

The background of the cover is a photograph of a dairy farm. In the foreground, a brown cow with a white blaze on its face and a red ear tag with the number '143' is looking towards the camera. In the background, a black and white cow is visible, and another brown cow is partially seen. The scene is set in a green field under a bright sky.

ECONOMIC SURVEY

2020-21

DairyNZ 

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Introduction

The 2020-21 DairyNZ Economic Survey is the sixteenth 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 milk solids 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 2020-21.

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

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Executive Summary

Milk payout received by farmers in 2020-21 increased by 35 cents to \$7.40 per kilogram of milksolids (MS). Milksolids production per cow and per hectare, and operating expenses per kilogram of milksolids increased compared to the 2019-20 season. Operating profit per hectare increased to \$3,195, operating return on dairy assets increased to 6.1 percent and total return on assets increased by 3.4 percentage points to 4.8 percent. Total return on equity increased to 6.4 percent, driven by high returns from dairy operations.

Owner-operator Summary

Operating profit of \$3,195 per hectare in 2020-21 was up 16 percent on the previous season. The milk payout received of \$7.40 per kilogram of milksolids was up 35 cents (+5%) on the price received in 2019-20. Milksolids sold per cow increased by 2.9 percent and milksolids sold per hectare increased by 2.2 percent in 2020-21. There was no change in livestock income per kilogram of milksolids (\$0.49). Gross farm revenue of \$7.94 per kilogram of milksolids was up 32 cents in 2020-21. Farm working expenses of \$4.43 per kilogram of milksolids were 2 cents higher compared with last season. Operating expenses increased 1 cent to \$5.32 per kilogram of milksolids, setting a new record high.

The cash available for living and growth (discretionary cash) in 2020-21 was \$363,911 per farm, breaking the record ten year high set last season. Following high levels of capital expenditure (\$148,238), net debt (\$59,719) and drawings (\$106,679), an average cash surplus of \$59,112 per farm was recorded. The operating return on dairy assets increased to 6.1 percent and the total return on assets was 4.8 percent. Total return on equity was 6.4%, slightly higher than in the previous season. Equity growth was positive, increasing by \$253,619 to \$168,312. High returns from dairy farm operations offset a small decline in equity from capital. Total liabilities as a percentage of total assets (debt to asset ratio) decreased to 50.1 percent at the end of the season. Closing term liabilities per kilogram of milksolids decreased from \$23.25 to \$22.37.

Owner-operator Summary Table

	2019-20	2020-21
PHYSICAL KPIS:		
Effective hectares	142.1	140.6
Peak cows milked	415	408
Stocking rate (cows/ha)	2.9	2.9
Kg milksolids sold	169,761	171,720
Milksolids sold per hectare	1,194	1,222
Milksolids sold per cow	409	421
PRICES:		
PAYOUT RECEIVED: \$/kg MS sold	7.05	7.40
CASHFLOW:		
Cash operating surplus	537,460	601,492
Discretionary Cash	318,872	379,869
Cash available for living and growth	299,837	363,911
Cash surplus/deficit	57,909	59,112
PROFITABILITY PER HA:		
Dairy gross farm revenue per ha	9,097	9,695
Dairy operating expenses per ha	6,347	6,500
Dairy operating profit per ha	2,750	3,195
Business profit before tax per all effective hectares	1,681	2,131
PROFITABILITY PER KG MILKSOLIDS:		
Dairy gross farm revenue per kg milksolids	7.62	7.94
Farm working expenses per kg milksolids	4.41	4.43
Dairy operating expenses per kg milksolids	5.31	5.32
Dairy operating profit per kg milksolids	2.30	2.62
RETURNS:		
Operating return on dairy assets %	5.1%	6.1%
Total return on assets %	1.4%	4.8%
Total return on equity %	-1.1%	6.4%
WEALTH CREATION:		
Growth in equity	-85,307	168,312
Growth in equity from profit	159,527	208,237
Growth in equity from capital	-244,765	-39,822
Growth in equity %	-2.1%	4.4%
RISK:		
Closing debt to asset %	51.0%	50.1%
Closing term liabilities per kg MS	23.25	22.37

50:50 Sharemilkers Summary

Dairy operating profit per hectare for 50:50 sharemilkers (herd owning sharemilkers) recorded an increase (+23%) to \$1,287 per hectare in 2020-21. Higher milk payouts received (+20 cents per kilogram of milksolids) were complemented with an increase in milksolids per cow and partially offset by a slight reduction in cows. Gross farm revenue of \$4.12 per kilogram of milksolids was up 13 cents in 2020-21. Farm working expenses of \$2.48 per kilogram of milksolids were 2 cents less than last season. Operating expenses per kilogram of milksolids remained constant between 2019-20 to 2020-21 at \$3.13.

The cash available for living and growth (discretionary cash) in 2020-21 for 50:50 Sharemilkers was \$258,338 per farm, breaking the record ten-year high set last season. High levels of capital expenditure, an increase in net debt and an increase in drawings were offset by a significant cash operating surplus, resulting in a cash surplus of +\$51,154 per farm. The operating return on dairy assets increased to 19.1 percent, while the total return on equity was 22.4 percent, 5.5 percent higher than in 2019-20. High equity growth from profit was complemented by positive growth in equity from capital. Total liabilities as a percentage of total assets (debt to asset ratio) decreased to 43.3 percent. Closing term liabilities per kilogram of milksolids decreased to \$2.91.

50:50 Sharemilkers Summary Table

	2019-20	2020-21
PHYSICAL KPIS:		
Effective hectares	144.1	140.0
Peak cows milked	431	424
Stocking rate (cows/ha)	3.0	3.0
Kg milksolids sold	175,656	182,030
Milksolids sold per hectare	1,219	1,300
Milksolids sold per cow	408	429
PRICES:		
PAYOUT RECEIVED: \$/kg MS sold	3.45	3.65
CASHFLOW:		
Cash operating surplus	230,372	298,298
Discretionary Cash	171,895	230,033
Cash available for living and growth	161,640	258,338
Cash surplus/deficit	41,334	51,154
PROFITABILITY PER HA:		
Dairy gross farm revenue per ha	4,864	5,357
Dairy operating expenses per ha	3,815	4,070
Dairy operating profit per ha	1,050	1,287
Business profit before tax per all effective hectares	1,260	1,577
PROFITABILITY PER KG MILKSOLIDS:		
Dairy gross farm revenue per kg milksolids	3.99	4.12
Farm working expenses per kg milksolids	2.50	2.48
Dairy operating expenses per kg milksolids	3.13	3.13
Dairy operating profit per kg milksolids	0.86	0.99
RETURNS:		
Operating return on dairy assets %	16.8%	19.1%
Total return on assets %	9.3%	12.2%
Total return on equity %	16.9%	22.4%
WEALTH CREATION:		
Growth in equity	97,394	155,984
Growth in equity from profit	112,985	127,784
Growth in equity from capital	-15,596	28,200

1 Background

The 2020-21 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 before 2005-06 were conducted by the 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 to match the average regional herd size, hectares and milksolids production as published in the New Zealand Dairy Statistics 2020-21 as close as possible while maintaining a large sample size.

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 and 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 it 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 and production system data.

2 Survey Description

2.1 Survey Methodology

Groups of farms were selected to match the average regional herd size, hectares and milksolids production as published in the New Zealand Dairy Statistics 2020-21 as close as possible while maintaining a large sample size. The initial pool of herds included 848 owner-operators and 265 50:50 sharemilkers (herd owning sharemilkers) herds, validated and committed to the DairyBase® database for the 2020-21 financial year. This excluded:

- multiple herds operating under one business identity, and/or
- herds with fewer than 100 cows.

Businesses were then excluded for the following reasons:

- businesses with a significant change in the land area during the year, and/or
- extreme outlier data and/or
- key financial data required for the data sample were missing.

The sample selection process aimed 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. These regional and national averages are available in New Zealand Dairy Statistics 2020-21 publication.

The final number of herds included in this survey comprised 308 owner-operators and 108 50:50 sharemilker herds. Of the owner-operator herds, 208 (67.53%) were North Island herds, and 100 (32.47%) were from the South Island. Of the sharemilker herds, 82 (75.93%) were from the North Island, and 26 (24.07%) 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

All national averages in this report have been weighted by the regional proportion of herds reported in the New Zealand Dairy Statistics 2020-21 (Table 3.3). Simply averaging the regional data shown in this document does not produce the same national average. Weighting the data ensures that each region contributes a representative proportion to the national averages. The national averages for 50:50 sharemilkers are weighted by the regional proportion of sharemilkers.

Table 2.1: Regional Distribution of Herds: Dairy Statistics

Region	Total herds	% of total herds	Owner-operator herds	% of Owner-operator herds	50:50 Sharemilker herds	% of 50:50 Sharemilker herds
Northland	895	8.4%	562	9.3%	212	6.9%
Waikato	3,583	33.4%	1,824	30.3%	1,135	37.0%
Bay of Plenty	555	5.2%	304	5.0%	146	4.8%
Taranaki	1,553	14.5%	867	14.4%	492	16.1%
Lower North Island	976	9.1%	622	10.3%	214	7.0%
West Coast-Tasman	362	3.4%	263	4.4%	71	2.3%
Mariborough-Canterbury	1,396	13.0%	854	14.2%	355	11.6%
Otago-Southland	1,398	13.0%	726	12.1%	440	14.4%

2.5 Herd Size Distributions

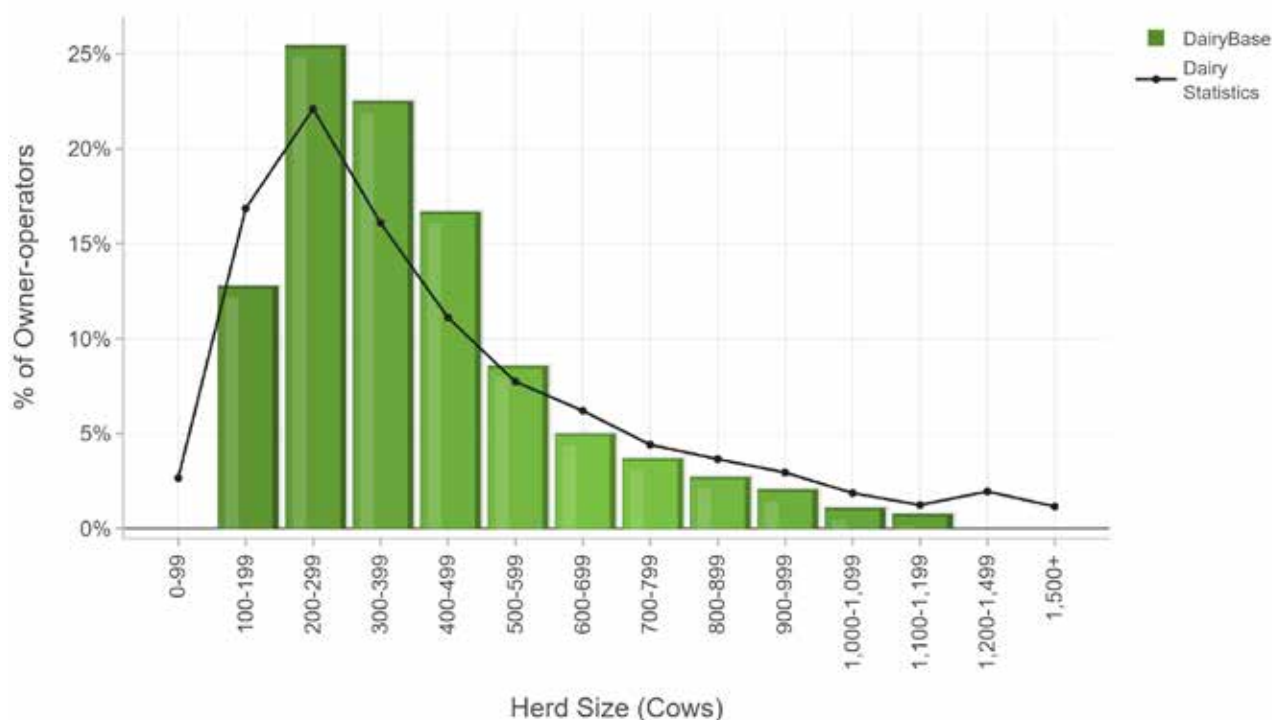
The average DairyNZ Economic Survey owner-operator herd of 408 cows was thirty-six less than the New Zealand Dairy Statistics 2020-21 national average herd size of 444 cows.

A comparison of the owner-operator herd distribution between the DairyNZ Economic Survey and the New Zealand Dairy Statistics 2020-21 shows the DairyNZ survey:

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

Refer to Figure 2.1.

Figure 2.1: New Zealand Owner-operator Herd Size Distributions 2020-21



The DairyNZ Economic Survey national average herd size for 50:50 sharemilkers of 424 cows is larger than the 408 cows recorded in the New Zealand Dairy Statistics 2020-21.

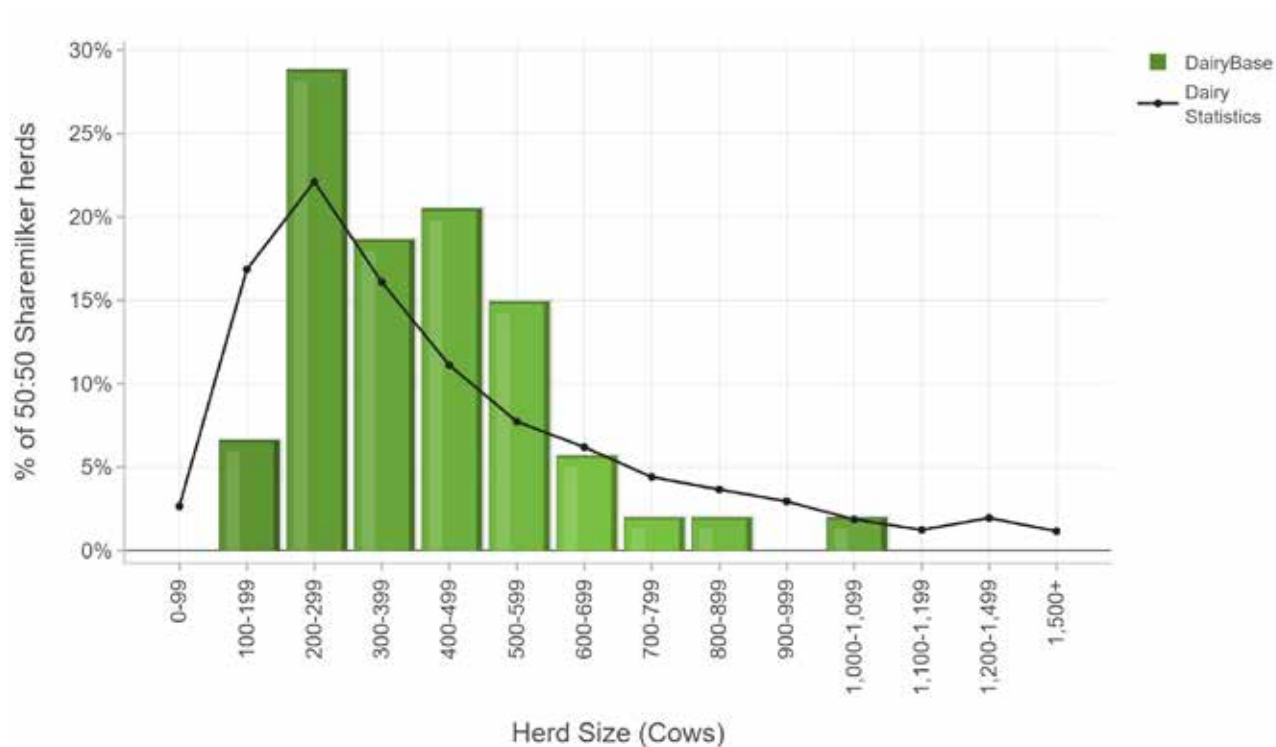
As compared with the New Zealand Dairy Statistics 2020-21, for 50:50 sharemilkers, the DairyNZ Economic Survey:

2.5. HERD SIZE DISTRIBUTIONS

- excludes herds under 100 cows;
- is over-represented by herds between 200 and 600 cows, and between 1,000 and 1,100 cows;
- is under-represented by herds between 600 and 1,500 cows.

Refer to Figure 2.2.

Figure 2.2: New Zealand 50:50 Sharemilker Herd Size Distributions 2020-21



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. Taranua
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

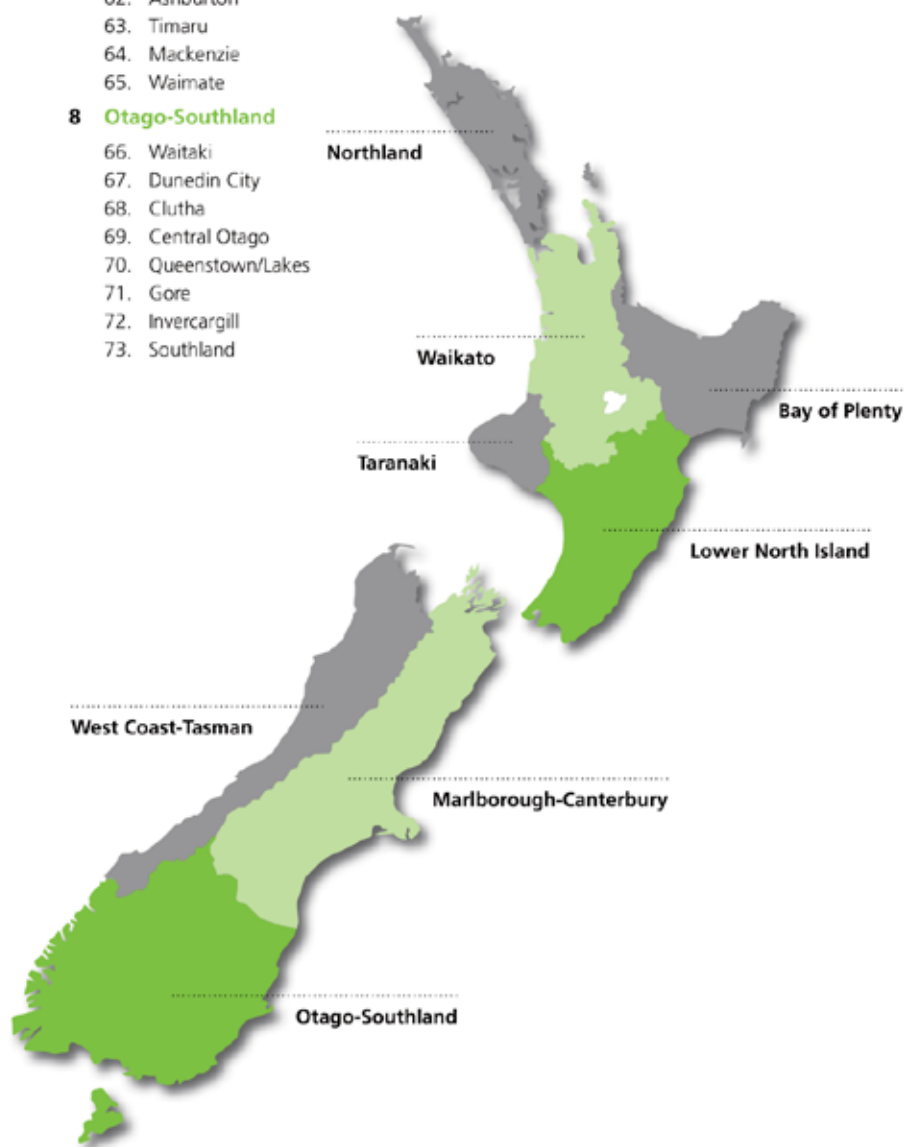
51. Tasman
52. Buller
53. Grey
54. Westland

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 used, 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 is fed unless harvested off the effective milking area, and dry cows are not grazed off the effective milking area. Approximately three 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 24 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 47 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 it could be less than 50% in some cases. Approximately six percent of owner-operator herds.

This publication refers 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 a change in livestock numbers. This adjustment is because the revenue from net dairy cash income can be affected by changes in herd size. For example, in drought years, more stock are sold and therefore, revenue through net livestock sales will be considerably higher. Similarly, livestock will be purchased in years following a drought 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 livestock numbers 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 an hourly market rate.
- Feed inventory adjustment – closing supplementary feed on hand less opening supplementary feed on hand, valued at a standard 35 cents per kilogram dry matter in 2020-21.
- Owned support block adjustment – valued based on regional market lease rate per hectare.
- Depreciation – as recorded in the annual financial statements of the farm.

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 2020 and 1 June 2021 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.

2.11 Statistical Methodology

Multiple methodologies are used in the Economic Farm Survey to generate statistics. Tables and graphs that use time series data are generated using an average of sums methodology. The average of sums involves summing all values together. While per farm values will be equivalent to the arithmetic mean, values that are divided by the number of cows, hectares, and milksolids will report the average value divided by the average denominator. The average of sums approach ensures that table entries add up to totals / sub-totals. However, a consequence of this methodology is that the averages reported are not equivalent to the arithmetic mean and can be biased depending on the data distribution. This bias can be severe in small samples, such as those used to produce the regional and production system tables.

To circumvent issues of this kind, we now report the median of the data in the tables and graphs that are most at risk of showing such bias. The median is the number that divides the data into two equal halves, such that half of the data is below and half the data is above this value. It is a robust and unbiased representation of the centre of the data. In the affected tables, entries will no longer add up to totals and sub-totals but provide a more accurate and representative value for the data. For example, in Table 7.1 below, we can see that by adding milk sales (net of dairy levy), net livestock sales (sales - purchases) and other dairy cash income, they do not add up to net dairy cash income, in contrast to the equivalent table presented in the 2018-19 version of the Economic Farm Survey.

The median is used in a number of different figures and tables:

- In Figure 3.1, we use the median deviation from the 30-year median rainfall. We do this because the arithmetic average is not robust to severe weather events that may misrepresent the true average rainfall a region receives in a season.
- In Tables 7.1, 7.2, 10.1 and 10.2, we report the median values for the table entries. Issues applying the average of sums methodology on these tables were identified in 2020. It was decided that accurate representation of these values was more important than ensuring the values added up in the table.

3 Physical Analysis

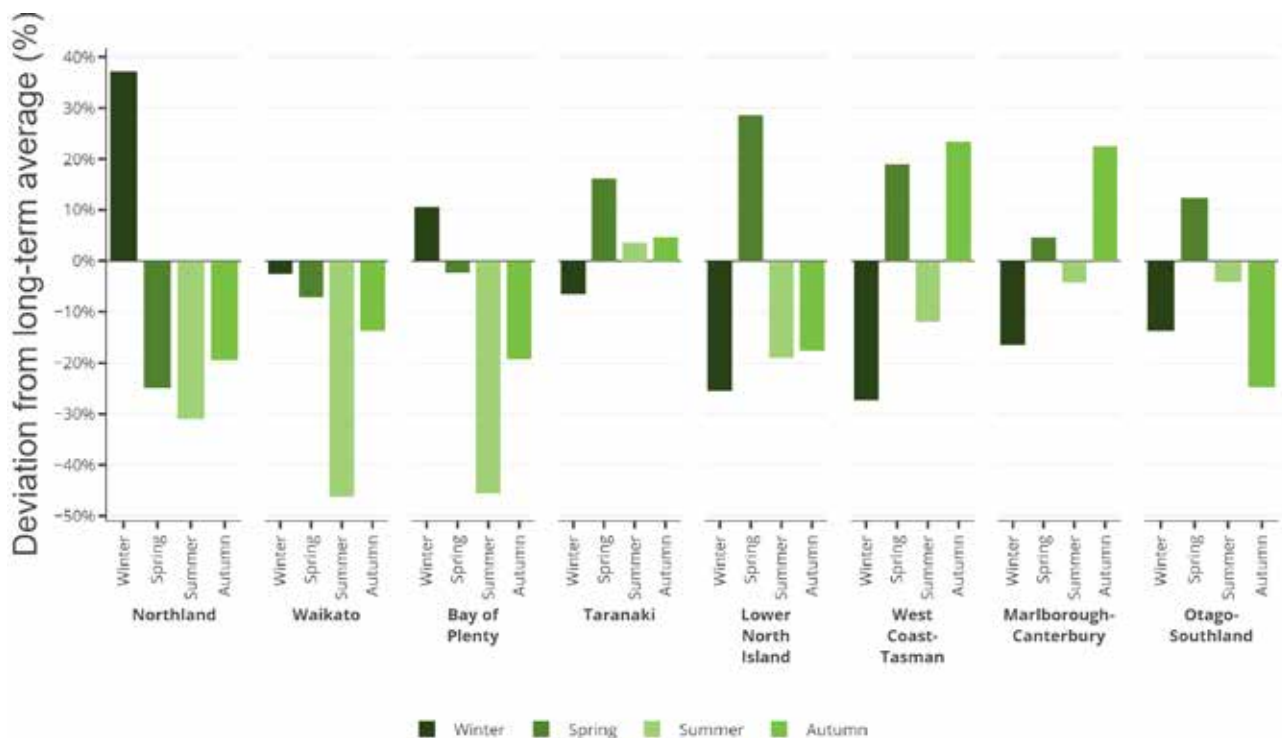
3.1 Introduction

The DairyNZ Economic Survey reports the trends in the 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 the days in milk, cow condition, reproductive performance, soil fertility, and fertiliser use data available in DairyBase®. 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, median 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 median regional rainfall from the thirty-year-weighted median is shown in Figure 3.1. See section 2.11 for an explanation of the median methodology used here. Overall, New Zealand experienced a drier year than the thirty-year weighted median.

Figure 3.1: Variation in rainfall

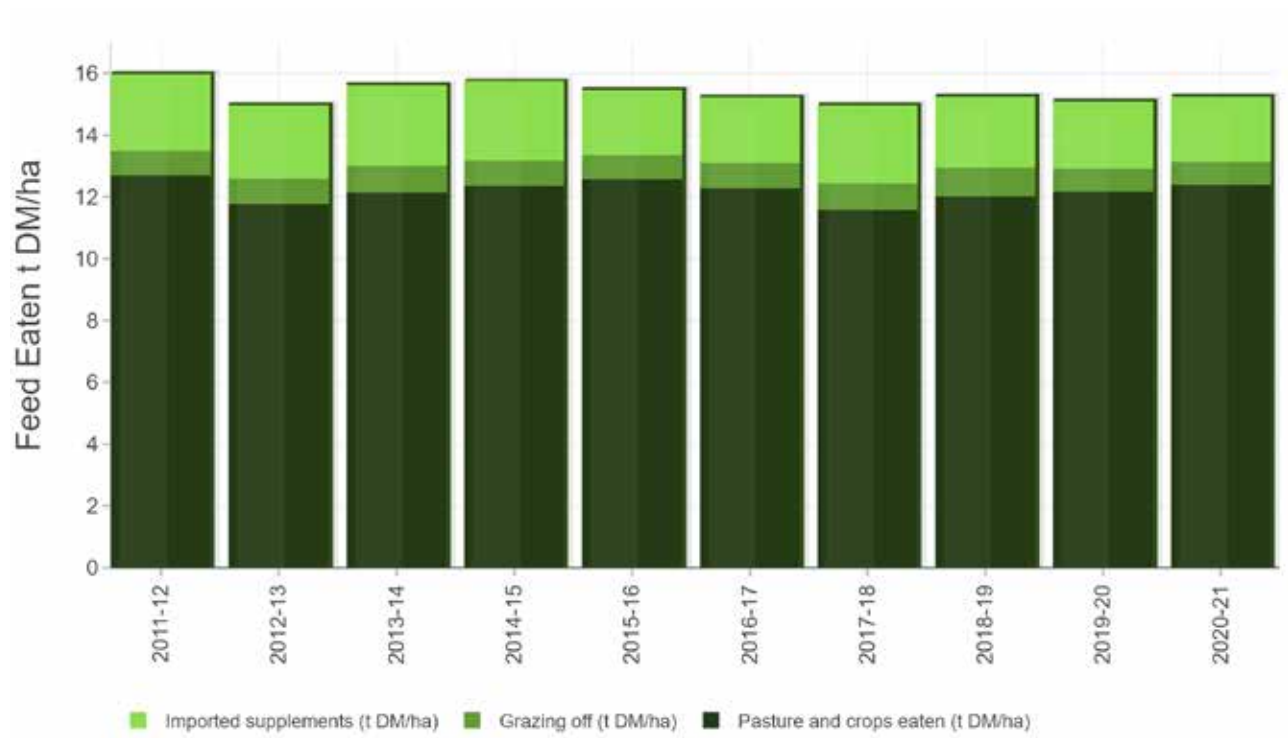


3.3 Feed Use

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. 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 (Figure 3.2).

