade average in inflation-adjusted terms (\$6.71) (Figure 4.2). While similar to the decade average, the modest decrease from

2017-18 was some respite for farmers given volatility over the previous few seasons. Average payout over the past 20 years, in real terms, was \$6.45 per kilogram milksolids.

**Figure 4.2:** Trend in Milk Payout (Nominal and Real)



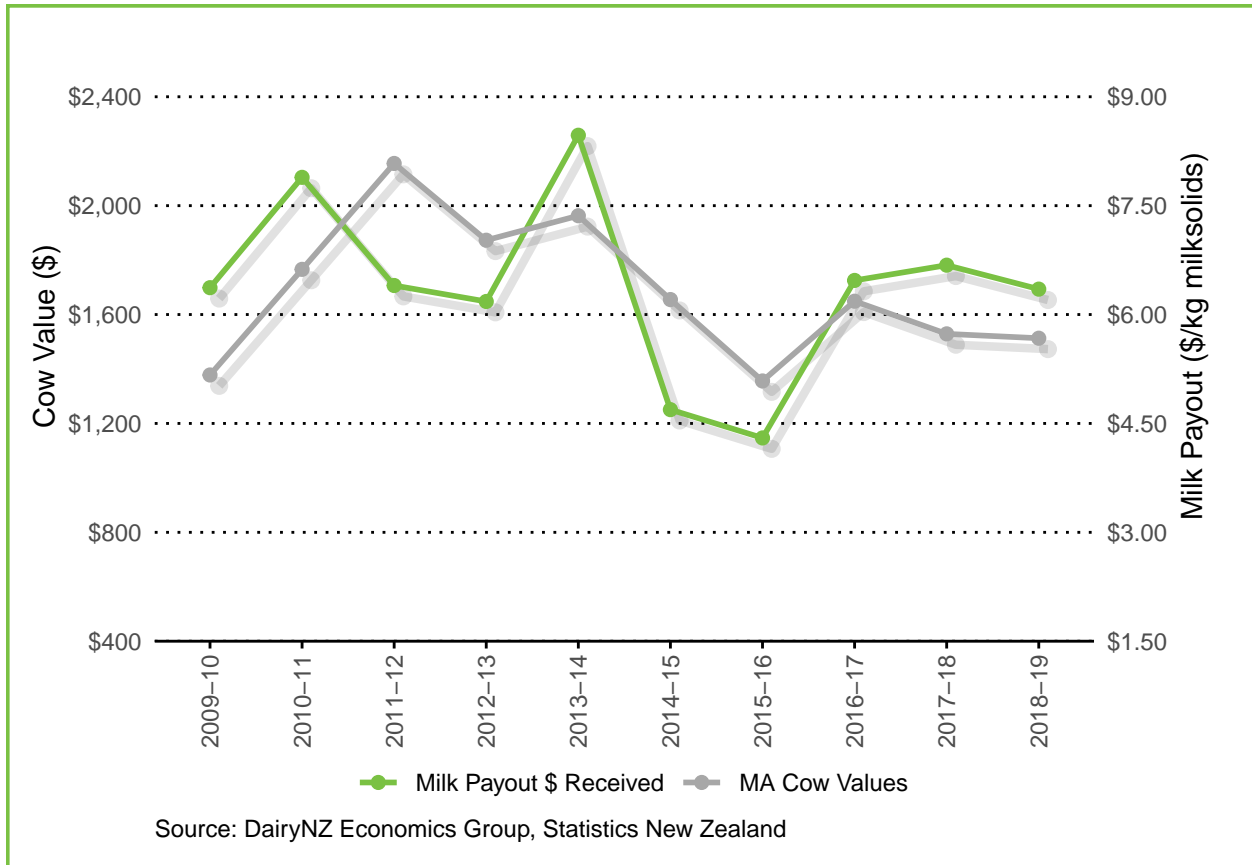
## 4.2 Livestock Prices

The value of mixed aged cows declined slightly to \$1,513 (-1%) in the 2018-19 season as milk prices stabilised. Cow values, in nominal terms, were below the decade-average of \$1,664. Figure 4.3 shows there has been a reasonably strong relationship between milk prices and the value of cows. Historically, cow values have followed the trend in milk prices, often with a slight time lag.

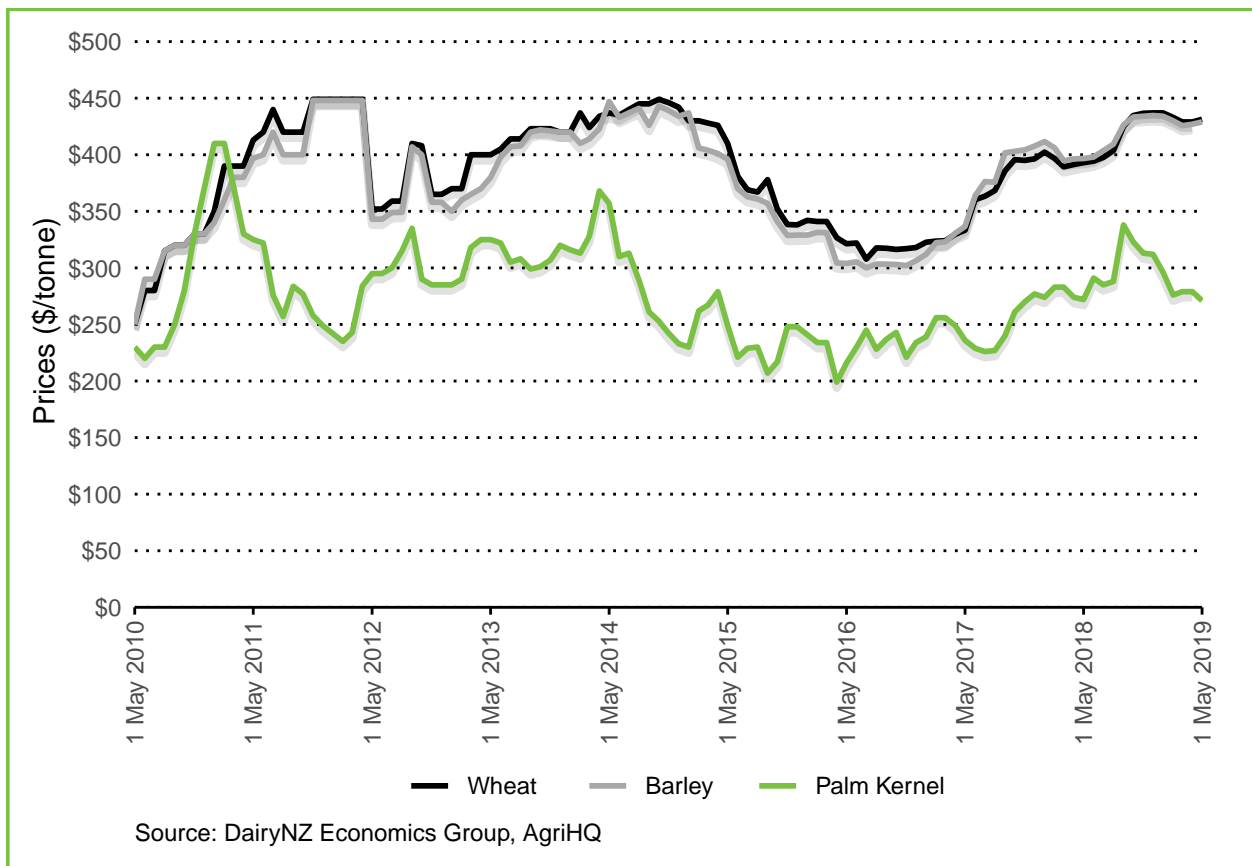
## 4.3 Feed and Fertiliser Prices

Feed and fertiliser prices between 2009-10 and 2018-19 are shown in Figures 4.4 and 4.5. Prices for wheat and barley climbed strongly over the year, closing about \$75 per tonne higher. Palm kernel prices dipped early in the season, before climbing again to close about \$25 per tonne higher. PKE imports decreased 1 percent from 1.91 million tonnes to 1.89 million tonnes in the year to June 2019.

**Figure 4.3:** Trend in Cow Values Relative to Milk Payout

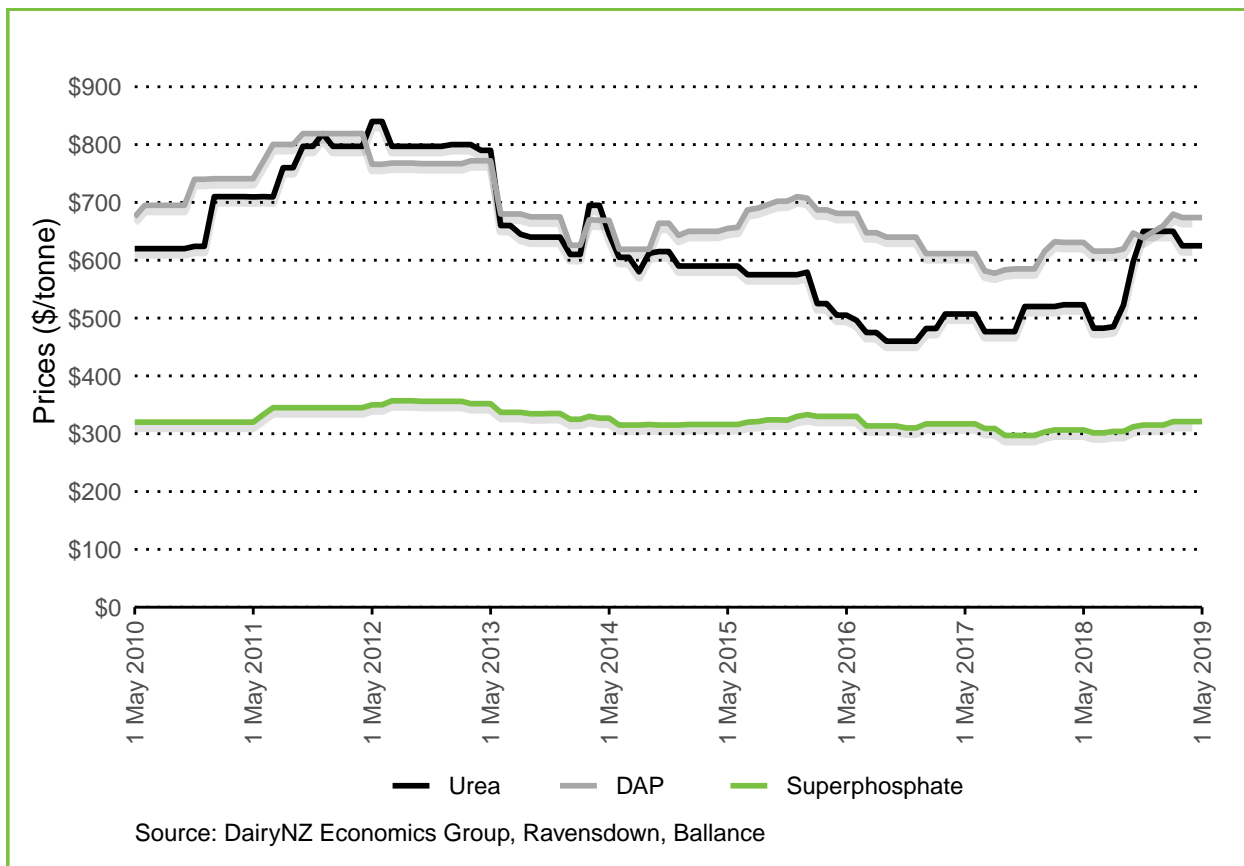


**Figure 4.4:** Feed Prices



There was a dip in fertiliser prices in the first half of the season, though Urea and DAP finished higher than they started the season (+\$102 and +\$43 per tonne respectively). Superphosphate had declined \$15 per tonne. Over the longer term (9 years) there has been a downward trend in fertiliser prices, despite a peak in 2012.

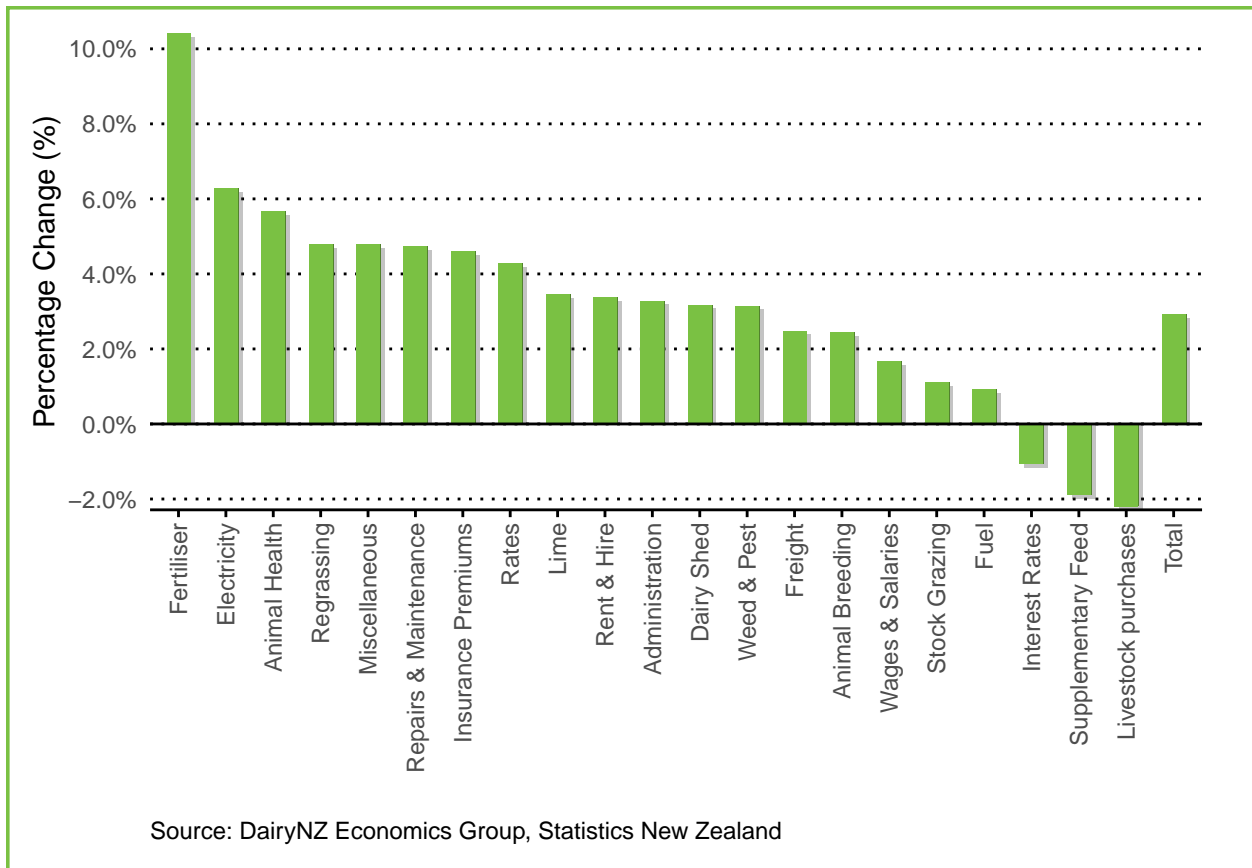
Figure 4.5: Fertiliser Prices



### 4.4 On-farm Inflation

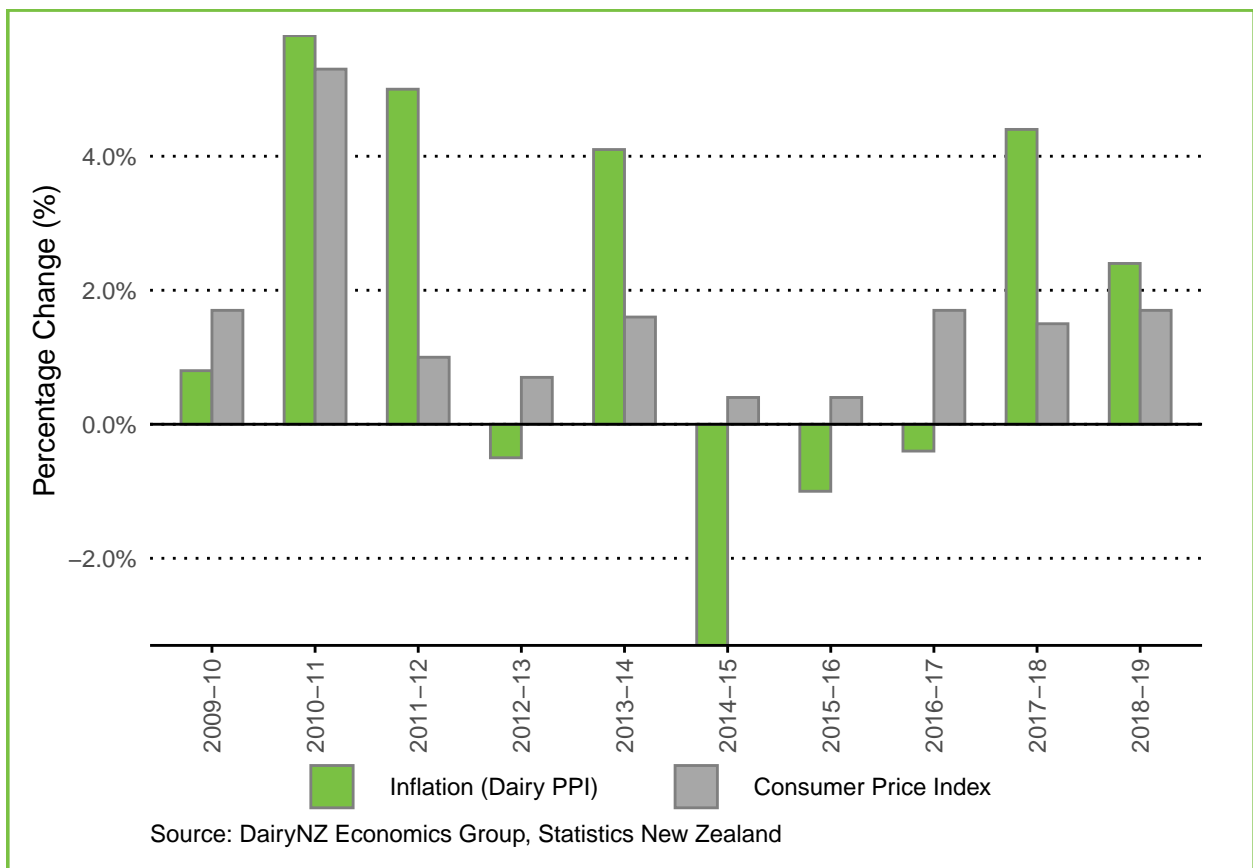
The movement in on-farm input prices is compiled by Statistics New Zealand in the Farm Expenses Price Index for dairy farms. The percentage movement of each category is weighted by a three-year rolling average of the contribution of each category to total expenditure. In the year to June 2019, the average price for inputs remained nearly unchanged (2.9%) after three seasons of lower or stable input prices. The price movements of individual categories for the 2018-19 season are shown in Figure 4.6. Decreases in individual price categories such as livestock purchases (-2.2%) and supplementary feed (-1.9%) were not enough to offset increases in other areas of expenditure. Increases included fertiliser (+10.4%), electricity (+6.3%), animal health (+5.7%), and others, leading to an overall 2.9% change for the season.

**Figure 4.6:** Dairy Input Price Changes – June 2018 to June 2019



The Producer Price Index (Stats NZ NZSIOC Level 3, June 2018 to June 2019) was up by 2.4% as seen in Figure 4.7. This slight increase in input prices was less than in 2017-18, before which there was two seasons of deflation (2014-15 and 2015-16). General inflation, as measured by the Consumers Price Index (CPI), experienced an increase (+1.7%) in the same period.

