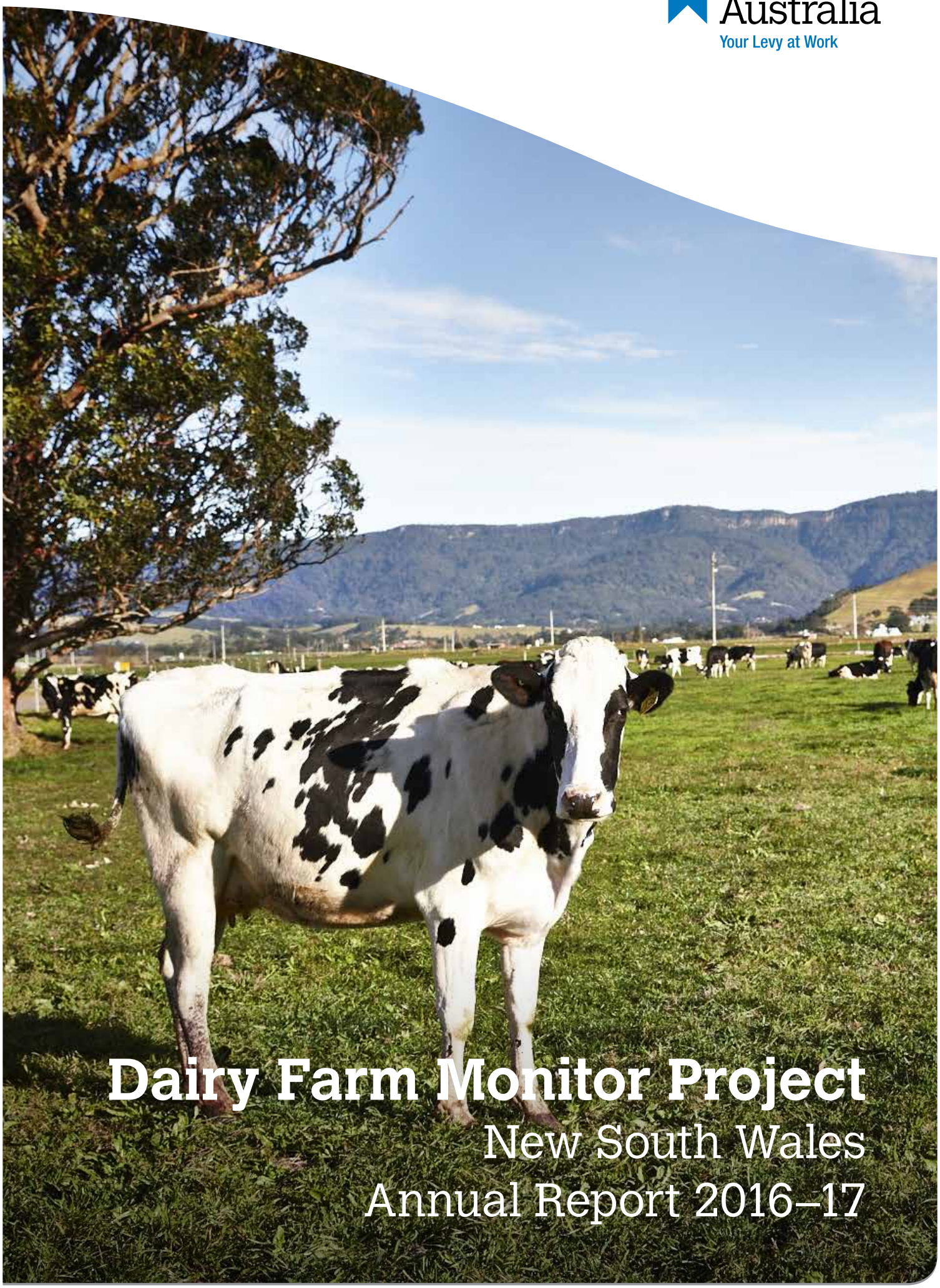
Dairy Australia
Your Levy at Work



Dairy Farm Monitor Project

New South Wales
Annual Report 2016–17

Acknowledgements

The cooperation, patience and goodwill of the farmers who willingly supplied their farm information, either for the first time or the sixth consecutive year, are gratefully acknowledged.