Increases in milk production have occurred from increased feed levels, notably palm kernel extract (PKE), maize silage, and fodder beet in recent years. In 2020-21, grazing off accounted for approximately 5 percent of total feed eaten, imported supplements (14%) and pasture and crops (81%) are the primary feed components in the diet of dairy cows.

Figure 3.2: Trends in feed use



3.4 Partial Productivity

Milksolids sold per cow on the average Economic Survey dairy farm increased from 409 in 2019-20 to 421 kilograms milksolids in 2020-21. Milksolids sold per hectare increased from 1194 in 2019-20 to 1222 kilograms of milksolids in 2020-21. 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

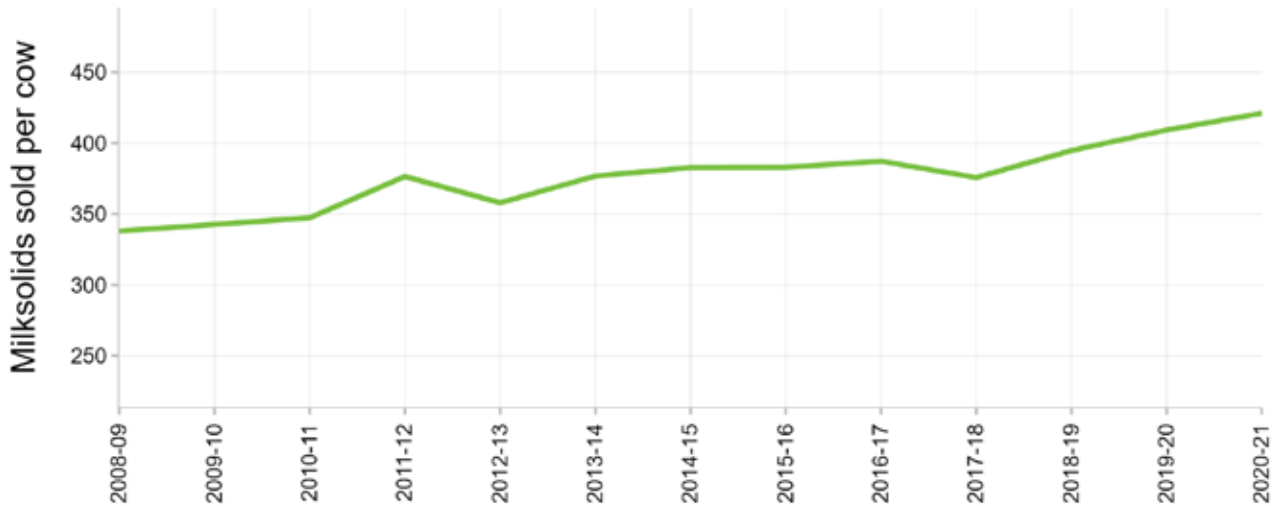
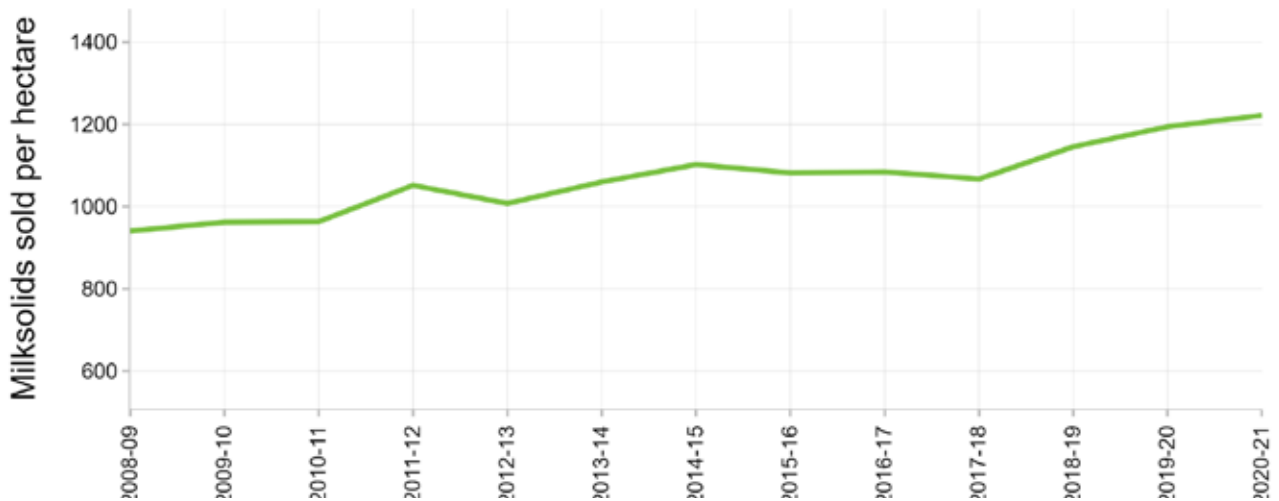


Figure 3.4: Milksolids production per hectare



Since 1990 the number of peak cows milked per full-time equivalent (FTE) labour unit has increased from 83 to 147, 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 2020-21, 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 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. PFP is a measure of cost-efficient milksolids production increases since the base year, valued at the end of the year operating profit margin per kilogram of 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 by 48% from \$672 per hectare in 2019-20 to \$995 in 2020-21 (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 1998-99



4 Prices Received and Paid

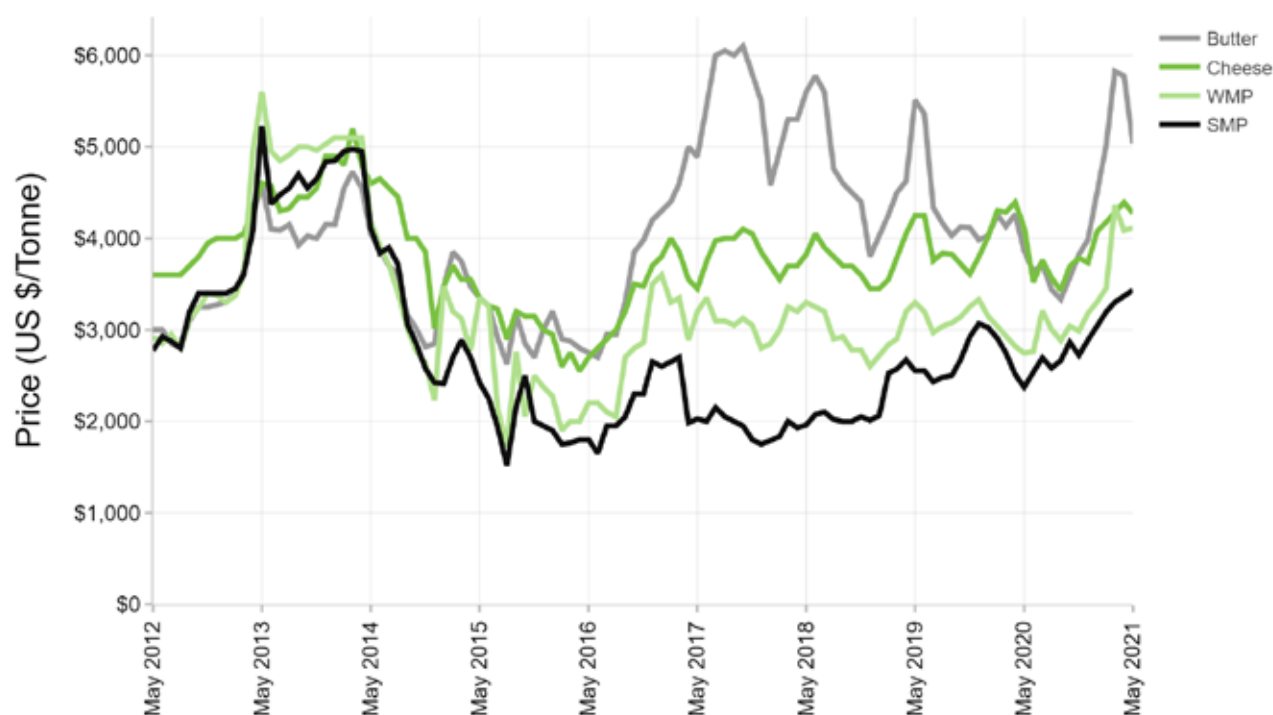
4.1 Milk Payment

Owner-operators in DairyBase received an average cash payout of \$7.40 per kilogram milksolids sold in 2020-21 (net of the industry good levy but includes advance and final payments). This was 35 cents more than 2019-20. The Fonterra average farmgate milk payout was \$7.54, 14 cents higher than the average cash payout. The New Zealand Dairy Statistics 2020-21 publication reported an average nominal payout (including dividend payments) of \$7.75.

International dairy prices (as seen in Figure 4.1) were higher for all dairy products in May 2021 than in May 2020, despite fluctuations over the year. Whole milk powder (WMP) finished at \$4,115 (+\$1,370), the greatest increase with respect to the May 2020 prices. Skim milk powder (SMP) finished at \$3,433 (+\$1,060). Butter finished at \$5,035 (+\$1,168). Cheese finished at \$4,274 (+\$159), the smallest increase relative to May 2020 prices.

The NZD:USD exchange rate closed the 2020-21 season 9 cents higher than it started, finishing at 73 cents, with an average of 69 cents throughout the season, a higher average than 2019-20 (64 cents). The increase in the exchange rate in 2020-21 was driven by strong demand for dairy products internationally and a reduced international supply due to COVID-19. Dairy contributed 32.63% to merchandise exports and 26.68% to total exports from New Zealand for the 2020-21 season. Whole milk powder comprised 42% of New Zealand's dairy export earnings in 2020-21, identical to the 2019-20 season. Skim milk powder decreased to 8% of export earnings, down from 9% in 2019-20. Cheese export earnings increased to 12% of total dairy export earnings, while butter decreased to 9% in 2020-21 from 10% in the 2019-20 season. The remaining proportion of dairy export earnings was distributed across other products.

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



The 2020-21 average nominal milk payout reported by the New Zealand Dairy Statistics publication of \$7.75 per kilogram milksolids was 80 cents above the decade average in inflation-adjusted terms (\$6.95) (Figure 4.2). The increase in milk payout per kilogram milksolids from 2019-20 reflects the strength of the international dairy commodity market in 2020-21. The average payout over the past ten years, in real terms, was \$6.95 per kilogram milksolids.

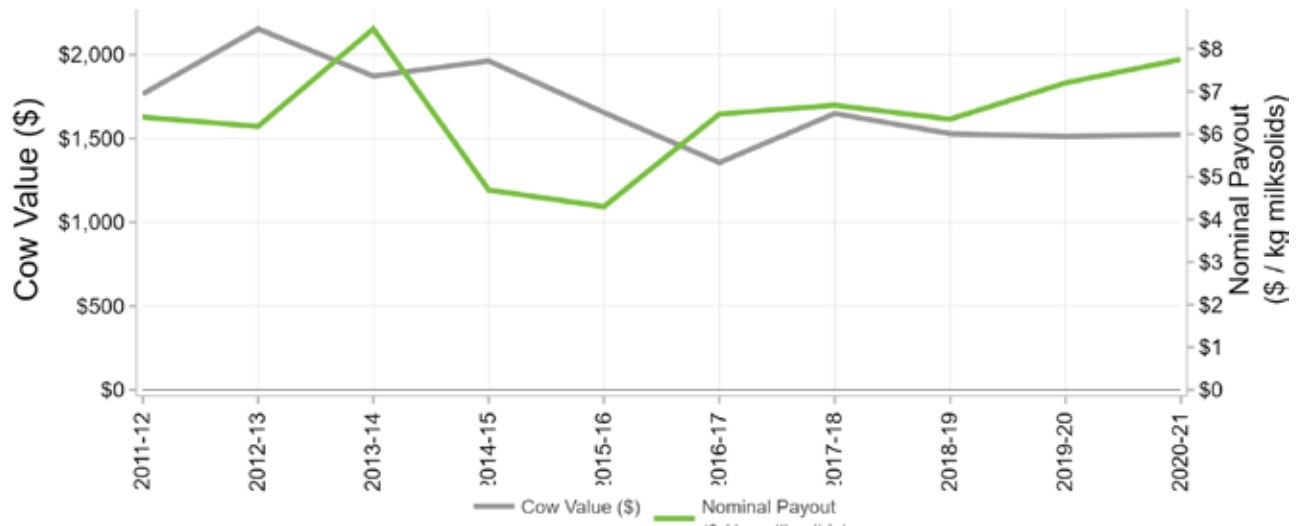
Figure 4.2: Trend in Milk Payout (Nominal and Real)



4.2 Livestock Prices

The value of mixed aged cows remained relatively unchanged, increasing slightly to \$1,525 (+\$12) in the 2020-21 season, relative to the 2019-20 season. Cow values, in nominal terms, were below the decade-average of \$1,698. Historically, cow values have followed the trend in milk prices, often with a slight time lag. However, in the last three seasons, cow values have stabilised while average milk payouts have increased.

Figure 4.3: Trend in Cow Values Relative to Milk Payout



4.3 Feed and Fertiliser Prices

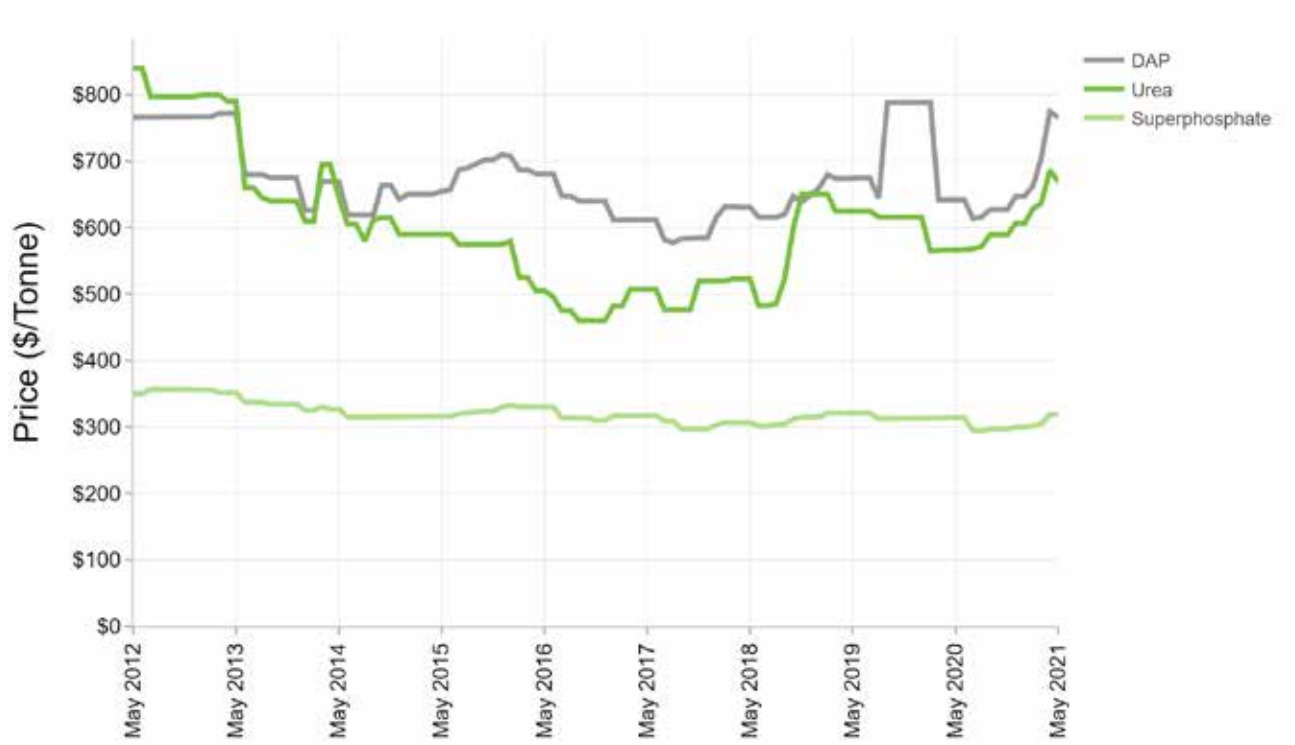
Feed and fertiliser prices between 2012-13 and 2020-21 are shown in Figures 4.4 and 4.5. Prices for wheat and barley remained relatively stable over the season, falling slightly at the end of the season. Palm kernel prices experienced a high level of volatility, with the highest price of \$362 in December 2021 and the lowest price of \$297 in September 2021. Palm kernel expeller imports decreased nearly 5.5 percent from 1.82 million tonnes to 1.72 million tonnes in the 2020-21 season.

Figure 4.4: Feed Prices



Throughout the season, prices for Urea and DAP trended upwards. By May 2021, the price for Urea was \$669 per tonne and the price for DAP was \$776 per tonne. Superphosphate prices were stable, finishing at \$319 per tonne in May 2021, reflecting an increase of \$5 from the price in June 2020. During 2020-21, the price of Superphosphate reached its highest in May 2021 and its lowest in August 2021.

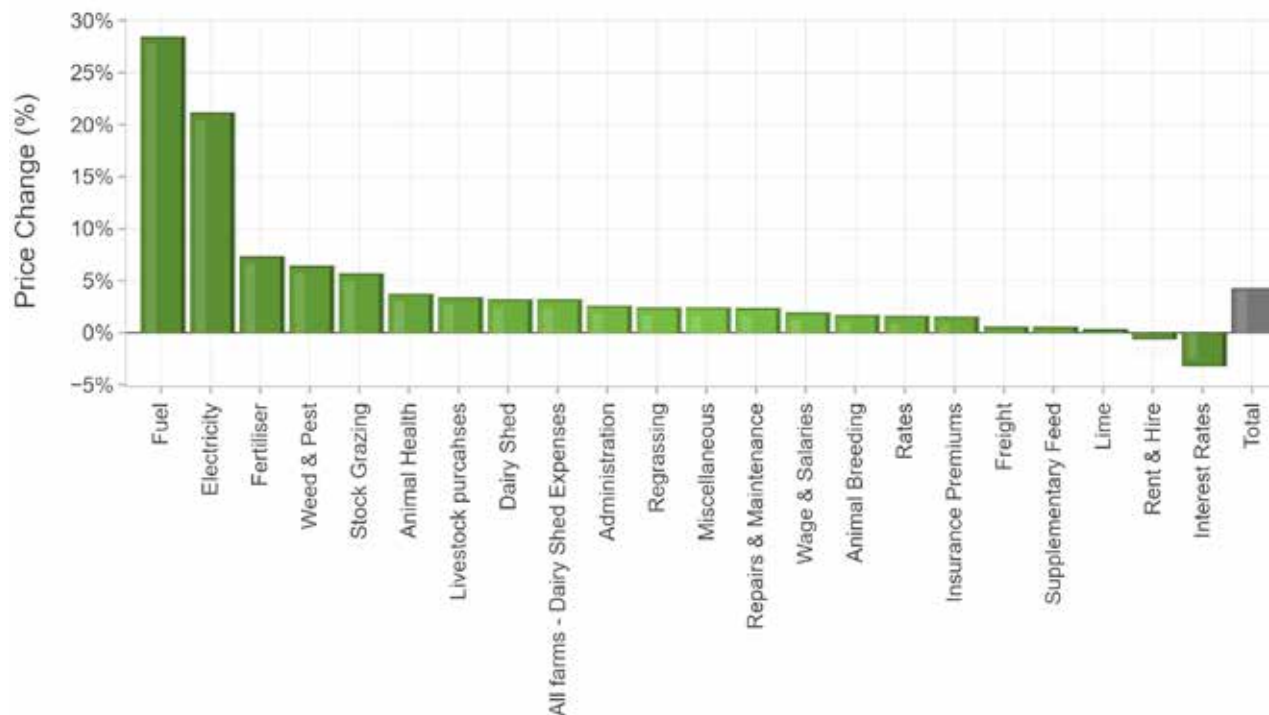
Figure 4.5: Fertiliser Prices



4.4 On-farm Inflation

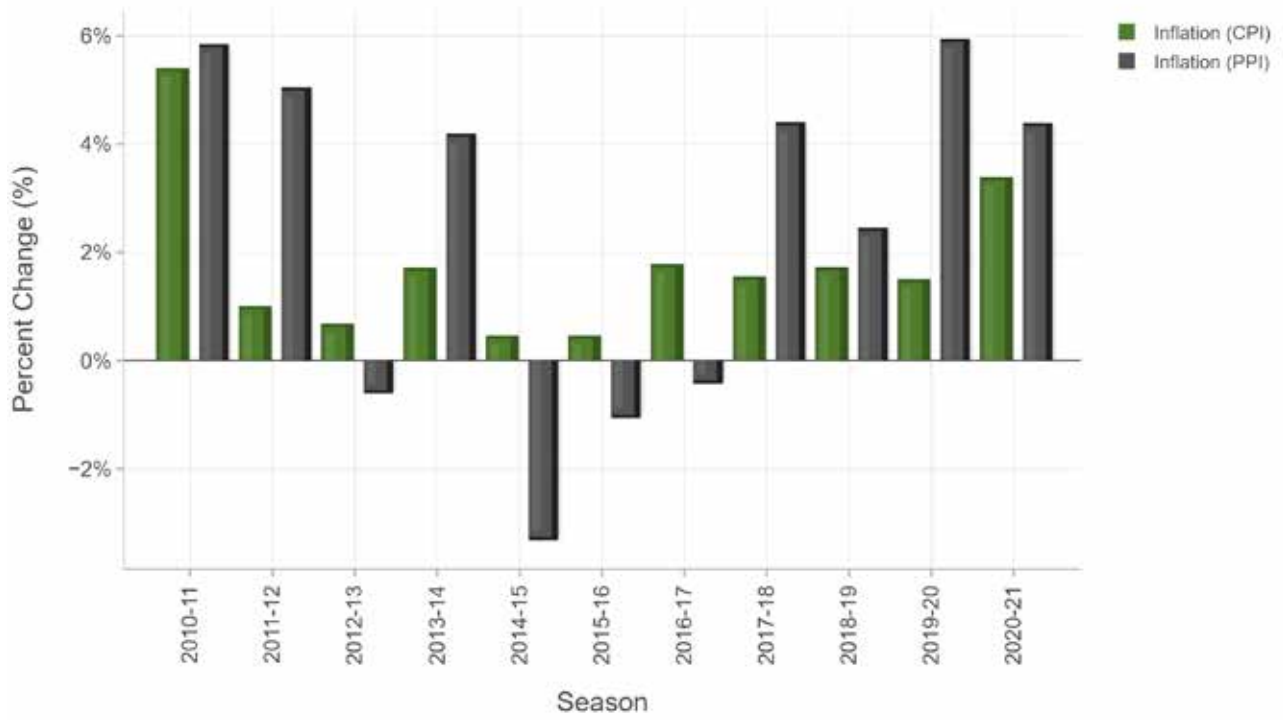
Statistics New Zealand compiles the movement of on-farm input prices in the Farm Expenses Price Index for dairy farms. The percentage movement of each category is weighted by a three-year rolling average of the contribution of each category to total expenditure. In the year to June 2021, the average price for inputs increased (+4%). The price movements of individual categories for the 2020-21 season are shown in Figure 4.6. The only individual price categories to experience price reductions were rent and hire (-0.48%) and interest rates (-3%). The most notable increases included fuel (+28%), electricity (+21%) and fertiliser (+7%), leading to an overall +4% change in the farm expense price index.

Figure 4.6: Dairy Input Price Changes 2020-21



The Producer Price Index (Stats NZ NZSIOC Level 3, June 2020 to June 2021) was up by 4%, as seen in Figure 4.7. General inflation, as measured by the Consumer Price Index (CPI), experienced an increase (+3%) in the same period. The producer price index has increased in the past four seasons at a rate consistently higher than the CPI.

Figure 4.7: Dairy Farm Producer Price Index and CPI Changes



5 Owner Operator: Operational Financial Analysis

5.1 Introduction

Operating profit of \$3,195 per hectare in 2020-21 was up 16 percent on the previous season. The milk payout received of \$7.40 per kilogram of milksolids was up 35 cents (+5%) on the average price received in 2019-20. Both milksolids per cow (+12 kgMS per cow) and milksolids per hectare (+27 kgMS per hectare) increased in 2020-21. Net livestock income (sales minus purchases) remained constant from 2019-20 to 2020-21 at \$0.49 per kgMS. Gross farm revenue was \$7.94 per kilogram milksolids in 2020-21, increasing 32 cents compared to the previous season. Farm working expenses (FWE) of \$4.43 per kilogram of milksolids was 2 cents higher than the last season. Operating expenses increased 1 cent to a record-high \$5.32 per kilogram of milksolids in 2020-21 compared to the previous season. The cash available for living and growth in 2020-21 was \$363,911 per farm, the highest value recorded in the past ten seasons.

5.2 Revenue

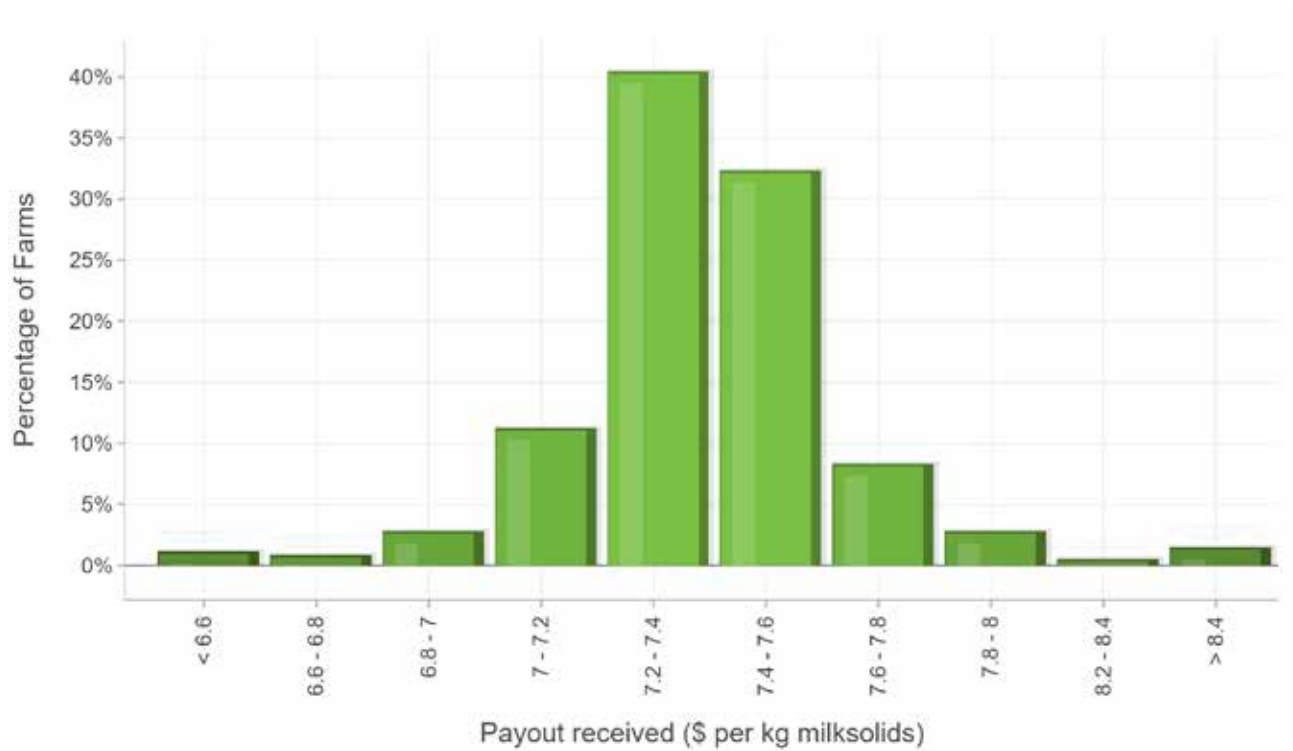
The milk payout received (including dividend payments) in 2020-21 increased 35 cents (5%) from the previous season to \$7.40 per kilogram of milksolids. milksolids production per cow and hectare, recorded by the Economic Farm Survey farms, increased marginally in 2020-21 from the 2019-20 season. Milk sales per farm (net of dairy levies) increased \$74,423 (+6%) from last season to a record-breaking \$1.2 million (\$1,271,447). Milk revenue in 2020-21 accounted for 93 percent of gross farm revenue. Net revenue from livestock sales increased to \$83,337 in 2020-21. Livestock revenue accounted for 6% of the total gross farm revenue per farm.