**Figure 4.7:** Dairy Farm Producer Price Index and CPI Changes – June 2018 to June 2019





## 5 Owner Operator: Operational Financial Analysis

### 5.1 Introduction

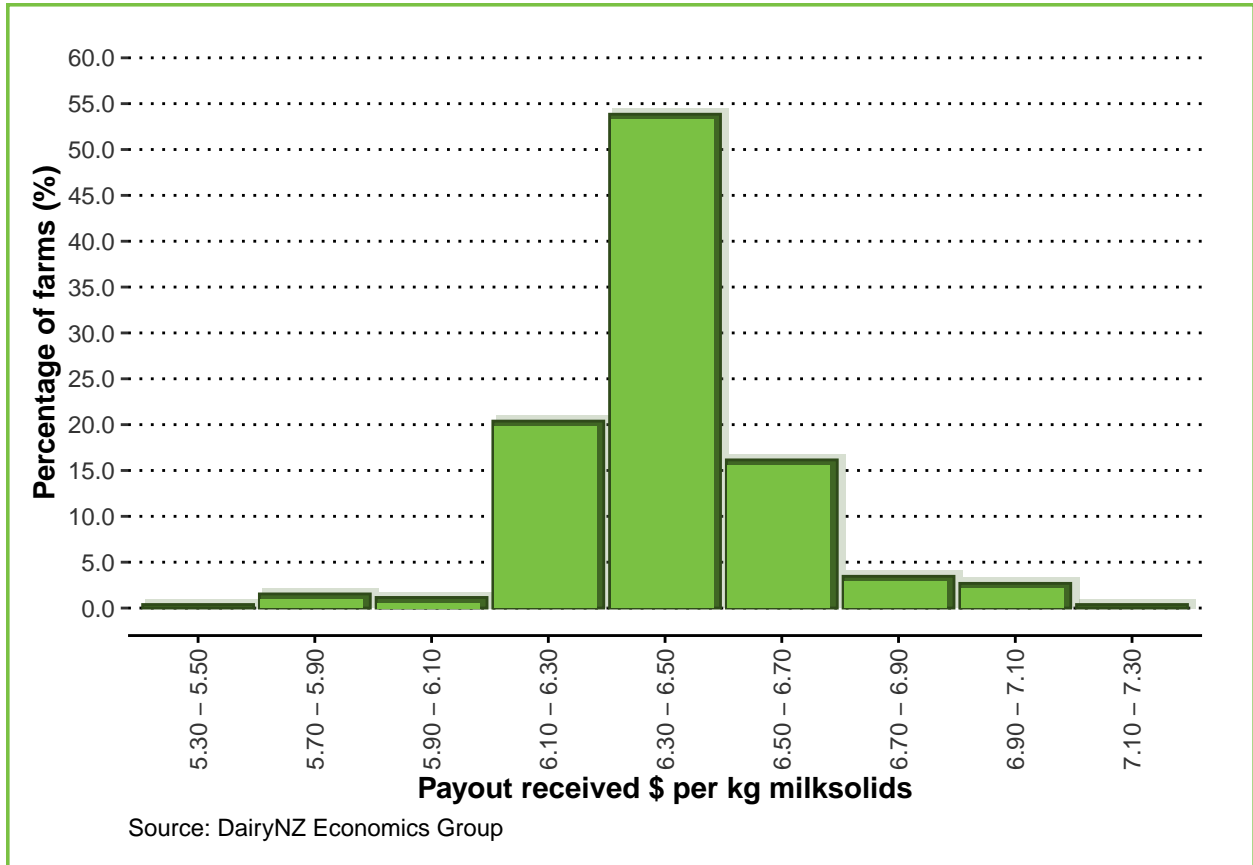
Operating profit of \$2,154 per hectare in 2018-19 was down 3.8 percent on the previous season. The milk payout received of \$6.42 per kilogram milksolids was down 20 cents (-3%) on the price received in 2017-18. Both milksolids per cow (+5%) and milksolids per hectare (+7%) increased in 2018-19. Livestock income in 2018-19 increased to \$0.47 per kg MS. Gross farm revenue was \$6.98 per kilogram milksolids in 2018-19 and was down 25 cents compared to the previous season. Farm working expenses (FWE) of \$4.25 per kilogram milksolids was 5 cents higher than last season. Operating expenses decreased 3 cents to \$5.10 per kilogram milksolids, though still not far below the record high of \$5.17 in 2013-14. The cash available for living and growth in 2018-19 was \$213,109 per farm, the highest level in five years.

### 5.2 Revenue

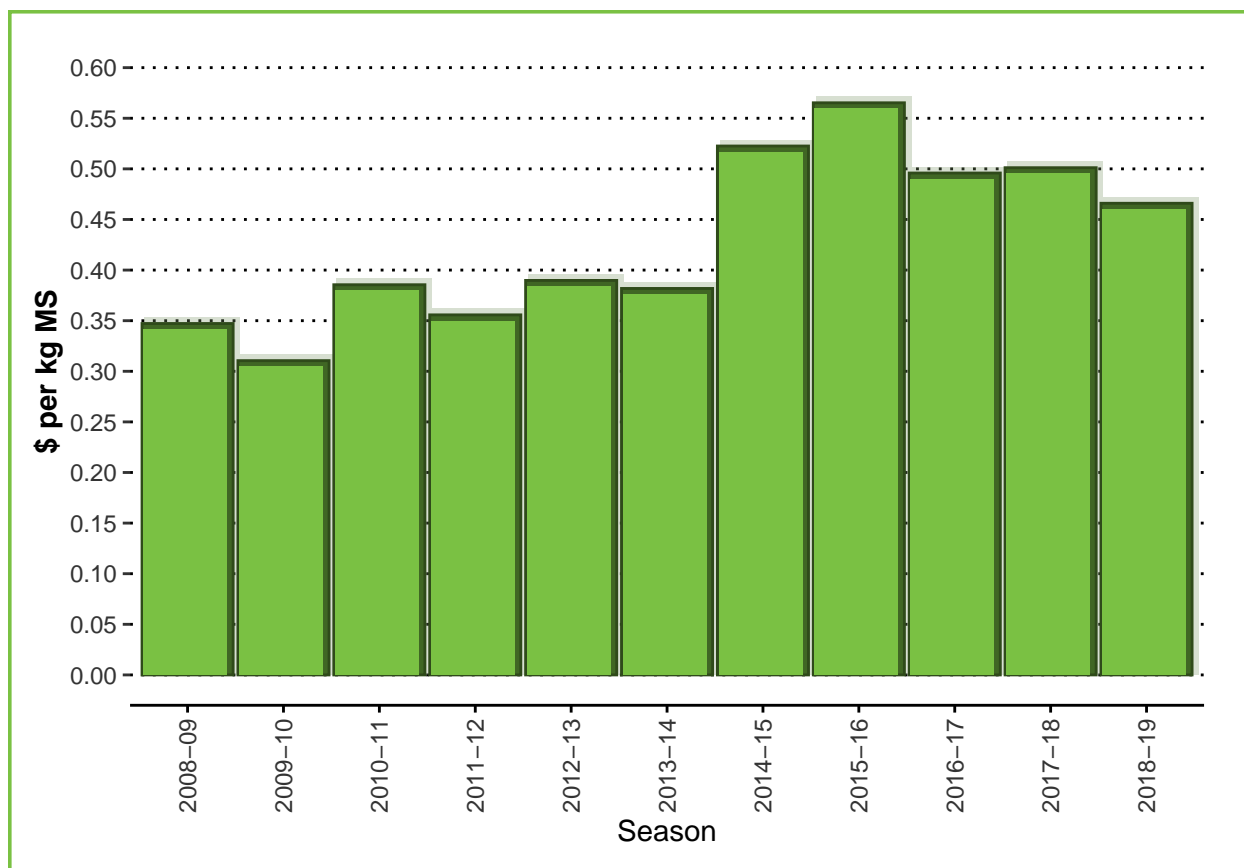
The milk payout received (including dividend payments) in 2018-19 decreased 20 cents (-3.0%) from the previous season to \$6.42 per kilogram milksolids. Milk production per cow and hectare, recorded by Economic Survey farms, increased slightly in 2018-19 from the 2017-18 season. Milk sales per farm (net of dairy levies) exceeded 1 million dollars (\$1,073,346) for the third time, the first being in 2013-14 following record high milk prices. Milk revenue in 2018-19 accounted for ninety-two percent of gross farm revenue. Revenue from livestock sales of \$77,911 in 2018-19. Livestock revenue accounted for 6.7 percent of the total gross farm revenue per farm.

There is variation (\$1.80 per kg MS) in the milk price farmers receive within a season (Figure 5.1) due to differences in milk composition, transport distances, milk production timing, annual account balance dates, milk companies supplied, different systems such as organics, penalties faced (grades), and whether a particular farm operated in the previous season. More than ninety percent of farms received a milk payout (milk price plus dividend) between \$6.10 and \$6.70 per kilogram milksolids in 2018-19. Within this, 54 percent received a milk payout between \$6.30 and \$6.50 per kilogram milksolids.

**Figure 5.1:** Distribution of Milk Payout Received



Cash income from net livestock sales decreased slightly to \$0.47 per kilogram milksolids in 2018-19, compared to \$0.50 per kilogram milksolids in 2017-18. High beef schedule prices have bolstered dairy farm incomes over the last five seasons.

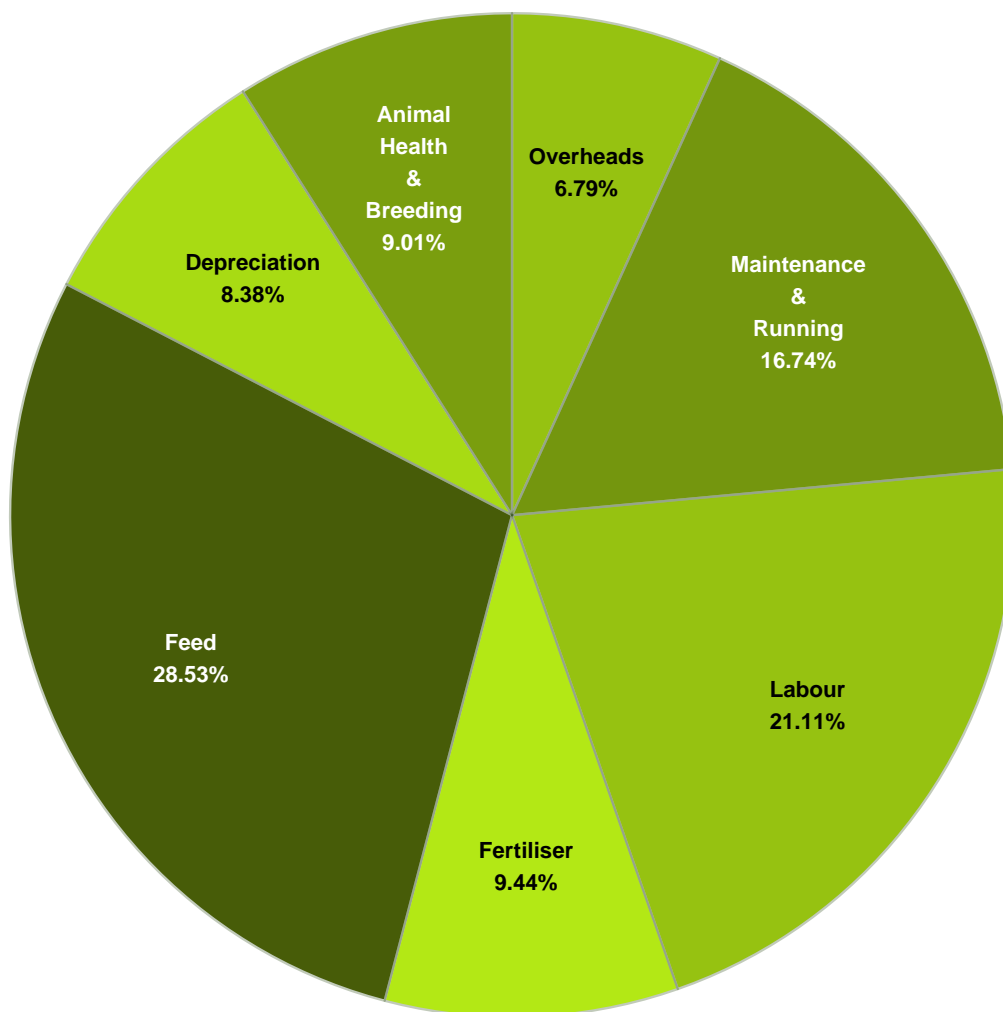
**Figure 5.2:** Net Livestock Sales (\$ per kg MS)

Dairy gross farm revenue on a typical New Zealand dairy farm was \$1,166,413 million and was similar to the previous season (\$1,168,061 in 2017-18). On a per hectare basis, gross farm revenue of \$7,991, was higher than the per hectare gross farm revenue in 2017-18. At \$6.98 per kilogram milksolids, gross farm revenue in 2018-19 was 25 cents (-3.5%) below the previous seasons.

Tables 12.1, 12.2, 12.3 and 12.4 show net cash income, cash farm working expenses and the adjustments made to calculate operating profit for the average New Zealand owner-operator on a per farm, per cow, per hectare and per kilogram milksolids sold basis.

### 5.3 Expenditure

Feed continues to be the largest category of expenditure at 28.5 percent in 2018-19 and has been the largest expenses category since 2007-08. Labour was the second highest operating expense for dairy farms at 21.1 percent of total operating expenditure. Maintenance and running costs and fertiliser contributed 16.7 and 9.44 percent respectively in the year to June 2019. Figure 5.3 shows the major 2018-19 expenditure categories.

**Figure 5.3:** Proportion of Dairy Operating Expenditure 2018-19

Changes in total farm expenditure are affected by changes in farm area and herd size, therefore per cow, per hectare and per kilogram milksolids are more appropriate measures of movement in individual items. Average farm working expenses (i.e. cash expenses) per kilogram milksolids increased 5 cents (+1.2%) to \$4.25. This was the second highest expenditure, behind the \$4.33 per kilogram milksolids recorded in 2013-14 prior to the downturn in milk prices.

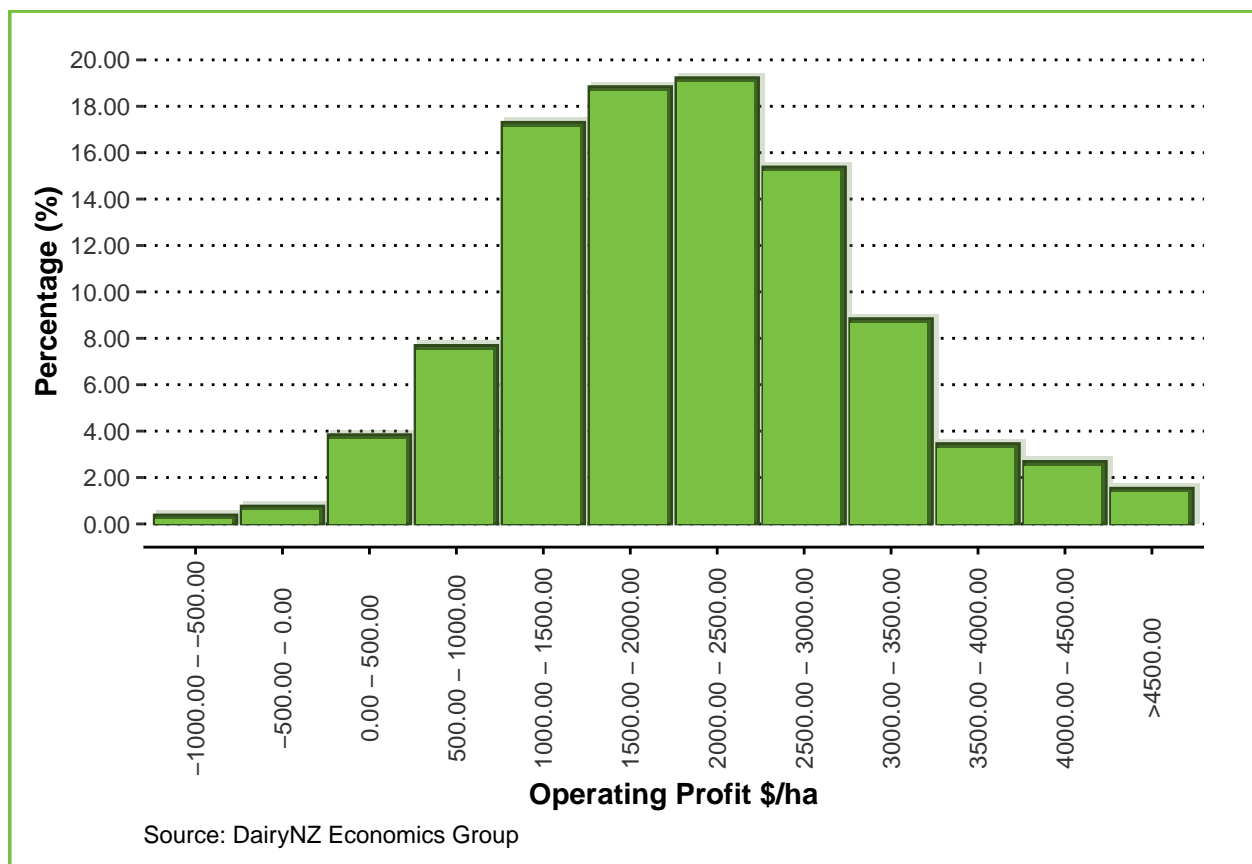
Dairy operating expenses per kilogram milksolids was \$5.10, 3 cents below the previous season. This was the third highest level of operating expenses and only the fourth-time operating expenses per kilogram milksolids has exceeded \$5. Table 12.4 shows the changes in the categories of operating expenses per kilogram milksolids. Animal health and breeding, labour, depreciation and overheads have remained steady over the past decade but feed, fertiliser, and maintenance and running costs have been more variable, reflecting significant changes in income levels from one season to the next.

## 5.4 Profitability

Operating profit is a key indicator of dairy farm financial performance. This measure, expressed on a per hectare basis, is particularly useful for comparing the profitability between farms. Operating profit incorporates adjustments to allow comparisons between farms, but does not include interest. Table 12.3 shows the revenue and expenditure items included in operating profit. Operating profit per hectare was \$2,154 in 2018-19, down 3.8 percent on the previous season.

Operating profit per hectare was normally distributed around the mean (\$2,154) per hectare, reflecting a wide range between farms. 97.3 percent of farmers had operating profits between \$0 and \$4,500 per hectare, while 9.3 percent of farmers had operating profits of over \$3,500 per hectare. Only 1.15 percent of farms recorded negative operating profits in 2018-19 (Figure 5.5).

**Figure 5.4:** Distribution of Owner-operating Profit (\$ per hectare)



Operating profit per hectare can be decomposed using the following equation:

$$\frac{\text{Operating Profit \$}}{\text{ha}} = \frac{\text{kg MS}}{\text{ha}} \times \frac{(\text{Gross Farm Revenue \$} - \text{Operating Expenses \$})}{\text{kg MS}}$$

Operating profit for an average New Zealand dairy farm in 2017-18 had the following components:

$$\text{\$2,154 (operating profit/ha)} = \text{1,145 (kg MS/ha)} \times (\text{\$6.42 GFR/kg MS} - \text{\$5.10 operating expenses/kg MS})$$

Tables 5.2 and 5.3 show the average size and profitability of farms by quartile. Quartiles have been constructed by ranking farms on operating profit per hectare across New Zealand. Operating profit per hectare for top quartile farms averaged \$3,389 compared with \$866 for the bottom quartile group. Each quartile group produced more milksolids per hectare compared with the quartile lower. Top quartile farmers produced 63 percent more kilograms milksolids per hectare than bottom quartile farmers, with substantially less farm working expenses per kilogram milksolids.

While there is a range in gross farm revenue across the quartiles the most significant difference between the groups is their operating expenses per kilogram milksolids. Top farms are more efficient as demonstrated by lower operating expenses per kilogram milksolids. Operating expenses increased from the top quartile group through to the bottom quartile group from \$4.52 through to \$5.99 per kilogram milksolids respectively.