There is a variation of \$3.24 per kg MS in farmers' milk price within the 2020-21 season (Figure 5.1). These differences are driven by:

- Variations in the milk composition (fat, protein, lactose, minerals),
- Transport distances,
- Annual account balance dates,
- Milk company supplied,
- Different systems such as organics,
- Penalties incurred,
- Whether the farm operated in the previous season.

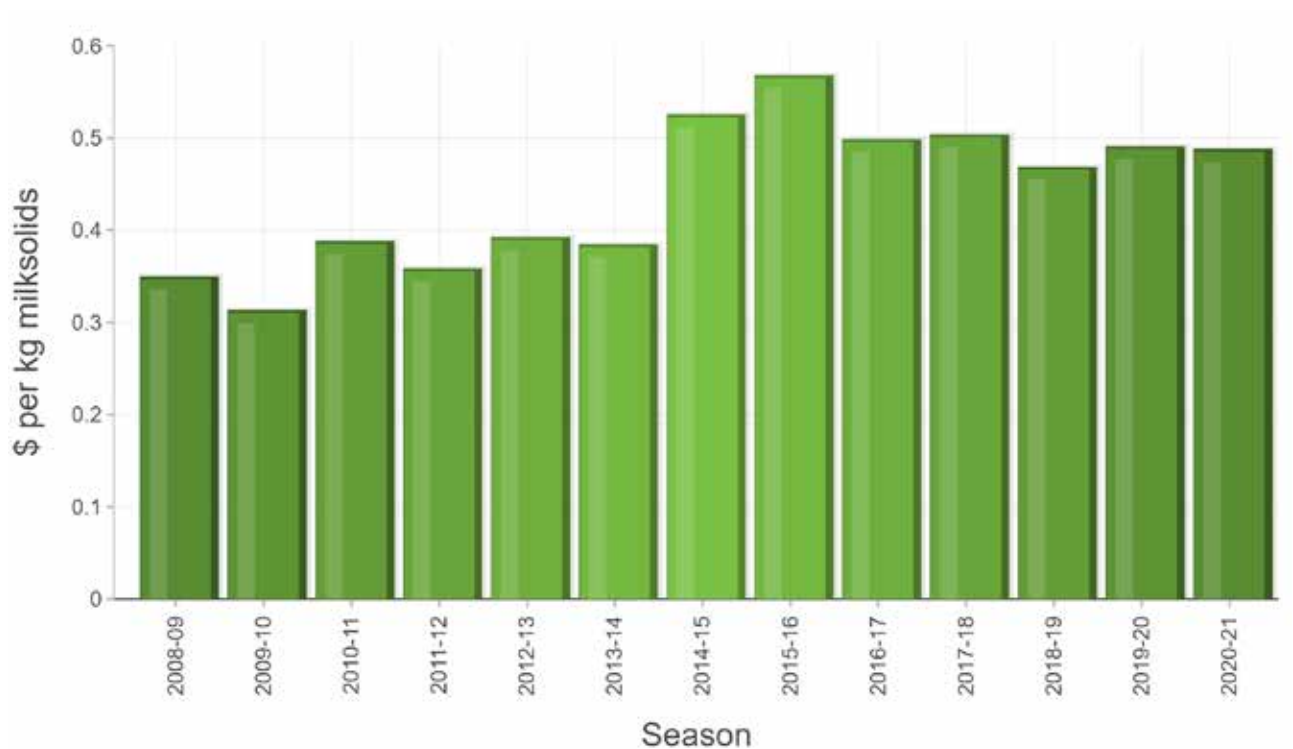
More than ninety percent of farms (91.6%) received a milk payout (milk price plus dividend) between \$7.00 and \$7.80 per kilogram of milksolids in 2020-21. The highest percentage was between \$7.20 and \$7.40, with 40% of farms receiving a milk payout in this range.

Figure 5.1: Distribution of Milk Payout Received 2020-21



Cash income from net livestock sales remained constant at \$0.49 per kilogram milksolids in 2020-21. Higher beef schedule prices have bolstered dairy farm incomes in the last six seasons, although beef prices for cows and heifers progressively fell from January 2021 to May 2021.

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



Dairy gross farm revenue on a typical New Zealand dairy farm was \$1,362,718 and was higher than the previous season by 5% (\$1,293,024 in 2019-20). On a per hectare basis, gross farm revenue of \$9,695 was higher than the per hectare gross farm revenue in 2019-20. At \$7.94 per kilogram of milksolids, gross farm revenue in 2020-21 was 32 cents (+4.2%) above the previous season when measured on a per kilogram

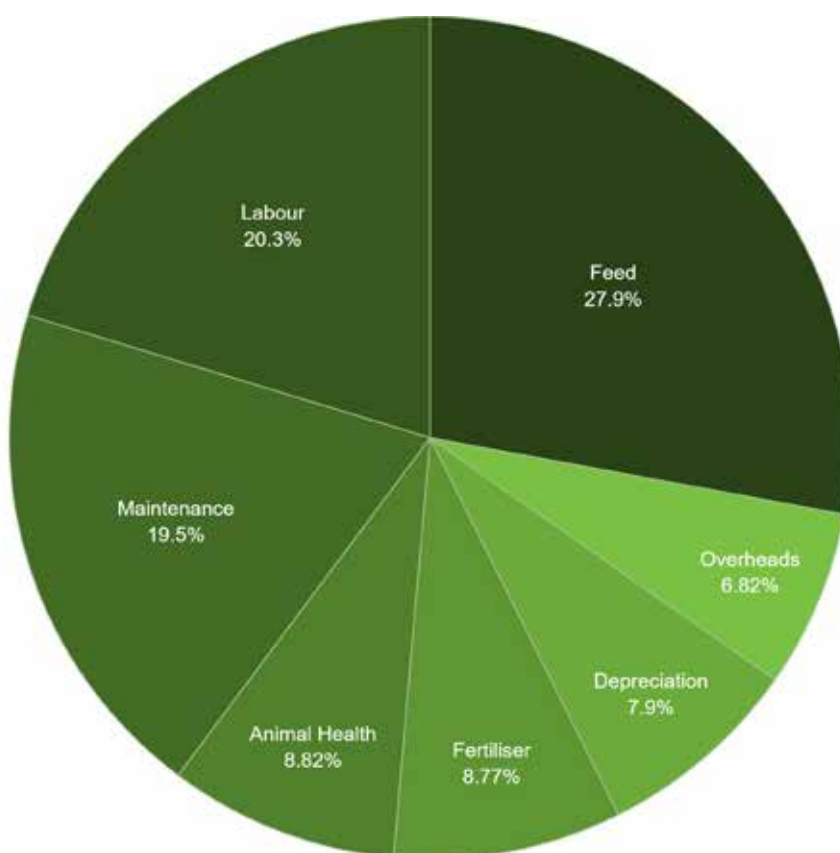
milk solids basis.

Tables 12.1, 12.2, 12.3 and 12.4 in chapter 12 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 milk solids sold basis.

5.3 Expenditure

Feed continues to be the largest expenditure category at 27.9% in 2020-21 and has been the largest expense category since 2007-08. Labour was the second-highest operating expense for dairy farms at 20.3 percent of total operating expenditure. Maintenance and fertiliser contributed 19.5 and 8.8 percent respectively. Figure 5.3 shows the major 2020-21 expenditure categories.

Figure 5.3: Proportion of Dairy Operating Expenditure 2020-21



Changes in the total farm expenditure are affected by the farm area, herd size and milk solids produced. Therefore, it is more appropriate to consider spending per cow, hectare or kilogram of milk solids to measure the movement of expenses for individual items. Average farm working expenses (i.e. cash expenses) per kilogram of milk solids increased 2 cents ($+<1\%$) to \$4.43. This was the highest expenditure recorded in a season, breaking the 2019-20 record.

Dairy operating expenses per kilogram milk solids were \$5.32, 1 cent above the 2019-20 season. This was the highest level of operating expenses in the last decade, beating the previous high in 2019-20. This was only the sixth time that operating expenses per kilogram of milk solids exceeded \$5.

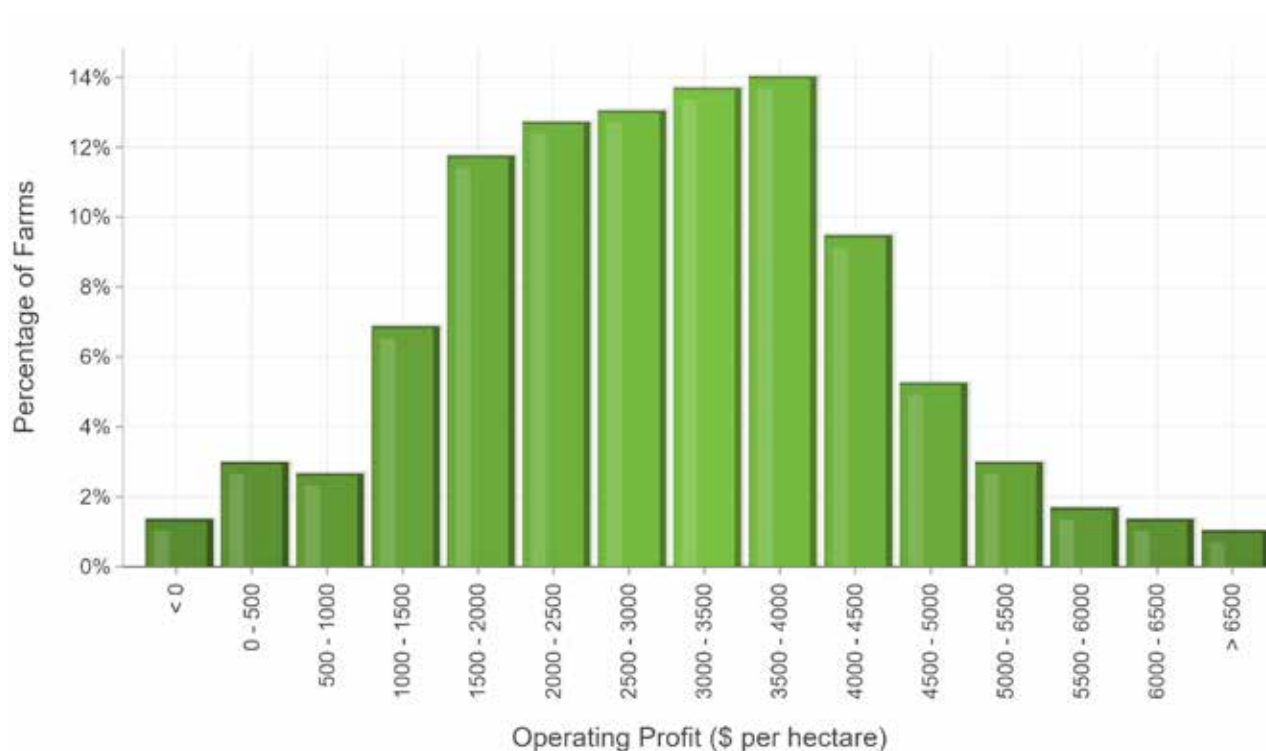
Table 12.4 shows the changes in the categories of operating expenses per kilogram milk solids. Animal health and breeding, labour, depreciation and overheads have remained steady over the past decade. However, feed, fertiliser, maintenance and running costs have been more variable, reflecting significant changes in income levels from one season to the next. Net feed made, purchased and cropped has exhibited the greatest variability due to price volatility of feeds, climate variation and milk payout variation.

5.4 Profitability

Operating profit is a key indicator of dairy farm financial performance. This measure, expressed on a per hectare basis, is beneficial for comparing the profitability between farms. Operating profit incorporates adjustments to allow comparisons between farms, but does not include interest, tax, rent payments or capital expenditure. Table 12.3 shows the revenue and expenditure items included in operating profit.

Figure 5.4 shows the distribution of 2020-21 operating profit per hectare. Operating profit per hectare was distributed around the mean (\$3,195) per hectare, reflecting a wide range between farms. 91.9 percent of farmers had operating profits between \$0 and \$5,000 per hectare, while 6.8 percent of farmers had operating profits over \$5,000 per hectare. Only 1.3 percent of farms recorded a negative operating profit in 2020-21 (Figure 5.4).

Figure 5.4: Distribution of Owner-operating Profit (\$ per hectare) 2020-21



Tables 5.1 and 5.2 show the average size and profitability of farms by quartile. Quartiles were constructed by ranking surveyed farms on operating profit per hectare across New Zealand. Top quartile farms average \$4,705 operating profit per hectare, compared with \$1,247 for the bottom quartile group. Each quartile group produced more milksolids per hectare compared with the quartile lower. Top quartile farmers produced approximately 66% more kilograms of milksolids per hectare than the bottom quartile farmers, with substantially lower farm working expenses per kilogram of milksolids (-19.7%).

There is not much difference in gross farm revenue per kg MS across the quartiles. The differences in profitability between the groups is driven by significant differences in the groups operating expenses per kilogram of milksolids. Top farms are more efficient, demonstrated by the lower operating expenses per kilogram of milksolids. Operating expenses increased from the top quartile group to the bottom quartile group from \$4.76 to \$6.41 per kilogram of milksolids, respectively.

Table 5.1: Owner-operator Quartile Profit (\$/kg MS)

	Bottom Quartile	Lower Middle Quartile	Upper Middle Quartile	Top Quartile
PHYSICAL CHARACTERISTICS:				
Number of herds	77	77	77	77
Effective hectares	131.4	126.3	147.1	151.9
Peak cows milked	317	337	439	488
Stocking rate (cows/ha)	2.4	2.7	2.9	3.2
Kg milksolids sold	112,677	135,683	186,182	222,352
Milksolids sold per hectare	866	1,075	1,236	1,438
Milksolids sold per cow	354	398	420	453
PAYOUT RECEIVED: \$/kg MS sold	7.35	7.44	7.36	7.43
DAIRY CASH INCOME \$:				
Milk sales (net of dairy levies)	7.36	7.47	7.36	7.43
Net livestock sales (sales - purchases)	0.55	0.52	0.48	0.45
Other dairy cash income	0.07	0.04	0.05	0.03
Net dairy cash income	7.99	8.04	7.89	7.91
CASH FARM WORKING EXPENSES:				
Wages	0.74	0.63	0.65	0.60
Animal health	0.27	0.24	0.24	0.23
Breeding & herd improvement	0.19	0.17	0.17	0.15
Farm dairy	0.08	0.07	0.06	0.05
Electricity	0.15	0.13	0.10	0.10
Net feed made, purchased, cropped	1.16	1.11	1.14	0.89
Stock grazing	0.26	0.29	0.38	0.52
Support block lease	0.08	0.09	0.05	0.05
Fertiliser (incl Nitrogen)	0.60	0.52	0.44	0.38
Irrigation	0.02	0.04	0.08	0.15
Regrassing	0.07	0.09	0.07	0.06
Weed & pest	0.05	0.04	0.03	0.02
Vehicles & fuel	0.27	0.21	0.15	0.13
Repairs & maintenance	0.53	0.48	0.38	0.36
Freight & general	0.11	0.09	0.07	0.06
Administration	0.17	0.14	0.15	0.12
Insurance	0.11	0.10	0.08	0.07
ACC	0.04	0.03	0.03	0.02
Rates	0.14	0.12	0.10	0.08
Farm working expenses	5.04	4.59	4.35	4.04
Cash operating surplus	2.95	3.44	3.54	3.87
ADJUSTMENTS:				
Value of change in dairy livestock	-0.13	-0.03	-0.04	0.06
Less labour adjustment	0.68	0.57	0.36	0.28
Plus feed inventory adjustment	0.03	0.04	0.05	0.02
Less owned support block adjustment	0.19	0.12	0.08	0.07
Less depreciation	0.52	0.43	0.37	0.40
Net adjustments	-1.50	-1.11	-0.80	-0.66
OPERATING CASH & NON-CASH PER KG MILKSOLID SOLD:				
Dairy gross farm revenue	7.86	8.00	7.86	7.97
Dairy operating expenses	6.41	5.67	5.12	4.76
Dairy operating profit	1.45	2.34	2.74	3.21
OPERATING CASH & NON-CASH PER HECTARE:				
Dairy gross farm revenue	6,744	8,599	9,944	11,670
Dairy operating expenses	5,496	6,088	6,474	6,965
Dairy operating profit	1,247	2,511	3,471	4,705
Operating profit margin	18.09%	30.03%	36.01%	41.81%

There was over a 4.8 percent range between the quartiles for operating return on dairy assets, down from five percent in the last season. The top quartile averaged 8.3 percent, compared to the bottom quartile of 3.4 percent.

Table 5.2: Owner-operator Quartile Financial Position

	Bottom Quartile	Lower Middle Quartile	Upper Middle Quartile	Top Quartile
RETURNS:				
Operating return on dairy assets %	3.5%	6.1%	7.3%	8.3%
Total return on assets %	3.6%	4.3%	5.4%	7.6%
Total return on equity %	3.4%	5.8%	9.2%	13.2%
Growth in equity %	6.1%	5.1%	10.3%	10.2%
DEBT:				
Closing term liabilities per kg MS	21.08	25.18	22.49	21.16
Closing debt to asset %	40.5%	53.6%	50.7%	48.2%

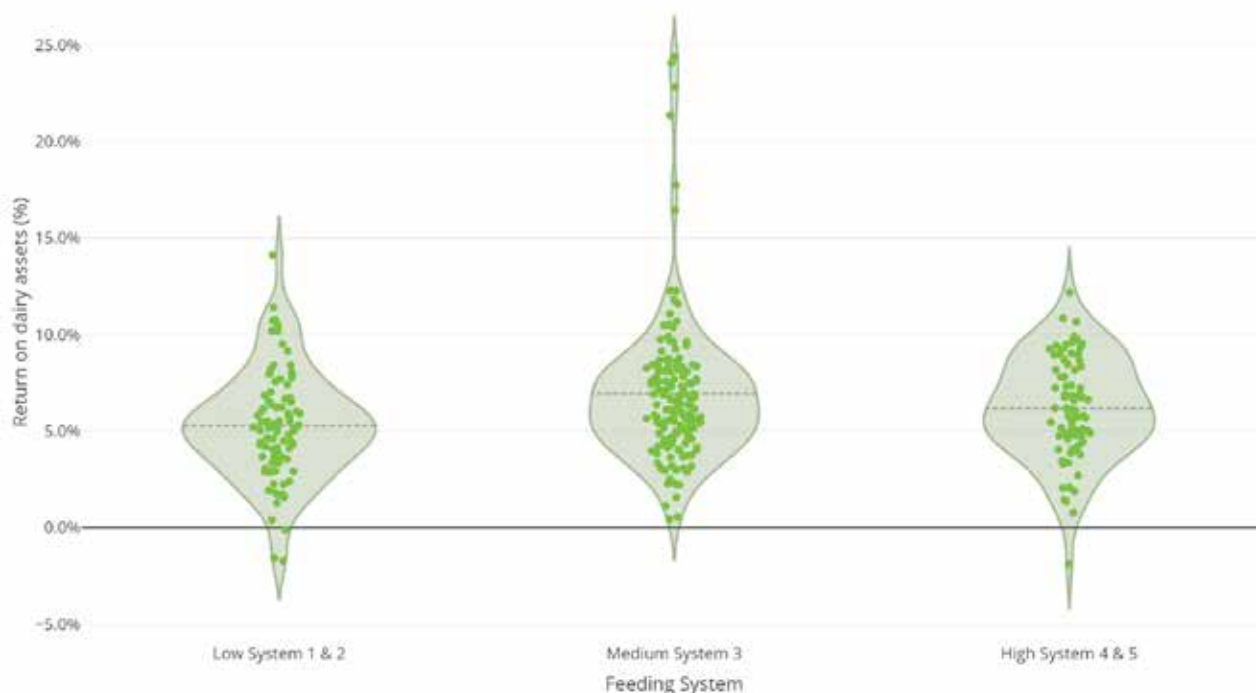
In high payout seasons, such as 2010-11, 2013-14 and 2019-20 the correlation between milksolids production per hectare and operating profit per hectare strengthens, and the reverse is true in low milk payout seasons. The changes in relationships over the past decade are detailed in Table 5.3. Measuring 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 last two rows in Table 5.3 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. The R^2 values (R^2 in Table 5.3) for the 2020-21 season demonstrate the correlation of a high milk payout with an increase in production.

Table 5.3: Correlations between Production, Profit and Operating Expenses

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
CORRELATIONS:										
Payout received \$/kg MS	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
Milksolids kg MS/ha	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,125	1,154
Dairy operating expenses \$/kg MS	4.73	5.03	5.17	4.94	4.45	4.60	5.13	5.10	5.47	5.44
Dairy operating profit \$/ha	2,624	1,830	3,295	1,537	-9	1,937	2,238	2,154	2,540	2,976
R^2 - dairy operating profit \$/ha & kg MS/ha	35.5%	40.0%	45.7%	17.3%	0.1%	32.7%	37.3%	39.3%	54.3%	53.2%
R^2 - dairy operating profit \$/ha & operating expenses \$/kg MS	53.0%	54.1%	46.7%	59.4%	60.4%	49.7%	62.9%	59.5%	62.2%	61.2%

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 6.1% in 2020-21. Grouping farm systems into low (systems 1 and 2), medium (system 3) and high input (systems 4 and 5) show that the average operating return on dairy assets was highest for medium input farms (+6.9%, Figure 5.5). There was a significant difference in the variation of operating returns on dairy assets within the groups, with the highest range in the medium input farms (0.4% to 24.4%) and the lowest range in the high input farms (-1.9% to 12.2%). Twenty-five farms across the high systems had an operating return on dairy assets exceeding ten percent. Only four farms across the five systems had an operating return on dairy assets less than zero.

Figure 5.5: Return on Dairy Assets Distribution 2020-21



Business profit before tax is another measure of profitability that 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 5.4).

Table 5.4: Business Profit before Tax

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
BUSINESS PROFIT:										
Dairy operating profit	369,163	258,049	470,808	223,630	-1,291	286,227	338,871	314,435	390,831	449,132
+ Labour adjustment	54,748	55,162	59,309	59,021	56,341	61,154	63,920	62,545	62,011	70,195
+ Owned support block adjustment	13,554	14,601	15,338	14,889	14,126	14,359	16,786	13,143	16,151	16,720
+ Non-dairy operating profit	-280	1,288	1,724	-673	-318	3,331	5,444	6,904	11,894	3,870
+ Net off-farm income	11,018	12,427	9,991	12,078	9,238	19,811	18,114	6,670	13,167	9,838
- Rent (excl support block)	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499	17,280	17,069
- Interest	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022	172,460	140,608
Business profit before tax	254,103	144,512	362,074	90,731	-139,258	167,789	231,251	197,163	304,312	392,077
Business profit before tax per all effective hectares	1,386	785	1,981	478	-734	887	1,174	1,077	1,681	2,131

Total effective hectares (effective dairy + effective dairy support block + effective non-dairy) increased by three hectares from the previous season to 184 hectares. The average dairy farm in 2020-21 made a business profit before tax of \$392,077 in 2020-21. This business profit is equivalent to \$2,131 per total effective hectare. The dairy operating profit increased by \$58,301 from the previous season. Rent payments remained similar to the last season (-\$211). Interest payments in 2020-21 were significantly lower than 2019-20, dropping by \$31,852.

5.5 Cash Flow

The cash operating surplus is the difference between net dairy cash income and farm working expenses. In 2020-21 the cash operating surplus was \$601,492, constituting an 11.9 percent increase from 2019-20. On a per kilogram of milksolids basis, the cash operating surplus in 2020-21 was \$3.50, up 11% from 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 2020-21 was \$379,869, equating to \$2.21 per kilogram of 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 2020-21 was \$363,911 per farm, larger than the previous high of \$299,837 in the last season.

Cash for living and growth can also be used to repay debt and for farm family drawings. Term debt decreased \$59,719 per farm during the year, and a large amount (\$148,238) was spent on capital transactions. Drawings increased \$14,589 to \$106,679 per farm. Tax payments increased to \$77,161 per farm (Table 12.5).

Figure 5.6: Annual Change in Revenue and Expenditure Over the Last 10 Years (\$ per kg MS)

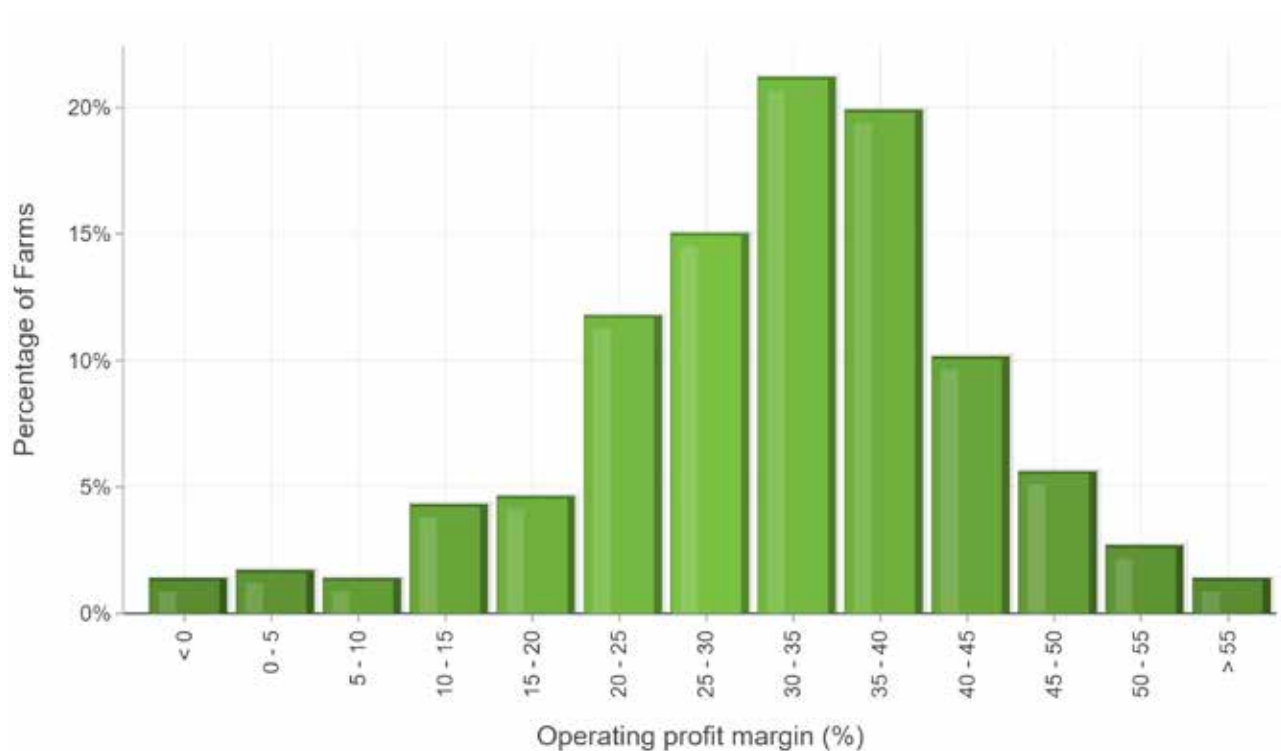


5.6 Operating Profit Margin

Operating profit margin is an indicator of dairy farm financial performance. This measurement is expressed as a percentage and describes the proportion of gross farm revenue converted to profit. The ability of a farmer to convert a high proportion of their revenue to profit indicates that the farm is cost-efficient and better placed to deal with financial and production risks. Figure 5.7 shows the distribution of operating profit margins. The average operating profit margin was 33.0%, up 2.8% from the 2019-20 season. The highest proportion of farms (21%) made an operating profit margin between 35 to 40 percent.