**Table 5.1:** Owner-operator Quartile Profit

	Bottom Quartile	Lower middle Quartile	Upper middle Quartile	Top Quartile
<b>PHYSICAL CHARACTERISTICS:</b>				
Number of herds	65	65	65	65
Effective hectares	128.1	136.3	159.0	151.9
Peak cows milked	312	386	470	478
Stocking rate (cows/ha)	2.4	2.8	3.0	3.1
Kg milksolids sold	107,699	147,694	186,304	208,344
Milksolids sold per hectare	841	1,083	1,172	1,372
Milksolids sold per cow	346	383	396	436
PAYOUT RECEIVED: \$/kg MS sold	6.40	6.44	6.39	6.44
<b>DAIRY CASH INCOME \$:</b>				
Milk sales (net of dairy levies)	6.40	6.44	6.39	6.44
Net livestock sales (sales - purchases)	0.55	0.50	0.46	0.43
Other dairy cash income	0.05	0.03	0.04	0.04
Net dairy cash income	7.00	6.97	6.90	6.91
<b>CASH FARM WORKING EXPENSES:</b>				
Wages	0.63	0.66	0.67	0.62
Animal health	0.25	0.24	0.21	0.20
Breeding & herd improvement	0.20	0.16	0.16	0.15
Farm dairy	0.08	0.07	0.05	0.05
Electricity	0.13	0.12	0.11	0.09
Net feed made, purchased, cropped	1.18	1.12	0.92	0.82
Stock grazing	0.23	0.34	0.46	0.52
Support block lease	0.09	0.05	0.09	0.03
Fertiliser (incl Nitrogen)	0.56	0.49	0.46	0.39
Irrigation	0.01	0.05	0.08	0.14
Regrassing	0.08	0.08	0.06	0.06
Weed & pest	0.05	0.03	0.03	0.02
Vehicles & fuel	0.29	0.22	0.17	0.14
Repairs & maintenance	0.45	0.39	0.35	0.28
Freight & general	0.07	0.05	0.04	0.03
Administration	0.14	0.14	0.12	0.12
Insurance	0.11	0.09	0.08	0.07
ACC	0.03	0.03	0.02	0.02
Rates	0.14	0.12	0.09	0.09
Farm working expenses	4.73	4.45	4.18	3.86
Cash operating surplus	2.27	2.52	2.71	3.06
<b>ADJUSTMENTS:</b>				
Value of change in dairy livestock	0.02	0.08	0.06	0.08
less Labour adjustment	0.66	0.48	0.31	0.25
plus Feed inventory adjustment	-0.03	0.00	0.02	0.06
less Owned support block adjustment	0.09	0.10	0.08	0.07
less Depreciation	0.48	0.44	0.38	0.39
Net Adjustments	-1.24	-0.94	-0.69	-0.59
<b>OPERATING CASH &amp; NON-CASH: MS BASIS</b>				
Dairy gross farm revenue	7.02	7.05	6.96	6.99
Dairy operating expenses	5.99	5.47	4.93	4.52
Dairy operating profit	1.03	1.58	2.03	2.47
<b>OPERATING CASH &amp; NON-CASH: HA BASIS</b>				
Dairy gross farm revenue	5,901	7,632	8,153	9,589
Dairy operating expenses	5,035	5,925	5,778	6,199
Dairy operating profit	866	1,707	2,375	3,389

There was over a three percent range between each of the quartiles of operating return on dairy assets. The top quartile averaged 5.4 percent, compared to the bottom quartile of 2.1 percent.

**Table 5.2:** Owner-operator Quartile Financial Position

	Bottom Quartile	Lower middle Quartile	Upper middle Quartile	Top Quartile
<b>RETURNS:</b>				
Operating return on dairy assets %	2.1%	3.2%	4.4%	5.4%
Total return on assets %	-2.2%	0.3%	0.9%	1.9%
Total return on equity %	-7.7%	-3.7%	-3.4%	-0.6%
Growth in equity %	-10.2%	-9.1%	-9.4%	-5.9%
<b>DEBT:</b>				
Closing term liabilities per kg MS	24.53	25.92	24.70	23.83
Closing debt to asset %	49.2%	51.6%	57.5%	52.8%

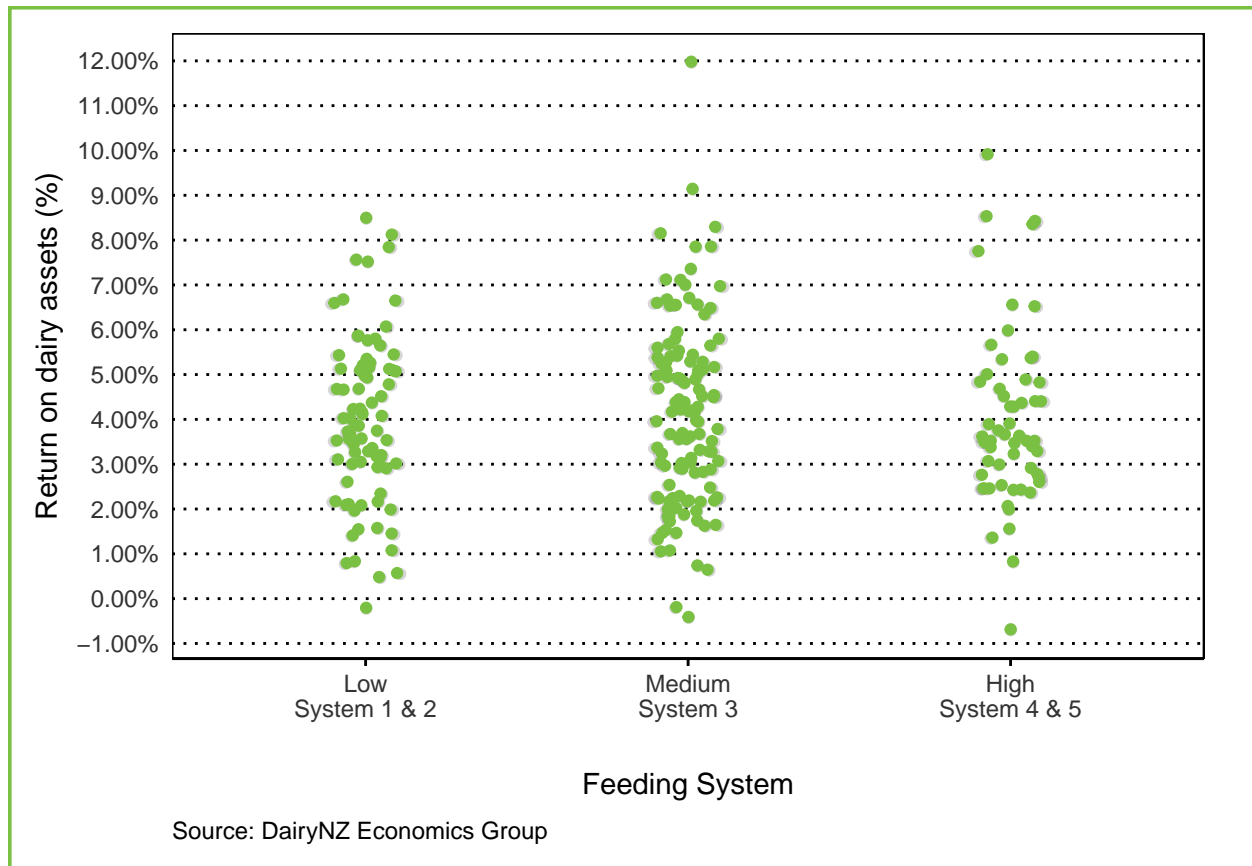
In high payout seasons, such as 2007-08, 2010-11, and 2013-14, the correlation between milksolids production per hectare and operating profit per hectare strengthens and the reverse is true in low milk payout seasons. The changes in relationships over the past decade are detailed in Table 5.4. Measuring the cost efficiency of milksolids production (operating expenses/kg MS) relative to milk price is more relevant than production or expenditure alone when focusing on how to achieve high profit margins. The  $R^2$  rows in table 5.4 denote the strength of the association between the variables. A value of 0% denotes no association, while a value of 100% denotes a perfect association.

**Table 5.3:** Correlations between Production, Profit and Operating Expenses

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>CORRELATIONS:</b>										
Payout received \$/kg MS	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.40
Milksolids kg MS/ha	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,149
Dairy operating expenses \$/kg MS	4.49	4.95	4.73	5.03	5.17	4.94	4.45	4.60	5.13	5.16
Dairy operating profit \$/ha	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937	2,238	2,128
R2 - dairy operating profit \$/ha & kg MS/ha	53.3%	54.3%	35.5%	40.0%	45.7%	17.3%	0.1%	32.7%	37.3%	39.3%
R2 - dairy operating profit \$/ha & operating expenses \$/kg MS	61.8%	53.6%	53.0%	54.1%	46.7%	59.4%	60.4%	49.7%	62.9%	59.5%

Operating return on dairy assets is a measure of the operating profit generated by the dairy assets employed at the start of the season. This measure excludes non-dairy activities and any change in capital value. The average operating return on dairy assets was 4.0 percent in 2018-19. Grouping farm systems into low (systems 1 and 2), medium (system 3) and high input (systems 4 and 5) shows that the average operating return on dairy assets was slightly higher for high input farms (Figure 5.6). The range within each system group is very similar across the three system groups, with operating return on dairy assets ranging primarily between one percent to ten percent.



**Figure 5.5:** Return on Dairy Assets Distribution

Business profit before tax is another measure of profitability which considers the cost of borrowing and other non-dairy activities. This is the overall profitability of the business enterprise and not just the dairy farm operation (Table 5.5).

**Table 5.4:** Table Business Profit before Tax

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>BUSINESS PROFIT:</b>							
Dairy operating profit	258,049	470,808	223,630	-1,291	286,227	338,871	314,435
+ Labour adjustment	55,162	59,309	59,021	56,341	61,154	63,920	62,545
+ Owned support block adjustment	14,601	15,338	14,889	14,126	14,359	16,786	13,143
+ Non-dairy operating profit	1,288	1,724	-673	-318	3,331	5,444	6,904
+ Net off-farm income	12,360	9,858	12,098	9,208	19,643	18,392	6,670
- Rent	22,812	23,366	22,250	20,047	19,582	20,703	12,499
- Interest	174,136	171,597	195,984	197,277	197,343	191,459	194,022
<b>Business profit before tax</b>	<b>144,512</b>	<b>362,074</b>	<b>90,731</b>	<b>-139,258</b>	<b>167,789</b>	<b>231,251</b>	<b>197,163</b>
Business profit before tax per all effective hectares	785	1,981	478	-734	887	1,174	1,077

The average dairy farm in 2018-19 made a business profit before tax of \$197,163, down \$34,088 per farm compared to the previous season. This business profit is equivalent to \$1,077 per all effective hectares (effective dairy + effective dairy support block + effective non-dairy). The dairy operating profit decreased by \$24,436 on the previous season. Combined interest and rent payments remained similar to the previous season. Total effective hectares decreased by 5.4 hectares from the season prior, to 146 effective dairy hectares.

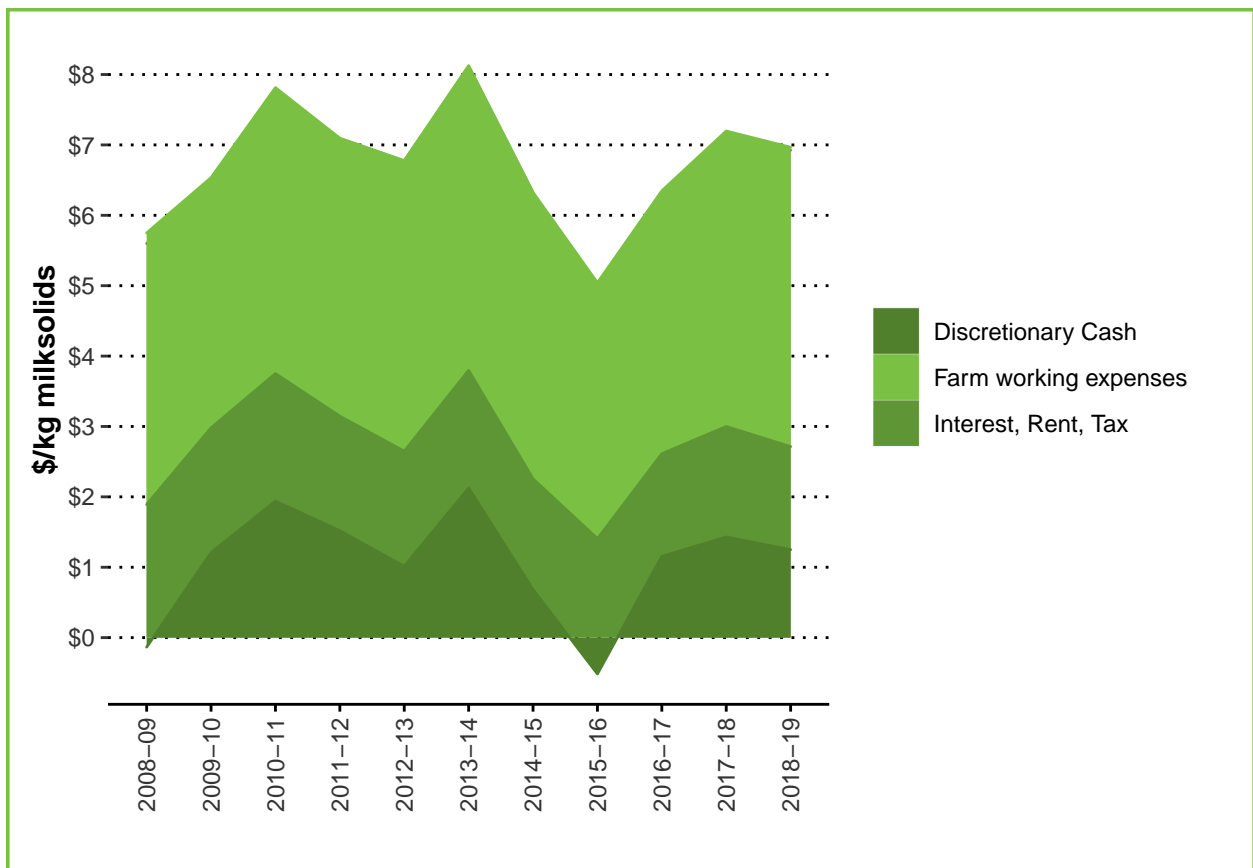
## 5.5 Cash Flow

The cash operating surplus is the difference between net dairy cash income and farm working expenses. In 2018-19 the cash operating surplus of \$446,701 decreased by 6.6 percent from the previous season. On a per kilogram milksolids basis the \$2.67 cash operating surplus was down 29 cents on the previous season. Once rent, interest and tax are paid and net income from non-dairy farming activities are added, the amount left is discretionary cash. Total discretionary cash in 2018-19 was at \$208,906 which equates to \$1.25 per kilogram milksolids (refer to Table 12.5).

Many farm businesses include cash funds and off-farm income in their annual accounts. The cash available after including these activities and any change of funds deposited or withdrawn from the IRD Income Equalisation Scheme is the cash available for drawings, debt repayments and/or capital development and purchases. Cash available for living and business growth in 2018-19 was \$213,109 per farm, the highest level since 2013-14 and up 2.4 percent from last season.

Cash for living and growth can also be used to repay debt and for farm family drawings. During the year, term debt increased \$74,133 per farm, but there was also a large amount (\$207,027) spent on capital transactions. Drawings decreased (-\$9,161) to \$95,173 per farm. Tax payments decreased to \$38,315 per farm (Table 12.5).

**Figure 5.6:** Annual Change in Revenue and Expenditure 10 years (\$ per kg MS)



## 6 Owner Operator: Equity and Capital Financial Analysis

### 6.1 Introduction

This section considers the equity and capital position of dairy farms, with additional information about trends over time in these positions.

Following a large capital expenditure, changes in debt and drawings, a cash deficit of \$14,958 was recorded. The operating return on dairy assets decreased to 4.0 percent in 2018-19 and the total return on assets was 0.5 percent. Total return on equity decreased was -3.4 percent. Equity levels decreased 8.7 percent (-\$363,884), with the positive growth in equity from profit more than offset by the decrease in asset values and small increase in liabilities. Total liabilities as a percentage of total assets (loan to value ratio) increased to 53.4 percent at the end of the season. Closing term liabilities per kilogram milksolids decreased to \$24.92.

### 6.2 Dairy Assets

The number of dairy farms sold in 2018-19 was down 78 farms (-34.5%), to 148. The REINZ average sales price per kilogram milksolids and per hectare for the last five seasons is shown in Table 6.1. Hectares are measured as total, rather than effective area which is generally used in this publication. Raw data from REINZ was weighted by the number of farms in each region and the analysis only includes farms considered to be economic units. Dairy land prices have remained reasonably static over the last three seasons at around \$40 per kilogram milksolids and around \$38,000 per hectare. In 2018-19 the land price decreased to \$38 per kilogram milksolids and \$36,846 per hectare.

**Table 6.1:** Average Sales Price and Number of Dairy Farms Sold

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>FARM SALES:</b>								
Farms sold	157	197	312	244	192	217	226	148
Average \$ sale price/kg MS	40	36	42	45	39	40	40	38
Average \$ sale price/ha	32,376	33,557	36,369	39,577	36,557	37,835	38,015	36,846
Average \$ sale price/ha (real 2018-19 dollars)	35,060	36,111	38,495	41,720	38,379	39,046	38,652	36,846

### 6.3 Liabilities and Debt Servicing

Interest is the cash cost of borrowing funds, while rent is the cost of borrowing assets. Interest and rent totalled \$1.24 per kilogram milksolids. The lower interest expenditure was due to a reduction in interest rates. Borrowing costs represented 17.7 percent of gross farm revenue (Table 6.2). Therefore, for every dollar of gross income earned, 17.7 cents is required to pay interest and rent.

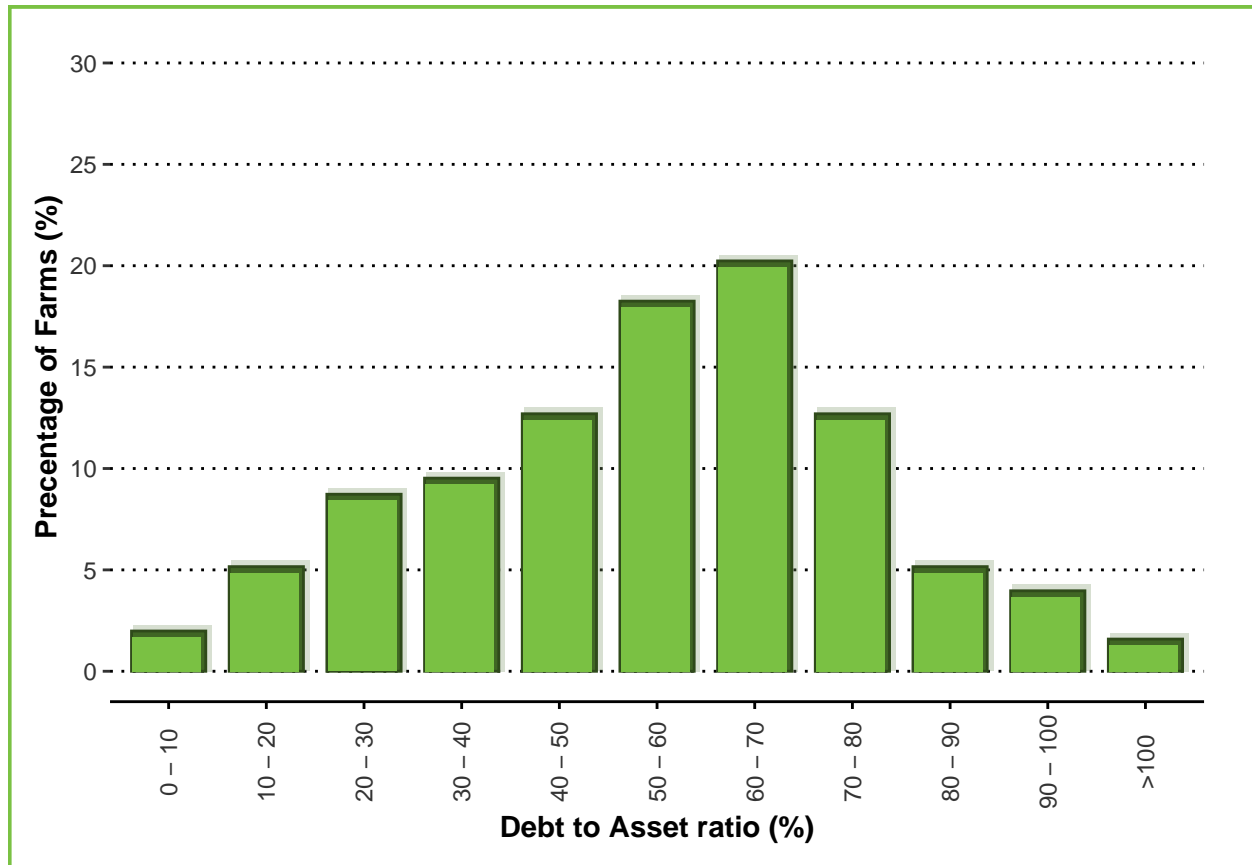
**Table 6.2:** Debt Servicing Ratios

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>DEBT SERVICING:</b>										
Interest & rent \$/kg MS	1.67	1.54	1.31	1.39	1.28	1.36	1.36	1.35	1.31	1.24
Interest & rent % GFR	25.5%	19.6%	18.1%	20.3%	15.5%	21.5%	30.5%	21.2%	18.2%	17.7%
Term liabilities \$/kg MS	21.65	20.44	19.24	20.82	20.14	21.26	22.49	25.00	25.31	24.92

The debt to asset ratio increased from 50.7 percent at the close of 2017-18 to 53.4 percent in 2018-19 (Table 12.6). Debt to asset values had been around 50 percent for the past four seasons but were at lower levels prior to that.

Figure 6.1 shows the debt to asset distribution in 2018-19, with an average of 53.4 percent. Twenty-six percent of farms have debt to asset ratios below 40 percent. Twenty-four percent of the farms had debt to asset ratios over 70 percent, with approximately six percent sitting in the high-risk area of over 90 percent debt.