Operating profit margin had a wide distribution ranging from -13.7% to 64.7%. 95% of farmers had an operating profit margin between 0 and 50 percent, and 1% had a negative operating profit margin.

Figure 5.7: Distribution of Operating Profit Margin (%) 2020-21



6 Owner Operator: Equity and Capital Financial Analysis

6.1 Introduction

This section considers dairy farms' equity and capital position, with additional information about trends over time.

Following significant capital expenditure and changes in debt and drawings, a cash surplus of \$59,112 was recorded in 2020-21, a \$1,204 increase from 2019-20. The operating return on dairy assets increased to 6.1 percent in 2020-21. Total return on equity increased to 6.4%. Equity levels increased by \$18,291, with the positive growth in equity from profit offsetting the reduction in asset values and increases in liabilities. Total liabilities as a percentage of total assets (debt to asset ratio) decreased to 50.1% at the end of the season. Closing term liabilities per kilogram of milksolids decreased to \$22.40.

6.2 Dairy Assets

Compared to the 2019-20 season, the number of dairy farms sold in 2020-21 increased by 75% (85 farms) to 198. The REINZ average sales price per kilogram of milksolids and hectares for the last seasons is shown below 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 decreased in the past four seasons from \$40 in 2017-18 to \$35 per kilogram of milksolids in 2020-21. This corresponds with a reduction from \$40,524 to \$31,393 per total effective 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	2019-20	2020-21
FARM SALES:										
Farms sold	157	197	312	244	192	217	226	148	113	198
Average \$ sale price/kg MS	41	36	42	44	39	40	40	38	37	35
Average \$ sale price/ha	32,376	33,557	36,369	39,577	36,557	37,835	38,015	36,846	33,410	31,393
Average \$ sale price/ha (real 2019-20 dollars)	36,758	37,861	40,360	43,741	40,239	40,937	40,524	38,631	34,527	31,393

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 \$0.92 per kilogram of milksolids. Borrowing costs represented 11.6 percent of gross farm revenue (Table 6.2). Therefore, for every dollar of gross income earned, 11.6 cents is required to pay interest and rent.

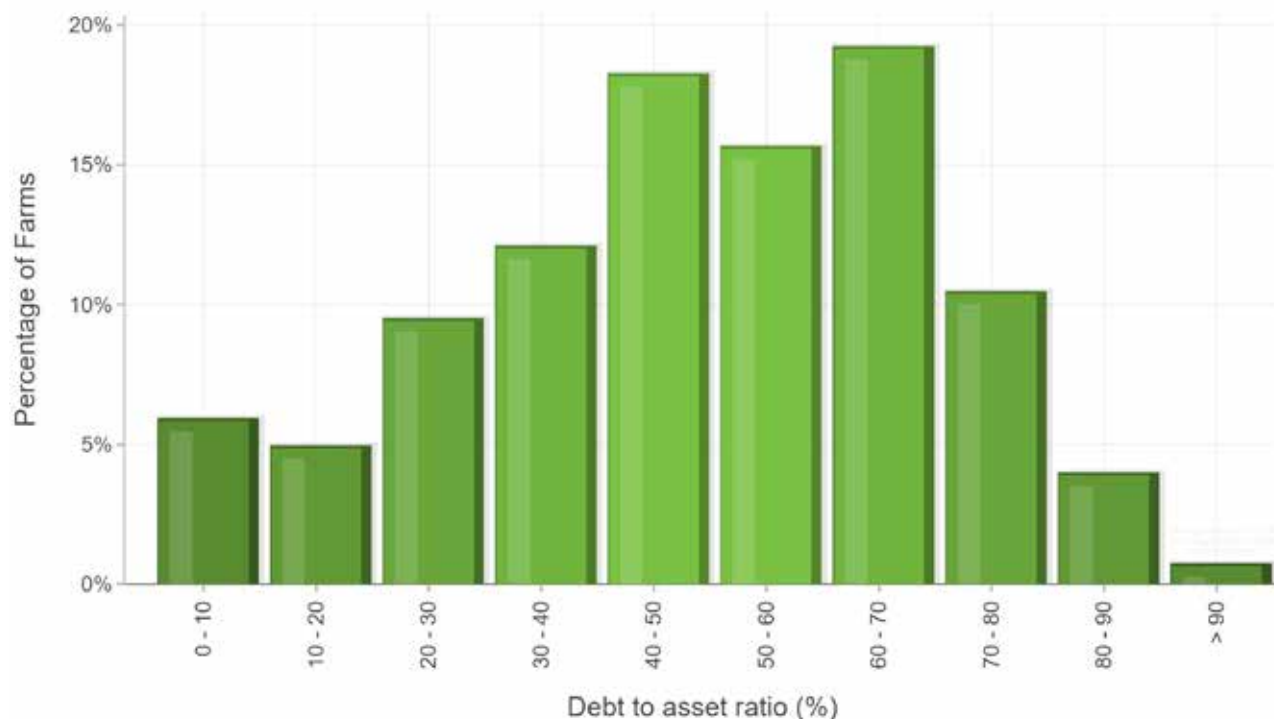
Table 6.2: Debt Servicing Ratios

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
DEBT SERVICING:										
Interest & rent \$/kg MS	1.31	1.39	1.29	1.36	1.36	1.35	1.31	1.24	1.12	0.92
Interest & rent % GFR	18.1%	20.2%	15.6%	21.5%	30.5%	21.2%	18.2%	17.7%	14.7%	11.6%
Term liabilities \$/kg MS	19.24	20.82	20.14	21.26	22.49	25.00	25.31	24.92	23.25	22.37

The debt to asset ratio decreased from 51 percent at the close of 2019-20 to 50.1 percent in 2020-21 (Table 12.6). Debt to asset values have been around 50 percent for the past six seasons but were at lower levels before that.

Figure 6.1 shows the debt to asset distribution in 2020-21, with an average of 50.1 percent. Thirty-two percent of farms have a debt to asset ratio below 40 percent. Fifteen percent of the farms had a debt to asset ratio over 70 percent, with less than one percent sitting in the high-risk area of over 90 percent.

Figure 6.1: Debt to Asset Distribution 2020-21



Over the last ten years, the average farm has increased its milksolids production by 16 percent, while term liabilities have increased nearly twice as fast (+35%) to \$3.8 million per farm. In 2020-21, farmers reduced their term liabilities by 2.6%.

6.4 Liquidity

Given the high profitability and cash available for living and growth, a cash operating surplus of \$601,492 was recorded in 2020-21, increasing \$64,032 compared to the last season. Table 6.3 shows a breakdown of the changes in working capital, including the source and application of cash funds. The majority of the source of funds in 2020-21 was from the current season's farming operations. The change in working capital increased to \$235,928 this season, reflecting an increase in current assets (+\$241,278), with a proportionately smaller increase in current liabilities (+\$5,350). Net debt decreased for the second season in a row, decreasing \$59,719. Cash from the income equalisation scheme was at \$875 per farm in 2020-21. After the farming operations, 32% of the cash was spent on interest and rent payments for borrowing, while net capital transactions, development and purchases (30%) were the other large cash expenditure area in 2020-21. Drawings from the dairy business, for farm family living and so forth (22%), and tax payments (16%) make up the remainder of the cash spent.

Table 6.3: Flow of funds

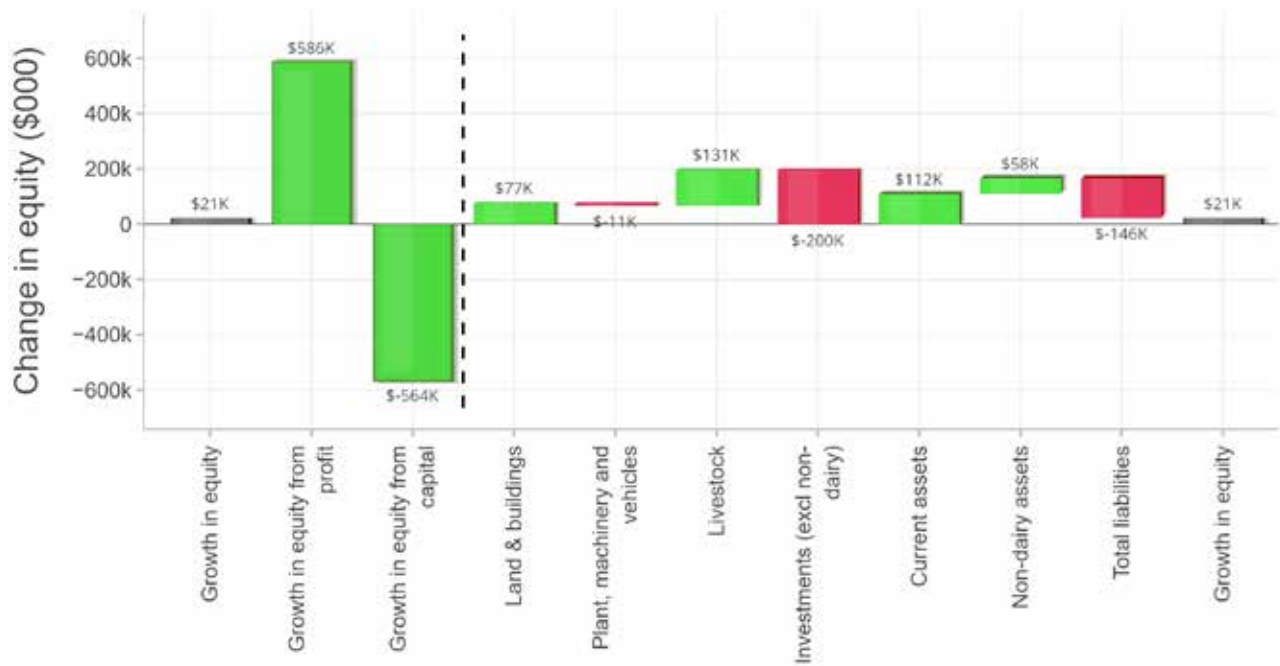
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
WORKING CAPITAL:										
Change in current assets	-33,122	17,733	58,063	-99,057	-24,651	56,493	-12,326	-17,418	205,720	241,278
- Change in current liabilities	5,959	-25,702	24,417	-20,779	-2,678	-9,780	29,949	-5,362	-7,441	5,350
Change in working capital	-39,081	43,435	33,646	-78,278	-21,973	66,273	-42,275	-12,056	213,162	235,928
SOURCE OF FUNDS:										
Cash operating surplus	464,654	375,176	572,586	361,272	141,757	415,410	478,511	446,701	537,460	601,492
+ Change in working capital	-39,081	43,435	33,646	-78,278	-21,973	66,273	-42,275	-12,056	213,162	235,928
+ Net non-dairy cash income	790	1,125	2,355	486	904	3,371	6,064	7,040	10,682	3,378
+ Net off-farm income	11,018	12,427	9,991	12,078	9,238	19,811	18,114	6,670	13,167	9,838
+ Introduced funds	-2,871	40,918	-44,275	28,307	77,696	-24,004	-40,908	-2,774	-18,560	-16,833
+ Income equalisation	-2,004	1,178	-4,756	-9,579	16,765	1,307	40	307	-475	875
+ Increase in term debt	-22,153	123,346	10,790	93,026	111,778	75,868	92,523	74,554	-49,483	-59,719
= Total source of funds	410,353	597,605	580,337	407,312	336,165	558,036	512,069	520,442	705,952	774,958
APPLICATION OF FUNDS:										
Rent (excl support block)	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499	17,280	17,069
+ Interest	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022	172,460	140,608
+ Tax	46,816	35,383	58,155	34,078	7,939	16,773	41,532	38,315	52,696	77,161
+ Net capital transactions	164,026	185,532	143,703	201,119	76,697	109,749	238,591	207,027	113,522	148,238
+ Drawings	83,781	92,872	116,224	110,437	78,151	82,043	104,334	95,173	92,090	106,679
= Total application of funds	488,515	510,735	513,045	563,868	380,111	425,490	596,619	547,036	448,048	489,756
Source less application of funds	-78,162	86,870	67,292	-156,556	-43,946	132,546	-84,550	-26,593	257,903	285,202

6.5 Equity

Equity (shareholders' funds or net worth) is the net value of the assets owned by owner operators (i.e. total assets less total liabilities at the open and close of each year). At the 2019-20 season-opening, dairy farm businesses had an average equity of \$3.81 million or 48 percent of total assets. This increased to \$3.98 million at the end of the season, or 50 percent of total closing asset values.

The equity value of the average dairy farm business decreased \$78,410 between 2016-17 to 2020-21 (Figure 6.2). Over the past five years, growth has been driven by increases in current assets and non-dairy assets (+\$111,767 and +\$57,959, respectively), and offset by the decline in values of plant, machine and vehicles (\$10,619), investments (excl. non-dairy) (\$199,805), and an increase in liabilities (\$146,458).

Figure 6.2: Components of Equity Change (\$000) 2016 - 21

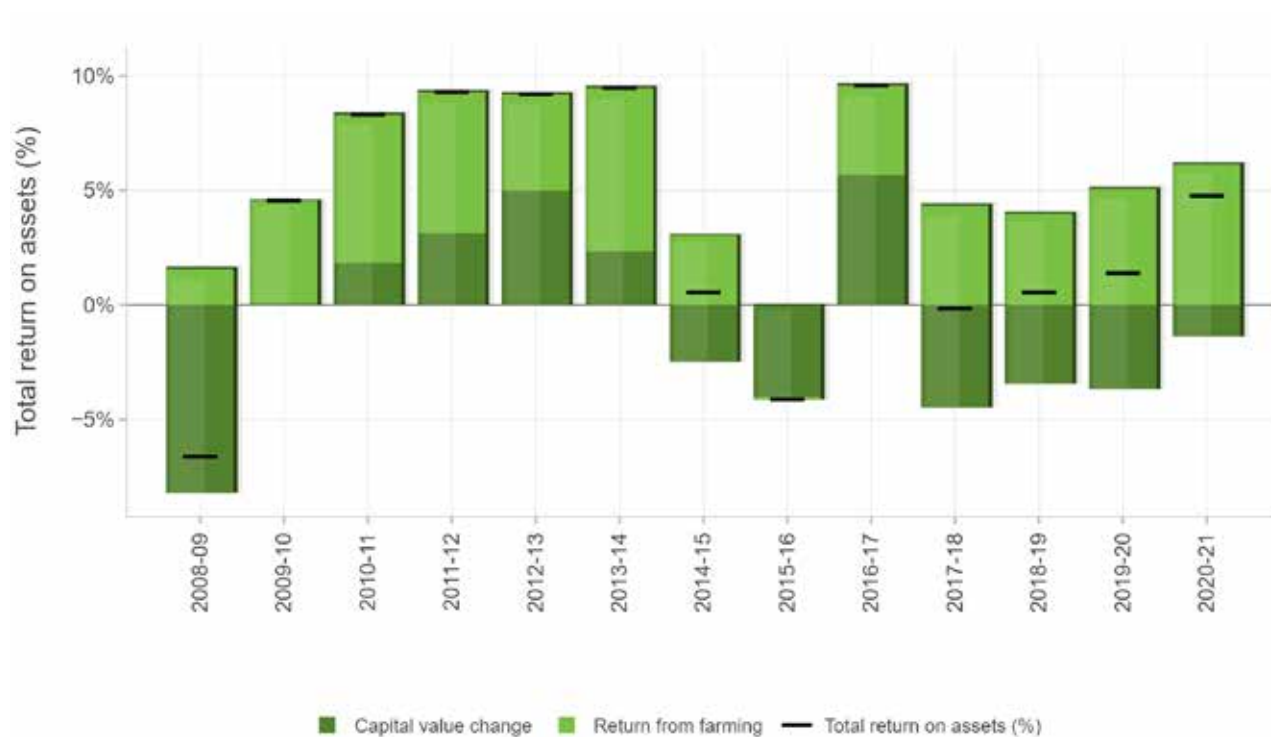


6.6 Returns

The return on dairy assets is discussed under farm profitability (Section 5.4). The total return on assets considers operating profit from both dairy and non-dairy farming operations, plus the change in the value of capital assets. The total return on assets in 2020-21 was 4.8 percent. The 2020-21 total return on assets comprised 6.1 percent net return from all farming operations and -1.4 percent net return from capital.

For the past decade, the total return on assets has ranged between -6.6% and 9.6% percent, driven by changes in the value of land and buildings, dairy company share values, livestock values and profits (Table 12.7)

Figure 6.3: 2020-21 Owner Operator Total Return on Assets



The percentage return on equity is the return on the 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 2020-21 the total return on equity was 6.4 percent compared to 4.8 percent total return on assets. The last five seasons have resulted in a negative return on equity. In 2015-16, the negative equity was due to low profitability, and in 2017-18, 2018-19 and 2019-20, the negative returns were 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). The values reported in Table 7.1 and 7.2 are median values to reduce numerical bias created by the average of sums methodology in regional samples. Thus, totals and sub-totals in these tables will not add up but will better represent the average values of the data sample. See section 2.11 for an explanation of this methodology.

Table 7.1 shows the values of key performance indicators (KPI) per kilogram of milksolids in the eight regions, for the 2020-21 season. North Island, South Island, and New Zealand data were weighted by owner-operator herd numbers in each region. Dairy farms in the West Coast-Tasman region had the smallest herd size (245 cows), followed by Taranaki (252). The Marlborough-Canterbury and Otago-Southland regions had the largest herd sizes in the South Island and the rest of the country, with 778 cows and 532 cows, respectively.

Northland and Lower North Island had the lowest stocking rates in the country, with 2.3 and 2.5 cows/ha, respectively, while Marlborough-Canterbury had the highest stocking rate (3.7 cows/ha). The remaining regions had an stocking rate that varied between 2.6 and 2.9 cows/ha.

Northland recorded the lowest average milksolids production per cow of all the regions (312 kg MS). The other four North Island regions recorded milksolids per cow between 398 and 417 kg MS. Marlborough-Canterbury and Otago-Southland recorded similar milksolids production per cow of 452 and 443 kilograms, respectively. However, Marlborough-Canterbury production is considerably higher on a per hectare basis due to its higher stocking rate.

The average payout received in each region was at or above \$7.33 per kilogram of milksolids. Regional average farm working expenses (FWE) per kilogram milksolids were lowest in Lower North Island (\$3.84) and Taranaki (\$3.91), and the highest FWE per kilogram of milksolids was reported in Northland (\$4.77) and Otago-Southland (\$4.72). The other regions reported average FWE between \$4.36 and \$4.47. The bottom of Table 7.1 shows the regional gross farm revenue, operating expenses and operating profit levels on a per hectare basis in 2020-21. Marlborough-Canterbury (\$4,333), Taranaki (\$3,409) and Otago-Southland (\$3,330) recorded the highest operating profit on a per hectare basis, while Northland recorded the lowest operating profit at \$1,471 per hectare. In general, farms in Marlborough-Canterbury experienced higher levels of profitability in 2020-21 relative to other regions.

7.1. REGIONAL PROFITABILITY

Table 7.1: Regional Owner-operator Profitability (\$ / kg MS)

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough-Canterbury	Otago-Southland
PHYSICAL CHARACTERISTICS:								
Number of herds	28	69	27	55	29	28	32	40
Effective hectares	122.8	106.0	123.0	97.0	126.0	127.0	213.5	195.8
Peak cows milked	275	327	385	252	321	245	778	532
Stocking rate (cows/ha)	2.3	2.9	2.9	2.8	2.5	2.6	3.7	2.9
Kg milk solids sold	84,557	131,100	140,360	107,279	131,513	98,679	360,713	242,135
Milk solids sold per hectare	692	1,192	1,129	1,149	1,031	1,007	1,605	1,255
Milk solids sold per cow	312	411	398	417	400	371	452	443
PAYOUT RECEIVED: \$/kg MS sold	7.33	7.33	7.38	7.35	7.34	7.49	7.42	7.42
DAIRY CASH INCOME \$: MS BASIS								
Milk sales (net of dairy levies)	7.33	7.33	7.38	7.35	7.34	7.49	7.42	7.42
Net livestock sales (sales - purchases)	0.68	0.48	0.48	0.38	0.49	0.42	0.49	0.46
Other dairy cash income	0.01	0.02	0.01	0.01	0.03	0.04	0.01	0.00
Net dairy cash income	8.12	7.91	7.97	7.76	7.88	8.03	7.94	7.92
CASH FARM WORKING EXPENSES: MS BASIS								
Wages	0.61	0.53	0.68	0.34	0.57	0.57	0.71	0.79
Animal health	0.24	0.25	0.29	0.22	0.19	0.18	0.23	0.23
Breeding & herd improvement	0.18	0.16	0.17	0.15	0.15	0.18	0.16	0.17
Farm dairy	0.06	0.05	0.05	0.06	0.07	0.06	0.04	0.04
Electricity	0.16	0.12	0.13	0.11	0.14	0.11	0.08	0.11
Net feed made, purchased, cropped	1.14	1.29	0.94	0.91	0.82	0.86	0.64	1.12
Stock grazing	0.06	0.29	0.14	0.26	0.11	0.08	0.90	0.69
Support block lease	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertiliser (incl Nitrogen)	0.54	0.41	0.53	0.43	0.38	0.78	0.38	0.44
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.00
Regrassing	0.11	0.06	0.05	0.03	0.06	0.06	0.08	0.06
Weed & pest	0.05	0.03	0.02	0.02	0.03	0.04	0.02	0.02
Vehicles & fuel	0.31	0.19	0.21	0.17	0.22	0.25	0.12	0.13
Repairs & maintenance	0.41	0.36	0.34	0.40	0.42	0.40	0.36	0.34
Freight & general	0.07	0.06	0.08	0.07	0.06	0.10	0.05	0.05
Administration	0.15	0.12	0.12	0.14	0.14	0.13	0.11	0.14
Insurance	0.10	0.08	0.09	0.10	0.10	0.12	0.08	0.07
ACC	0.04	0.03	0.02	0.01	0.03	0.06	0.02	0.02
Rates	0.15	0.11	0.13	0.14	0.14	0.08	0.05	0.07
Farm working expenses	4.77	4.36	4.44	3.91	3.84	4.47	4.38	4.72
Cash operating surplus	3.42	3.46	3.53	3.90	4.06	3.55	3.46	3.20
ADJUSTMENTS: MS BASIS								
Value of change in dairy livestock	-0.08	0.01	-0.03	0.01	-0.04	-0.09	-0.05	-0.02
Less labour adjustment	0.78	0.53	0.60	0.67	0.73	0.66	0.25	0.08
Plus feed inventory adjustment	0.00	0.00	0.02	0.00	0.06	0.00	0.00	0.00
Less owned support block adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Less depreciation	0.36	0.39	0.41	0.36	0.35	0.52	0.44	0.33
Net adjustments	-1.51	-0.94	-1.22	-1.11	-1.09	-1.38	-0.81	-0.59
OPERATING CASH & NON-CASH: MS BASIS								
Dairy gross farm revenue	8.08	7.91	7.86	7.78	7.88	7.95	7.81	7.86
Dairy operating expenses	6.20	5.41	5.50	5.00	4.94	5.68	5.21	5.32
Dairy operating profit	2.03	2.61	2.38	2.80	2.89	2.33	2.67	2.73
OPERATING CASH & NON-CASH: HA BASIS								
Dairy gross farm revenue	5,519	9,575	8,984	8,951	8,091	7,955	12,590	9,872
Dairy operating expenses	4,405	6,207	5,901	5,657	4,938	5,453	8,297	6,828
Dairy operating profit	1,471	2,987	2,586	3,409	2,976	2,044	4,333	3,330
Operating profit margin	25.88%	32.36%	30.19%	35.67%	36.62%	29.55%	34.10%	34.01%

Table 7.2 shows the values for the key indicators of financial position for the eight regions in 2020-21. The values reported in this table are medians; see section 2.11 for an explanation of this methodology. Regional average operating returns on dairy assets ranged between 4.2% and 7.6%. Otago-Southland (7.6%) and Marlborough-Canterbury (7.0%) had the highest operating returns on dairy assets in 2020-21. Northland had the lowest operating returns on dairy assets (4.2%). The national total return on assets, including change in asset values, was 4.8%. All regions reported positive total returns on assets, with Bay of Plenty recording the highest (11.4%) and Waikato recording the lowest (2.4%).

Total return on equity is the return on the owner’s funds, including capital changes after interest is paid. Otago-Southland was the only region to experience a negative return on equity (-0.01%), while all other regions experienced positive growth in equity. The largest growth in equity was recorded for Bay of Plenty (14.9%), followed by Marlborough-Canterbury (12.2%).

Average term debt per kilogram of milksolids decreased nationally in 2020-21 and was higher in the North Island (\$24.33) than in South Island (\$19.98). There was some variation between regions, with Taranaki (\$29.99) the highest and West-Coast Tasman the lowest (\$15.80). Debt to asset levels were lower in the North Island (48.6%) than in the South Island (51.1%), with regional averages ranging between 42.5% and 58.9%.

Table 7.2: Regional Owner-operator Financial Position

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough-Canterbury	Otago-Southland
RETURNS:								
Operating return on dairy assets %	4.2%	5.3%	6.0%	5.3%	6.6%	6.6%	7.0%	7.6%
Total return on assets %	5.3%	2.4%	11.4%	4.3%	6.5%	5.1%	7.6%	1.3%
Total return on equity %	7.4%	2.0%	14.9%	6.1%	10.5%	6.6%	12.2%	-1.4%
Growth in equity %	4.1%	1.1%	16.2%	5.2%	7.4%	5.1%	6.3%	-7.0%
DEBT:								
Closing term liabilities per kg MS	21.57	24.15	18.48	29.99	21.47	15.80	20.65	21.11

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. The production system type is not a good indicator of profitability as a farm can be profitable (or unprofitable) operating at 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.

The averages reported in Table 7.3 and 7.4 are median values to reduce numerical bias created by the average of sums methodology in regional samples. Thus, totals and sub-totals in these tables will not add up, but will better represent average values in the data sample. See section 2.11 for an explanation of this methodology.

Average herd sizes, milking area and stocking rates increase from low to high production systems. Average milksolids per cow and per hectare also follow this trend, reflecting higher inputs of supplementary feed. Table 7.3 shows the key 2020-21 average performance indicators per kilogram of milksolids in the three production system categories. Medium system farms recorded an average of 413 kilograms of milksolids per cow while high input farms recorded an average of 436 kilograms of milksolids per cow. The average milksolids production per hectare for medium input farms (1,164 kg) was 151 kilograms higher than low input farms (1,013 kg) and 182 kilograms less than the average for high input farms (1,346 kg).

Dairy cash income per kilogram of milksolids was highest for high input systems (\$7.96) due to milk sales being greater than the other two systems on a per kilogram of milksolids basis. Low input (\$7.91) and medium input systems (\$7.90) had similar average dairy cash incomes per kilogram of milksolids. Farm working expenses per kilogram of milksolids were \$4.13 for low input systems, \$4.28 for medium input systems and \$4.61 for high input systems.

Cash operating surplus per kilogram of milksolids was the highest for low input systems (\$3.72), followed by medium input systems (\$3.64). High input systems recorded the lowest average cash operating surplus of \$3.39 per kilogram of milksolids. Operating profit per kilogram of milksolids was highest for medium input farms (\$2.68). High input (\$2.49) and low input systems (\$2.50) recorded similar levels of operating profit per kilogram of milksolids. Operating profit per hectare was highest for medium input systems (\$3,215). Operating profit per hectare was \$2,453 per hectare for low systems and \$3,060 for high input systems.

Table 7.3: Owner-operator Production Systems Profitability (\$ / kg MS)

	1 & 2 (Low)	3 (Medium)	4 & 5 (High)
PHYSICAL CHARACTERISTICS:			
Number of herds	85	144	79
Effective hectares	106.0	124.0	148.0
Peak cows milked	275	350	437
Stocking rate (cows/ha)	2.6	2.8	3.0
Kg milksolids sold	105,164	140,844	195,643
Milksolids sold per hectare	1,013	1,164	1,346
Milksolids sold per cow	375	413	436
PAYOUT RECEIVED: \$/kg MS sold	7.37	7.36	7.43
DAIRY CASH INCOME \$: MS BASIS			
Milk sales (net of dairy levies)	7.37	7.36	7.43
Net livestock sales (sales - purchases)	0.48	0.46	0.47
Other dairy cash income	0.01	0.01	0.01
Net dairy cash income	7.91	7.90	7.96
CASH FARM WORKING EXPENSES: MS BASIS			
Wages	0.54	0.59	0.60
Animal health	0.22	0.23	0.25
Breeding & herd improvement	0.18	0.16	0.16
Farm dairy	0.06	0.06	0.04
Electricity	0.12	0.12	0.11
Net feed made, purchased, cropped	0.67	1.04	1.34
Stock grazing	0.15	0.29	0.30
Support block lease	0.00	0.00	0.00
Fertiliser (incl Nitrogen)	0.44	0.43	0.41
Irrigation	0.00	0.00	0.00
Regrassing	0.05	0.06	0.07
Weed & pest	0.03	0.02	0.03
Vehicles & fuel	0.21	0.17	0.18
Repairs & maintenance	0.40	0.37	0.38
Freight & general	0.07	0.06	0.07
Administration	0.14	0.14	0.12
Insurance	0.10	0.09	0.09
ACC	0.03	0.03	0.02
Rates	0.14	0.10	0.08
Farm working expenses	4.13	4.28	4.61
Cash operating surplus	3.72	3.64	3.39
ADJUSTMENTS: MS BASIS			
Value of change in dairy livestock	-0.06	0.00	-0.01
Less labour adjustment	0.70	0.50	0.40
Plus feed inventory adjustment	0.00	0.00	0.00
Less owned support block adjustment	0.00	0.00	0.00
Less depreciation	0.36	0.39	0.41
Net adjustments	-1.33	-1.02	-0.85
OPERATING CASH & NON-CASH: MS BASIS			
Dairy gross farm revenue	7.79	7.91	7.94
Dairy operating expenses	5.37	5.18	5.58
Dairy operating profit	2.49	2.68	2.50
OPERATING CASH & NON-CASH: HA BASIS			
Dairy gross farm revenue	7,973	9,158	10,480
Dairy operating expenses	5,113	5,893	7,365
Dairy operating profit	2,453	3,215	3,060
Operating profit margin	31.70%	33.42%	29.06%

Table 7.4 shows key 2020-21 average financial indicators in the three production system categories. The averages reported in this table are medians; see section 2.11 for an explanation of this methodology. The operating return on dairy assets was highest for medium input farms (6.4%) and lowest for low input farms (5.1%). Once capital and non-dairy operations were included, the average total return on assets was 3.6% for low input farms, 5.0% for medium input farms and 4.1% for high input farms. For all three production systems, the operating return on dairy assets was higher than the total return on assets due to a reduction in capital values. Low input farms had the smallest debt to asset ratio (45.4%). Medium input farms had a debt to asset ratio of 50.4% and high input farms had a debt to asset ratio of 56.9%. Closing term liabilities per kilogram of milksolids were highest for low input systems (\$22.49). The average closing term liabilities for medium input systems were \$21.56, and for high input systems were \$21.86.

All farm system types had positive average growth in equity percentages. Average growth in equity for low input systems was 4.3%, medium input systems recorded the most significant growth in equity of 8.5%, and high input systems recorded an average growth in equity of 4.5%.

Table 7.4: Owner-operator Production Systems Financial Position

	1 & 2 (Low)	3 (Medium)	4 & 5 (High)
RETURNS:			
Operating return on dairy assets %	5.1%	6.4%	6.1%
Total return on assets %	3.6%	5.0%	4.1%
Total return on equity %	4.3%	8.5%	4.5%
Growth in equity %	2.8%	6.6%	3.2%
DEBT:			
Closing term liabilities per kg MS	22.49	21.56	21.87
Closing debt to asset %	45.4%	50.4%	56.9%

8 50:50 Sharemilkers: Operational Financial Analysis

8.1 Introduction

Operating profit per hectare for 50:50 sharemilkers (herd owning sharemilkers) recorded an increase (22%) to \$1,287 per hectare in 2020-21. Higher milk payouts received were complemented by an increase in milksolids produced per cow and was partially offset by a slight reduction in the peak cows milked. Operating expenses per kilogram of milksolids remained constant at \$3.13. Both, kilograms of milksolids sold per cow and per hectare increased from 2019-20 to 2020-21, by 21 and 81 kg MS, respectively. The average cash available for living and growth increased to \$258,338 per farm, an increase of \$96,698 from 2019-20 (Table 13.5). With increased capital expenditure, drawings and debt, a cash surplus of \$51,154 was recorded in 2020-21 (Table 13.5).

Tables 13.1, 13.2, 13.3 and 13.4 in Chapter 13 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

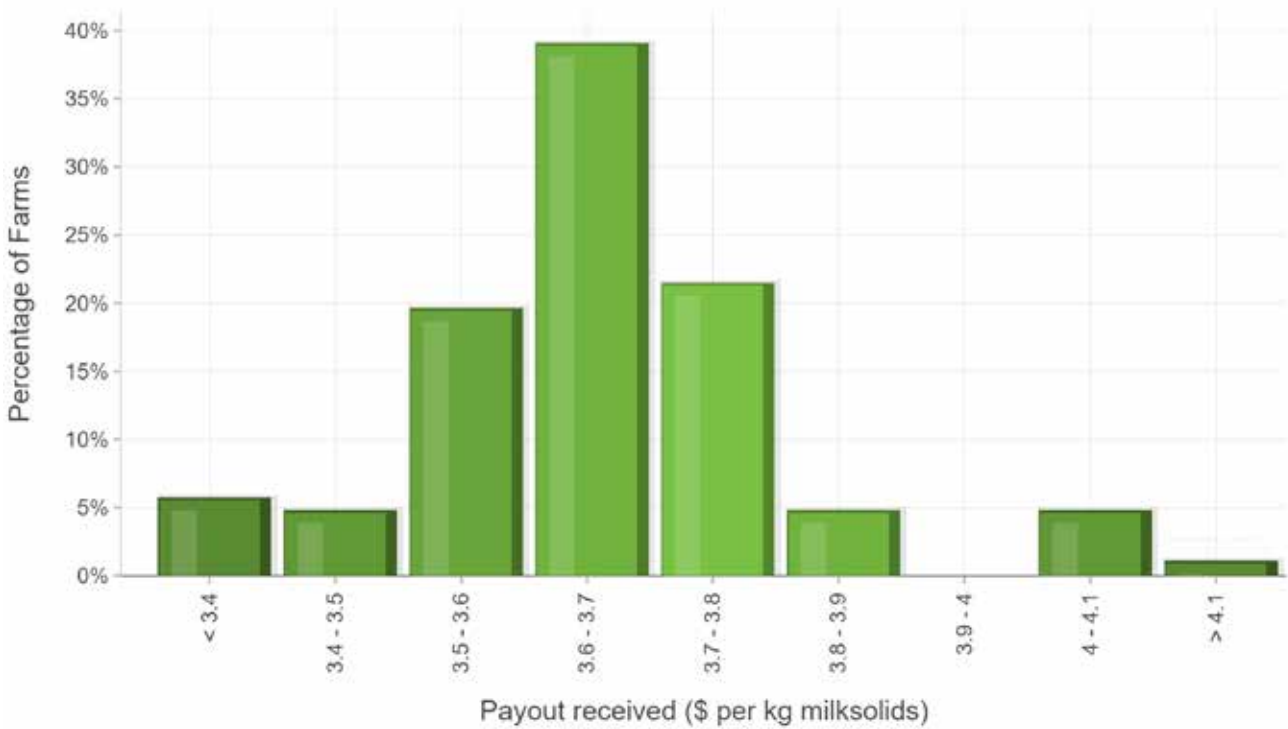
The milk payout received (including dividend payments) in 2020-21 increased 20 cents (5%) from the previous season to \$3.65 per kilogram of milksolids. milksolids production per cow and hectare, recorded by the Economic Farm Survey farms, increased marginally in 2020-21 from the 2019-20 season. Milk sales per farm (net of dairy levies) were higher than in the previous season (\$664,874). Milk revenue in 2020-21 accounted for 89 percent of gross farm revenue. Livestock revenue accounted for 10.7% of the total gross farm revenue per farm.

There is a variation of \$1.39 per kg MS in farmers' milk price within the 2020-21 season (Figure 8.1). These differences are driven by:

- Differences in the percentage of milk payment received,
- Variations in the milk composition (fat, protein, lactose, minerals),
- Annual account balance dates,
- Milk company supplied,
- Different systems such as organics,
- Penalties incurred, and,
- Whether the sharemilker operated in the previous season.

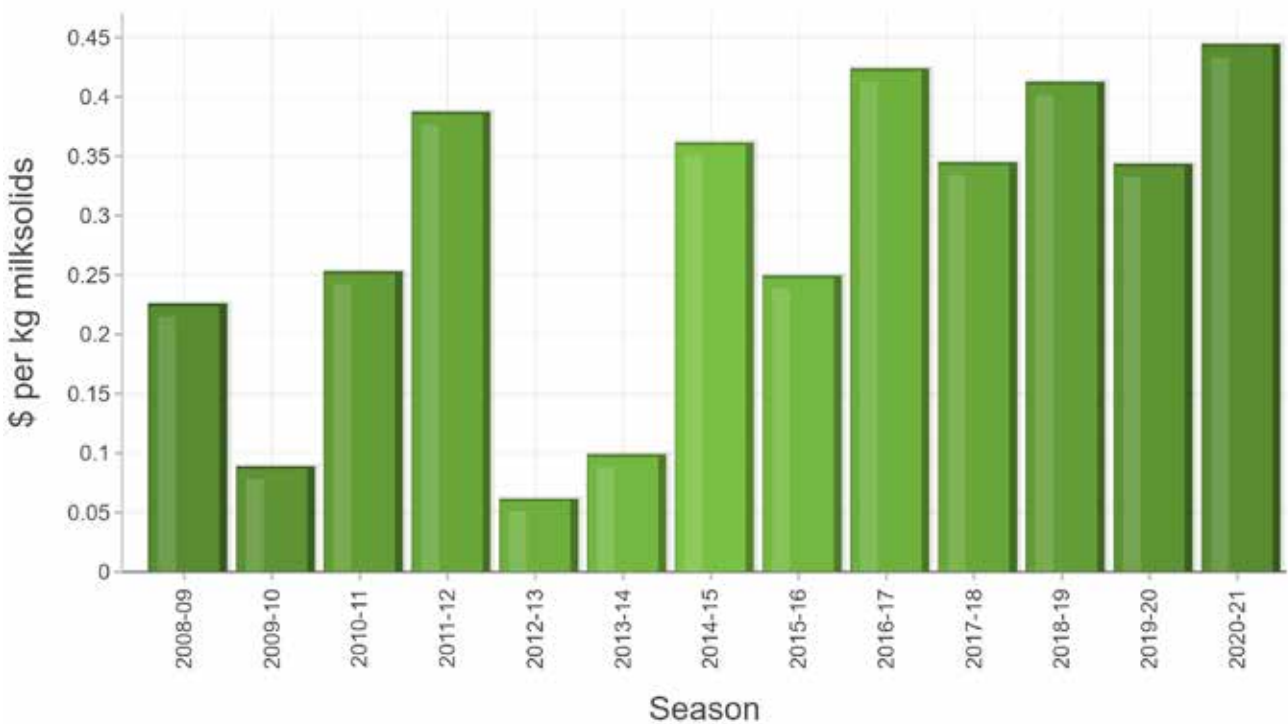
Eighty percent of farms received a milk payout (milk price plus dividend) between \$3.50 and \$3.80 per kilogram of milksolids in 2020-21. The highest percentage was between \$3.60 and \$3.70, with 39% of farms receiving a milk payout in this range.

Figure 8.1: Distribution of Milk Payout Received 2020-21



Cash income from net livestock sales increased by \$0.10 to \$0.44 per kilogram of milksolids in 2020-21. Higher beef schedule prices have bolstered dairy farm incomes in the previous six seasons, although beef prices for cows and heifers progressively fell from January 2021 to May 2021. Livestock sales have become a more prominent source of income for sharemilkers in the past five seasons. Net livestock sales per cow were higher than \$100 for the fifth season in a row, with a record high of \$190 in 2020-21.

Figure 8.2: Net Livestock Sales (\$ per kg MS)



Dairy gross farm revenue for a typical New Zealand sharemilker was \$750,010 and was larger than the previous season by 7 percent (\$701,154 in 2019-20). On a per hectare basis, gross farm revenue of \$5,357 was higher

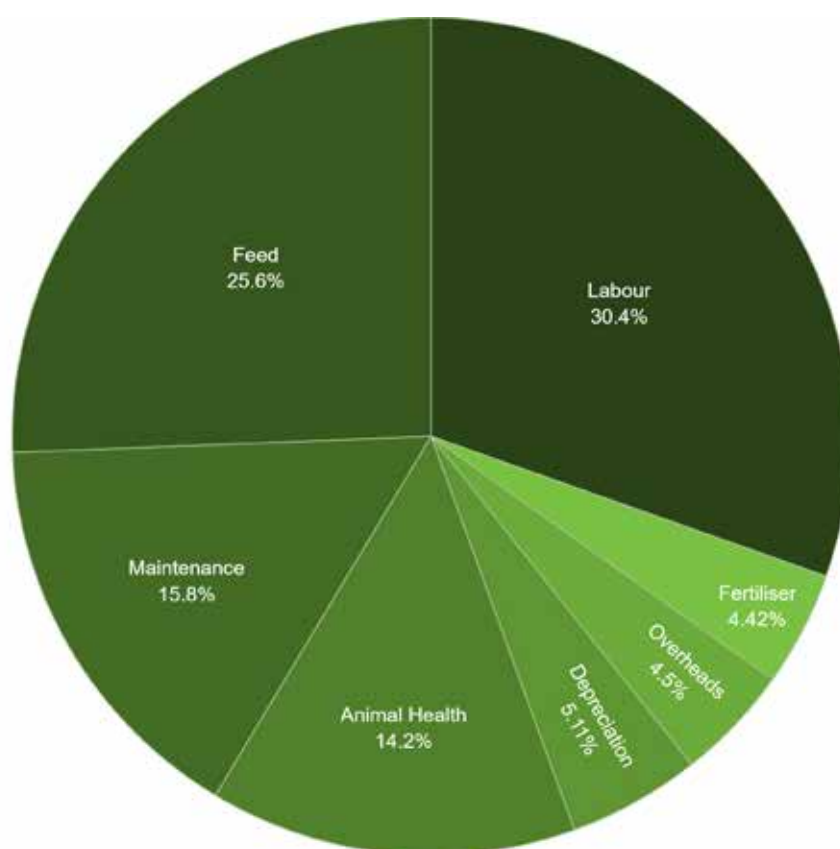
(+10%) in 2020-21 compared to 2019-20. At \$4.12 per kilogram of milksolids, gross farm revenue in 2020-21 was 13 cents (+3.2%) above the previous season when measured on a per kilogram of milksolids basis.

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 owner-operator on a per farm, per cow, per hectare and per kilogram milksolids sold basis.

8.3 Expenditure

Labour continues to be the largest category of expenditure at 30 percent in 2020-21. Feed was the second-highest operating expense at 26 percent. Maintenance and animal health contributed 16 and 14 percent, respectively. Figure 8.3 shows the major 2020-21 expenditure categories for sharemilkers.

Figure 8.3: Proportion of Dairy Operating Expenditure 2020-21



Changes in total farm expenditure for sharemilkers are primarily affected by the herd size and milksolids produced, since sharemilkers primarily pay animal related costs. Farm working expenses (FWE) per farm increased 2.8% relative to last season, increasing \$12,221 to \$451,984. On a per kilogram of milksolids basis, FWE fell 2 cents to \$2.48. After adjustments for resources used but not paid for with cash, operating expenses per kilogram of milksolids were \$3.13, identical to 2019-20.

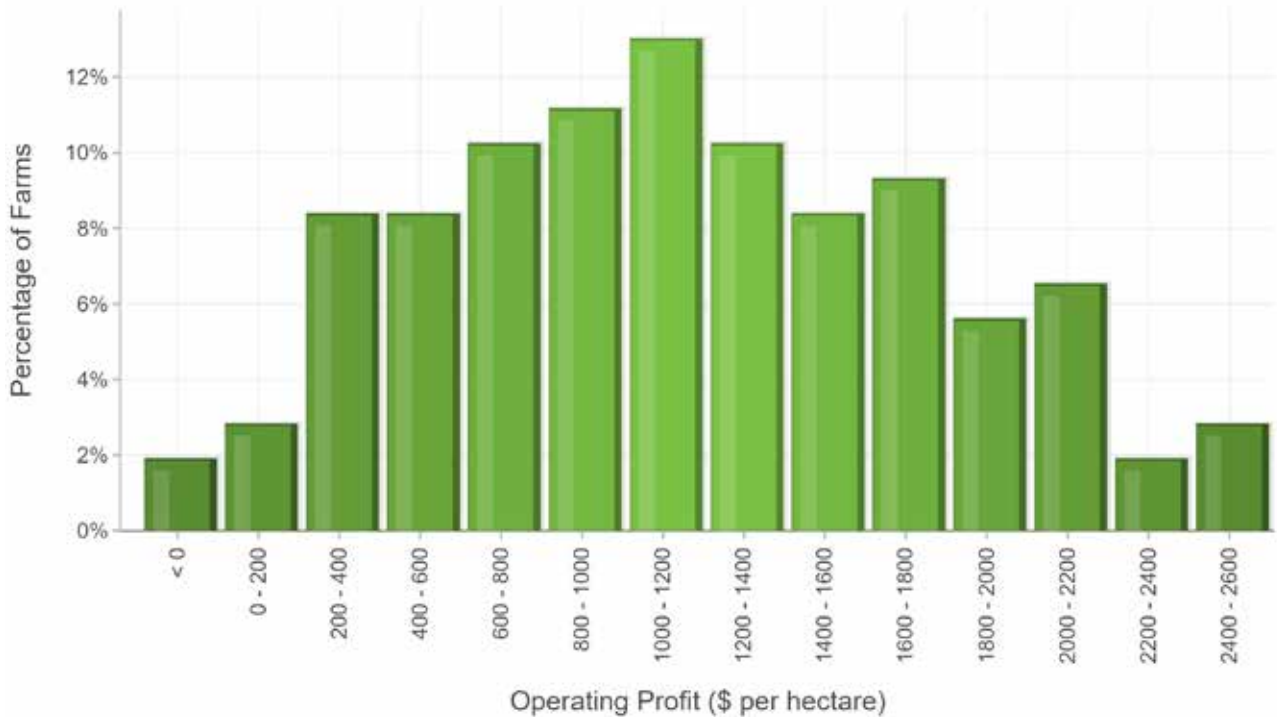
8.4 Profitability

Operating profit is a key indicator of dairy farm financial performance. This measure, expressed on a per hectare basis, is useful for comparing the profitability between farms. Operating profit incorporates adjustments to allow comparisons between farms but does not include interest, tax or rent payments. Table 13.3 shows the revenue and expenditure items included in operating profit. Operating profit per hectare in 2020-21 was higher than in the previous six seasons.

Figure 8.4 shows the distribution of 2020-21 operating profit per hectare. Operating profit per hectare was distributed around the mean of \$1,287 per hectare. Ninety-one percent of farmers had operating profits

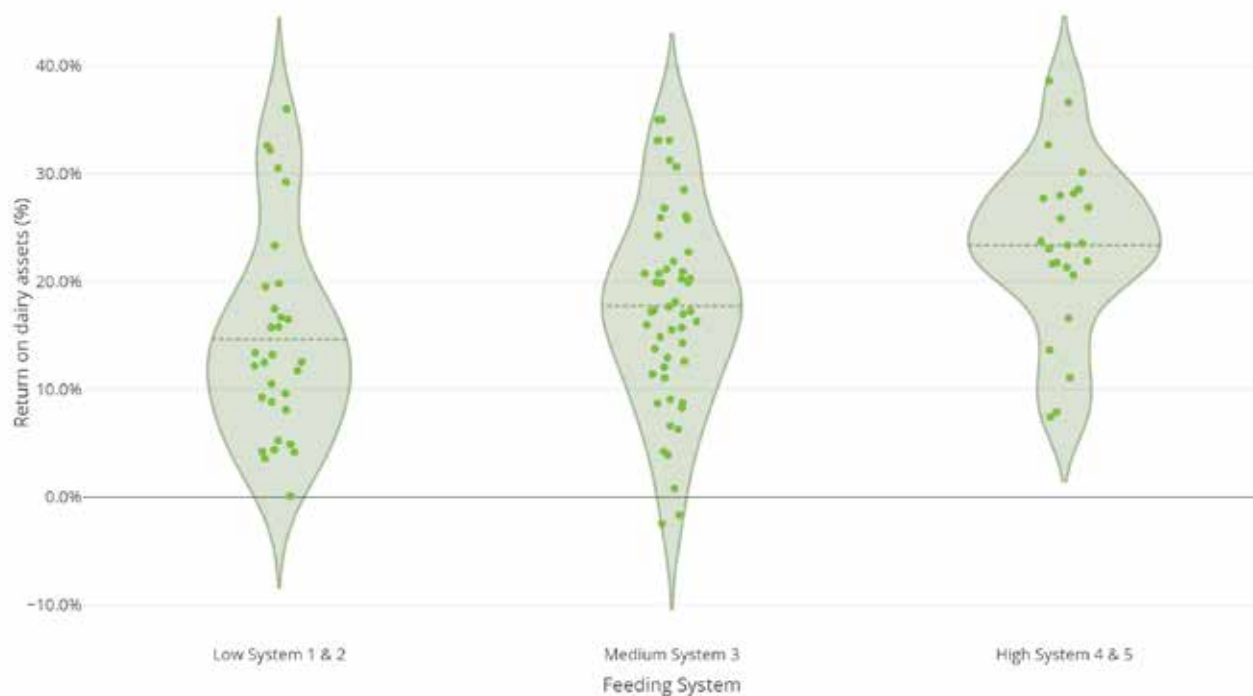
between \$200 and \$2,200 per hectare, while 2.8 percent of farmers had operating profits over \$2,400 per hectare. Only 1.8 percent of farms recorded a negative operating profit in 2020-21 (Figure 8.4).

Figure 8.4: Distribution of Operating Profit (\$ per hectare) 2020-21



Operating return on dairy assets measures 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. Operating returns on dairy assets for sharemilkers are more volatile than owner-operators because sharemilkers' dairy assets primarily consist of livestock. The average operating return on dairy assets for sharemilkers was 19.1 percent in 2020-21. Grouping farm production systems into low (systems 1 and 2), medium (system 3), and high input (systems 4 and 5) show that the average operating return on dairy assets was larger for high input farms (+23.4%) than low (14.6%) or medium input systems (17.7%). Figure 8.6 shows the distribution of operating return on dairy assets by production systems. High input systems are more likely to be located in higher producing regions such as Marlborough-Canterbury and Otago-Southland. Under higher milk price conditions, farms in these regions are more likely to feed out higher levels of supplementary feed or source grazing off to extend lactation, operating as a system four or five farm.

Figure 8.5: Return on Dairy Assets Distribution 2020-21



Business profit before tax is another measure of profitability that considers the cost of borrowing and other non-dairy activities, measuring the overall profitability of the business enterprise and not just the dairy farm operation (Table 8.1).

Table 8.1: Business Profit before Tax

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
BUSINESS PROFIT:										
Dairy operating profit	167,173	99,142	182,709	65,599	-53,678	91,877	98,570	117,177	151,293	180,220
+ Labour adjustment	76,757	74,703	68,733	77,508	73,553	72,041	80,608	80,071	82,559	91,240
+ Owned support block adjustment	1,217	3,315	685	1,245	695	508	251	299	479	611
+ Non-dairy operating profit	684	445	2,052	2,671	2,203	2,387	2,758	2,615	1,209	5,284
+ Net off-farm income	3,753	4,244	3,989	3,817	4,546	2,281	4,071	5,230	10,975	8,513
- Rent (excl support block)	3,450	4,385	3,401	5,154	1,407	1,047	2,320	827	1,220	438
- Interest	34,423	33,043	34,599	31,805	37,949	34,629	31,626	36,976	27,516	21,389
Business profit before tax	211,673	144,313	220,149	113,971	-12,038	133,967	154,478	166,064	217,779	264,041
Business profit before tax per all effective hectares	1,268	854	1,484	755	-75	841	967	951	1,260	1,577

The average sharemilker in 2020-21 made a business profit before tax of \$264,041, up \$46,262 per farm compared to the previous season. This business profit is equivalent to \$1,577 per all effective hectares (effective dairy + effective dairy support block + effective non-dairy). The dairy operating profit increased by \$28,927 from the previous season. Combined interest and rent payments were slightly down on last season. Total effective hectares decreased from the season prior to 167 total effective dairy hectares.

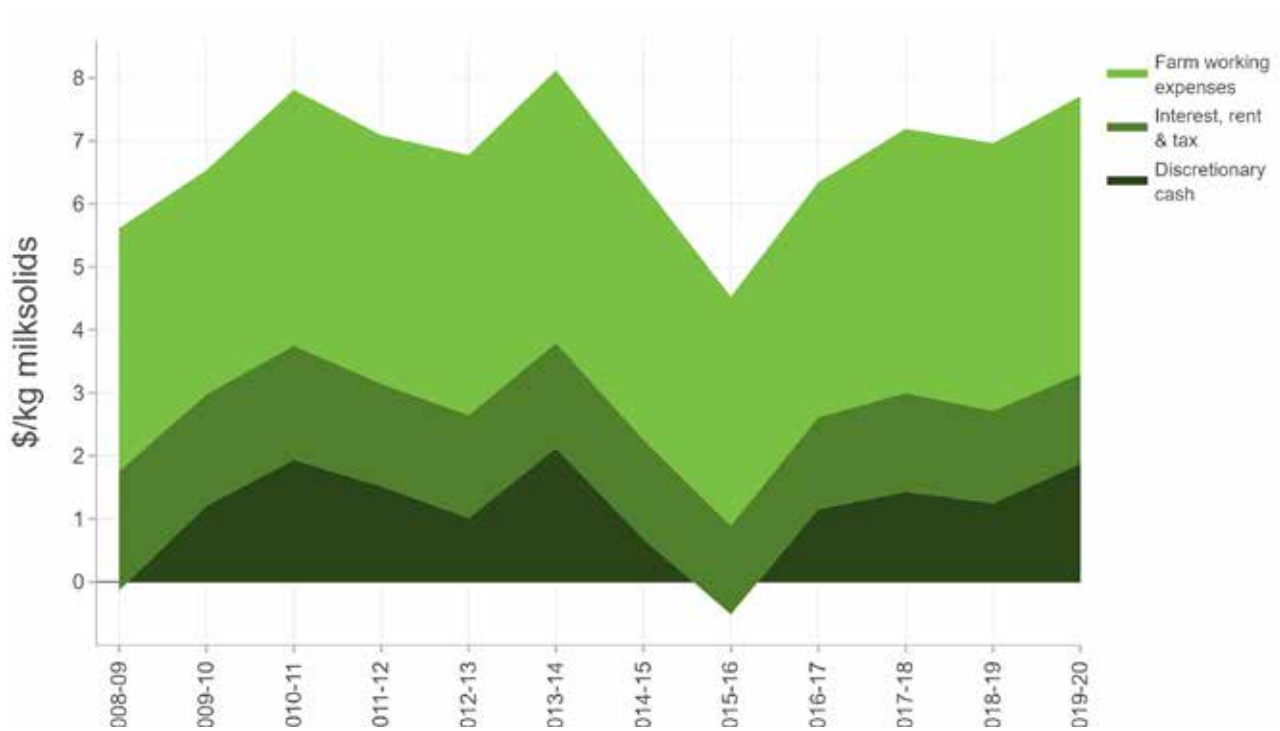
8.5 Cash Flow

The cash operating surplus is the difference between net dairy cash income and farm working expenses. In 2020-21, the average sharemilker cash operating surplus of \$298,298 increased by 29 percent from the previous season. On a per kilogram milksolids basis, the \$1.64 cash operating surplus was up 33 cents from last season. Once rent, interest and tax are paid, and net income from non-dairy farming activities are added, the remaining value is discretionary cash. Total discretionary cash in 2020-21 was \$230,033, equating to \$1.26 per kilogram milksolids (refer to Table 13.5).