**Figure 6.1:** Debt to Asset Distributions 2018-19



Over the last 10 years, the average farm has increased its milksolids production by 33 percent, while term liabilities have increased twice as fast (+69%) to \$4.2 million per farm. Therefore, term liabilities per kilogram milksolids have increased during this period, increasing liquidity pressure on some farms through higher interest payments.

## 6.4 Liquidity

Despite the high profitability and cash available for living and growth, a cash deficit of \$101,147 was recorded in 2018-19. Table 6.3 shows a breakdown of the change in working capital including the source and application of cash funds. The majority of the source of funds in 2018-19 was from the current year's farming operations. The other major source of funds this season was increased debt (16.7% of total source of funds). Cash from the income equalisation scheme was at \$307 per farm in 2018-19. After farming operations, thirty-eight percent of the cash was spent on interest and rent payments for borrowing, while capital development and purchases (38%) was the other large cash expenditure area in 2018-19. Drawings for farm family living (17.4%) and tax payments (7%), was where the remainder of the cash was spent.

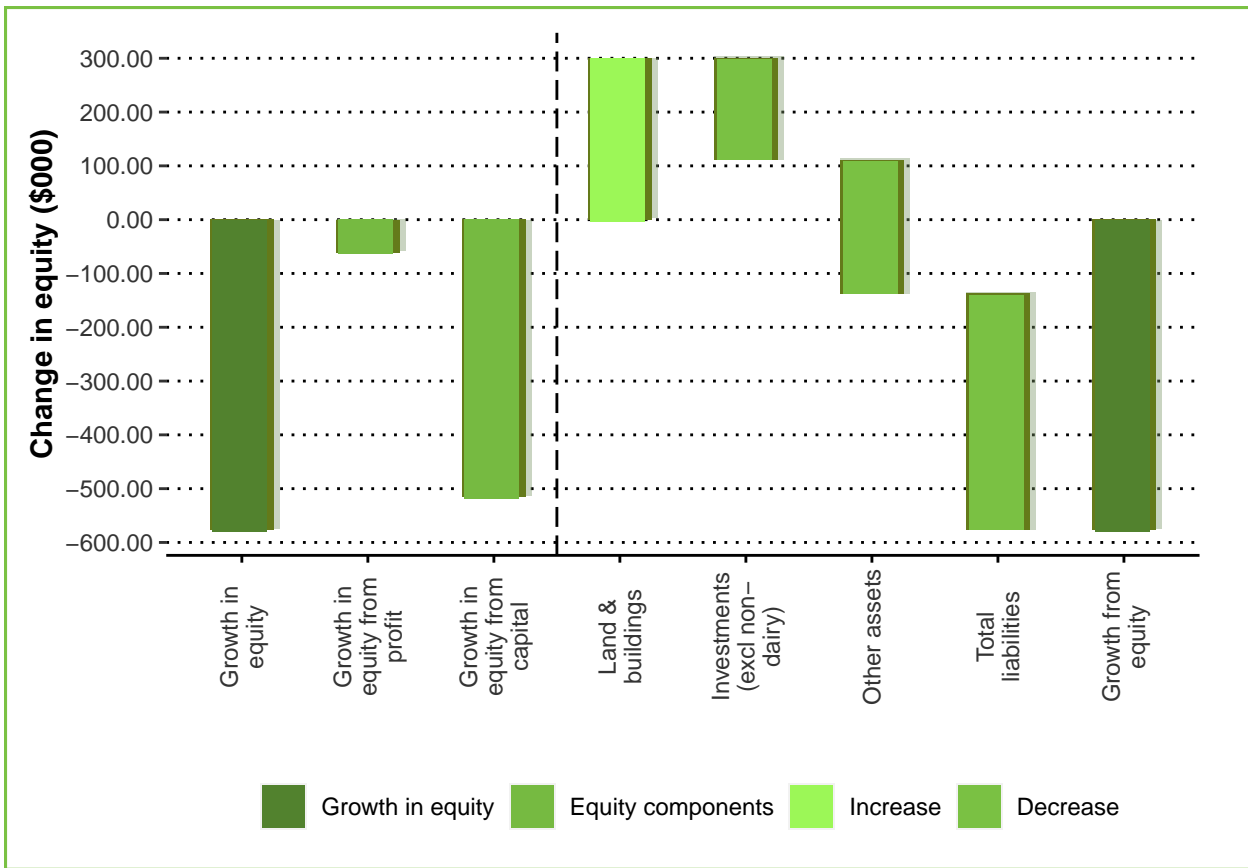
**Table 6.3:** Flow of funds

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>WORKING CAPITAL:</b>								
Change in Current Assets	-33,122	17,733	58,063	-99,057	-24,651	56,493	-12,326	-17,418
- Change in Current Liabilities	5,959	-25,702	24,417	-20,779	-2,678	-9,780	29,949	-5,362
Change in Working Capital	-39,081	43,435	33,646	-78,278	-21,973	66,273	-42,275	-12,056
<b>SOURCE OF FUNDS:</b>								
Cash Operating Surplus	464,654	375,176	572,586	361,272	141,757	415,410	478,511	446,701
+ non-dairy cash income	790	1,125	2,355	486	904	3,371	6,064	7,040
+ net off-farm income	11,018	12,427	9,991	12,078	9,238	19,811	18,114	6,670
+ introduced funds	-2,871	40,918	-44,275	28,307	77,696	-24,004	-40,908	-2,774
+ income equalisation	-2,004	1,178	-4,756	-9,579	16,765	1,307	40	307
+ increase in term debt	-22,153	123,346	10,790	93,026	111,778	75,868	92,523	74,554
= Total source of funds	449,434	554,170	546,691	485,590	358,138	491,763	554,344	520,442
<b>APPLICATION OF FUNDS:</b>								
rent	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499
+ interest	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022
+ tax	46,816	35,383	58,155	34,078	7,939	16,773	41,532	38,315
+ capital transactions	164,026	185,532	143,703	201,119	76,697	109,749	238,591	207,027
+ drawings	83,781	92,872	116,224	110,437	78,151	82,043	104,334	95,173
= Total application of funds	488,515	510,735	513,045	563,868	380,111	425,490	596,619	547,036
Source less Application of funds	-39,081	43,435	33,646	-78,278	-21,973	66,273	-42,275	-26,593

## 6.5 Equity

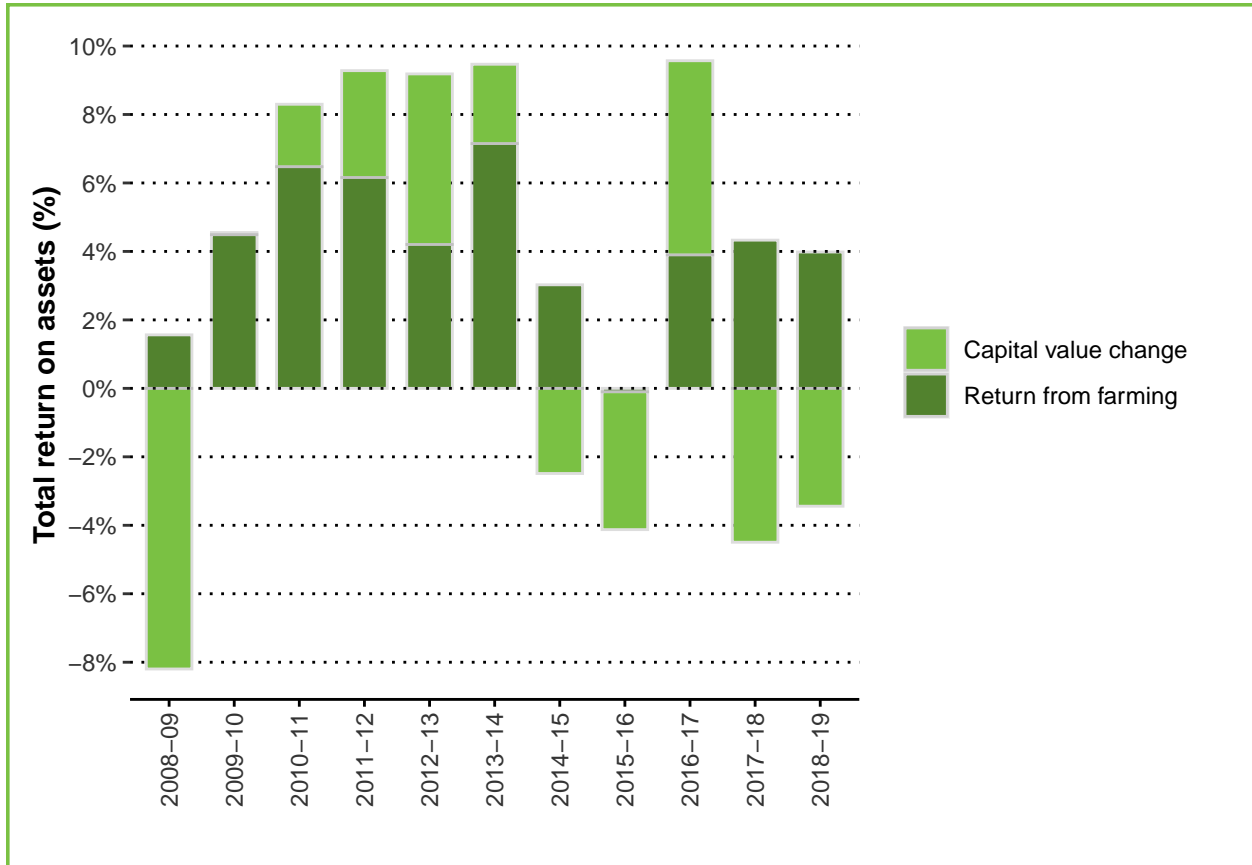
Equity (shareholders' funds or net worth) is the net value of the assets owned by the farm business (i.e. total assets less total liabilities at open and close of each year). At the opening of the 2018-19 season, dairy farm businesses had an average equity of \$4.16 million or 49 percent of total assets. This decreased to \$3.8 million at the end of the season or 47 percent of total closing asset values.

The equity value of the average dairy farm business increased -\$576,870 between 2014 and 2019 (Figure 6.2). Over the past five years, growth has been driven by increases in land and buildings (+\$300,160), offset by the decline in value of investments (-\$189,020) and other assets (-\$248,880). Liabilities have increased \$439,100 over the past five years.



## 6.6 Returns

The return on dairy assets is discussed under farm profitability (Section 5.5). The total return on assets takes into account operating profit from both dairy and non-dairy farming operations, plus the change in value of capital assets. The total return on assets in 2018-19 was 0.5 percent. The 2018-19 total return on assets comprised 3.8 percent net return from all farming operations with -3.4 percent net return from capital. For the past decade the total return on assets has ranged between -4.1 percent and 9.5 percent, driven by changes in the value of land and buildings, dairy company share values, livestock values and profits (Table 12.7).

**Figure 6.2:** Owner Operator Total Return on Assets

The percentage return on equity is the return on owner's funds, including capital changes after interest is paid (Table 12.7). The return on equity will be higher than the total return on assets when the latter is greater than the cost of debt and vice versa. In 2018-19 the total return on equity was -3.4 percent compared to 0.5 percent total return on assets. Both 2014-15 and 2015-16 realised negative returns on equity due to low profitability, but in 2017-18 and 2018-19 the negative return was due to reduced capital values. Ideally, the return on assets should be above the returns for alternative investments of similar risk, such as shares or other forms of property investment.

## 7 Owner Operator: Regional and Systems Financial Analysis

### 7.1 Regional Profitability

DairyBase® classifies farms into eight regions, five in the North Island and three in the South Island (refer to Section 2.6). Table 7.1 shows key 2018-19 performance indicators for the average farm in these eight regions. North Island, South Island, and New Zealand data was weighted by owner-operator herd numbers in each region. Taranaki had the lowest average herd size of 282 cows, 55 cows below the North Island average (337). Waikato had the largest herd size in the North Island (376), followed by the Bay of Plenty (368). Average herd sizes in the South Island were considerably larger than in the North Island, with on average 567 peak cows milked. In the South Island, Marlborough-Canterbury had the largest herd size with 818 cows, 251 cows above the South Island average (567), while the average herd size in Otago-Southland was 543 cows.

There is a range of stocking rates nationwide with West Coast-Tasman (2.3 cows/ha) and Northland (2.4 cows/ha) having the lowest stocking rates. Marlborough-Canterbury had the highest stocking rate at 3.5 cows per hectare, while the rest of the regions had an average stocking rate of either 2.6 and 3.0. Northland recorded the lowest average milksolids production per cow of all the regions (337 kg MS). The other four North Island regions recorded milksolids per cow between 372 and 411 kg MS. Marlborough-Canterbury and Otago-Southland recorded similar production per cow of 436 and 411 kilograms milksolids per cow respectively. However on a per hectare basis Marlborough-Canterbury production is considerably higher due to more cows per hectare.

Farms in most regions recorded average milk payouts between \$6.38 and \$6.51 per kilogram milksolids, with the exception of West Coast-Tasman where the average milk payout received was \$6.11 per kilogram milksolids due to a lower milk price paid by Westland Milk Products in 2018-19. Regional average farm working expenses (FWE) per kilogram milksolids were lowest in Taranaki (\$3.86) and Bay of Plenty (\$4.06) while all other regions' average farm working expenses ranged between \$4.11 and \$4.46 per kilogram milksolids. The bottom of Table 7.1 shows the regional gross farm revenue, operating expenses, and operating profit levels on a per hectare basis in 2018-19. Marlborough-Canterbury (\$2,890), Otago-Southland (\$2,616) and the Taranaki region (\$2,438) recorded the highest operating profits per hectare, while West Coast-Tasman recorded the smallest operating profit at \$1,118 per hectare. West Coast-Tasman (\$4,414) and Northland (\$4,377) recorded the lowest dairy operating expenses per hectare, while Marlborough-Canterbury had the highest at \$7,579, followed by the Waikato at \$5,968. Due to the much higher gross farm revenue for Marlborough-Canterbury farms, they were the most profitable (\$2,890) region on a per hectare basis. Generally, Marlborough-Canterbury, Otago-Southland and Taranaki farms experienced high levels of profitability in 2018-19 relative to other regions.



**Table 7.1:** Regional Owner-operator Profitability

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough-Canterbury	Otago-Southland
<b>PHYSICAL CHARACTERISTICS:</b>								
Number of herds	34	50	18	50	41	12	31	24
Effective hectares	128.7	126.1	128.7	100.0	136.4	149.1	234.4	197.8
Peak cows milked	306	376	368	282	354	340	818	543
Stocking rate (cows/ha)	2.4	3.0	2.9	2.8	2.6	2.3	3.5	2.7
Kg milksolids sold	103,147	140,165	134,469	115,721	135,454	121,406	357,061	227,150
Milksolids sold per hectare	801	1,112	1,045	1,157	993	814	1,523	1,148
Milksolids sold per cow	337	372	365	411	383	357	436	418
PAYOUT RECEIVED: \$/kg MS sold	6.51	6.44	6.40	6.38	6.45	6.11	6.43	6.40
<b>DAIRY CASH INCOME \$:</b>								
Milk sales (net of dairy levies)	6.51	6.44	6.40	6.38	6.45	6.11	6.43	6.40
Net livestock sales (sales - purchases)	0.68	0.48	0.48	0.41	0.65	0.42	0.34	0.52
Other dairy cash income	0.07	0.05	0.03	0.05	0.05	0.05	0.03	0.01
Net dairy cash income	7.27	6.97	6.92	6.85	7.15	6.58	6.80	6.93
<b>CASH FARM WORKING EXPENSES:</b>								
Wages	0.53	0.67	0.56	0.41	0.70	0.63	0.77	0.70
Animal health	0.23	0.25	0.27	0.20	0.21	0.15	0.22	0.21
Breeding & herd improvement	0.17	0.17	0.13	0.15	0.15	0.18	0.16	0.17
Farm dairy	0.07	0.07	0.04	0.06	0.08	0.07	0.04	0.05
Electricity	0.15	0.13	0.12	0.11	0.13	0.10	0.09	0.10
Net feed made, purchased, cropped	0.89	1.22	0.96	1.12	0.99	1.15	0.81	0.87
Stock grazing	0.19	0.29	0.26	0.25	0.20	0.13	0.72	0.62
Support block lease	0.09	0.05	0.06	0.08	0.10	0.24	0.02	0.05
Fertiliser (incl Nitrogen)	0.65	0.47	0.47	0.40	0.38	0.67	0.45	0.42
Irrigation	0.00	0.00	0.04	0.00	0.02	0.03	0.28	0.02
Regrassing	0.09	0.09	0.07	0.04	0.09	0.06	0.06	0.07
Weed & pest	0.05	0.03	0.04	0.03	0.03	0.04	0.02	0.03
Vehicles & fuel	0.28	0.20	0.22	0.20	0.27	0.27	0.13	0.15
Repairs & maintenance	0.46	0.35	0.34	0.36	0.39	0.30	0.32	0.32
Freight & general	0.06	0.06	0.07	0.05	0.06	0.08	0.03	0.03
Administration	0.12	0.11	0.14	0.15	0.14	0.14	0.12	0.14
Insurance	0.09	0.08	0.08	0.10	0.11	0.12	0.07	0.07
ACC	0.04	0.02	0.03	0.02	0.03	0.03	0.02	0.02
Rates	0.13	0.13	0.16	0.13	0.14	0.07	0.06	0.07
Farm working expenses	4.28	4.40	4.06	3.86	4.21	4.46	4.37	4.11
Cash operating surplus	2.98	2.57	2.86	2.99	2.94	2.13	2.43	2.82
<b>ADJUSTMENTS:</b>								
Value of change in dairy livestock	0.05	0.03	0.06	0.07	0.11	0.21	0.07	0.00
less Labour adjustment	0.70	0.45	0.58	0.58	0.50	0.47	0.11	0.26
plus Feed inventory adjustment	-0.03	-0.04	-0.10	0.06	-0.01	-0.00	0.04	0.13
less Owned support block adjustment	0.09	0.08	0.06	0.05	0.18	0.06	0.06	0.08
less Depreciation	0.36	0.40	0.43	0.38	0.45	0.43	0.47	0.34
Net Adjustments	-1.12	-0.94	-1.11	-0.88	-1.04	-0.75	-0.53	-0.54
<b>OPERATING CASH &amp; NON-CASH: MS BASIS</b>								
Dairy gross farm revenue	7.32	7.00	6.99	6.91	7.26	6.79	6.87	6.93
Dairy operating expenses	5.46	5.37	5.24	4.81	5.35	5.42	4.98	4.66
Dairy operating profit	1.86	1.63	1.75	2.11	1.90	1.37	1.90	2.28
<b>OPERATING CASH &amp; NON-CASH: HA BASIS</b>								
Dairy gross farm revenue	5,868	7,778	7,298	7,999	7,204	5,532	10,469	7,962
Dairy operating expenses	4,377	5,968	5,470	5,561	5,316	4,414	7,579	5,346
Dairy operating profit	1,492	1,810	1,828	2,438	1,888	1,118	2,890	2,616

Regional average operating return on dairy assets ranged from 3.0 percent to 5.7 percent. Otago-Southland (5.7%), and Northland (4.3%) had the highest operating returns on dairy assets in 2018-19. The national total return on assets (including change in asset values) was 0.5% percent. Bay of Plenty and the Lower North Island reported negative total return on assets, -0.5% and -2.4% respectively.

Return on equity is the return on owner's funds, including capital changes after interest is paid. Northland and Otago-Southland experienced positive returns on equity, while all regions experienced negative total returns

on equity. The largest negative return on equity was recorded for Lower North Island (-8.2%) followed by Waikato (-5.6%).

Average term debt per kilogram milksolids increased nationally in 2018-19 and was higher in the North Island (\$25.67) compared to the South Island (\$19.90). There was some variation between regions with Taranaki (\$31.01) the highest, while West Coast-Tasman was the lowest (\$17.59). Debt to asset levels were lower in the North Island (50.7%) than the South Island (53%) with averages across all regions ranging between 44.6 percent and 57.8 percent.

**Table 7.2:** Regional Owner-operator Financial Position

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough-Canterbury	Otago-Southland
<b>RETURNS:</b>								
Operating return on dairy assets %	4.3%	3.0%	3.7%	3.5%	3.8%	4.1%	4.6%	5.7%
Total return on assets %	4.2%	-0.5%	-0.5%	0.7%	-2.4%	3.1%	0.4%	3.5%
Total return on equity %	3.4%	-5.6%	-3.7%	-3.3%	-8.2%	1.8%	-4.8%	2.5%
Growth in equity %	-3.1%	-11.5%	-7.1%	-6.0%	-13.4%	-1.0%	-7.9%	-7.0%
<b>DEBT:</b>								
Closing term liabilities per kg MS	21.83	30.50	20.11	31.01	24.89	17.59	23.25	18.85
Closing debt to asset %	48.6%	55.4%	44.6%	54.7%	50.0%	52.7%	57.8%	48.6%

## 7.2 Production Systems

DairyBase® categorises farms into five production systems based on the quantity of feed purchased (including cow grazing) and the timing and use of imported feed (refer to Section 2.7 for production system descriptions). For the following analysis the systems have been combined to produce three categories; low (systems 1 and 2), medium (system 3) and high (systems 4 and 5). Within each production system there is variation in milksolids production and profitability. Production system type is not a good indicator of profitability as a farm can be profitable (or unprofitable) operating any system. Profit is less to do with the production system type, and more to do with the management, milksolids production and the costs within the production system.

Average herd sizes, milking area and stocking rates increase from low systems through to high. Average milksolids produced per cow and per hectare also follow this trend, reflecting higher inputs of supplementary feed. Milksolids per cow for the average of medium system farms (401 kg MS/cow) was 50 kg MS/cow more compared to the average of low system farms (351 kg MS/cow). High input systems recorded an average of 425 kilograms milksolids per cow, which was 24 kilograms higher than the average for medium farms. Once stocking rates are included, average milksolids per hectare for medium input farms (1,132) was 198 kilograms higher than low input farms (934) and 193 kilograms less than the average for high input farms (1,325).

Dairy cash income per kilogram milksolids was the highest for low input systems at \$7.00 due to livestock sales and other dairy income being greater than the other two systems on a per kilogram milksolids basis. Medium (\$6.94) and high input systems (\$6.89) had similar average dairy cash incomes per kilogram milksolids. Farm working expenses per kilogram milksolids was \$3.98 for low input systems and \$4.16 medium input systems, while high input systems had average farm working expenses \$4.50 per kilogram milksolids.

Cash operating surplus per kilogram milksolids was the highest for low input systems (\$3.02) and \$2.78 for medium systems. High input systems recorded the lowest average cash operating surplus of \$2.39 per kilogram milksolids. Operating profit per kilogram of milksolids was the highest for the average of medium input farms, although the spread between each of the system averages was only 33 cents in 2018-19. Operating profit per hectare was highest for average medium input systems (\$2,294), while the profits were slightly lower for high input system farms (\$2,247). Low input systems averaged less profit (\$1,825) in 2018-19.

The operating return on dairy assets was lower for average low input farms (3.8%). Medium input farms operating return on dairy assets averaged 4.2 percent and was 3.9 percent for average high input farms. Once capital and non-dairy operations were accounted for, total returns on assets were 0.0% for medium and 0.4% high input systems. Low input systems averaged slightly higher for total return on assets (1.4%). The total return on equity was -4% for medium, -5.1% for high input systems, and low input systems were higher (-1.3%), though still negative. The debt to asset ratio was moderate for low (49.5%) and medium (50.8%) input systems and a little higher (59.8%) for high input systems. Closing term liabilities per kilogram milksolids were

highest for low input systems (\$26.44). The average term liabilities for high input systems was \$24.79, while medium input systems (\$23.64) had the lowest level in 2018-19.

All farm system types had negative average growth in equity percentages, the opposite of last season. Growth in equity for low input systems was -7.1 percent, medium input systems at -8.6 percent, while high input systems recorded the largest negative growth in equity of -9.7 percent.

**Table 7.3:** Owner-operator Production Systems Profitability

	1&2 (Low)	3 (Medium)	4&5 (High)
<b>PHYSICAL CHARACTERISTICS:</b>			
Number of herds	81	120	59
Effective hectares	130.3	136.7	176.9
Peak cows milked	347	386	551
Stocking rate (cows/ha)	2.7	2.8	3.1
Kg milksolids sold	121,655	154,764	234,356
Milksolids sold per hectare	934	1,132	1,325
Milksolids sold per cow	351	401	425
PAYOUT RECEIVED: \$/kg MS sold	6.41	6.44	6.40
<b>DAIRY CASH INCOME \$:</b>			
Milk sales (net of dairy levies)	6.41	6.44	6.40
Net livestock sales (sales - purchases)	0.53	0.46	0.46
Other dairy cash income	0.06	0.04	0.02
Net dairy cash income	7.00	6.94	6.89
<b>CASH FARM WORKING EXPENSES:</b>			
Wages	0.62	0.64	0.67
Animal health	0.21	0.22	0.24
Breeding & herd improvement	0.18	0.15	0.16
Farm dairy	0.06	0.06	0.06
Electricity	0.13	0.11	0.10
Net feed made, purchased, cropped	0.75	0.99	1.12
Stock grazing	0.28	0.39	0.52
Support block lease	0.07	0.07	0.05
Fertiliser (incl Nitrogen)	0.50	0.44	0.46
Irrigation	0.01	0.05	0.18
Regrassing	0.06	0.07	0.07
Weed & pest	0.04	0.03	0.03
Vehicles & fuel	0.22	0.19	0.17
Repairs & maintenance	0.41	0.33	0.34
Freight & general	0.06	0.05	0.04
Administration	0.13	0.13	0.13
Insurance	0.09	0.09	0.07
ACC	0.03	0.02	0.02
Rates	0.14	0.11	0.08
Farm working expenses	3.98	4.16	4.50
Cash operating surplus	3.02	2.78	2.39
<b>ADJUSTMENTS:</b>			
Value of change in dairy livestock	0.00	0.08	0.07
less Labour adjustment	0.56	0.40	0.25
plus Feed inventory adjustment	0.01	0.03	0.01
less Owned support block adjustment	0.12	0.07	0.07
less Depreciation	0.40	0.40	0.45
Net Adjustments	-1.06	-0.76	-0.69
<b>OPERATING CASH &amp; NON-CASH: MS BASIS</b>			
Dairy gross farm revenue	7.00	7.02	6.96
Dairy operating expenses	5.05	5.00	5.26
Dairy operating profit	1.95	2.03	1.70
<b>OPERATING CASH &amp; NON-CASH: HA BASIS</b>			
Dairy gross farm revenue	6,537	7,953	9,221
Dairy operating expenses	4,712	5,659	6,974
Dairy operating profit	1,825	2,294	2,247

**Table 7.4:** Owner-operator Production Systems Financial Position

	1&2 (Low)	3 (Medium)	4&5 (High)
<b>RETURNS:</b>			
Operating return on dairy assets %	3.8%	4.2%	3.9%
Total return on assets %	1.4%	0.0%	0.4%
Total return on equity %	-1.3%	-4.0%	-5.1%
Growth in equity %	-7.1%	-8.6%	-9.7%
<b>DEBT:</b>			
Closing term liabilities per kg MS	26.44	23.64	24.79
Closing debt to asset %	49.5%	50.8%	59.8%

## 8 50:50 Sharemilkers: Operational Financial Analysis

### 8.1 Introduction

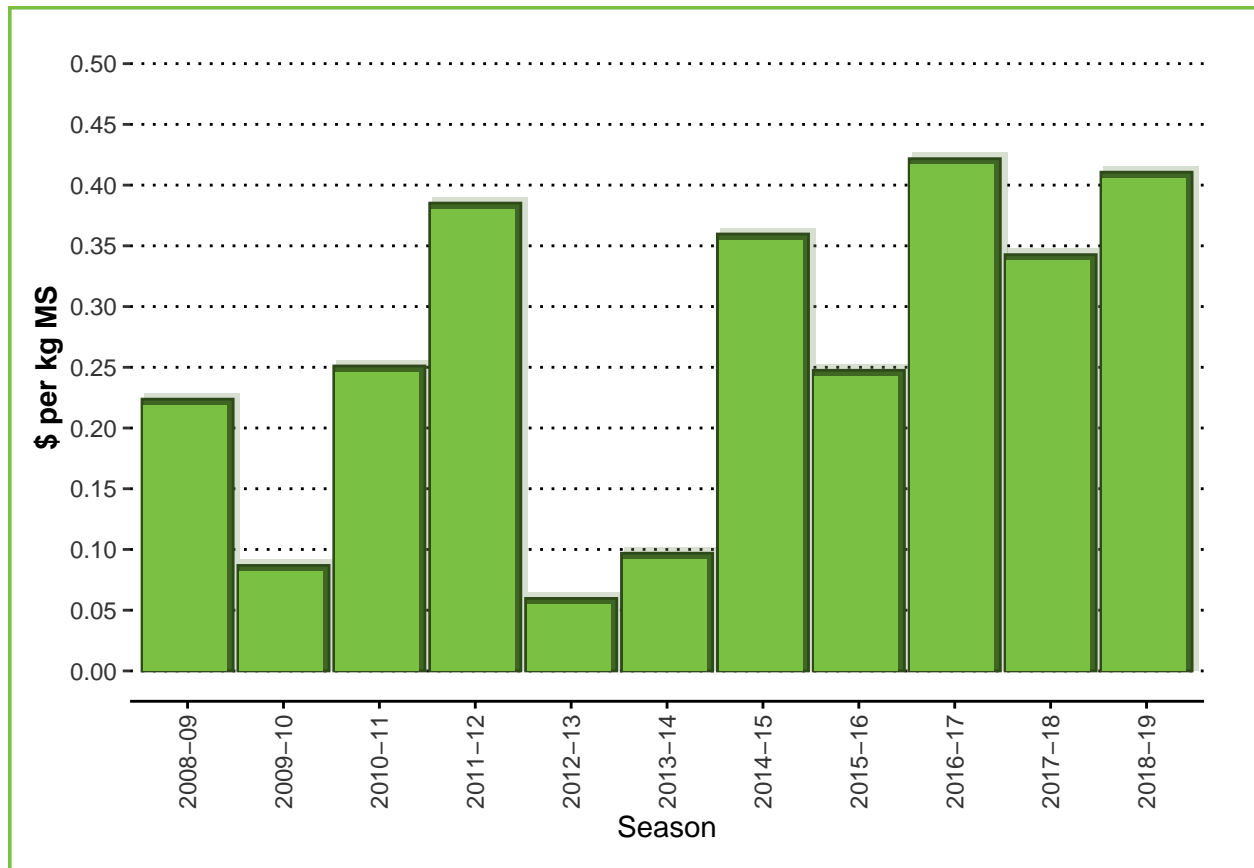
Operating profit per hectare for 50:50 sharemilkers (herd owning sharemilkers) recorded an increase (+8%) to \$775 per hectare in 2018-19. Lower milk payouts received (-4 cents per kilogram milksolids) were partially offset by a 9 percent increase in kilogram milksolids produced per cow. Operating expenses per kilogram milksolids decreased 13 cents to \$3.00. Production per cow and hectare increased from last season. The average cash available for living and growth increased to \$134,715 per farm. With increased capital expenditure, drawings and debt, a cash deficit of \$12,622 was recorded in 2018-19.

Tables 13.1, 13.2, 13.3 and 13.4 show net cash income, cash farm working expenses and the adjustments made to calculate operating profit for the average New Zealand 50:50 sharemilker on a per farm, per cow, per hectare and per kilogram milksolids sold basis.

### 8.2 Revenue

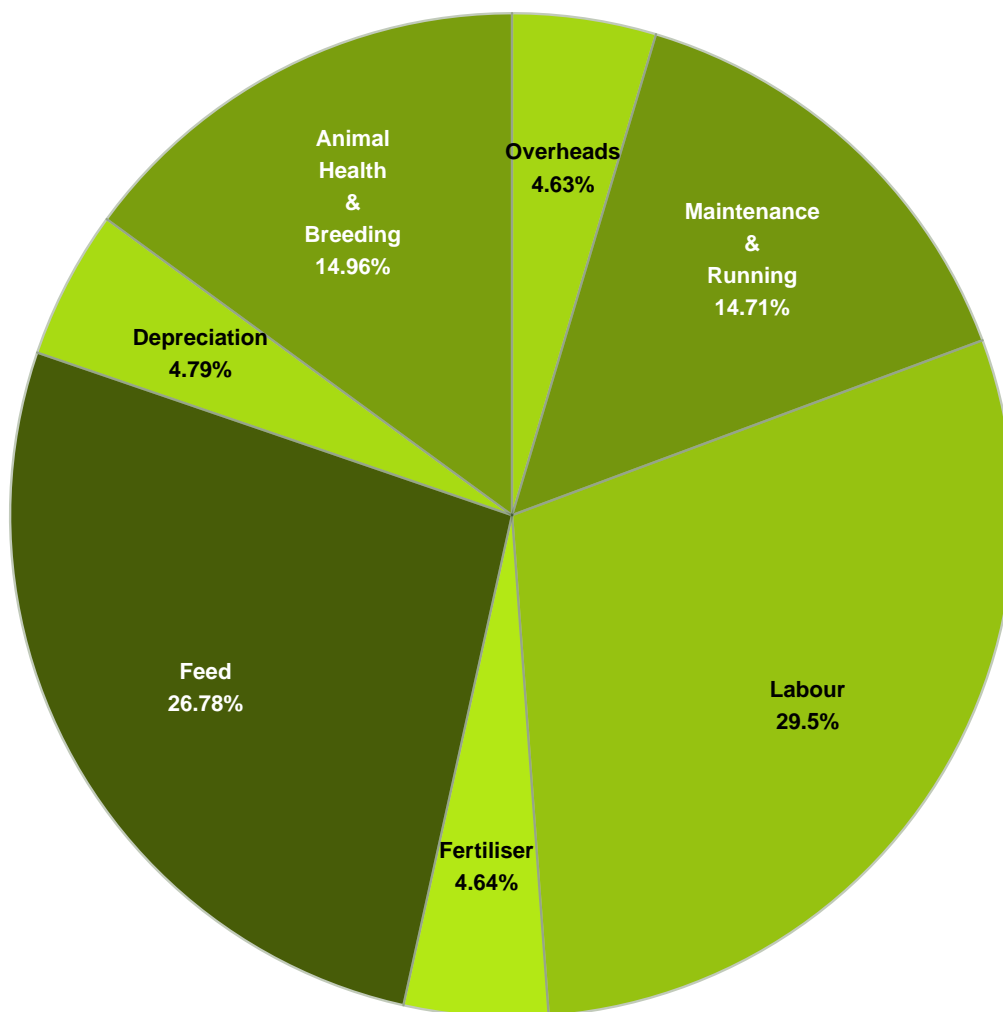
The price received for milk decreased from \$3.21 to \$3.17 per kilogram milksolids in 2018-19, a decrease of 4 cents (-1.2%) from the previous season. This being the second time that the price surpassed the decadal average of \$3.02 since 2013/14. Income from milk sales increased by 24 percent to \$586,337, alongside net livestock sales of \$75,931 and other dairy income of \$2,332. These contribute to a total net dairy cash income for the average farm of \$664,600 for the season, which is 26.5% above the result for 2017-18.

Net livestock sales have become a more prominent source of income for sharemilkers over the last five seasons. Annual average livestock sales were \$73 per cow over 2010-11 to 2013-14, but rose to \$168 in 2018-19. Nonetheless, livestock sales as a proportion of net dairy cash income fell from its historical high (per kilogram milksolids) reported in 2016-17, to a level closer to its long-term average. Figure 8.1 shows the trend for the past decade. Milk production per herd increased for sharemilkers (25.7%), reflecting an increase in herd number, herd size, effective hectares and milksolids per cow.

**Figure 8.1:** Net Livestock Sales (\$ per kg MS)

### 8.3 Expenditure

Farm working expenses (FWE) increased relative to last season. It averaged \$451,327 per sharemilking business or \$2.44 per kilogram milksolids. Farm expense items remained relatively similar to last seasons on a per kilogram milksolids basis. After adjustments for resources used but not paid for in the cash account (e.g. unpaid family labour), operating expenses per kilogram milksolids were \$3.00 per kilogram milksolids, lower than last seasons of \$3.13. The components of dairy operating expenditure are shown in Figure 8.2.

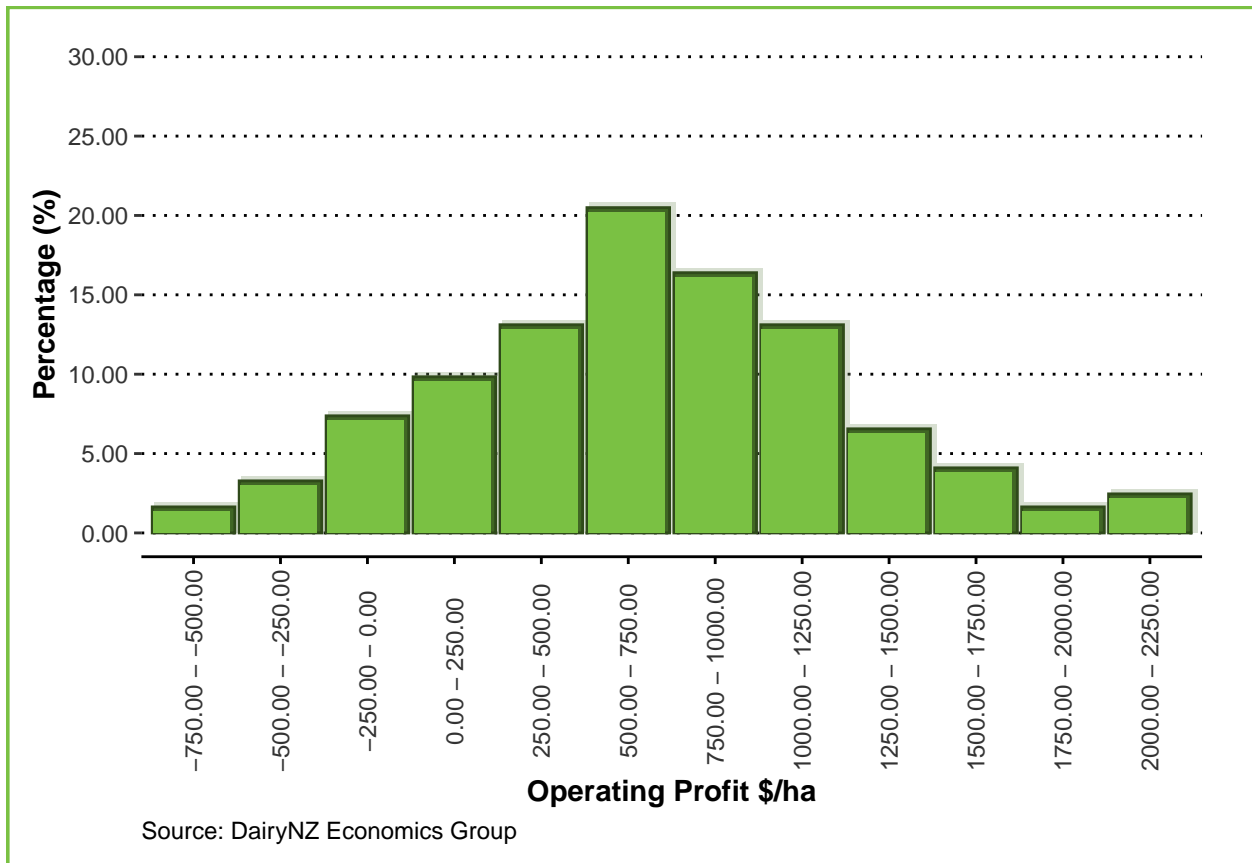
**Figure 8.2:** Proportion of Dairy Operating Expenditure 2018-19

## 8.4 Profitability

Dairy operating profit per kilogram milksolids in 2018-19 was \$0.63 for the average 50:50 Sharemilker, compared to the 2017-18 season. Net dairy cash income per kilogram milksolids went up by 2 cents relative to last season. In comparison, operating profit per effective cow and per hectare increased by 3% and 6.5%, respectively.

Figure 8.4 shows the distribution of 2018-19 operating profit per hectare. It is approximately normally distributed around the mean of \$775 per hectare. Eighty-eight percent of sharemilkers had positive operating profit, leaving 12% of sharemilkers below \$0 per hectare. Twenty-eight percent of sharemilkers achieved operating profits of over \$1,000 per hectare.

**Figure 8.3:** Distribution of Owner-operating Profit (\$ per hectare)





## 9 50:50 Sharemilkers: Equity and Capital Financial Analysis

### 9.1 Introduction

This section considers the equity and capital position of dairy farms, with additional information about trends over time in these positions.

Operating return on dairy assets was at 12.4 percent for sharemilkers, while total return on assets was measured at 18 percent. The level of debt to assets increased to 61.6 percent at close, while term liabilities of \$3.78 per kilogram milksolids was similar to the previous season.

### 9.2 Dairy Assets

Total dairy assets increased in value by \$10,474 during the 2018-19 season, closing at \$1.0 million per farm. Livestock accounted for 75 percent of total closing dairy assets, following a small decrease in value throughout the season.

### 9.3 Liabilities and Debt Servicing

The flow of funds (Table 9.1) shows the components of the change in working capital, including the source and application of cash funds. Funds for 2018-19 were mostly from farm operations. Term debt increased (\$33,643) on loans by the close of the season. Of the funds applied, 27% was spent on drawings, 46% was spent on capital transactions and 15% was spent on interest payments. Tax payments required 12 percent of funds at \$30,109 per herd.