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 2020-21 was \$258,338 per farm, up 60 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 \$11,878 per farm to \$20,070, and capital transactions of \$119,380 were up 107 percent from last season. Drawings increased (+\$10,789) to \$76,247 per farm. Tax payments increased to \$60,010 per farm (Table 13.5).

Figure 8.6: Annual Change in Revenue and Expenditure Over the Last 10 Years (\$ per kg MS)

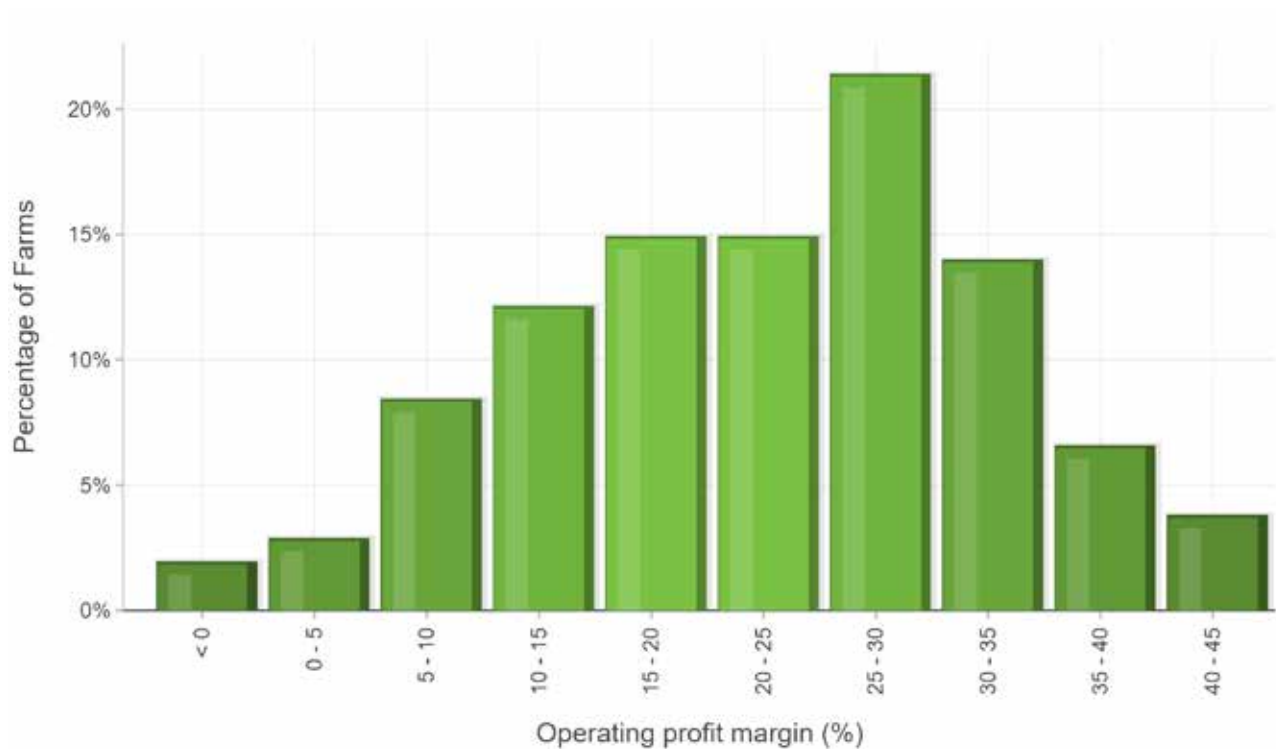


8.6 Operating Profit Margin

Operating profit margin is an indicator of dairy farm financial performance. This measurement is expressed as a percentage and describes the proportion of gross farm revenue converted to profit. The ability of a farmer to convert a high proportion of their revenue to profit indicates that the farm is cost-efficient and better placed to deal with financial and production risks. Figure 8.6 shows the distribution of operating profit margins. The average operating profit margin was 24.0%, up 2.4% from the 2020-21 season. The highest proportion of farms (21.3%) made an operating profit margin between 25 to 30 percent.

Operating profit margin had a wide distribution ranging from -3.3 to 44.5 percent. 94 percent of farmers had an operating profit margin between 0 and 40 percent, and 1.8 percent had a negative operating profit margin.

Figure 8.7: Distribution of Operating Profit Margins (%) 2020-21



9 50:50 Sharemilkers: Equity and Capital Financial Analysis

9.1 Introduction

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

Net capital transactions significantly increased (+107%) to 119,380 in 2020-21, while tax payments increased (+53%) to 60,010. The proportion of source funds applied increased in 2020-21 from \$191,161 to \$277,464, resulting in a cash surplus of \$51,154. This constitutes a 24 percent increase from the 2019-20 season. The operating return on dairy assets increased to 19.1 percent, and the total return on assets was 12.2 percent. Sharemilkers' equity increased by \$58,590 to \$806,125, with the positive growth in equity from profit (+13%) offsetting a decline in equity from capital (-2.8%). Total liabilities as a percentage of total assets (the debt to asset ratio) decreased to 43 percent at the end of the season. Closing term liabilities fell from \$3.19 to \$2.91 from 2019-20 to 2020-21.

9.2 Dairy Assets

Total dairy assets increased by \$250,697 from opening to close in the 2020-21 season, closing at \$1.15 million per farm. Livestock constitutes the highest proportion of sharemilkers' dairy assets, comprising 65% of total dairy assets at closing, down from 68 percent in 2019-20.

9.3 Liabilities and Debt Servicing

Interest is the cash cost of borrowing funds, while rent is the cost of borrowing assets. Interest is the cash cost of borrowing funds, while rent is the cost of borrowing assets. Interest & rent totalled \$0.12 per kilogram of milksolids.

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 2019-20 were mostly from farm operations. Term debt increased (\$20,070) on loans at the season's close. Of the funds applied, 27 percent was spent on drawings, 43 percent on capital transactions, and 8 percent on interest payments. Tax payments required 22 percent of funds at \$60,010 per herd.

Table 9.1: Flow of Funds

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
WORKING CAPITAL:										
Change in current assets :	-1,003	-22,966	32,816	-23,771	-16,221	22,455	2,932	-24,375	112,605	161,046
- Change in current liabilities :	-2,464	7,412	13,755	-1,920	23,954	-9,244	15,668	-10,322	-10,193	-16,512
Change in working capital :	1,461	-30,378	19,061	-21,851	-40,175	31,699	-12,736	-14,053	122,798	177,558
SOURCE OF FUNDS:										
Cash operating surplus :	235,759	120,735	201,958	137,419	11,433	167,540	169,323	213,273	230,372	298,298
+ Change in working capital :	1,461	-30,378	19,061	-21,851	-40,175	31,699	-12,736	-14,053	122,798	177,558
+ Net non-dairy cash income :	1,458	139	2,036	2,511	2,243	1,798	1,996	2,659	-1,380	5,060
+ Net off-farm income :	3,753	4,244	3,989	3,817	4,546	2,281	4,071	5,230	10,975	8,513
+ Introduced funds :	11,331	8,480	13,155	24,197	26,601	12,583	14,806	-19,006	-10,255	27,709
+ Income equalisation :	-379	4,325	-2,621	-6,091	5,707	1,412	0	470	0	596
+ Increase in term debt :	-56,442	40,067	973	50,721	37,011	-17,644	-20,730	33,643	-8,192	-20,070
= Total source of funds :	196,941	147,612	238,551	190,723	47,366	199,669	156,730	222,216	344,318	497,664
APPLICATION OF FUNDS:										
Rent (excl support block) :	3,450	4,385	3,401	5,154	1,407	1,047	2,320	827	1,220	438
+ Interest :	34,423	33,043	34,599	31,805	37,949	34,629	31,626	36,976	27,516	21,389
+ Tax :	31,344	27,351	29,237	25,101	5,492	6,220	24,199	30,109	39,336	60,010
+ Net capital transactions :	48,945	70,590	60,379	89,030	26,407	36,654	49,540	113,811	57,631	119,380
+ Drawings :	75,857	72,999	72,813	83,335	56,461	57,721	74,517	67,169	65,458	76,247
= Total application of funds :	194,019	208,368	200,429	234,425	127,716	136,271	182,202	248,891	191,161	277,464
Source less application of funds :	2,922	-60,756	38,122	-43,702	-80,350	63,398	-25,472	-26,675	153,157	220,200

The 2020-21 average 50:50 sharemilkers' cash operating surplus was \$298,298, well above the \$230,372 recorded in the previous season. This translates to \$1.64 per kilogram of milksolids. The 2020-21 average level of discretionary cash was \$230,033, increasing \$58,138 from 2019-20. Average discretionary cash for sharemilkers has maintained a strong position since the 2016-17 season. Typically, these funds are required to reduce debt, sustain drawings, and fund capital expenditure. Term liabilities declined to \$2.91 per kg MS at the close of the 2020-21 season.

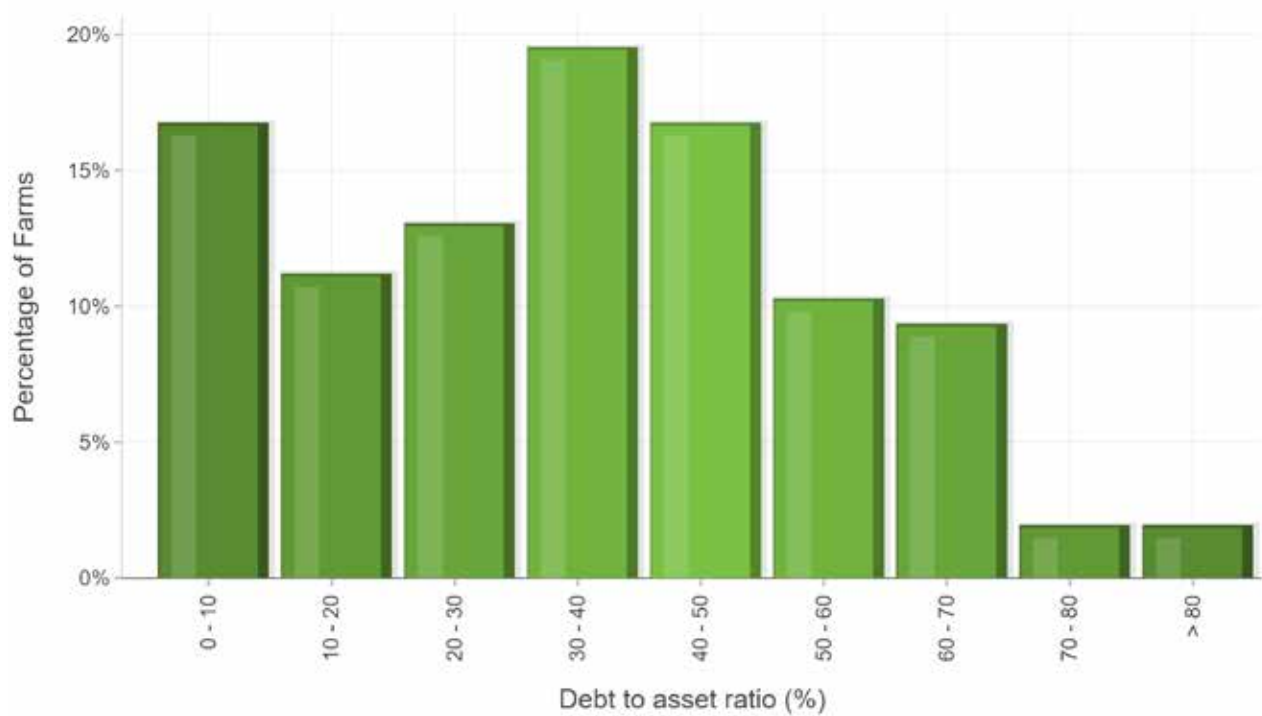
Table 9.2: Debt Servicing Ratios

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
DEBT SERVICING:										
Interest & rent \$/kg MS :	0.26	0.27	0.27	0.24	0.27	0.25	0.23	0.20	0.16	0.12
Interest & rent % GFR :	6.5%	7.0%	6.2%	7.1%	11.5%	7.3%	6.1%	5.6%	4.1%	2.9%
Term liabilities \$/kg MS :	3.09	3.64	3.71	3.36	4.07	4.05	3.81	3.78	3.19	2.91

The debt to asset ratio decreased from 48 percent at the close of 2019-20 to 43 percent in 2020-21. Debt to asset values have significantly fallen from a period of high debt to asset ratios from 2015-16 to 2018-19, corresponding with stronger milk payouts for sharemilkers.

Figure 9.1 shows the debt to asset distribution for 2020-21, with an average of 43 percent. Sixty percent of farms had a debt to asset ratio below 40 percent. Four percent of farms had a debt to asset ratio over 70 percent, with less than one percent sitting in the high-risk area of over 90 percent.

Figure 9.1: Debt to Asset Distribution 2020-21

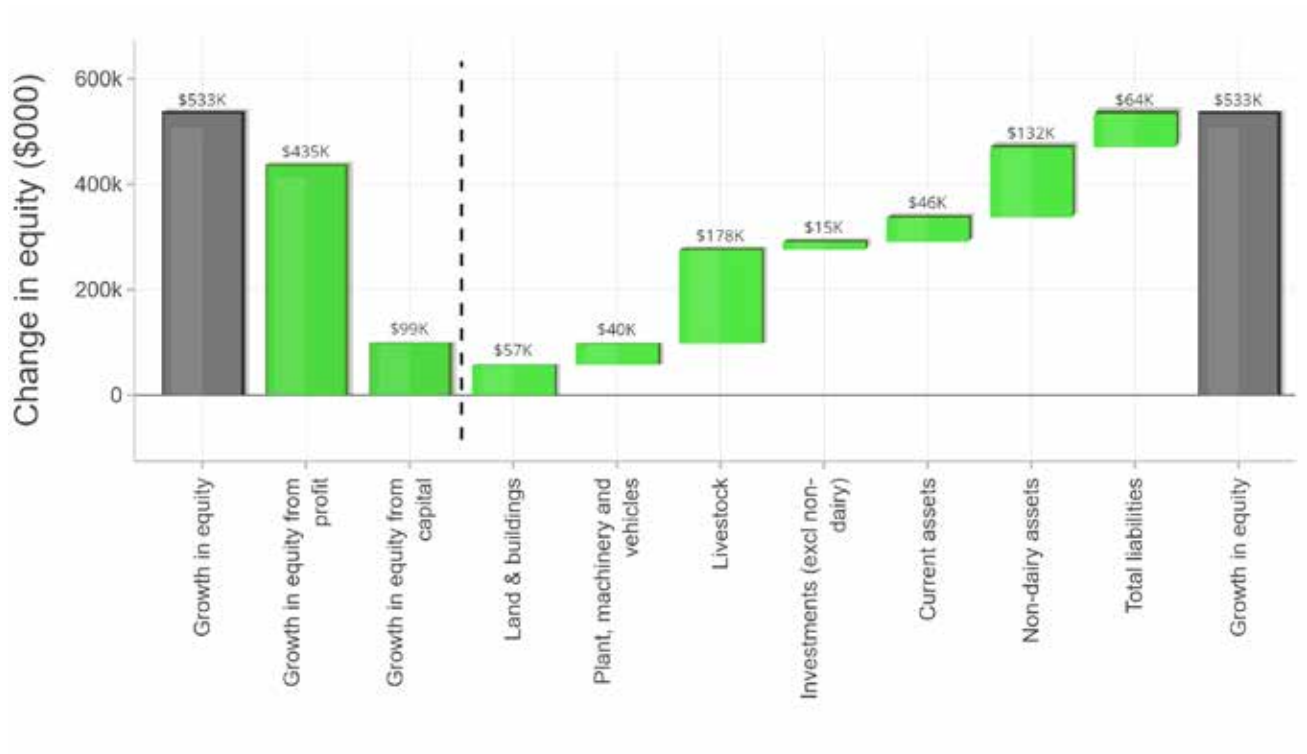


9.4 Equity

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 the open and close of each year). At the opening of the 2020-21 season, 50:50 sharemilkers had an average equity of \$806,125 which represented 57% of total closing asset values.

The equity value of 50:50 sharemilker farm businesses increased between 2016-17 and 2020-21 (Figure 9.2). Over the past five years, growth has primarily been driven by increases in livestock and current assets and offset by a decrease in dairy investments and an increase in total liabilities.

Figure 9.2: Components of Equity Change (\$000) 2016-21



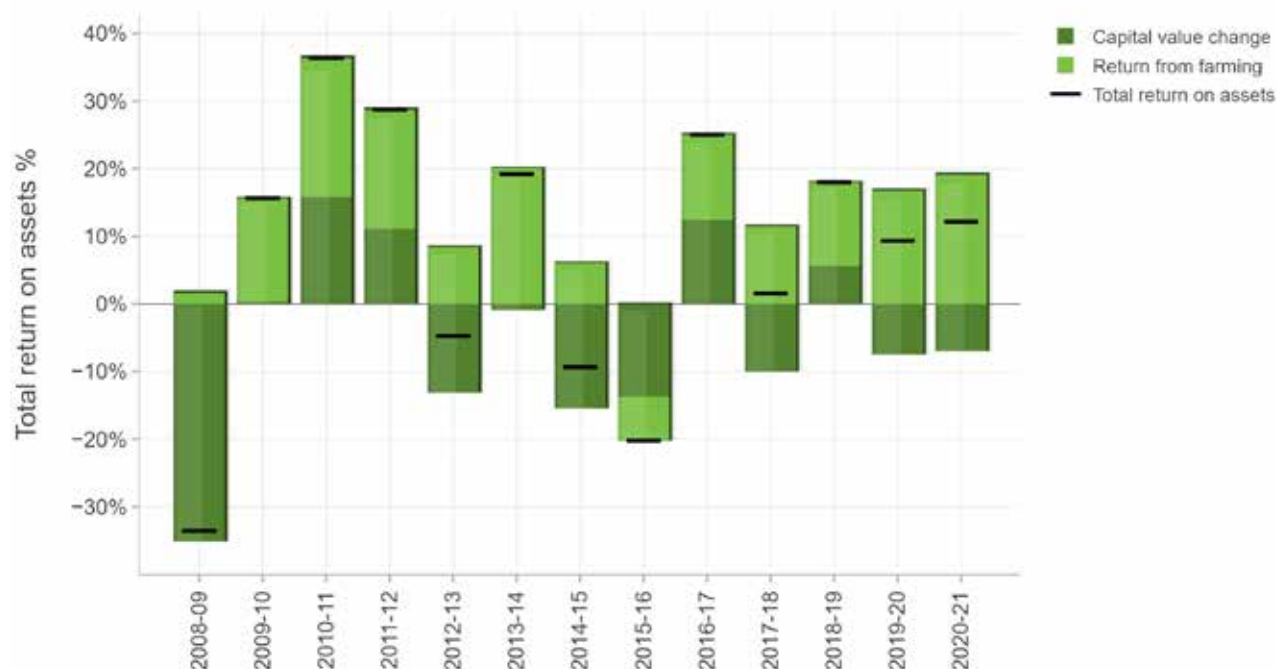
9.5 Returns

The return on dairy assets is discussed under farm profitability (Section 8.4). The total return on assets considers operating profit from both dairy and non-dairy farming operations, plus the change in the value of capital assets. The total return on assets in 2020-21 was 12.2 percent. The 2020-21 total return on assets comprised 13.8 percent net return from all farming operations and -2.1 percent net return from capital.

Net returns from dairy activity yielded \$180,393 across the 2020-21 season, combined with an average change in capital value of -\$27,117 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.

For the past decade, the total return on assets has ranged between -10.5 and 36.5 percent, driven by changes in the value of land and buildings, dairy company share values, livestock values and profits (Table 13.7)

Figure 9.3: Sharemilker Total Return on Assets 2020-21



The percentage return on equity is the return on the owner's funds, including capital changes after interest is paid (Table 13.7). 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 2020-21 the total return on equity was 22.4 percent compared to 12.2 percent total return on assets. The last five seasons have resulted in a negative return on equity in 2017-18, with the other years yielding a positive return to equity. Sharemilkers' total return on assets has been positive for the past five seasons.

10 50:50 Sharemilkers: Regional Financial Analysis

10.1 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 10.1 and 10.2 shows key 2019-20 average performance indicators per kilo milksolids for 50:50 sharemilker farms in these eight regions. The low number of farms in the regions presented here may also reduce the representativeness of the sample. Both Table 10.1 and 10.2 report median values to reduce numerical bias created by the average of sums methodology in regional samples. Thus, totals and sub-totals in these tables will not add up but will better represent average values of the data sample. See section 2.11 for an explanation of this methodology.

Table 10.1 shows key 2020-21 average performance indicators per kilogram of milksolids in the eight regions. North Island, South Island, and New Zealand data were weighted by owner-operator herd numbers in each region. Lower North Island had the smallest average herd size of 294 cows, followed by Taranaki (305). Average herd sizes in the South Island were considerably larger than in the North Island, with an average of 611 peak cows milked. Marlborough-Canterbury had the largest average herd size in the South Island with 785 cows, 174 cows above the South Island average (611), while the average herd size in Otago-Southland was 510 cows.

There is a range of stocking rates nationwide, with Northland (2.3 cows/ha) and West Coast-Tasman (2.6 cows/ha) having the lowest stocking rates. Marlborough-Canterbury had the highest stocking rate at 3.7 cows per hectare, while the remaining regions had average stocking rates between 2.7 and 3.0.

West Coast-Tasman recorded the lowest average milksolids production per cow of all the regions (357 kg MS). The other four North Island regions recorded milksolids per cow between 371 and 423 kg MS. Marlborough-Canterbury recorded the highest milksolids sold per cow at 491 kg MS, and Otago-Southland recorded a milksolids sold per hectare of 431.

The average payout received in each region was at or above \$3.60 per kilogram of milksolids. Regional average farm working expenses (FWE) per kilogram of milksolids were lowest in Bay of Plenty (\$2.18) and Taranaki (\$2.20), and the highest FWE per kilogram of milksolids was reported in Otago-Southland (\$2.69). The bottom of Table 10.1 shows the regional gross farm revenue, operating expenses and operating profit levels on a per hectare basis in 2020-21. Marlborough-Canterbury (\$1,931) recorded the highest operating profit on a per hectare basis, while West Coast-Tasman (\$754) and Northland (\$763) recorded the lowest operating profit per hectare. West Coast-Tasman (\$4,000) and Northland (\$4,178) recorded the lowest gross farm revenue per hectare and the lowest operating expenses per hectare (\$2,919 and \$3,124, respectively). Marlborough-Canterbury recorded the highest gross farm revenue (\$7,011) and operating expenses (\$5,432) per hectare. In general, Sharemilkers in Marlborough-Canterbury experienced higher levels of profitability in 2020-21 relative to other regions.

Table 10.1: Regional Sharemilker Profitability

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough-Canterbury	Otago-Southland
PHYSICAL CHARACTERISTICS:								
Number of herds	14	32	11	15	10	7	7	12
Effective hectares	157.0	111.0	140.0	104.2	122.5	140.0	215.0	196.5
Peak cows milked	356	355	320	305	294	387	785	510
Stocking rate (cows/ha)	2.3	3.0	3.0	2.8	2.7	2.6	3.7	2.9
Kg milk solids sold	135,700	136,349	133,090	121,235	118,482	175,297	408,959	206,395
Milk solids sold per hectare	919	1,250	1,190	1,226	1,133	931	1,857	1,307
Milk solids sold per cow	371	414	408	432	423	357	491	431
PAYOUT RECEIVED: \$/kg MS sold	3.63	3.68	3.63	3.70	3.64	3.63	3.66	3.68
DAIRY CASH INCOME \$: MS BASIS								
Milk sales (net of dairy levies)	3.63	3.68	3.63	3.70	3.64	3.63	3.66	3.68
Net livestock sales (sales - purchases)	0.64	0.30	0.41	0.43	0.49	0.54	0.37	0.53
Other dairy cash income	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net dairy cash income	4.37	3.99	4.01	4.16	4.12	4.38	4.05	4.19
CASH FARM WORKING EXPENSES: MS BASIS								
Wages	0.42	0.39	0.40	0.32	0.45	0.38	0.47	0.53
Animal health	0.25	0.23	0.28	0.24	0.19	0.26	0.22	0.23
Breeding & herd improvement	0.15	0.16	0.18	0.15	0.19	0.16	0.19	0.17
Farm dairy	0.04	0.04	0.05	0.05	0.04	0.05	0.05	0.04
Electricity	0.10	0.11	0.12	0.11	0.10	0.09	0.08	0.10
Net feed made, purchased, cropped	0.70	0.59	0.46	0.46	0.59	0.35	0.55	0.43
Stock grazing	0.12	0.19	0.13	0.22	0.23	0.21	0.46	0.31
Support block lease	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertiliser (incl Nitrogen)	0.20	0.12	0.15	0.11	0.10	0.14	0.14	0.15
Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00
Regrassing	0.02	0.00	0.03	0.00	0.00	0.01	0.02	0.01
Weed & pest	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01
Vehicles & fuel	0.20	0.15	0.18	0.17	0.15	0.27	0.12	0.13
Repairs & maintenance	0.15	0.09	0.10	0.06	0.07	0.13	0.07	0.07
Freight & general	0.04	0.05	0.05	0.05	0.05	0.08	0.03	0.07
Administration	0.08	0.08	0.07	0.10	0.08	0.05	0.07	0.08
Insurance	0.04	0.03	0.04	0.05	0.04	0.06	0.03	0.04
ACC	0.04	0.03	0.03	0.02	0.03	0.04	0.02	0.03
Rates	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Farm working expenses	2.56	2.25	2.18	2.20	2.33	2.57	2.51	2.69
Cash operating surplus	1.79	1.73	1.78	1.95	1.67	1.61	1.44	1.39
ADJUSTMENTS: MS BASIS								
Value of change in dairy livestock	0.07	0.04	0.08	-0.05	0.00	-0.20	0.00	-0.11
Less labour adjustment	0.65	0.53	0.68	0.81	0.65	0.55	0.25	0.48
Plus feed inventory adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Less owned support block adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Less depreciation	0.17	0.17	0.18	0.17	0.14	0.19	0.12	0.13
Net adjustments	-0.70	-0.65	-0.76	-1.02	-0.76	-0.78	-0.31	-0.85
OPERATING CASH & NON-CASH: MS BASIS								
Dairy gross farm revenue	4.35	4.02	4.04	4.12	4.05	3.99	4.01	4.16
Dairy operating expenses	3.60	3.06	3.01	2.87	3.20	3.33	2.91	3.36
Dairy operating profit	0.81	1.01	0.94	0.95	0.97	0.67	1.13	0.89
OPERATING CASH & NON-CASH: HA BASIS								
Dairy gross farm revenue	4,178	5,237	4,624	5,055	4,697	4,000	7,011	5,330
Dairy operating expenses	3,124	3,770	3,719	3,561	3,409	2,919	5,432	3,980
Dairy operating profit	763	1,171	1,073	1,265	1,308	754	1,931	1,004
Operating profit margin	17.51%	25.48%	24.14%	25.03%	23.19%	17.24%	25.79%	21.45%

Table 10.2 shows the eight regions' key 2020-21 average financial indicators. The averages reported in this table are medians; see section 2.11 for an explanation of this methodology. Regional average operating

returns on dairy assets ranged between 13.2 and 23.7 percent. Marlborough-Canterbury (23.7%) and Lower North Island (22.1%) had the highest operating returns on dairy assets in 2020-21. Northland had the lowest operating returns on dairy assets (13.2%). All regions reported positive returns on assets, with Marlborough-Canterbury (18.7%) and Lower North Island (17.8%) recording the highest total returns on assets. Northland (7.2%) and West Coast-Tasman (7.4%) recorded the lowest.