**Table 9.1:** Flow of funds

	2017-18	2018-19
<b>WORKING CAPITAL:</b>		
Change in Current Assets	2,932	-24,375
- Change in Current Liabilities	15,668	-10,322
Change in Working Capital	-12,736	-14,053
<b>SOURCE OF FUNDS:</b>		
Cash Operating Surplus	169,323	213,273
+ non-dairy cash income	1,996	2,659
+ net off-farm income	4,071	5,230
+ introduced funds	14,806	-19,006
+ income equalisation	0	470
+ increase in term debt	20,730	33,643
= Total source of funds	169,466	222,216
<b>APPLICATION OF FUNDS:</b>		
rent	2,320	827
+ interest	31,626	36,976
+ tax	24,199	30,109
+ capital transactions	49,540	113,811
+ drawings	74,517	67,169
= Total application of funds	182,202	248,891
Source less Application of funds	-12,736	-26,675

The average 50:50 sharemilkers cash operating surplus was \$213,273, which was well above the previous season's \$169,323. This level of cash operating surplus for 2018-19 translates to around \$1.15 per kilogram milksolids, the same as last season's level. In 2018-19, the average level of discretionary cash of \$153,251 per farm was well above last season's at \$113,174 (Table 13.5). It continued the strong position also observed in 2016-17, in strong contrast to the instance in 2015-16 where discretionary cash was negative (-\$31,172). Typically, these funds are required to reduce debt, sustain drawings and to fund capital expenditure. For the 2018-19 season, term liabilities declined from \$3.78 relative to the 2017-18 season of \$3.81. Interest and rent expenditure at 20 cents per kilogram milksolids was 3 cents less than the previous year. Interest and rent per dollar of gross farm revenue decreased from 6.1% to 5.6% (Table 9.2).

**Table 9.2:** Debt Servicing Ratios

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>DEBT SERVICING:</b>										
Interest & rent \$/kg MS	0.38	0.35	0.26	0.27	0.27	0.24	0.27	0.25	0.23	0.20
Interest & rent % GFR	10.9%	8.2%	6.5%	7.0%	6.2%	7.1%	11.5%	7.3%	6.1%	5.6%
Term liabilities \$/kg MS	4.51	3.98	3.09	3.64	3.71	3.36	4.07	4.05	3.81	3.78

## 9.4 Equity

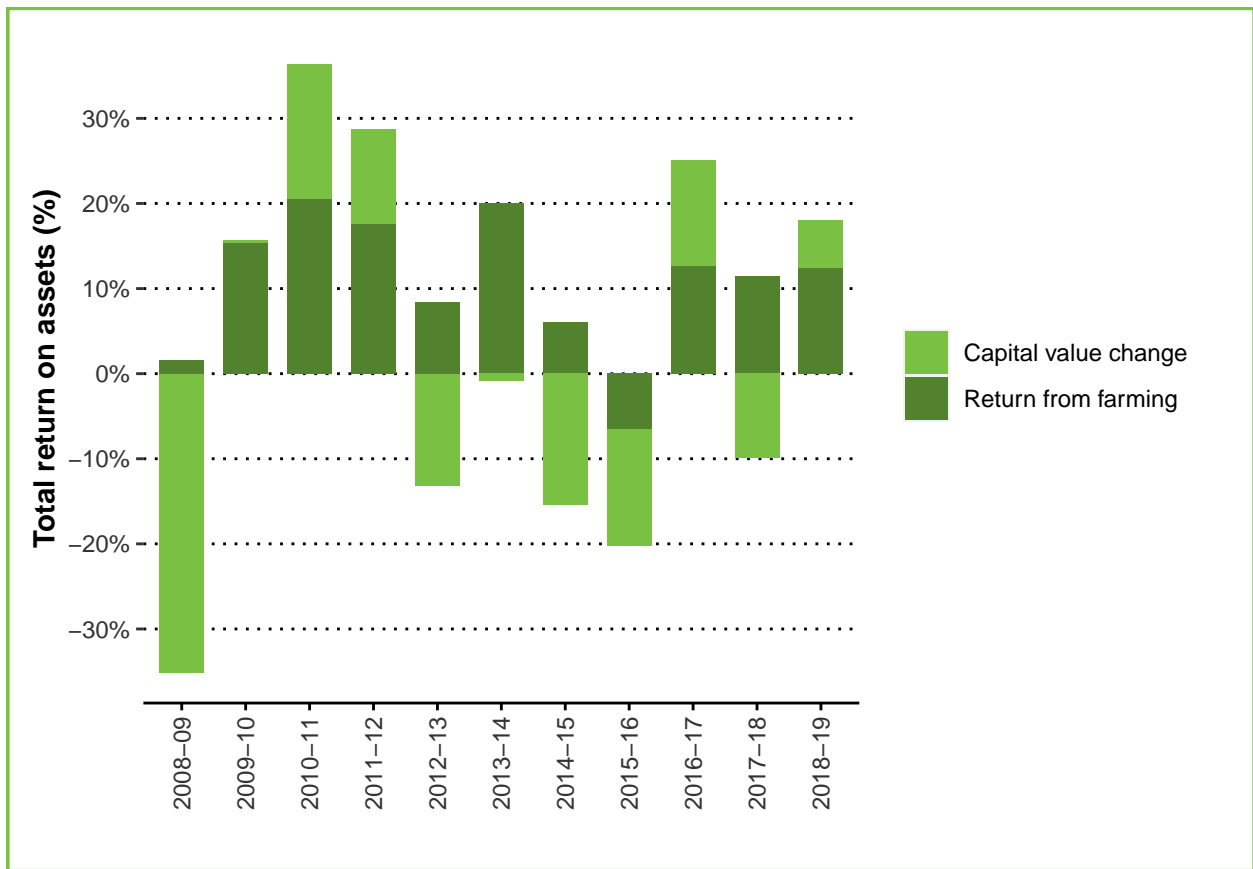
As of 1 June 2019, sharemilkers had an average equity of \$496,276 in their dairy farm business. Total liabilities increased over the 2018-19 season.

## 9.5 Returns

The operating return on dairy assets (excluding capital appreciation) is discussed under profitability (see Section 7.3). Total return on assets (profit including capital change generated by the assets employed) in 2018-19 was 18 percent, as shown in Figure 9.1. Net returns from dairy activity yielded \$116,649 across the 2018-19

season, combined with an average change in capital value of \$82,092 per herd. Sharemilker returns are more volatile than those earned by Owner-operators due to livestock being their most significant asset class and livestock values fluctuating with greater magnitude than land prices.

**Figure 9.1:** Owner Operator Total Return on Assets



Total returns on sharemilkers equity averaged an increase of 36.7% in 2018-19. This was well above last seasons -2.9% return.

## 10 50:50 Sharemilkers: Regional Financial Analysis

### 10.1 Regional Profitability

Tables 10.1 and 10.2 show key indicative performance for the average farm in Waikato, Taranaki, and Otago-Southland. Other regions do not have sufficient farm data to generate representative statistics, and the low number of farms in the regions presented here may also be less than perfectly representative.

Key Points from Table 10.1 include:

- Otago-Southland had the largest farms by hectares, cows and milksolids, followed by Waikato and then Taranaki.
- The cash operating surplus per kg MS was highest in Taranaki (\$1.34), and lowest in Otago-Southland (\$1.01)
- All three regions had an average profit per hectare between \$600 and \$700 per hectare.

**Table 10.1:** Regional 50:50 Sharemilker Profitability

	Waikato	Taranaki	Otago- Southland
<b>PHYSICAL CHARACTERISTICS:</b>			
Number of herds	32	27	25
Effective hectares	116.6	98.3	208.0
Peak cows milked	347	285	601
Stocking rate (cows/ha)	3.0	2.9	2.9
Kg milksolids sold	134,461	117,059	257,951
Milksolids sold per hectare	1,153	1,191	1,240
Milksolids sold per cow	388	411	429
PAYOUT RECEIVED: \$/kg MS sold	3.15	3.12	3.14
<b>DAIRY CASH INCOME \$:</b>			
Milk sales (net of dairy levies)	3.15	3.12	3.14
Net livestock sales (sales - purchases)	0.36	0.38	0.42
Other dairy cash income	0.02	0.01	0.01
Net dairy cash income	3.54	3.52	3.57
<b>CASH FARM WORKING EXPENSES:</b>			
Wages	0.34	0.25	0.53
Animal health	0.25	0.23	0.21
Breeding & herd improvement	0.17	0.17	0.17
Farm dairy	0.06	0.06	0.04
Electricity	0.12	0.11	0.09
Net feed made, purchased, cropped	0.66	0.57	0.47
Stock grazing	0.16	0.15	0.39
Support block lease	0.01	0.01	0.00
Fertiliser (incl Nitrogen)	0.09	0.14	0.18
Irrigation	0.00	0.00	0.01
Regrassing	0.01	0.01	0.03
Weed & pest	0.01	0.01	0.01
Vehicles & fuel	0.20	0.17	0.15
Repairs & maintenance	0.07	0.07	0.08
Freight & general	0.05	0.04	0.03
Administration	0.10	0.10	0.09
Insurance	0.03	0.04	0.03
ACC	0.02	0.02	0.02
Rates	0.00	0.02	0.00
Farm working expenses	2.35	2.18	2.55
Cash operating surplus	1.18	1.34	1.01
<b>ADJUSTMENTS:</b>			
Value of change in dairy livestock	0.09	0.04	0.03
less Labour adjustment	0.55	0.64	0.33
plus Feed inventory adjustment	0.01	0.01	-0.01
less Owned support block adjustment	0.00	0.00	0.00
less Depreciation	0.19	0.16	0.14
Net Adjustments	-0.64	-0.76	-0.45
<b>OPERATING CASH &amp; NON-CASH: MS BASIS</b>			
Dairy gross farm revenue	3.62	3.56	3.60
Dairy operating expenses	3.08	2.98	3.04
Dairy operating profit	0.54	0.57	0.56
<b>OPERATING CASH &amp; NON-CASH: HA BASIS</b>			
Dairy gross farm revenue	4,177	4,239	4,465
Dairy operating expenses	3,553	3,555	3,770
Dairy operating profit	624	685	695

Operating return on dairy assets was similar (~10-11%) across the three regions reported in Table 10.2. Term liabilities per kg MS were much higher in Taranaki, consistent with last year. The relatively high debt to asset % in Waikato and Taranaki may be influenced by the sample selection, though Taranaki did have a difficult season in the prior year, which may have added to debt loadings.

**Table 10.2:** Regional 50:50 Sharemilker Financial Position

	Waikato	Taranaki	Otago- Southland
<b>RETURNS:</b>			
Operating return on dairy assets %	10.0%	10.8%	11.2%
Total return on assets %	16.3%	10.0%	23.7%
Total return on equity %	39.9%	59.8%	40.8%
Growth in equity %	5.1%	36.0%	1.4%
<b>DEBT:</b>			
Closing term liabilities per kg MS	4.38	6.14	3.31
Closing debt to asset %	69.8%	87.1%	56.8%

# 11 Dairy Tomorrow Measures

## 11.1 Annual update on the Dairy Tomorrow economic measures

The Dairy Tomorrow Strategy outlines the aspirations that the New Zealand dairy sector wants to achieve to be competitive, productive, trusted, and valued. A core part of the Strategy is the development of an integrated set of measures for dairy farms. This report focuses on the four measures that together have been selected to help capture the international competitiveness and resilience of the New Zealand dairy sector from an economic perspective. These measures are:

- The cost of production, measured in terms of dollars per kilogram of milksolids, is a popular metric in global studies of competitiveness. In the New Zealand context, it is measured as operating expenses (\$) per kilogram of milksolids. It shows on average how much profit the sector earns per unit of output at a given milk price. It is a key measure of resilience since a low cost of production helps to buffer the impacts of a change in the milk price on a farm business.
- The dairy operating profit margin (%) is the ratio of operating profit and gross farm revenue, where both the profit and revenue terms are measured in units of dollars per hectare. The dairy operating profit margin is most often a number between zero and one. A higher value denotes that a farm produces a given level of revenue at a lower cost, indicating that it is able to better survive through turbulent market and production conditions.
- The operating return on dairy assets, measured in % terms, is a key financial metric used worldwide to measure how effectively a business is employing their asset base. It is computed as the ratio of operating profit and the total value of dairy assets, both measured in dollars per hectare. This metric captures the ability of a farm to grow through careful, considered investment in high-performing assets.
- The equity to milksolids metric, measured in dollars per kilogram of milksolid terms, reflects resilience through its focus on the value of the farm business asset that is owned and not borrowed. Controlling for the level of milk production makes it easier to compare across farms, both nationally and globally.

**Table 11.1:** Dairy Tomorrow Measures

	25th percentile	50th percentile	75th percentile
<b>MEASURE:</b>			
Cost of production (operating expenses/kg MS)	4.61	5.15	5.69
Operating profit margin (%)	20.1%	26.5%	33.8%
Operating return on assets (%)	2.7%	3.9%	5.2%
Equity (\$) per kg milksolids	13.42	20.61	34.17

## 12 Time Series Tables: Owner Operator

Table 12.1: Cash Operating Surplus and Operating Profit - \$ per farm

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milksolids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milksolids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milksolids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	795,575	979,430	990,172	899,388	1,164,274	923,621	628,192	928,944	1,068,927	1,073,346
Net livestock sales (sales - purchases)	40,072	51,283	52,637	55,381	57,832	83,804	90,596	79,495	80,967	77,911
Other dairy cash income	6,137	6,341	6,063	7,151	6,338	6,466	5,819	5,633	6,789	6,377
Net dairy cash income	841,784	1,037,054	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072	1,156,683	1,157,633
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	78,139	80,413	88,015	91,013	90,565	97,790	103,689	92,630	106,331	110,011
Animal health	26,104	31,352	31,621	32,944	35,800	36,553	30,906	34,577	37,497	37,958
Breeding & herd improvement	14,253	17,601	17,850	20,267	20,485	23,746	19,702	21,986	25,043	27,336
Farm dairy	7,524	8,184	9,781	10,225	10,068	9,693	7,902	9,636	9,433	9,773
Electricity	13,240	13,754	14,489	16,028	17,342	17,636	17,646	18,352	18,256	18,521
Net feed made, purchased, cropped	83,985	114,290	117,928	124,172	156,489	152,147	118,281	120,103	151,337	167,341
Stock grazing	40,917	48,080	55,505	52,914	53,919	64,319	64,317	58,368	58,254	71,042
Support block lease	9,618	8,881	12,361	12,543	11,519	11,992	12,385	12,322	10,882	9,548
Fertiliser (incl Nitrogen)	70,422	79,692	87,658	81,705	86,711	75,738	66,595	73,964	77,478	77,175
Irrigation	5,105	5,658	4,326	5,807	4,527	9,367	7,987	8,527	8,314	12,833
Regrassing	7,446	8,861	6,696	8,709	10,423	9,776	7,751	9,913	12,503	11,654
Weed & pest	3,928	4,874	5,074	4,714	6,387	5,502	5,561	5,631	5,951	5,299
Vehicles & fuel	23,035	25,686	29,014	30,026	32,423	28,918	26,704	29,220	31,584	30,955
Repairs & maintenance	32,798	46,688	51,664	43,114	62,561	52,240	35,753	46,630	63,665	58,032
Freight & general	5,922	6,739	7,612	7,630	9,030	8,700	8,666	7,755	8,518	7,912
Administration	14,259	15,671	17,080	17,765	17,697	17,680	18,974	17,895	19,675	21,182
Insurance	6,147	7,159	8,042	9,084	9,718	10,773	10,252	10,947	12,635	13,587
ACC	4,002	4,289	5,712	3,937	4,321	4,134	3,690	3,445	3,785	3,750
Rates	11,946	12,597	13,790	14,147	15,873	15,915	16,089	16,761	17,031	17,022
Farm working expenses	458,790	540,469	584,218	586,744	655,858	652,619	582,850	598,662	678,172	710,932
Cash operating surplus	382,994	496,585	464,654	375,176	572,586	361,272	141,757	415,410	478,511	446,701
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	327	9,883	20,201	11,428	24,912	2,632	-13,067	9,835	11,378	8,780
less Labour adjustment	52,969	51,797	54,748	55,162	59,309	59,021	56,341	61,154	63,920	62,545
plus Feed inventory adjustment	-744	3,313	4,782	-2,534	5,340	-210	3,453	2,790	-2,413	3,164
less Owned support block adjustment	10,635	11,062	13,554	14,601	15,338	14,889	14,126	14,359	16,786	13,143
less Depreciation	56,300	58,898	52,172	56,258	57,383	66,154	62,967	66,295	67,899	68,522
Net Adjustments	-120,321	-108,561	-95,491	-117,127	-101,778	-137,642	-143,048	-129,183	-139,640	-132,266
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	842,111	1,046,937	1,069,073	973,348	1,253,356	1,016,523	711,540	1,023,907	1,168,061	1,166,413
Dairy operating expenses	579,438	658,913	699,910	715,299	782,548	792,893	712,831	737,680	829,190	851,978
Dairy operating profit	262,673	388,024	369,163	258,049	470,808	223,630	-1,291	286,227	338,871	314,435
Dairy operating profit per ha	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937	2,238	2,154



**Table 12.2:** Cash Operating Surplus and Operating Profit - \$ per cow

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milksolids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milksolids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milksolids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	2,110	2,557	2,520	2,265	2,896	2,204	1,503	2,244	2,486	2,534
Net livestock sales (sales - purchases)	106	134	134	139	144	200	217	192	188	184
Other dairy cash income	16	17	15	18	16	15	14	14	16	15
Net dairy cash income	2,233	2,708	2,669	2,423	3,056	2,420	1,734	2,449	2,690	2,733
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	207	210	224	229	225	233	248	224	247	260
Animal health	69	82	80	83	89	87	74	84	87	90
Breeding & herd improvement	38	46	45	51	51	57	47	53	58	65
Farm dairy	20	21	25	26	25	23	19	23	22	23
Electricity	35	36	37	40	43	42	42	44	42	44
Net feed made, purchased, cropped	223	298	300	313	389	363	283	290	352	395
Stock grazing	109	126	141	133	134	154	154	141	135	168
Support block lease	26	23	31	32	29	29	30	30	25	23
Fertiliser (incl Nitrogen)	187	208	223	206	216	181	159	179	180	182
Irrigation	14	15	11	15	11	22	19	21	19	30
Regrassing	20	23	17	22	26	23	19	24	29	28
Weed & pest	10	13	13	12	16	13	13	14	14	13
Vehicles & fuel	61	67	74	76	81	69	64	71	73	73
Repairs & maintenance	87	122	131	109	156	125	86	113	148	137
Freight & general	16	18	19	19	22	21	21	19	20	19
Administration	38	41	43	45	44	42	45	43	46	50
Insurance	16	19	20	23	24	26	25	26	29	32
ACC	11	11	15	10	11	10	9	8	9	9
Rates	32	33	35	36	39	38	38	40	40	40
Farm working expenses	1,217	1,411	1,487	1,478	1,631	1,558	1,394	1,446	1,577	1,678
Cash operating surplus	1,016	1,297	1,182	945	1,424	862	339	1,003	1,113	1,055
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	1	26	51	29	62	6	-31	24	26	21
less Labour adjustment	141	135	139	139	148	141	135	148	149	148
plus Feed inventory adjustment	-2	9	12	-6	13	-1	8	7	-6	7
less Owned support block adjustment	28	29	34	37	38	36	34	35	39	31
less Depreciation	149	154	133	142	143	158	151	160	158	162
Net Adjustments	-319	-283	-243	-295	-253	-329	-342	-312	-325	-312
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	2,234	2,734	2,720	2,452	3,118	2,426	1,702	2,473	2,716	2,754
Dairy operating expenses	1,537	1,720	1,781	1,802	1,947	1,892	1,705	1,782	1,928	2,011
Dairy operating profit	697	1,013	939	650	1,171	534	-3	691	788	2