Total return on equity is the return on the owner’s funds, including capital changes after interest is paid. All regions reported positive returns on equity, with Marlborough-Canterbury (35.4%) and Lower North Island (33.3%) recording the highest total return on equity. West Coast-Tasman (13.1%) recorded the lowest total return on equity.

Average term debt per kilogram of milksolids decreased nationally in 2020-21. There was variation between the regions, with Northland (\$2.61) the highest and Marlborough-Canterbury (\$1.54) the lowest. The regional average debt to asset ratio ranged between 39.1 percent and 43.1 percent.

Table 10.2: Regional 50:50 Sharemilker Financial Position

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough-Canterbury	Otago-Southland
RETURNS:								
Operating return on dairy assets %	13.2%	18.8%	16.0%	17.0%	22.1%	13.7%	23.7%	16.5%
Total return on assets %	7.2%	12.0%	11.5%	11.6%	17.8%	7.4%	18.7%	10.0%
Total return on equity %	16.7%	23.0%	18.7%	18.6%	33.3%	13.1%	35.4%	14.2%
Growth in equity %	24.6%	25.4%	16.5%	23.9%	29.6%	18.0%	45.4%	17.1%
DEBT:								
Closing term liabilities per kg MS	2.61	2.40	2.42	1.78	1.94	2.28	1.54	2.32
Closing debt to asset %	41.2%	43.1%	39.8%	39.5%	38.9%	41.0%	39.1%	42.1%

11 Dairy Tomorrow Measures

11.1 Annual Update

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. A lower cost of production mitigates the impact of a low milk price on profitability and results in increased operating profit during high milk prices. It is a key measure of resilience as 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. The dairy operating profit margin is a percentage most often between zero and fifty. 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. 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 milksolids 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.

The Dairy Tomorrow measures are reported in Tables 11.1 through 11.4 by quartiles and the mean. The quartiles can be interpreted as follows:

- The 25th percentile for a variable represents a value where 25% of the data is lower.
- The 50th percentile or median represents the centre of the data, such that 50% of data points are lower, and 50% are higher than this value.
- The 75th percentile represents a value such that 75% of observations are lower than this value.

In comparison, the mean is an average calculated by adding all values together and dividing by the number of observations. The mean provides an average across the values for all observations.

Table 11.1: Cost of Production 2011-21

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
COST OF PRODUCTION (OPERATING EXPENSES / KG MS):										
25th percentile	5.17	5.59	5.71	5.35	4.66	5.32	5.62	5.69	5.95	5.94
Mean	4.74	5.05	5.21	4.85	4.36	4.72	5.12	5.18	5.47	5.44
50th percentile	4.71	4.90	5.15	4.76	4.21	4.57	5.02	5.15	5.38	5.34
75th percentile	4.18	4.44	4.55	4.30	3.90	4.13	4.55	4.61	4.88	4.84

Table 11.2: Operating profit margin 2011-21

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
OPERATING PROFIT MARGIN (%):										
25th percentile :	28.3%	18.7%	31.5%	17.0%	-6.3%	19.3%	23.1%	20.1%	21.7%	25.5%
Mean :	34.5%	25.7%	37.0%	23.7%	2.2%	27.5%	29.7%	26.5%	28.5%	31.5%
50th percentile :	34.6%	26.6%	37.2%	24.6%	4.7%	30.5%	30.9%	26.5%	30.0%	32.5%
75th percentile :	41.3%	34.7%	44.7%	33.2%	12.1%	36.1%	36.1%	33.8%	35.5%	38.9%

Table 11.3: Operating return on assets 2011-21

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
OPERATING RETURN ON DAIRY ASSETS (%):										
25th percentile :	4.6%	2.6%	5.1%	2.2%	-0.7%	2.7%	3.2%	2.7%	3.2%	4.3%
Mean :	6.4%	4.5%	8.2%	3.7%	-0.1%	4.4%	5.3%	4.0%	5.2%	6.3%
50th percentile :	6.1%	4.1%	6.9%	3.4%	0.1%	4.3%	4.5%	3.9%	4.8%	5.8%
75th percentile :	7.9%	5.7%	8.9%	4.8%	1.0%	5.4%	6.3%	5.2%	6.8%	8.0%

Table 11.4: Equity per kg milksolids 2011-21

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
EQUITY (\$) PER KG MILKSOLIDS:										
25th percentile :	15.13	15.01	16.57	18.93	13.08	18.32	14.92	13.42	13.62	14.09
Mean :	27.29	28.00	28.71	28.38	25.06	30.78	27.19	25.22	26.26	26.52
50th percentile :	25.90	25.59	26.25	27.63	22.08	26.28	25.09	20.61	21.60	22.17
75th percentile :	37.37	39.65	39.71	37.29	34.14	41.17	33.99	34.17	35.09	33.43

12 Time Series Tables: Owner Operator

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

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	990,172	899,388	1,164,274	923,621	628,192	928,944	1,068,927	1,073,346	1,197,023	1,271,447
Net livestock sales (sales - purchases)	52,637	55,381	57,832	83,804	90,596	79,495	80,967	77,911	82,883	83,337
Other dairy cash income	6,063	7,151	6,338	6,466	5,819	5,633	6,789	6,377	5,836	7,705
Net dairy cash income	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072	1,156,683	1,157,633	1,285,742	1,362,488
CASH FARM WORKING EXPENSES:										
Wages	88,015	91,013	90,565	97,790	103,689	92,630	106,331	110,011	113,880	111,931
Animal health	31,621	32,944	35,800	36,553	30,906	34,577	37,497	37,958	40,754	41,674
Breeding & herd improvement	17,850	20,267	20,485	23,746	19,702	21,986	25,043	27,336	28,626	28,930
Farm dairy	9,781	10,225	10,068	9,693	7,902	9,636	9,433	9,773	10,804	10,391
Electricity	14,489	16,028	17,342	17,636	17,646	18,352	18,256	18,521	18,818	19,217
Net feed made, purchased, cropped	117,928	124,172	156,489	152,147	118,281	120,103	151,337	167,341	175,287	186,564
Stock grazing	55,505	52,914	53,919	64,319	64,317	58,368	58,254	71,042	72,720	70,207
Support block lease	12,361	12,543	11,519	11,992	12,385	12,322	10,882	9,548	10,371	10,285
Fertiliser (incl Nitrogen)	87,658	81,705	86,711	75,738	66,595	73,964	77,478	77,175	77,691	75,625
Irrigation	4,326	5,807	4,527	9,367	7,987	8,527	8,314	12,833	18,773	16,270
Regrassing	6,696	8,709	10,423	9,776	7,751	9,913	12,503	11,654	12,456	12,321
Weed & pest	5,074	4,714	6,387	5,502	5,561	5,631	5,951	5,299	5,441	5,567
Vehicles & fuel	29,014	30,026	32,423	28,918	26,704	29,220	31,584	30,955	30,230	28,783
Repairs & maintenance	51,664	43,114	62,561	52,240	35,753	46,630	63,665	58,032	61,811	70,505
Freight & general	7,612	7,630	9,030	8,700	8,666	7,755	8,518	7,912	12,330	12,109
Administration	17,080	17,765	17,697	17,680	18,974	17,895	19,675	21,182	24,213	24,300
Insurance	8,042	9,084	9,718	10,773	10,252	10,947	12,635	13,587	13,961	14,319
ACC	5,712	3,937	4,321	4,134	3,690	3,445	3,785	3,750	3,134	4,785
Rates	13,790	14,147	15,873	15,915	16,089	16,761	17,031	17,022	16,979	17,212
Farm working expenses	584,218	586,744	655,858	652,619	582,850	598,662	678,172	710,932	748,282	760,996
Cash operating surplus	464,654	375,176	572,586	361,272	141,757	415,410	478,511	446,701	537,460	601,492
ADJUSTMENTS:										
Plus value of change in dairy livestock	20,201	11,428	24,912	2,632	-13,067	9,835	11,378	8,780	7,282	230
Less labour adjustment	54,748	55,162	59,309	59,021	56,341	61,154	63,920	62,545	62,011	70,195
Plus feed inventory adjustment	4,782	-2,534	5,340	-210	3,453	2,790	-2,413	3,164	-3,484	5,884
Less owned support block adjustment	13,554	14,601	15,338	14,889	14,126	14,359	16,786	13,143	16,151	16,720
Less depreciation	52,172	56,258	57,383	66,154	62,967	66,295	67,899	68,522	72,265	71,559
Net adjustments	-95,491	-117,127	-101,778	-137,642	-143,048	-129,183	-139,640	-132,266	-146,629	-152,360
OPERATING CASH & NON CASH:										
Dairy gross farm revenue	1,069,073	973,348	1,253,356	1,016,523	711,540	1,023,907	1,168,061	1,166,413	1,293,024	1,362,718
Dairy operating expenses	699,910	715,299	782,548	792,893	712,831	737,680	829,190	851,978	902,193	913,587
Dairy operating profit	369,163	258,049	470,808	223,630	-1,291	286,227	338,871	314,435	390,831	449,132
Dairy operating profit per ha	2,624	1,830	3,295	1,537	-9	1,937	2,238	2,154	2,750	3,195

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

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	2,520	2,265	2,896	2,204	1,503	2,244	2,486	2,534	2,886	3,118
Net livestock sales (sales purchases)	134	139	144	200	217	192	188	184	200	204
Other dairy cash income	15	18	16	15	14	14	16	15	14	19
Net dairy cash income	2,669	2,423	3,056	2,420	1,734	2,449	2,690	2,733	3,100	3,341
CASH FARM WORKING EXPENSES:										
Wages	224	229	225	233	248	224	247	260	275	274
Animal health	80	83	89	87	74	84	87	90	98	102
Breeding & herd improvement	45	51	51	57	47	53	58	65	69	71
Farm dairy	25	26	25	23	19	23	22	23	26	25
Electricity	37	40	43	42	42	44	42	44	45	47
Net feed made, purchased, cropped	300	313	389	363	283	290	352	395	423	457
Stock grazing	141	133	134	154	154	141	135	168	175	172
Support block lease	31	32	29	29	30	30	25	23	25	25
Fertiliser (incl Nitrogen)	223	206	216	181	159	179	180	182	187	185
Irrigation	11	15	11	22	19	21	19	30	45	40
Regrassing	17	22	26	23	19	24	29	28	30	30
Weed & pest	13	12	16	13	13	14	14	13	13	14
Vehicles & fuel	74	76	81	69	64	71	73	73	73	71
Repairs & maintenance	131	109	156	125	86	113	148	137	149	173
Freight & general	19	19	22	21	21	19	20	19	30	30
Administration	43	45	44	42	45	43	46	50	58	60
Insurance	20	23	24	26	25	26	29	32	34	35
ACC	15	10	11	10	9	8	9	9	8	12
Rates	35	36	39	38	38	40	40	40	41	42
Farm working expenses	1,487	1,478	1,631	1,558	1,394	1,446	1,577	1,678	1,804	1,866
Cash operating surplus	1,182	945	1,424	862	339	1,003	1,113	1,055	1,296	1,475
ADJUSTMENTS:										
Plus value of change in dairy livestock	51	29	62	6	-31	24	26	21	18	-1
Less labour adjustment	139	139	148	141	135	148	149	148	149	172
Plus feed inventory adjustment	12	-6	13	-1	8	7	-6	7	-8	14
Less owned support block adjustment	34	37	38	36	34	35	39	31	39	41
Less depreciation	133	142	143	158	151	160	158	162	174	175
Net adjustments	-243	-295	-253	-329	-342	-312	-325	-312	-353	-374
OPERATING CASH & NON CASH:										
Dairy gross farm revenue	2,720	2,452	3,118	2,426	1,702	2,473	2,716	2,754	3,117	3,341
Dairy operating expenses	1,781	1,802	1,947	1,892	1,705	1,782	1,928	2,011	2,175	2,240
Dairy operating profit	939	650	1,171	534	-3	691	788	742	942	1,101

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

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	7,037	6,379	8,147	6,348	4,242	6,285	7,060	7,353	8,421	9,046
Net livestock sales (sales - purchases)	374	393	405	576	612	538	535	534	583	593
Other dairy cash income	43	51	44	44	39	38	45	44	41	55
Net dairy cash income	7,455	6,822	8,597	6,968	4,893	6,861	7,640	7,930	9,046	9,694
CASH FARM WORKING EXPENSES:										
Wages	626	645	634	672	700	627	702	754	801	796
Animal health	225	234	251	251	209	234	248	260	287	296
Breeding & herd improvement	127	144	143	163	133	149	165	187	201	206
Farm dairy	70	73	70	67	53	65	62	67	76	74
Electricity	103	114	121	121	119	124	121	127	132	137
Net feed made, purchased, cropped	838	881	1,095	1,046	799	813	1,000	1,146	1,233	1,327
Stock grazing	394	375	377	442	434	395	385	487	512	499
Support block lease	88	89	81	82	84	83	72	65	73	73
Fertiliser (incl Nitrogen)	623	579	607	521	450	500	512	529	547	538
Irrigation	31	41	32	64	54	58	55	88	132	116
Regrassing	48	62	73	67	52	67	83	80	88	88
Weed & pest	36	33	45	38	38	38	39	36	38	40
Vehicles & fuel	206	213	227	199	180	198	209	212	213	205
Repairs & maintenance	367	306	438	359	241	315	421	398	435	502
Freight & general	54	54	63	60	59	52	56	54	87	86
Administration	121	126	124	122	128	121	130	145	170	173
Insurance	57	64	68	74	69	74	83	93	98	102
ACC	41	28	30	28	25	23	25	26	22	34
Rates	98	100	111	109	109	113	112	117	119	122
Farm working expenses	4,152	4,161	4,590	4,485	3,936	4,050	4,479	4,870	5,264	5,414
Cash operating surplus	3,302	2,661	4,007	2,483	957	2,811	3,161	3,060	3,781	4,279
ADJUSTMENTS:										
Plus value of change in dairy livestock	144	81	174	18	-88	67	75	60	51	2
Less labour adjustment	389	391	415	406	380	414	422	428	436	499
Plus feed inventory adjustment	34	-18	37	-1	23	19	-16	22	-25	42
Less owned support block adjustment	96	104	107	102	95	97	111	90	114	119
Less depreciation	371	399	402	455	425	449	448	469	508	509
Net adjustments	-679	-831	-712	-946	-966	-874	-922	-906	-1,032	-1,084
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	7,598	6,903	8,771	6,986	4,804	6,928	7,715	7,991	9,097	9,695
Dairy operating expenses	4,974	5,073	5,476	5,449	4,813	4,991	5,477	5,837	6,347	6,500
Dairy operating profit	2,624	1,830	3,295	1,537	-9	1,937	2,238	2,154	2,750	3,195

Table 12.4: Cash Operating Surplus and Operating Profit - \$ per milksolid sold

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
Net livestock sales (sales-purchases)	0.36	0.39	0.38	0.52	0.57	0.50	0.50	0.47	0.49	0.49
Other dairy cash income	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04
Net dairy cash income	7.09	6.77	8.11	6.32	4.52	6.33	7.16	6.92	7.57	7.93
CASH FARM WORKING EXPENSES:										
Wages	0.59	0.64	0.60	0.61	0.65	0.58	0.66	0.66	0.67	0.65
Animal health	0.21	0.23	0.24	0.23	0.19	0.22	0.23	0.23	0.24	0.24
Breeding & herd improvement	0.12	0.14	0.14	0.15	0.12	0.14	0.16	0.16	0.17	0.17
Farm dairy	0.07	0.07	0.07	0.06	0.05	0.06	0.06	0.06	0.06	0.06
Electricity	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Net feed made, purchased, cropped	0.80	0.87	1.03	0.95	0.74	0.75	0.94	1.00	1.03	1.09
Stock grazing	0.38	0.37	0.36	0.40	0.40	0.36	0.36	0.42	0.43	0.41
Support block lease	0.08	0.09	0.08	0.07	0.08	0.08	0.07	0.06	0.06	0.06
Fertiliser (incl Nitrogen)	0.59	0.58	0.57	0.47	0.42	0.46	0.48	0.46	0.46	0.44
Irrigation	0.03	0.04	0.03	0.06	0.05	0.05	0.05	0.08	0.11	0.09
Regrassing	0.05	0.06	0.07	0.06	0.05	0.06	0.08	0.07	0.07	0.07
Weed & pest	0.03	0.03	0.04	0.03	0.03	0.04	0.04	0.03	0.03	0.03
Vehicles & fuel	0.20	0.21	0.21	0.18	0.17	0.18	0.20	0.19	0.18	0.17
Repairs & maintenance	0.35	0.30	0.41	0.33	0.22	0.29	0.39	0.35	0.36	0.41
Freight & general	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.07	0.07
Administration	0.12	0.13	0.12	0.11	0.12	0.11	0.12	0.13	0.14	0.14
Insurance	0.05	0.06	0.06	0.07	0.06	0.07	0.08	0.08	0.08	0.08
ACC	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.03
Rates	0.09	0.10	0.10	0.10	0.10	0.10	0.11	0.10	0.10	0.10
Farm working expenses	3.95	4.13	4.33	4.07	3.64	3.73	4.20	4.25	4.41	4.43
Cash operating surplus	3.14	2.64	3.78	2.25	0.88	2.59	2.96	2.67	3.17	3.50
ADJUSTMENTS:										
Plus value of change in dairy livestock	0.14	0.08	0.16	0.02	-0.08	0.06	0.07	0.05	0.04	0.00
Less labour adjustment	0.37	0.39	0.39	0.37	0.35	0.38	0.40	0.37	0.37	0.41
Plus feed inventory adjustment	0.03	-0.02	0.04	0.00	0.02	0.02	-0.01	0.02	-0.02	0.03
Less owned support block adjustment	0.09	0.10	0.10	0.09	0.09	0.09	0.10	0.08	0.10	0.10
Less depreciation	0.35	0.40	0.38	0.41	0.39	0.41	0.42	0.41	0.43	0.42
Net adjustments	-0.65	-0.82	-0.67	-0.86	-0.89	-0.81	-0.86	-0.79	-0.86	-0.89
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	7.23	6.85	8.28	6.34	4.44	6.39	7.23	6.98	7.62	7.94
Dairy operating expenses	4.73	5.03	5.17	4.94	4.45	4.60	5.13	5.10	5.31	5.32
Dairy operating profit	2.49	1.82	3.11	1.39	-0.01	1.79	2.10	1.88	2.30	2.62

Table 12.5: Cashflow

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
CASHFLOW										
Net dairy cash income	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072	1,156,683	1,157,633	1,285,742	1,362,488
Farm working expenses	584,218	586,744	655,858	652,619	582,850	598,662	678,172	710,932	748,282	760,996
Cash operating surplus	464,654	375,176	572,586	361,272	141,757	415,410	478,511	446,701	537,460	601,492
DISCRETIONARY CASH										
Less rent (excl support block)	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499	17,280	17,069
Less interest	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022	172,460	140,608
Less tax	46,816	35,383	58,155	34,078	7,939	16,773	41,532	38,315	52,696	77,161
Plus net non-dairy cash income	790	1,125	2,355	486	904	3,371	6,064	7,040	10,682	3,378
Discretionary cash	224,736	143,970	321,823	109,446	-82,602	185,083	230,881	208,906	318,872	379,869
OTHER CASH INCOME										
Plus net off-farm income	11,018	12,427	9,991	12,078	9,238	19,811	18,114	6,670	13,167	9,838
Plus introduced funds	-2,871	40,918	-44,275	28,307	77,696	-24,004	-40,908	-2,774	-18,560	-16,833
Plus income equalisation	-2,004	1,178	-4,756	-9,579	16,765	1,307	40	307	-475	875
Cash available for living and growth	230,879	198,493	282,783	140,252	21,097	182,197	208,127	213,109	299,837	363,911
OTHER CASH EXPENDITURE										
Less net capital transactions	164,026	185,532	143,703	201,119	76,697	109,749	238,591	207,027	113,522	148,238
less net debt	22,153	-123,346	-10,790	-93,026	-111,777	-75,867	-92,523	-74,133	49,483	59,719
less net drawings	83,781	92,872	116,224	110,437	78,151	82,043	104,334	95,173	92,090	106,679
Cash surplus/deficit	-39,081	43,435	33,646	-78,278	-21,974	66,272	-42,275	-14,958	57,909	59,112
CASHFLOW PER KG MILKSOLIDS SOLD										
Net dairy cash income	7.09	6.77	8.11	6.32	4.52	6.33	7.16	6.92	7.57	7.93
Farm working expenses	3.95	4.13	4.33	4.07	3.64	3.73	4.20	4.25	4.41	4.43
Cash operating surplus	3.14	2.64	3.78	2.25	0.88	2.59	2.96	2.67	3.17	3.50
DISCRETIONARY CASH PER KG MILKSOLIDS SOLD										
Less rent (excl support block)	0.13	0.16	0.15	0.14	0.13	0.12	0.13	0.07	0.10	0.10
Less interest	1.18	1.23	1.13	1.22	1.23	1.23	1.19	1.16	1.02	0.82
Less tax	0.32	0.25	0.38	0.21	0.05	0.10	0.26	0.23	0.31	0.45
Plus net non-dairy cash income	0.01	0.01	0.02	0.00	0.01	0.02	0.04	0.04	0.06	0.02
Discretionary cash	1.52	1.01	2.12	0.68	-0.52	1.15	1.43	1.25	1.88	2.21
OTHER CASH INCOME PER KG MILKSOLIDS SOLD										
Plus net off-farm income	0.07	0.09	0.07	0.08	0.06	0.12	0.11	0.04	0.08	0.06
Plus introduced funds	-0.02	0.29	-0.29	0.18	0.48	-0.15	-0.25	-0.02	-0.11	-0.10
Plus income equalisation	-0.01	0.01	-0.03	-0.06	0.10	0.01	0.00	0.00	0.00	0.01
Cash available for living and growth	1.56	1.40	1.87	0.87	0.13	1.14	1.29	1.27	1.77	2.12
OTHER CASH EXPENDITURE PER KG MILKSOLIDS SOLD										
Less net capital transactions	1.11	1.31	0.95	1.25	0.48	0.68	1.48	1.24	0.67	0.86
Less net debt	0.15	-0.87	-0.07	-0.58	-0.70	-0.47	-0.57	-0.44	0.29	0.35
Less net drawings	0.57	0.65	0.77	0.69	0.49	0.51	0.65	0.57	0.54	0.62
Cash surplus/deficit	-0.26	0.31	0.22	-0.49	-0.14	0.41	-0.26	-0.09	0.34	0.34

Table 12.6: Capital Structure and Wealth Creation

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
DAIRY ASSETS AT OPEN										
Land & buildings	4,247,819	4,109,797	4,474,344	5,055,041	5,473,880	5,518,535	5,849,932	6,091,560	6,039,561	5,752,162
Plant, machinery and vehicles	213,589	193,255	224,385	233,302	258,077	254,722	252,258	249,118	260,302	240,288
Livestock	821,346	1,013,686	873,333	967,406	812,241	640,378	834,061	754,230	737,092	730,625
Investments (excl non-dairy)	616,654	628,020	899,384	892,639	688,384	791,795	800,126	815,583	660,658	585,604
Current assets	221,577	168,694	221,155	285,915	176,424	138,254	208,018	180,448	172,313	189,667
Total dairy assets at open	6,120,985	6,113,452	6,692,601	7,434,303	7,409,006	7,343,684	7,944,395	8,090,939	7,869,926	7,498,345
Plus non-dairy assets	243,626	226,186	225,437	207,058	258,166	267,387	403,636	353,525	351,490	371,716
Total assets	6,364,611	6,339,638	6,918,038	7,641,361	7,667,172	7,611,071	8,348,031	8,444,463	8,221,416	7,870,061
LIABILITIES AT OPEN										
Term liabilities	2,868,307	2,834,656	3,039,137	3,317,150	3,493,221	3,932,350	3,996,989	4,091,376	3,995,700	3,901,222
Current liabilities	167,634	174,851	154,442	182,128	197,175	160,682	149,261	189,611	178,179	156,630
Total liabilities	3,035,941	3,009,507	3,193,579	3,499,278	3,690,396	4,093,032	4,146,250	4,280,987	4,173,879	4,057,851
Owners equity at open	3,328,670	3,330,131	3,724,459	4,142,083	3,976,776	3,518,039	4,201,781	4,163,476	4,047,537	3,812,209
DAIRY ASSETS AT CLOSE										
Land & buildings	4,367,922	4,384,302	4,788,661	5,368,063	5,289,448	5,854,250	5,843,351	5,933,994	5,888,745	5,808,851
Plant, machinery and vehicles	227,328	196,594	252,083	233,593	243,360	249,436	255,794	246,538	253,497	240,804
Livestock	1,017,760	874,419	939,582	804,897	651,096	815,984	776,831	752,063	748,428	734,146
Investments (excl non-dairy)	649,996	967,958	817,865	751,874	810,143	823,402	748,739	665,352	632,180	584,287
Current assets	188,455	186,427	279,218	186,858	151,773	194,747	195,692	163,031	205,720	241,278
Total dairy assets at close	6,451,461	6,609,700	7,077,409	7,345,285	7,145,820	7,937,819	7,820,407	7,760,977	7,728,570	7,609,364
plus Non-dairy assets	271,339	260,335	236,874	224,823	258,766	280,232	411,434	388,794	350,613	374,638
Total assets	6,722,800	6,870,035	7,314,283	7,570,108	7,404,586	8,218,051	8,231,841	8,149,771	8,079,184	7,984,003
LIABILITIES AT CLOSE										
Term liabilities	2,846,154	2,958,002	3,049,927	3,410,176	3,604,999	4,008,218	4,089,512	4,165,930	3,946,217	3,841,503
Current liabilities	173,593	149,149	178,859	161,349	194,497	150,902	179,210	184,250	170,738	161,979
Total liabilities	3,019,747	3,107,151	3,228,786	3,571,525	3,799,496	4,159,120	4,268,722	4,350,179	4,116,954	4,003,482
Owners equity at close	3,703,053	3,762,884	4,085,497	3,998,583	3,605,090	4,058,931	3,963,119	3,799,592	3,962,230	3,980,521
EQUITY										
Growth in equity	374,383	432,753	361,038	-143,500	-371,686	540,892	-238,662	-363,884	-85,307	168,312
Growth in equity from profit	123,506	16,257	187,695	-53,784	-225,348	68,973	85,385	63,675	159,527	208,237
Growth in equity from capital	250,877	416,496	173,343	-89,716	-146,338	471,919	-324,047	-427,560	-244,765	-39,822
Growth in equity %	11.2%	13.0%	9.7%	-3.5%	-9.3%	15.4%	-5.7%	-8.7%	-2.1%	4.4%
Closing debt to asset %	43.3%	43.7%	41.9%	45.8%	50.3%	49.4%	50.7%	53.4%	51.0%	50.1%
Closing term liabilities per kg MS	19.24	20.82	20.14	21.26	22.49	25.00	25.31	24.92	23.25	22.37