**Table 12.3:** Cash Operating Surplus and Operating Profit - \$ per effective hectare

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milksolids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milksolids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milksolids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	5,928	7,092	7,037	6,379	8,147	6,348	4,242	6,285	7,060	7,353
Net livestock sales (sales - purchases)	299	371	374	393	405	576	612	538	535	534
Other dairy cash income	46	46	43	51	44	44	39	38	45	44
Net dairy cash income	6,273	7,509	7,455	6,822	8,597	6,968	4,893	6,861	7,640	7,930
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	582	582	626	645	634	672	700	627	702	754
Animal health	195	227	225	234	251	251	209	234	248	260
Breeding & herd improvement	106	127	127	144	143	163	133	149	165	187
Farm dairy	56	59	70	73	70	67	53	65	62	67
Electricity	99	100	103	114	121	121	119	124	121	127
Net feed made, purchased, cropped	626	828	838	881	1,095	1,046	799	813	1,000	1,146
Stock grazing	305	348	394	375	377	442	434	395	385	487
Support block lease	72	64	88	89	81	82	84	83	72	65
Fertiliser (incl Nitrogen)	525	577	623	579	607	521	450	500	512	529
Irrigation	38	41	31	41	32	64	54	58	55	88
Regrassing	55	64	48	62	73	67	52	67	83	80
Weed & pest	29	35	36	33	45	38	38	38	39	36
Vehicles & fuel	172	186	206	213	227	199	180	198	209	212
Repairs & maintenance	244	338	367	306	438	359	241	315	421	398
Freight & general	44	49	54	54	63	60	59	52	56	54
Administration	106	113	121	126	124	122	128	121	130	145
Insurance	46	52	57	64	68	74	69	74	83	93
ACC	30	31	41	28	30	28	25	23	25	26
Rates	89	91	98	100	111	109	109	113	112	117
Farm working expenses	3,419	3,914	4,152	4,161	4,590	4,485	3,936	4,050	4,479	4,870
Cash operating surplus	2,854	3,596	3,302	2,661	4,007	2,483	957	2,811	3,161	3,060
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	2	72	144	81	174	18	-88	67	75	60
less Labour adjustment	395	375	389	391	415	406	380	414	422	428
plus Feed inventory adjustment	-6	24	34	-18	37	-1	23	19	-16	22
less Owned support block adjustment	79	80	96	104	107	102	95	97	111	90
less Depreciation	420	426	371	399	402	455	425	449	448	469
Net Adjustments	-897	-786	-679	-831	-712	-946	-966	-874	-922	-906
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	6,275	7,581	7,598	6,903	8,771	6,986	4,804	6,928	7,715	7,991
Dairy operating expenses	4,318	4,771	4,974	5,073	5,476	5,449	4,813	4,991	5,477	5,837
Dairy operating profit	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937	2,238	2,154

**Table 12.4:** Cash Operating Surplus and Operating Profit - \$ per milk solid sold

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milk solids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milk solids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milk solids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
Net livestock sales (sales - purchases)	0.31	0.39	0.36	0.39	0.38	0.52	0.57	0.50	0.50	0.47
Other dairy cash income	0.05	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04
Net dairy cash income	6.52	7.80	7.09	6.77	8.11	6.32	4.52	6.33	7.16	6.92
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	0.61	0.60	0.59	0.64	0.60	0.61	0.65	0.58	0.66	0.66
Animal health	0.20	0.24	0.21	0.23	0.24	0.23	0.19	0.22	0.23	0.23
Breeding & herd improvement	0.11	0.13	0.12	0.14	0.14	0.15	0.12	0.14	0.16	0.16
Farm dairy	0.06	0.06	0.07	0.07	0.07	0.06	0.05	0.06	0.06	0.06
Electricity	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Net feed made, purchased, cropped	0.65	0.86	0.80	0.87	1.03	0.95	0.74	0.75	0.94	1.00
Stock grazing	0.32	0.36	0.38	0.37	0.36	0.40	0.40	0.36	0.36	0.42
Support block lease	0.07	0.07	0.08	0.09	0.08	0.07	0.08	0.08	0.07	0.06
Fertiliser (incl Nitrogen)	0.55	0.60	0.59	0.58	0.57	0.47	0.42	0.46	0.48	0.46
Irrigation	0.04	0.04	0.03	0.04	0.03	0.06	0.05	0.05	0.05	0.08
Regrassing	0.06	0.07	0.05	0.06	0.07	0.06	0.05	0.06	0.08	0.07
Weed & pest	0.03	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.04	0.03
Vehicles & fuel	0.18	0.19	0.20	0.21	0.21	0.18	0.17	0.18	0.20	0.19
Repairs & maintenance	0.25	0.35	0.35	0.30	0.41	0.33	0.22	0.29	0.39	0.35
Freight & general	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05
Administration	0.11	0.12	0.12	0.13	0.12	0.11	0.12	0.11	0.12	0.13
Insurance	0.05	0.05	0.05	0.06	0.06	0.07	0.06	0.07	0.08	0.08
ACC	0.03	0.03	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Rates	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.11	0.10
Farm working expenses	3.56	4.06	3.95	4.13	4.33	4.07	3.64	3.73	4.20	4.25
Cash operating surplus	2.97	3.73	3.14	2.64	3.78	2.25	0.88	2.59	2.96	2.67
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	0.00	0.07	0.14	0.08	0.16	0.02	-0.08	0.06	0.07	0.05
less Labour adjustment	0.41	0.39	0.37	0.39	0.39	0.37	0.35	0.38	0.40	0.37
plus Feed inventory adjustment	-0.01	0.02	0.03	-0.02	0.04	-0.00	0.02	0.02	-0.01	0.02
less Owned support block adjustment	0.08	0.08	0.09	0.10	0.10	0.09	0.09	0.09	0.10	0.08
less Depreciation	0.44	0.44	0.35	0.40	0.38	0.41	0.39	0.41	0.42	0.41
Net Adjustments	-0.93	-0.82	-0.65	-0.82	-0.67	-0.86	-0.89	-0.81	-0.86	-0.79
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	6.53	7.87	7.23	6.85	8.28	6.34	4.44	6.39	7.23	6.98
Dairy operating expenses	4.49	4.95	4.73	5.03	5.17	4.94	4.45	4.60	5.13	5.10
Dairy operating profit	2.04	2.92	2.49	1.82	3.11	1.39	-0.01	1.79	2.10	1.88

Table 12.5: Cashflow

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milksolids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milksolids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milksolids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
Net dairy cash income	841,784	1,037,054	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072	1,156,683	1,157,633
Farm working expenses	458,790	540,469	584,218	586,744	655,858	652,619	582,850	598,662	678,172	710,932
Cash operating surplus	382,994	496,585	464,654	375,176	572,586	361,272	141,757	415,410	478,511	446,701
<b>DISCRETIONARY CASH</b>										
less Rent (excl support block)	18,834	20,040	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499
less Interest	195,523	184,707	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022
less Tax	14,442	36,388	46,816	35,383	58,155	34,078	7,939	16,773	41,532	38,315
plus Net non-dairy cash income	1,518	2,446	790	1,125	2,355	486	904	3,371	6,064	7,040
Discretionary Cash	155,713	257,896	224,736	143,970	321,823	109,446	-82,602	185,083	230,881	208,906
<b>OTHER CASH INCOME</b>										
plus Net off-farm income	12,695	12,323	11,018	12,427	9,991	12,078	9,238	19,811	18,114	6,670
plus Introduced funds	37,142	6,240	-2,871	40,918	-44,275	28,307	77,696	-24,004	-40,908	-2,774
plus Income equalisation	3,556	-274	-2,004	1,178	-4,756	-9,579	16,765	1,307	40	307
Cash available for living and growth	209,106	276,185	230,879	198,493	282,783	140,252	21,097	182,197	208,127	213,109
<b>OTHER CASH EXPENDITURE</b>										
less Net capital transactions	117,688	136,393	164,026	185,532	143,703	201,119	76,697	109,749	238,591	207,027
less Net debt	-57,011	2,991	22,153	-123,346	-10,790	-93,026	-111,777	-75,867	-92,523	-74,133
less Net drawings	84,261	97,099	83,781	92,872	116,224	110,437	78,151	82,043	104,334	95,173
Cash surplus/deficit	64,168	39,702	-39,081	43,435	33,646	-78,278	-21,974	66,272	-42,275	-14,958
<b>CASHFLOW PER KG MILKSOLIDS SOLD:</b>										
Net dairy cash income	6.52	7.80	7.09	6.77	8.11	6.32	4.52	6.33	7.16	6.92
Farm working expenses	3.56	4.06	3.95	4.13	4.33	4.07	3.64	3.73	4.20	4.25
Cash operating surplus	2.97	3.73	3.14	2.64	3.78	2.25	0.88	2.59	2.96	2.67
<b>DISCRETIONARY CASH: MS BASIS</b>										
less Rent (excl support block)	0.15	0.15	0.13	0.16	0.15	0.14	0.13	0.12	0.13	0.07
less Interest	1.52	1.39	1.18	1.23	1.13	1.22	1.23	1.23	1.19	1.16
less Tax	0.11	0.27	0.32	0.25	0.38	0.21	0.05	0.10	0.26	0.23
plus Net non-dairy cash income	0.01	0.02	0.01	0.01	0.02	0.00	0.01	0.02	0.04	0.04
Discretionary Cash	1.21	1.94	1.52	1.01	2.12	0.68	-0.52	1.15	1.43	1.25
<b>OTHER CASH INCOME: MS BASIS</b>										
plus Net off-farm income	0.10	0.09	0.07	0.09	0.07	0.08	0.06	0.12	0.11	0.04
plus Introduced funds	0.29	0.05	-0.02	0.29	-0.29	0.18	0.48	-0.15	-0.25	-0.02
plus Income equalisation	0.03	-0.00	-0.01	0.01	-0.03	-0.06	0.10	0.01	0.00	0.00
Cash available for living and growth	1.62	2.08	1.56	1.40	1.87	0.87	0.13	1.14	1.29	1.27
<b>OTHER CASH EXPENDITURE: MS BASIS</b>										
less Net capital transactions	0.91	1.03	1.11	1.31	0.95	1.25	0.48	0.68	1.48	1.24
less Net debt	-0.44	0.02	0.15	-0.87	-0.07	-0.58	-0.70	-0.47	-0.57	-0.44
less Net drawings	0.65	0.73	0.57	0.65	0.77	0.69	0.49	0.51	0.65	0.57
Cash surplus/deficit	0.50	0.30	-0.26	0.31	0.22	-0.49	-0.14	0.41	-0.26	-0.09

Table 12.6: Capital Structure and Wealth Creation

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milksolids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milksolids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milksolids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
<b>DAIRY ASSETS AT OPEN</b>										
Land & buildings	4,226,924	4,402,009	4,247,819	4,109,797	4,474,344	5,055,041	5,473,880	5,518,535	5,849,932	6,091,560
Plant, machinery and vehicles	212,797	185,881	213,589	193,255	224,385	233,302	258,077	254,722	252,258	249,118
Livestock	571,893	607,371	821,346	1,013,686	873,333	967,406	812,241	640,378	834,061	754,230
Investments (excl non-dairy)	657,001	658,358	616,654	628,020	899,384	892,639	688,384	791,795	800,126	815,583
Current assets	120,852	235,731	221,577	168,694	221,155	285,915	176,424	138,254	208,018	180,448
Total dairy assets at open	5,789,467	6,089,350	6,120,985	6,113,452	6,692,601	7,434,303	7,409,006	7,343,684	7,944,395	8,090,939
plus Non-dairy assets	207,001	227,726	243,626	226,186	225,437	207,058	258,166	267,387	403,636	353,525
Total assets	5,996,468	6,317,076	6,364,611	6,339,638	6,918,038	7,641,361	7,667,172	7,611,071	8,348,031	8,444,463
<b>LIABILITIES AT OPEN</b>										
Term liabilities	2,736,810	2,721,810	2,868,307	2,834,656	3,039,137	3,317,150	3,493,221	3,932,350	3,996,989	4,091,376
Current liabilities	183,275	101,438	167,634	174,851	154,442	182,128	197,175	160,682	149,261	189,611
Total liabilities	2,920,085	2,823,248	3,035,941	3,009,507	3,193,579	3,499,278	3,690,396	4,093,032	4,146,250	4,280,987
Owners equity at open	3,076,383	3,493,828	3,328,670	3,330,131	3,724,459	4,142,083	3,976,776	3,518,039	4,201,781	4,163,476
<b>DAIRY ASSETS AT CLOSE</b>										
Land & buildings	4,348,461	4,424,626	4,367,922	4,384,302	4,788,661	5,368,063	5,289,448	5,854,250	5,843,351	5,933,994
Plant, machinery and vehicles	204,911	189,607	227,328	196,594	252,083	233,593	243,360	249,436	255,794	246,538
Livestock	612,361	807,201	1,017,760	874,419	939,582	804,897	651,096	815,984	776,831	752,063
Investments (excl non-dairy)	618,712	676,231	649,996	967,958	817,865	751,874	810,143	823,402	748,739	665,352
Current assets	152,996	294,029	188,455	186,427	279,218	186,858	151,773	194,747	195,692	163,031
Total dairy assets at close	5,937,441	6,391,694	6,451,461	6,609,700	7,077,409	7,345,285	7,145,820	7,937,819	7,820,407	7,760,977
plus Non-dairy assets	221,772	256,722	271,339	260,335	236,874	224,823	258,766	280,232	411,434	388,794
Total assets	6,159,213	6,648,416	6,722,800	6,870,035	7,314,283	7,570,108	7,404,586	8,218,051	8,231,841	8,149,771
<b>LIABILITIES AT CLOSE</b>										
Term liabilities	2,793,821	2,718,819	2,846,154	2,958,002	3,049,927	3,410,176	3,604,999	4,008,218	4,089,512	4,165,930
Current liabilities	151,251	120,034	173,593	149,149	178,859	161,349	194,497	150,902	179,210	184,250
Total liabilities	2,945,072	2,838,853	3,019,747	3,107,151	3,228,786	3,571,525	3,799,496	4,159,120	4,268,722	4,350,179
Owners equity at close	3,214,141	3,809,563	3,703,053	3,762,884	4,085,497	3,998,583	3,605,090	4,058,931	3,963,119	3,799,592
<b>EQUITY</b>										
Growth in equity	137,758	315,735	374,383	432,753	361,038	-143,500	-371,686	540,892	-238,662	-363,884
Growth in equity from profit	26,052	123,991	123,506	16,257	187,695	-53,784	-225,348	68,973	85,385	63,675
Growth in equity from capital	111,706	191,744	250,877	416,496	173,343	-89,716	-146,338	471,919	-324,047	-427,560
Growth in equity %	4.5%	9.0%	11.2%	13.0%	9.7%	-3.5%	-9.3%	15.4%	-5.7%	-8.7%
Closing debt to asset %	46.5%	40.0%	43.3%	43.7%	41.9%	45.8%	50.3%	49.4%	50.7%	53.4%
Closing term liabilities per kg MS	21.65	20.44	19.24	20.82	20.14	21.26	22.49	25.00	25.31	24.92

Table 12.7: Returns

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	223	214	204	217	301	296	279	316	265	260
Effective hectares	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0
Peak cows milked	377	383	393	397	402	419	418	414	430	424
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9
Kg milksolids sold	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189
Milksolids sold per hectare	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145
Milksolids sold per cow	343	347	376	358	377	383	383	387	376	395
PAYOUT RECEIVED: \$/kg MS sold	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42
<b>RETURN ON DAIRY ASSETS %</b>										
Dairy operating profit	262,673	388,024	369,163	258,049	470,808	223,630	-1,291	286,227	338,871	314,435
plus Owned support block adjustment	10,635	11,062	13,554	14,601	15,338	14,889	14,126	14,359	16,786	13,143
less Rent	18,834	20,040	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499
Net return from dairy	254,474	379,046	363,343	249,838	462,780	216,269	-7,212	281,004	334,954	315,079
Total dairy assets (less current) at open	5,668,615	5,853,619	5,899,408	5,944,758	6,471,446	7,148,388	7,232,582	7,205,430	7,736,377	7,910,490
Operating return on dairy assets %	4.5%	6.5%	6.2%	4.2%	7.2%	3.0%	-0.1%	3.9%	4.3%	4.0%
<b>TOTAL RETURN ON ASSETS %</b>										
Net return from dairy	254,474	379,046	363,343	249,838	462,780	216,269	-7,212	281,004	334,954	315,079
plus Net non-dairy profit	356	-1,100	-280	1,288	1,724	-673	-318	3,331	5,444	6,904
plus Change in capital value	12,586	126,766	207,084	315,704	169,567	-175,947	-301,565	430,903	-353,833	-277,275
Total return	267,416	504,712	570,147	566,830	634,071	39,649	-309,095	715,238	-13,435	44,709
Total assets (less current) at open	5,875,616	6,081,345	6,143,034	6,170,944	6,696,883	7,355,446	7,490,748	7,472,817	8,140,013	8,264,015
Total return on assets %	4.6%	8.3%	9.3%	9.2%	9.5%	0.5%	-4.1%	9.6%	-0.2%	0.5%
<b>TOTAL RETURN ON EQUITY %</b>										
Total return	267,416	504,712	570,147	566,830	634,071	39,649	-309,095	715,238	-13,435	44,709
plus Net off-farm income	12,479	12,442	10,810	12,360	9,858	12,098	9,208	19,643	18,392	6,670
less Interest	195,523	184,707	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022
Total return for equity	84,372	332,447	406,439	405,054	472,332	-144,237	-497,164	537,538	-186,502	-142,643
Equity at open	3,076,383	3,493,828	3,328,670	3,330,131	3,724,459	4,142,083	3,976,776	3,518,039	4,201,781	4,163,476
Total return on equity %	2.7%	9.5%	12.2%	12.2%	12.7%	-3.5%	-12.5%	15.3%	-4.4%	-3.4%

## 13 Time Series Tables: 50:50 Sharemilkers

**Table 13.1:** Cash Operating Surplus and Operating Profit - \$ per farm

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milksolids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milksolids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milksolids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	395,138	488,379	489,513	441,112	520,870	434,377	272,370	405,691	472,702	586,337
Net livestock sales (sales - purchases)	11,253	33,805	56,522	8,419	13,423	54,333	35,783	60,598	50,428	75,931
Other dairy cash income	2,810	5,149	5,206	2,844	3,407	2,381	3,368	2,419	2,321	2,332
Net dairy cash income	409,201	527,333	551,241	452,375	537,700	491,091	311,521	468,708	525,451	664,600
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	43,184	48,112	51,719	57,928	51,400	52,915	48,799	51,624	61,841	82,680
Animal health	25,912	31,820	33,464	32,842	34,651	35,418	28,668	31,232	34,238	43,264
Breeding & herd improvement	15,389	17,663	19,251	21,195	20,468	22,026	20,299	20,065	24,196	30,219
Farm dairy	5,918	6,369	6,386	6,077	6,631	6,653	6,629	6,886	7,538	8,922
Electricity	12,549	12,884	13,868	13,765	14,439	15,840	15,435	15,505	15,362	18,649
Net feed made, purchased, cropped	42,078	60,080	62,553	70,461	74,677	77,650	53,410	55,474	72,032	93,630
Stock grazing	28,426	35,791	29,714	30,296	39,026	50,175	42,034	34,075	46,703	60,678
Support block lease	4,698	2,997	2,971	5,199	1,308	1,403	2,206	1,834	1,666	1,380
Fertiliser (incl Nitrogen)	18,837	22,083	24,548	22,666	20,377	21,454	18,608	18,616	21,151	25,577
Irrigation	1,098	1,108	655	933	1,778	2,135	3,991	2,462	2,043	5,126
Regrassing	1,578	3,314	3,256	2,388	2,821	2,560	2,502	2,442	3,026	4,270
Weed & pest	1,326	1,425	1,616	1,534	1,392	1,582	1,383	1,948	1,869	1,940
Vehicles & fuel	20,241	24,795	25,313	26,602	25,153	23,726	20,049	22,926	24,851	28,739
Repairs & maintenance	8,612	9,808	11,617	9,703	12,113	10,305	9,029	10,234	11,702	12,710
Freight & general	6,651	6,571	6,420	8,502	8,892	8,661	6,782	6,600	7,871	8,008
Administration	10,536	11,034	11,656	12,014	12,063	12,413	11,778	11,542	11,785	15,718
Insurance	3,124	3,199	4,093	4,379	4,016	4,255	4,906	4,254	4,970	5,351
ACC	3,703	3,388	5,357	4,169	3,914	3,248	3,054	2,937	2,982	3,918
Rates	619	866	1,025	987	623	1,253	526	512	302	549
Farm working expenses	254,479	303,307	315,482	331,640	335,742	353,672	300,088	301,168	356,128	451,327
Cash operating surplus	154,722	224,026	235,759	120,735	201,958	137,419	11,433	167,540	169,323	213,273
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	45,716	40,245	27,593	80,132	70,394	32,000	30,838	16,893	32,946	8,193
less Labour adjustment	71,129	74,092	76,757	74,703	68,733	77,508	73,553	72,041	80,608	80,071
plus Feed inventory adjustment	261	912	3,819	-441	1,573	176	1,708	-486	1,860	2,496
less Owned support block adjustment	1,597	2,218	1,217	3,315	685	1,245	695	508	251	299
less Depreciation	19,077	21,960	22,024	23,266	21,798	25,243	23,409	19,521	24,700	26,415
Net Adjustments	-45,826	-57,113	-68,586	-21,593	-19,249	-71,820	-65,111	-75,663	-70,753	-96,096
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	454,917	567,578	578,834	532,507	608,094	523,091	342,359	485,601	558,397	672,793
Dairy operating expenses	346,021	400,665	411,661	433,365	425,385	457,492	396,037	393,724	459,827	555,616
Dairy operating profit	108,896	166,913	167,173	99,142	182,709	65,599	-53,678	91,877	98,570	117,177
Dairy operating profit per ha	834	1,221	1,222	719	1,427	497	-403	696	718	775