Table 12.7: Returns

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	204	217	301	296	279	316	265	260	326	308
Effective hectares	140.7	141.0	142.9	145.5	148.1	147.8	151.4	146.0	142.1	140.6
Peak cows milked	393	397	402	419	418	414	430	424	415	408
Stocking rate (cows/ha)	2.8	2.8	2.8	2.9	2.8	2.8	2.8	2.9	2.9	2.9
Kg milksolids sold	147,964	142,089	151,455	160,367	160,270	160,302	161,567	167,189	169,761	171,720
Milksolids sold per hectare	1,052	1,008	1,060	1,102	1,082	1,085	1,067	1,145	1,194	1,222
Milksolids sold per cow	376	358	377	383	383	387	376	395	409	421
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.33	7.69	5.76	3.92	5.79	6.62	6.42	7.05	7.40
RETURN ON DAIRY ASSETS %										
Dairy operating profit	369,163	258,049	470,808	223,630	-1,291	286,227	338,871	314,435	390,831	449,132
Plus owned support block adjustment	13,554	14,601	15,338	14,889	14,126	14,359	16,786	13,143	16,151	16,720
Less rent	19,374	22,812	23,366	22,250	20,047	19,582	20,703	12,499	17,280	17,069
Net return from dairy	363,343	249,838	462,780	216,269	-7,212	281,004	334,954	315,079	389,701	448,783
Total dairy assets (less current) at open	5,899,408	5,944,758	6,471,446	7,148,388	7,232,582	7,205,430	7,736,377	7,910,490	7,697,613	7,308,678
Operating return on dairy assets %	6.2%	4.2%	7.2%	3.0%	-0.1%	3.9%	4.3%	4.0%	5.1%	6.1%
TOTAL RETURN ON ASSETS %										
Net return from dairy	363,343	249,838	462,780	216,269	-7,212	281,004	334,954	315,079	389,701	448,783
Plus net non-dairy profit	-280	1,288	1,724	-673	-318	3,331	5,444	6,904	11,894	3,870
Plus change in capital value	207,084	315,704	169,567	-175,947	-301,565	430,903	-353,833	-277,275	-287,474	-78,028
Total assets (less current) at open	6,143,034	6,170,944	6,696,883	7,355,446	7,490,748	7,472,817	8,140,013	8,264,015	8,221,416	7,870,061
Total return on assets %	9.3%	9.2%	9.5%	0.5%	-4.1%	9.6%	-0.2%	0.5%	1.4%	4.8%
TOTAL RETURN ON EQUITY %										
Plus net off-farm income	11,018	12,427	9,991	12,078	9,238	19,811	18,114	6,670	13,167	9,838
Less interest	174,518	174,136	171,597	195,984	197,277	197,343	191,459	194,022	172,460	140,608
Total return for equity	406,439	405,054	472,332	-144,237	-497,164	537,538	-186,502	-142,643	-45,173	243,855
Equity at open	3,328,670	3,330,131	3,724,459	4,142,083	3,976,776	3,518,039	4,201,781	4,163,476	4,047,537	3,812,209
Total return on equity %	12.2%	12.2%	12.7%	-3.5%	-12.5%	15.3%	-4.4%	-3.4%	-1.1%	6.4%

13 Time Series Tables: 50:50 Sharemilkers

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

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	489,513	441,112	520,870	434,377	272,370	405,691	472,702	586,337	606,847	665,124
Net livestock sales (sales - purchases)	56,522	8,419	13,423	54,333	35,783	60,598	50,428	75,931	60,008	80,562
Other dairy cash income	5,206	2,844	3,407	2,381	3,368	2,419	2,321	2,332	3,280	4,596
Net dairy cash income	551,241	452,375	537,700	491,091	311,521	468,708	525,451	664,600	670,136	750,282
CASH FARM WORKING EXPENSES:										
Wages	51,719	57,928	51,400	52,915	48,799	51,624	61,841	82,680	76,511	80,791
Animal health	33,464	32,842	34,651	35,418	28,668	31,232	34,238	43,264	41,198	43,119
Breeding & herd improvement	19,251	21,195	20,468	22,026	20,299	20,065	24,196	30,219	29,137	30,536
Farm dairy	6,386	6,077	6,631	6,653	6,629	6,886	7,538	8,922	9,415	8,627
Electricity	13,868	13,765	14,439	15,840	15,435	15,505	15,362	18,649	18,121	19,104
Net feed made, purchased, cropped	62,553	70,461	74,677	77,650	53,410	55,474	72,032	93,630	93,405	100,999
Stock grazing	29,714	30,296	39,026	50,175	42,034	34,075	46,703	60,678	58,204	53,146
Support block lease	2,971	5,199	1,308	1,403	2,206	1,834	1,666	1,380	2,840	1,817
Fertiliser (incl Nitrogen)	24,548	22,666	20,377	21,454	18,608	18,616	21,151	25,577	27,222	24,985
Irrigation	655	933	1,778	2,135	3,991	2,462	2,043	5,126	6,117	4,720
Regrassing	3,256	2,388	2,821	2,560	2,502	2,442	3,026	4,270	3,428	3,776
Weed & pest	1,616	1,534	1,392	1,582	1,383	1,948	1,869	1,940	2,049	2,046
Vehicles & fuel	25,313	26,602	25,153	23,726	20,049	22,926	24,851	28,739	27,432	26,732
Repairs & maintenance	11,617	9,703	12,113	10,305	9,029	10,234	11,702	12,710	11,632	16,045
Freight & general	6,420	8,502	8,892	8,661	6,782	6,600	7,871	8,008	9,305	9,605
Administration	11,656	12,014	12,063	12,413	11,778	11,542	11,785	15,718	15,081	14,212
Insurance	4,093	4,379	4,016	4,255	4,906	4,254	4,970	5,351	5,614	6,223
ACC	5,357	4,169	3,914	3,248	3,054	2,937	2,982	3,918	2,399	5,084
Rates	1,025	987	623	1,253	526	512	302	549	656	417
Farm working expenses	315,482	331,640	335,742	353,672	300,088	301,168	356,128	451,327	439,763	451,984
Cash operating surplus	235,759	120,735	201,958	137,419	11,433	167,540	169,323	213,273	230,372	298,298
ADJUSTMENTS:										
Plus value of change in dairy livestock	27,593	80,132	70,394	32,000	30,838	16,893	32,946	8,193	31,018	-272
Less labour adjustment	76,757	74,703	68,733	77,508	73,553	72,041	80,608	80,071	82,559	91,240
Plus feed inventory adjustment	3,819	-441	1,573	176	1,708	-486	1,860	2,496	-41	2,515
Less owned support block adjustment	1,217	3,315	685	1,245	695	508	251	299	479	611
Less depreciation	22,024	23,266	21,798	25,243	23,409	19,521	24,700	26,415	27,018	28,470
Net adjustments	-68,586	-21,593	-19,249	-71,820	-65,111	-75,663	-70,753	-96,096	-79,079	-118,078
OPERATING CASH & NON CASH:										
Dairy gross farm revenue	578,834	532,507	608,094	523,091	342,359	485,601	558,397	672,793	701,154	750,010
Dairy operating expenses	411,661	433,365	425,385	457,492	396,037	393,724	459,827	555,616	549,861	569,791
Dairy operating profit	167,173	99,142	182,709	65,599	-53,678	91,877	98,570	117,177	151,293	180,220
Dairy operating profit per ha	1,222	719	1,427	497	-403	696	718	775	1,050	1,287

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

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	1,262	1,120	1,419	1,134	719	1,091	1,209	1,299	1,408	1,567
Net livestock sales (sales - purchases)	146	21	37	142	94	163	129	168	139	190
Other dairy cash income	13	7	9	6	9	7	6	5	8	11
Net dairy cash income	1,421	1,148	1,465	1,282	822	1,260	1,344	1,472	1,555	1,768
CASH FARM WORKING EXPENSES:										
Wages	133	147	140	138	129	139	158	183	178	190
Animal health	86	83	94	92	76	84	88	96	96	102
Breeding & herd improvement	50	54	56	58	54	54	62	67	68	72
Farm dairy	16	15	18	17	17	19	19	20	22	20
Electricity	36	35	39	41	41	42	39	41	42	45
Net feed made, purchased, cropped	161	179	203	203	141	149	184	207	217	238
Stock grazing	77	77	106	131	111	92	119	134	135	125
Support block lease	8	13	4	4	6	5	4	3	7	4
Fertiliser (incl Nitrogen)	63	58	56	56	49	50	54	57	63	59
Irrigation	2	2	5	6	11	7	5	11	14	11
Regrassing	8	6	8	7	7	7	8	9	8	9
Weed & pest	4	4	4	4	4	5	5	4	5	5
Vehicles & fuel	65	68	69	62	53	62	64	64	64	63
Repairs & maintenance	30	25	33	27	24	28	30	28	27	38
Freight & general	17	22	24	23	18	18	20	18	22	23
Administration	30	30	33	32	31	31	30	35	35	33
Insurance	11	11	11	11	13	11	13	12	13	15
ACC	14	11	11	8	8	8	8	9	6	12
Rates	3	3	2	3	1	1	1	1	2	1
Farm working expenses	813	842	915	923	792	810	911	1,000	1,021	1,065
Cash operating surplus	608	306	550	359	30	450	433	472	535	703
ADJUSTMENTS:										
Plus value of change in dairy livestock	71	203	192	84	81	45	84	18	72	-1
Less labour adjustment	198	190	187	202	194	194	206	177	192	215
Plus feed inventory adjustment	10	-1	4	0	5	-1	5	6	0	6
Less owned support block adjustment	3	8	2	3	2	1	1	1	1	1
Less depreciation	57	59	59	66	62	52	63	59	63	67
Net adjustments	-177	-55	-52	-188	-172	-203	-181	-213	-184	-278
OPERATING CASH & NON CASH:										
Dairy gross farm revenue	1,492	1,352	1,657	1,366	903	1,305	1,428	1,490	1,627	1,767
Dairy operating expenses	1,061	1,100	1,159	1,194	1,045	1,058	1,176	1,231	1,276	1,342
Dairy operating profit	431	252	498	171	-142	247	252	260	351	425

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

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	3,578	3,199	4,069	3,291	2,043	3,073	3,445	3,876	4,210	4,751
Net livestock sales (sales - purchases)	413	61	105	412	268	459	368	502	416	575
Other dairy cash income	38	21	27	18	25	18	17	15	23	33
Net dairy cash income	4,030	3,280	4,201	3,720	2,337	3,551	3,830	4,393	4,649	5,359
CASH FARM WORKING EXPENSES:										
Wages	378	420	402	401	366	391	451	547	531	577
Animal health	245	238	271	268	215	237	250	286	286	308
Breeding & herd improvement	141	154	160	167	152	152	176	200	202	218
Farm dairy	47	44	52	50	50	52	55	59	65	62
Electricity	101	100	113	120	116	117	112	123	126	136
Net feed made, purchased, cropped	457	511	583	588	401	420	525	619	648	721
Stock grazing	217	220	305	380	315	258	340	401	404	380
Support block lease	22	38	10	11	17	14	12	9	20	13
Fertiliser (incl Nitrogen)	179	164	159	163	140	141	154	169	189	178
Irrigation	5	7	14	16	30	19	15	34	42	34
Regrassing	24	17	22	19	19	18	22	28	24	27
Weed & pest	12	11	11	12	10	15	14	13	14	15
Vehicles & fuel	185	193	197	180	150	174	181	190	190	191
Repairs & maintenance	85	70	95	78	68	78	85	84	81	115
Freight & general	47	62	69	66	51	50	57	53	65	69
Administration	85	87	94	94	88	87	86	104	105	102
Insurance	30	32	31	32	37	32	36	35	39	44
ACC	39	30	31	25	23	22	22	26	17	36
Rates	7	7	5	9	4	4	2	4	5	3
Farm working expenses	2,306	2,405	2,623	2,679	2,251	2,282	2,596	2,983	3,051	3,229
Cash operating surplus	1,723	876	1,578	1,041	86	1,269	1,234	1,410	1,598	2,131
ADJUSTMENTS:										
Plus value of change in dairy livestock	202	581	550	242	231	128	240	54	215	-2
Less labour adjustment	561	542	537	587	552	546	588	529	573	652
Plus feed inventory adjustment	28	-3	12	1	13	-4	14	16	0	18
Less owned support block adjustment	9	24	5	9	5	4	2	2	3	4
Less depreciation	161	169	170	191	176	148	180	175	187	203
Net adjustments	-501	-157	-150	-544	-488	-573	-516	-635	-549	-843
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	4,231	3,862	4,751	3,963	2,568	3,679	4,070	4,447	4,864	5,357
Dairy operating expenses	3,009	3,143	3,323	3,466	2,971	2,983	3,352	3,673	3,815	4,070
Dairy operating profit	1,222	719	1,427	497	-403	696	718	775	1,050	1,287

Table 13.4: Cash Operating Surplus and Operating Profit - \$ per milksolid sold

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
Net livestock sales (sales - purchases)	0.39	0.06	0.10	0.36	0.25	0.42	0.34	0.41	0.34	0.44
Other dairy cash income	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.03
Net dairy cash income	3.76	3.21	3.88	3.25	2.15	3.26	3.57	3.59	3.82	4.12
CASH FARM WORKING EXPENSES:										
Wages	0.35	0.41	0.37	0.35	0.34	0.36	0.42	0.45	0.44	0.44
Animal health	0.23	0.23	0.25	0.23	0.20	0.22	0.23	0.23	0.23	0.24
Breeding & herd improvement	0.13	0.15	0.15	0.15	0.14	0.14	0.16	0.16	0.17	0.17
Farm dairy	0.04	0.04	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.05
Electricity	0.09	0.10	0.10	0.10	0.11	0.11	0.10	0.10	0.10	0.10
Net feed made, purchased, cropped	0.43	0.50	0.54	0.51	0.37	0.39	0.49	0.51	0.53	0.55
Stock grazing	0.20	0.21	0.28	0.33	0.29	0.24	0.32	0.33	0.33	0.29
Support block lease	0.02	0.04	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01
Fertiliser (incl Nitrogen)	0.17	0.16	0.15	0.14	0.13	0.13	0.14	0.14	0.15	0.14
Irrigation	0.00	0.01	0.01	0.01	0.03	0.02	0.01	0.03	0.03	0.03
Regrassing	0.02	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	0.17	0.19	0.18	0.16	0.14	0.16	0.17	0.16	0.16	0.15
Repairs & maintenance	0.08	0.07	0.09	0.07	0.06	0.07	0.08	0.07	0.07	0.09
Freight & general	0.04	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.05	0.05
Administration	0.08	0.09	0.09	0.08	0.08	0.08	0.08	0.09	0.09	0.08
Insurance	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
ACC	0.04	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.03
Rates	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Farm working expenses	2.15	2.35	2.42	2.34	2.08	2.10	2.42	2.44	2.50	2.48
Cash operating surplus	1.61	0.86	1.46	0.91	0.08	1.17	1.15	1.15	1.31	1.64
ADJUSTMENTS:										
Plus value of change in dairy livestock	0.19	0.57	0.51	0.21	0.21	0.12	0.22	0.04	0.18	0.00
Less labour adjustment	0.52	0.53	0.50	0.51	0.51	0.50	0.55	0.43	0.47	0.50
Plus feed inventory adjustment	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01
Less owned support block adjustment	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Less depreciation	0.15	0.16	0.16	0.17	0.16	0.14	0.17	0.14	0.15	0.16
Net adjustments	-0.47	-0.15	-0.14	-0.48	-0.45	-0.53	-0.48	-0.52	-0.45	-0.65
OPERATING CASH & NON CASH:										
Dairy gross farm revenue	3.94	3.77	4.39	3.46	2.37	3.38	3.79	3.64	3.99	4.12
Dairy operating expenses	2.81	3.07	3.07	3.03	2.74	2.74	3.13	3.00	3.13	3.13
Dairy operating profit	1.14	0.70	1.32	0.43	-0.37	0.64	0.67	0.63	0.86	0.99

Table 13.5: Cashflow

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
CASHFLOW										
Net dairy cash income	551,241	452,375	537,700	491,091	311,521	468,708	525,451	664,600	670,136	750,282
Farm working expenses	315,482	331,640	335,742	353,672	300,088	301,168	356,128	451,327	439,763	451,984
Cash operating surplus	235,759	120,735	201,958	137,419	11,433	167,540	169,323	213,273	230,372	298,298
DISCRETIONARY CASH										
Less rent (excl support block)	3,450	4,385	3,401	5,154	1,407	1,047	2,320	827	1,220	438
Less interest	34,423	33,043	34,599	31,805	37,949	34,629	31,626	36,976	27,516	21,389
Less tax	31,344	27,351	29,237	25,101	5,492	6,220	24,199	30,109	39,336	60,010
Plus net non-dairy cash income	1,458	139	2,036	2,511	2,243	1,798	1,996	2,659	-1,380	5,060
Discretionary cash	168,000	56,095	136,757	77,870	-31,172	127,442	113,174	148,021	171,895	230,033
OTHER CASH INCOME										
Plus net off-farm income	3,753	4,244	3,989	3,817	4,546	2,281	4,071	5,230	10,975	8,513
Plus introduced funds	11,331	8,480	13,155	24,197	26,601	12,583	14,806	-19,006	-10,255	27,709
Plus income equalisation	-379	4,325	-2,621	-6,091	5,707	1,412	0	470	0	596
Cash available for living and growth	182,705	73,144	151,280	99,793	5,682	143,718	132,051	134,715	161,640	258,338
OTHER CASH EXPENDITURE										
Less net capital transactions	48,945	70,590	60,379	89,030	26,407	36,654	49,540	113,811	57,631	119,380
less net debt	56,442	-40,067	-973	-50,721	37,011	17,644	20,730	-33,643	8,192	20,070
less net drawings	75,857	72,999	72,813	83,335	56,461	57,721	74,517	67,169	65,458	76,247
Cash surplus/deficit	1,461	-30,378	19,061	-21,851	-114,197	31,699	-12,736	-12,622	41,334	51,154
CASHFLOW PER KG MILKSOLIDS SOLD										
Net dairy cash income	3.76	3.21	3.88	3.25	2.15	3.26	3.57	3.59	3.82	4.12
Farm working expenses	2.15	2.35	2.42	2.34	2.08	2.10	2.42	2.44	2.50	2.48
Cash operating surplus	1.61	0.86	1.46	0.91	0.08	1.17	1.15	1.15	1.31	1.64
DISCRETIONARY CASH PER KG MILKSOLIDS SOLD										
Less rent (excl support block)	0.02	0.03	0.02	0.03	0.01	0.01	0.02	0.00	0.01	0.00
Less interest	0.23	0.23	0.25	0.21	0.26	0.24	0.21	0.20	0.16	0.12
Less tax	0.21	0.19	0.21	0.17	0.04	0.04	0.16	0.16	0.22	0.33
Plus net non-dairy cash income	0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.01	-0.01	0.03
Discretionary cash	1.14	0.40	0.99	0.52	-0.22	0.89	0.77	0.80	0.98	1.26
OTHER CASH INCOME PER KG MILKSOLIDS SOLD										
Plus net off-farm income	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.06	0.05
Plus introduced funds	0.08	0.06	0.09	0.16	0.18	0.09	0.10	-0.10	-0.06	0.15
Plus income equalisation	0.00	0.03	-0.02	-0.04	0.04	0.01	0.00	0.00	0.00	0.00
Cash available for living and growth	1.25	0.52	1.09	0.66	0.04	1.00	0.90	0.73	0.92	1.42
OTHER CASH EXPENDITURE PER KG MILKSOLIDS SOLD										
Less net capital transactions	0.33	0.50	0.44	0.59	0.18	0.26	0.34	0.62	0.33	0.66
Less net debt	0.38	-0.28	-0.01	-0.34	0.26	0.12	0.14	-0.18	0.05	0.11
Less net drawings	0.52	0.52	0.53	0.55	0.39	0.40	0.51	0.36	0.37	0.42
Cash surplus/deficit	0.01	-0.22	0.14	-0.14	-0.79	0.22	-0.09	-0.07	0.24	0.28

Table 13.6: Capital Structure and Wealth Creation

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
DAIRY ASSETS AT OPEN										
Land & buildings	28,567	86,836	15,098	30,040	11,402	18,684	11,326	4,691	12,128	27,005
Plant, machinery and vehicles	106,678	117,383	108,099	126,212	125,820	117,301	128,521	140,793	137,363	150,045
Livestock	788,495	948,782	763,980	845,693	691,128	569,288	691,303	790,098	731,432	748,526
Investments (excl non-dairy)	12,004	12,323	9,835	14,950	7,629	15,904	7,852	5,442	15,611	16,788
Current assets	118,029	106,625	82,670	138,435	103,524	46,993	95,392	116,653	93,939	134,284
Total dairy assets at open	1,053,773	1,271,949	979,682	1,155,330	939,503	768,170	934,394	1,057,677	990,474	1,076,649
Plus non-dairy assets	139,545	111,848	148,952	126,234	152,207	195,254	136,930	177,130	298,734	226,427
Total assets	1,193,318	1,383,797	1,128,634	1,281,564	1,091,710	963,424	1,071,324	1,234,807	1,289,208	1,303,076
LIABILITIES AT OPEN										
Term liabilities	510,469	473,652	513,263	456,746	552,001	599,319	581,994	665,150	569,206	549,938
Current liabilities	101,391	96,334	97,513	88,015	95,703	89,844	73,944	107,777	104,477	102,998
Total liabilities	611,860	569,986	610,776	544,761	647,704	689,163	655,938	772,928	673,683	652,936
Owners equity at open	581,458	813,811	517,858	736,803	444,006	274,261	415,386	461,880	615,525	650,141
DAIRY ASSETS AT CLOSE										
Land & buildings	28,759	95,068	15,631	45,015	10,361	19,483	11,326	14,637	31,423	54,315
Plant, machinery and vehicles	126,654	129,332	132,115	126,025	121,846	125,203	140,605	141,864	142,025	163,965
Livestock	985,447	887,135	870,676	731,576	594,679	734,331	667,438	787,504	766,899	752,807
Investments (excl non-dairy)	17,438	13,086	11,543	17,568	7,796	23,409	8,439	10,920	16,278	17,935
Current assets	117,026	83,659	115,486	114,664	87,303	69,448	98,324	92,277	112,605	161,046
Total dairy assets at close	1,275,324	1,208,280	1,145,451	1,034,848	821,985	971,874	926,132	1,047,203	1,069,230	1,150,067
plus Non-dairy assets	136,933	144,476	165,597	172,672	163,079	203,511	146,603	245,321	298,988	272,411
Total assets	1,412,257	1,352,756	1,311,048	1,207,520	985,064	1,175,385	1,072,735	1,292,524	1,368,218	1,422,479
LIABILITIES AT CLOSE										
Term liabilities	454,027	513,719	514,236	507,467	589,012	581,675	561,264	698,793	561,014	529,868
Current liabilities	98,927	103,746	111,268	86,095	119,657	80,600	89,612	97,455	94,284	86,486
Total liabilities	552,954	617,465	625,504	593,562	708,669	662,275	650,876	796,248	655,298	616,353
Owners equity at close	859,303	735,291	685,544	613,958	276,395	513,110	421,859	496,276	712,919	806,125
EQUITY										
Growth in equity	277,845	-78,520	167,686	-122,845	-167,611	238,849	6,473	34,397	97,394	155,984
Growth in equity from profit	104,473	43,782	118,099	4,979	-73,991	69,859	53,694	70,311	112,985	127,784
Growth in equity from capital	173,372	-122,302	49,587	-127,824	-93,620	168,990	-47,221	-35,914	-15,536	28,259
Growth in equity %	47.8%	-9.6%	32.4%	-16.7%	-37.7%	87.1%	1.6%	7.4%	15.8%	24.0%
Closing debt to asset %	33.7%	42.1%	42.7%	43.8%	69.2%	53.6%	56.7%	61.6%	47.9%	43.3%
Closing term liabilities per kg MS	3.09	3.64	3.71	3.36	4.07	4.05	3.81	3.78	3.19	2.91

Table 13.7: Returns

	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
PHYSICAL CHARACTERISTICS:										
Number of herds	96	92	114	111	109	113	108	122	124	108
Effective hectares	136.8	137.9	128.0	132.0	133.3	132.0	137.2	151.3	144.1	140.0
Peak cows milked	388	394	367	383	379	372	391	452	431	424
Stocking rate (cows/ha)	2.8	2.9	2.9	2.9	2.8	2.8	2.8	3.0	3.0	3.0
Kg milksolids sold	146,745	141,062	138,532	151,044	144,587	143,685	147,143	184,909	175,656	182,030
Milksolids sold per hectare	1,073	1,023	1,082	1,144	1,085	1,089	1,072	1,222	1,219	1,300
Milksolids sold per cow	378	358	377	394	381	386	376	410	408	429
PAYOUT RECEIVED: \$/kg MS sold	3.34	3.13	3.76	2.88	1.88	2.82	3.21	3.17	3.45	3.65
RETURN ON DAIRY ASSETS %										
Dairy operating profit	167,173	99,142	182,709	65,599	-53,678	91,877	98,570	117,177	151,293	180,220
Plus owned support block adjustment	1,217	3,315	685	1,245	695	508	251	299	479	611
Less rent	3,450	4,385	3,401	5,154	1,407	1,047	2,320	827	1,220	438
Net return from dairy	164,940	98,072	179,993	61,690	-54,390	91,338	96,501	116,649	150,552	180,393
Total dairy assets (less current) at open	935,744	1,165,324	897,012	1,016,895	835,979	721,177	839,002	941,025	896,535	942,365
Operating return on dairy assets %	17.6%	8.4%	20.1%	6.1%	-6.5%	12.7%	11.5%	12.4%	16.8%	19.1%
TOTAL RETURN ON ASSETS %										
Net return from dairy	164,940	98,072	179,993	61,690	-54,390	91,338	96,501	116,649	150,552	180,393
Plus net non-dairy profit	684	445	2,052	2,671	2,203	2,387	2,758	2,615	1,209	5,284
Plus change in capital value	143,404	-158,797	18,825	-171,303	-147,670	135,959	-84,007	82,092	-31,459	-27,117
Total return	309,028	-60,280	200,870	-106,942	-199,857	229,684	15,252	201,356	120,302	158,560
Total assets (less current) at open	1,075,289	1,277,172	1,045,964	1,143,129	988,186	916,431	975,932	1,118,155	1,289,208	1,303,076
Total return on assets %	28.7%	-4.7%	19.2%	-9.4%	-20.2%	25.1%	1.6%	18.0%	9.3%	12.2%
TOTAL RETURN ON EQUITY %										
Total return	309,028	-60,280	200,870	-106,942	-199,857	229,684	15,252	201,356	120,302	158,560
Plus net off-farm income	3,753	4,244	3,989	3,817	4,546	2,281	4,071	5,230	10,975	8,513
Less interest	34,423	33,043	34,599	31,805	37,949	34,629	31,626	36,976	27,516	21,389
Total return for equity	278,321	-89,187	170,239	-134,838	-233,264	197,355	-12,206	169,610	103,761	145,684
Equity at open	581,458	813,811	517,858	736,803	444,006	274,261	415,386	461,880	615,525	650,141
Total return on equity %	47.9%	-11.0%	32.9%	-18.3%	-52.5%	72.0%	-2.9%	36.7%	16.9%	22.4%