**Table 13.2:** Cash Operating Surplus and Operating Profit - \$ per cow

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milksolids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milksolids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milksolids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	1,051	1,259	1,262	1,120	1,419	1,134	719	1,091	1,209	1,299
Net livestock sales (sales - purchases)	30	87	146	21	37	142	94	163	129	168
Other dairy cash income	7	13	13	7	9	6	9	7	6	5
Net dairy cash income	1,088	1,359	1,421	1,148	1,465	1,282	822	1,260	1,344	1,472
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	115	124	133	147	140	138	129	139	158	183
Animal health	69	82	86	83	94	92	76	84	88	96
Breeding & herd improvement	41	46	50	54	56	58	54	54	62	67
Farm dairy	16	16	16	15	18	17	17	19	19	20
Electricity	33	33	36	35	39	41	41	42	39	41
Net feed made, purchased, cropped	112	155	161	179	203	203	141	149	184	207
Stock grazing	76	92	77	77	106	131	111	92	119	134
Support block lease	12	8	8	13	4	4	6	5	4	3
Fertiliser (incl Nitrogen)	50	57	63	58	56	56	49	50	54	57
Irrigation	3	3	2	2	5	6	11	7	5	11
Regrassing	4	9	8	6	8	7	7	7	8	9
Weed & pest	4	4	4	4	4	4	4	5	5	4
Vehicles & fuel	54	64	65	68	69	62	53	62	64	64
Repairs & maintenance	23	25	30	25	33	27	24	28	30	28
Freight & general	18	17	17	22	24	23	18	18	20	18
Administration	28	28	30	30	33	32	31	31	30	35
Insurance	8	8	11	11	11	11	13	11	13	12
ACC	10	9	14	11	11	8	8	8	8	9
Rates	2	2	3	3	2	3	1	1	1	1
Farm working expenses	677	782	813	842	915	923	792	810	911	1,000
Cash operating surplus	411	577	608	306	550	359	30	450	433	472
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	122	104	71	203	192	84	81	45	84	18
less Labour adjustment	189	191	198	190	187	202	194	194	206	177
plus Feed inventory adjustment	1	2	10	-1	4	0	5	-1	5	6
less Owned support block adjustment	4	6	3	8	2	3	2	1	1	1
less Depreciation	51	57	57	59	59	66	62	52	63	59
Net Adjustments	-122	-147	-177	-55	-52	-188	-172	-203	-181	-213
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	1,210	1,463	1,492	1,352	1,657	1,366	903	1,305	1,428	1,490
Dairy operating expenses	920	1,033	1,061	1,100	1,159	1,194	1,045	1,058	1,176	1,231
Dairy operating profit per cow	290	430	431	252	498	171	-142	247	252	260



**Table 13.3:** Cash Operating Surplus and Operating Profit - \$ per effective hectare

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milksolids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milksolids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milksolids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	3,026	3,573	3,578	3,199	4,069	3,291	2,043	3,073	3,445	3,876
Net livestock sales (sales - purchases)	86	247	413	61	105	412	268	459	368	502
Other dairy cash income	22	38	38	21	27	18	25	18	17	15
Net dairy cash income	3,133	3,858	4,030	3,280	4,201	3,720	2,337	3,551	3,830	4,393
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	331	352	378	420	402	401	366	391	451	547
Animal health	198	233	245	238	271	268	215	237	250	286
Breeding & herd improvement	118	129	141	154	160	167	152	152	176	200
Farm dairy	45	47	47	44	52	50	50	52	55	59
Electricity	96	94	101	100	113	120	116	117	112	123
Net feed made, purchased, cropped	322	440	457	511	583	588	401	420	525	619
Stock grazing	218	262	217	220	305	380	315	258	340	401
Support block lease	36	22	22	38	10	11	17	14	12	9
Fertiliser (incl Nitrogen)	144	162	179	164	159	163	140	141	154	169
Irrigation	8	8	5	7	14	16	30	19	15	34
Regrassing	12	24	24	17	22	19	19	18	22	28
Weed & pest	10	10	12	11	11	12	10	15	14	13
Vehicles & fuel	155	181	185	193	197	180	150	174	181	190
Repairs & maintenance	66	72	85	70	95	78	68	78	85	84
Freight & general	51	48	47	62	69	66	51	50	57	53
Administration	81	81	85	87	94	94	88	87	86	104
Insurance	24	23	30	32	31	32	37	32	36	35
ACC	28	25	39	30	31	25	23	22	22	26
Rates	5	6	7	7	5	9	4	4	2	4
Farm working expenses	1,949	2,219	2,306	2,405	2,623	2,679	2,251	2,282	2,596	2,983
Cash operating surplus	1,185	1,639	1,723	876	1,578	1,041	86	1,269	1,234	1,410
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	350	294	202	581	550	242	231	128	240	54
less Labour adjustment	545	542	561	542	537	587	552	546	588	529
plus Feed inventory adjustment	2	7	28	-3	12	1	13	-4	14	16
less Owned support block adjustment	12	16	9	24	5	9	5	4	2	2
less Depreciation	146	161	161	169	170	191	176	148	180	175
Net Adjustments	-351	-418	-501	-157	-150	-544	-488	-573	-516	-635
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	3,483	4,152	4,231	3,862	4,751	3,963	2,568	3,679	4,070	4,447
Dairy operating expenses	2,649	2,931	3,009	3,143	3,323	3,466	2,971	2,983	3,352	3,673
Dairy operating profit per ha	834	1,221	1,222	719	1,427	497	-403	696	718	775

**Table 13.4:** Cash Operating Surplus and Operating Profit - \$ per milk solid sold

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milk solids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milk solids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milk solids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
<b>DAIRY CASH INCOME \$:</b>										
Milk sales (net of dairy levies)	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
Net livestock sales (sales - purchases)	0.09	0.25	0.39	0.06	0.10	0.36	0.25	0.42	0.34	0.41
Other dairy cash income	0.02	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Net dairy cash income	3.16	3.92	3.76	3.21	3.88	3.25	2.15	3.26	3.57	3.59
<b>CASH FARM WORKING EXPENSES:</b>										
Wages	0.33	0.36	0.35	0.41	0.37	0.35	0.34	0.36	0.42	0.45
Animal health	0.20	0.24	0.23	0.23	0.25	0.23	0.20	0.22	0.23	0.23
Breeding & herd improvement	0.12	0.13	0.13	0.15	0.15	0.15	0.14	0.14	0.16	0.16
Farm dairy	0.05	0.05	0.04	0.04	0.05	0.04	0.05	0.05	0.05	0.05
Electricity	0.10	0.10	0.09	0.10	0.10	0.10	0.11	0.11	0.10	0.10
Net feed made, purchased, cropped	0.32	0.45	0.43	0.50	0.54	0.51	0.37	0.39	0.49	0.51
Stock grazing	0.22	0.27	0.20	0.21	0.28	0.33	0.29	0.24	0.32	0.33
Support block lease	0.04	0.02	0.02	0.04	0.01	0.01	0.02	0.01	0.01	0.01
Fertiliser (incl Nitrogen)	0.15	0.16	0.17	0.16	0.15	0.14	0.13	0.13	0.14	0.14
Irrigation	0.01	0.01	0.00	0.01	0.01	0.01	0.03	0.02	0.01	0.03
Regrassing	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Weed & pest	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Vehicles & fuel	0.16	0.18	0.17	0.19	0.18	0.16	0.14	0.16	0.17	0.16
Repairs & maintenance	0.07	0.07	0.08	0.07	0.09	0.07	0.06	0.07	0.08	0.07
Freight & general	0.05	0.05	0.04	0.06	0.06	0.06	0.05	0.05	0.05	0.04
Administration	0.08	0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.09
Insurance	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
ACC	0.03	0.03	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02
Rates	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Farm working expenses	1.96	2.25	2.15	2.35	2.42	2.34	2.08	2.10	2.42	2.44
Cash operating surplus	1.19	1.66	1.61	0.86	1.46	0.91	0.08	1.17	1.15	1.15
<b>ADJUSTMENTS:</b>										
Value of change in dairy livestock	0.35	0.30	0.19	0.57	0.51	0.21	0.21	0.12	0.22	0.04
less Labour adjustment	0.55	0.55	0.52	0.53	0.50	0.51	0.51	0.50	0.55	0.43
plus Feed inventory adjustment	0.00	0.01	0.03	-0.00	0.01	0.00	0.01	-0.00	0.01	0.01
less Owned support block adjustment	0.01	0.02	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00
less Depreciation	0.15	0.16	0.15	0.16	0.16	0.17	0.16	0.14	0.17	0.14
Net Adjustments	-0.35	-0.42	-0.47	-0.15	-0.14	-0.48	-0.45	-0.53	-0.48	-0.52
<b>OPERATING CASH &amp; NON-CASH:</b>										
Dairy gross farm revenue	3.51	4.22	3.94	3.77	4.39	3.46	2.37	3.38	3.79	3.64
Dairy operating expenses	2.67	2.98	2.81	3.07	3.07	3.03	2.74	2.74	3.13	3.00
Dairy operating profit per kg MS	0.84	1.24	1.14	0.70	1.32	0.43	-0.37	0.64	0.67	0.63

Table 13.5: Cashflow

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milksolids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milksolids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milksolids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
Net dairy cash income	409,201	527,333	551,241	452,375	537,700	491,091	311,521	468,708	525,451	664,600
Farm working expenses	254,479	303,307	315,482	331,640	335,742	353,672	300,088	301,168	356,128	451,327
Cash operating surplus	154,722	224,026	235,759	120,735	201,958	137,419	11,433	167,540	169,323	213,273
<b>DISCRETIONARY CASH</b>										
less Rent (excl support block)	1,611	2,111	3,450	4,385	3,401	5,154	1,407	1,047	2,320	827
less Interest	47,816	44,577	34,423	33,043	34,599	31,805	37,949	34,629	31,626	36,976
less Tax	5,085	23,930	31,344	27,351	29,237	25,101	5,492	6,220	24,199	30,109
plus Net non-dairy cash income	1,498	2,645	1,458	139	2,036	2,511	2,243	1,798	1,996	2,659
Discretionary Cash	101,708	156,053	168,000	56,095	136,757	77,870	-31,172	127,442	113,174	148,021
<b>OTHER CASH INCOME</b>										
plus Net off-farm income	6,014	5,508	3,753	4,244	3,989	3,817	4,546	2,281	4,071	5,230
plus Introduced funds	-3,583	8,612	11,331	8,480	13,155	24,197	26,601	12,583	14,806	-19,006
plus Income equalisation	1,535	519	-379	4,325	-2,621	-6,091	5,707	1,412	0	470
Cash available for living and growth	105,674	170,692	182,705	73,144	151,280	99,793	5,682	143,718	132,051	134,715
<b>OTHER CASH EXPENDITURE</b>										
less Net capital transactions	12,833	27,519	48,945	70,590	60,379	89,030	26,407	36,654	49,540	113,811
less Net debt	24,238	58,537	56,442	-40,067	-973	-50,721	37,011	17,644	20,730	-33,643
less Net drawings	55,876	67,893	75,857	72,999	72,813	83,335	56,461	57,721	74,517	67,169
Cash surplus/deficit	12,727	16,743	1,461	-30,378	19,061	-21,851	-114,197	31,699	-12,736	-12,622
<b>CASHFLOW PER KG MILKSOLIDS SOLD:</b>										
Net dairy cash income	3.16	3.92	3.76	3.21	3.88	3.25	2.15	3.26	3.57	3.59
Farm working expenses	1.96	2.25	2.15	2.35	2.42	2.34	2.08	2.10	2.42	2.44
Cash operating surplus	1.19	1.66	1.61	0.86	1.46	0.91	0.08	1.17	1.15	1.15
<b>DISCRETIONARY CASH: MS BASIS</b>										
less Rent (excl support block)	0.01	0.02	0.02	0.03	0.02	0.03	0.01	0.01	0.02	0.00
less Interest	0.37	0.33	0.23	0.23	0.25	0.21	0.26	0.24	0.21	0.20
less Tax	0.04	0.18	0.21	0.19	0.21	0.17	0.04	0.04	0.16	0.16
plus Net non-dairy cash income	0.01	0.02	0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.01
Discretionary Cash	0.78	1.16	1.14	0.40	0.99	0.52	-0.22	0.89	0.77	0.80
<b>OTHER CASH INCOME: MS BASIS</b>										
plus Net off-farm income	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03
plus Introduced funds	-0.03	0.06	0.08	0.06	0.09	0.16	0.18	0.09	0.10	-0.10
plus Income equalisation	0.01	0.00	-0.00	0.03	-0.02	-0.04	0.04	0.01	0.00	0.00
Cash available for living and growth	0.82	1.27	1.25	0.52	1.09	0.66	0.04	1.00	0.90	0.73
<b>OTHER CASH EXPENDITURE: MS BASIS</b>										
less Net capital transactions	0.10	0.20	0.33	0.50	0.44	0.59	0.18	0.26	0.34	0.62
less Net debt	0.19	0.43	0.38	-0.28	-0.01	-0.34	0.26	0.12	0.14	-0.18
less Net drawings	0.43	0.50	0.52	0.52	0.53	0.55	0.39	0.40	0.51	0.36
Cash surplus/deficit	0.10	0.12	0.01	-0.22	0.14	-0.14	-0.79	0.22	-0.09	-0.07

Table 13.6: Capital Structure and Wealth Creation

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milksolids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milksolids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milksolids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
<b>DAIRY ASSETS AT OPEN</b>										
Land & buildings	66,517	105,003	28,567	86,836	15,098	30,040	11,402	18,684	11,326	4,691
Plant, machinery and vehicles	93,586	95,481	106,678	117,383	108,099	126,212	125,820	117,301	128,521	140,793
Livestock	540,948	598,372	788,495	948,782	763,980	845,693	691,128	569,288	691,303	790,098
Investments (excl non-dairy)	4,996	13,340	12,004	12,323	9,835	14,950	7,629	15,904	7,852	5,442
Current assets	61,330	82,002	118,029	106,625	82,670	138,435	103,524	46,993	95,392	116,653
Total dairy assets at open	767,377	894,198	1,053,773	1,271,949	979,682	1,155,330	939,503	768,170	934,394	1,057,677
plus Non-dairy assets	162,078	112,936	139,545	111,848	148,952	126,234	152,207	195,254	136,930	177,130
Total assets	929,455	1,007,134	1,193,318	1,383,797	1,128,634	1,281,564	1,091,710	963,424	1,071,324	1,234,807
<b>LIABILITIES AT OPEN</b>										
Term liabilities	608,678	594,089	510,469	473,652	513,263	456,746	552,001	599,319	581,994	665,150
Current liabilities	80,763	77,308	101,391	96,334	97,513	88,015	95,703	89,844	73,944	107,777
Total liabilities	689,441	671,397	611,860	569,986	610,776	544,761	647,704	689,163	655,938	772,928
Owners equity at open	240,014	335,737	581,458	813,811	517,858	736,803	444,006	274,261	415,386	461,880
<b>DAIRY ASSETS AT CLOSE</b>										
Land & buildings	67,558	103,473	28,759	95,068	15,631	45,015	10,361	19,483	11,326	14,637
Plant, machinery and vehicles	95,020	106,965	126,654	129,332	132,115	126,025	121,846	125,203	140,605	141,864
Livestock	624,904	827,120	985,447	887,135	870,676	731,576	594,679	734,331	667,438	787,504
Investments (excl non-dairy)	6,734	14,062	17,438	13,086	11,543	17,568	7,796	23,409	8,439	10,920
Current assets	73,704	105,744	117,026	83,659	115,486	114,664	87,303	69,448	98,324	92,277
Total dairy assets at close	867,920	1,157,364	1,275,324	1,208,280	1,145,451	1,034,848	821,985	971,874	926,132	1,047,203
plus Non-dairy assets	158,786	107,949	136,933	144,476	165,597	172,672	163,079	203,511	146,603	245,321
Total assets	1,026,706	1,265,313	1,412,257	1,352,756	1,311,048	1,207,520	985,064	1,175,385	1,072,735	1,292,524
<b>LIABILITIES AT CLOSE</b>										
Term liabilities	584,440	535,552	454,027	513,719	514,236	507,467	589,012	581,675	561,264	698,793
Current liabilities	80,410	84,307	98,927	103,746	111,268	86,095	119,657	80,600	89,612	97,455
Total liabilities	664,850	619,859	552,954	617,465	625,504	593,562	708,669	662,275	650,876	796,248
Owners equity at close	361,856	645,454	859,303	735,291	685,544	613,958	276,395	513,110	421,859	496,276
Growth in equity	121,842	309,717	277,845	-78,520	167,686	-122,845	-167,611	238,849	6,473	34,397
Growth in equity from profit	77,675	112,617	104,473	43,782	118,099	4,979	-73,991	69,859	53,694	70,311
Growth in equity from capital	44,167	197,100	173,372	-122,302	49,587	-127,824	-93,620	168,990	-47,221	-35,914
Growth in equity %	50.8%	92.2%	47.8%	-9.6%	32.4%	-16.7%	-37.7%	87.1%	1.6%	7.4%
Closing debt to asset %	62.0%	44.3%	33.7%	42.1%	42.7%	43.8%	69.2%	53.6%	56.7%	61.6%
Closing term liabilities per kg MS	4.51	3.98	3.09	3.64	3.71	3.36	4.07	4.05	3.81	3.78

Table 13.7: Returns

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
<b>PHYSICAL CHARACTERISTICS:</b>										
Number of herds	115	100	96	92	114	111	109	113	108	122
Effective hectares	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	133.0	151.3
Peak cows milked	376	388	388	394	367	383	379	372	391	452
Stocking rate (cows/ha)	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0
Kg milksolids sold	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909
Milksolids sold per hectare	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222
Milksolids sold per cow	345	347	378	358	377	394	381	386	376	410
PAYOUT RECEIVED: \$/kg MS sold	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17
<b>RETURN ON DAIRY ASSETS %</b>										
Dairy operating profit	108,896	166,913	167,173	99,142	182,709	65,599	-53,678	91,877	98,570	117,177
plus Owned support block adjustment	1,597	2,218	1,217	3,315	685	1,245	695	508	251	299
less Rent	1,611	2,111	3,450	4,385	3,401	5,154	1,407	1,047	2,320	827
Net return from dairy	108,882	167,020	164,940	98,072	179,993	61,690	-54,390	91,338	96,501	116,649
Total dairy assets (less current) at open	706,047	812,196	935,744	1,165,324	897,012	1,016,895	835,979	721,177	839,002	941,025
Operating return on dairy assets %	15.4%	20.6%	17.6%	8.4%	20.1%	6.1%	-6.5%	12.7%	11.5%	12.4%
<b>TOTAL RETURN ON ASSETS %</b>										
Net return from dairy	108,882	167,020	164,940	98,072	179,993	61,690	-54,390	91,338	96,501	116,649
plus Net non-dairy profit	896	2,563	684	445	2,052	2,671	2,203	2,387	2,758	2,615
plus Change in capital value	26,356	166,673	143,404	-158,797	18,825	-171,303	-147,670	135,959	-84,007	82,092
Total return	136,134	336,256	309,028	-60,280	200,870	-106,942	-199,857	229,684	15,252	201,356
Total assets (less current) at open	868,125	925,132	1,075,289	1,277,172	1,045,964	1,143,129	988,186	916,431	975,932	1,118,155
Total return on assets %	15.7%	36.3%	28.7%	-4.7%	19.2%	-9.4%	-20.2%	25.1%	1.6%	18.0%
<b>TOTAL RETURN ON EQUITY %</b>										
Total return	136,134	336,256	309,028	-60,280	200,870	-106,942	-199,857	229,684	15,252	201,356
plus Net off-farm income	5,545	5,342	3,716	4,136	3,968	3,909	4,542	2,300	4,168	5,230
less Interest	47,816	44,577	34,423	33,043	34,599	31,805	37,949	34,629	31,626	36,976
Total return for equity	93,863	297,021	278,321	-89,187	170,239	-134,838	-233,264	197,355	-12,206	169,610
Equity at open	240,014	335,737	581,458	813,811	517,858	736,803	444,006	274,261	415,386	461,880
Total return on equity %	39.1%	88.5%	47.9%	-11.0%	32.9%	-18.3%	-52.5%	72.0%	-2.9%	36.7%