The project is conducted by NSW Department of Primary Industries, managed by Kerry Kempton, Technical Specialist Dairy. The success of the project was made possible this year through the contributions of Julie Dart from North Coast Local Land Services; Hayden Kingston from South East Local Land Services; Sheena Carter from Dairy NSW; contractors Tim Burfitt and Katina Trout; Mick O'Keefe from DEDJTR Vic; and Nicolas Lyons and Peter Havrlant, Dairy Development Officers with NSW DPI. These people collected farm data and provided feedback and validation to ensure the accuracy and integrity of the information.

The diligent work of Victorian Economic Development, Jobs, Transport and Resources (DEDJTR) Dairy Services Natalie Nelson, Sam Henty and Olive Montecillo, who conducted the data analysis and continued to be actively involved in the report through to its publication, is much appreciated.

This report has been produced by Kerry Kempton, in conjunction with DEDJTR Dairy Services and Dairy Australia.

This document is also available in PDF format on the internet at dairyaustralia.com.au/dairyfarmmonitor

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ISSN 2206-0014

NSW GOVERNMENT Department of Primary Industries

AGRICULTURE VICTORIA

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How to read this report

This section explains the calculations used and the data presented throughout this report. The purpose of the different sections of the report is also discussed.

This report is presented in the following sections;

- Summary
- Farm monitor method
- Statewide overview
- North region overview
- South region overview
- Business confidence survey
- Greenhouse gas emissions report
- Historical analysis
- Appendices

Participants were selected for the project in order to represent a distribution of farm sizes, herd sizes and geographical locations within each region. The results presented in this report do not represent population averages as the participant farms were not selected using random population sampling.

The report presents visual descriptions of the data for the 2016–17 year. Data are presented for individual farms, as regional financial averages and for the state top 25 % of farms ranked by return on assets (RoA). The presented averages should not be considered averages for a given region due to the small sample size and these farms not being randomly selected.

The top 25 % consists of nine farms on a statewide basis, taken by considering all 35 as one sample and not from combining the top farms from each region. Return on assets is the determinant used to identify the top 25 % of producers as it provides an assessment of the performance of the whole farm irrespective of differences in location and production system.

The Q1–Q3 data range for key indicators are also presented to provide an indication of the variation in the data. The Q1 value is the quartile 1 value, that is, the value of which one quarter (25 %) of data in that range is less than the average. The Q3 value is the quartile 3 value that is the value of which one quarter (25 %) of data in that range is greater than the average. Therefore the middle 50 % of data resides between the Q1–Q3 data range. Given the differences in variation in the regional data, it is not recommended to compare one region to another.

This report often refers to the group of participating farms in a given region by their regional name;

- The 18 participating farms in the Northern NSW region are referred to as ‘North’.
- The 17 participating farms in the Southern NSW region are referred to as ‘South’.

The appendices include detailed data tables, a list of abbreviations, a glossary of terms and a list of standard values used.

Milk production data are presented in kilograms of milk solids (fat + protein) as most farmers are paid based on milk solids.

The report focuses on measures on a per kilogram of milk solids basis, with occasional reference to measures on a per hectare or per cow basis. The appendix tables contain the majority of financial information on a per kilogram of milk solids basis.

Percentage differences are calculated as [(new value – original value)/original value]. For example ‘costs went from $80/ha to $120/ha, a 50 % increase’; [{(120-80)/80} x (100/1)] = [(40/80) x 100] = 0.5 x 100 = 50 %, unless otherwise stated.

Any reference to ‘last year’ refers to the 2015–16 Dairy Farm Monitor Project report. Price and cost comparisons between years are nominal unless otherwise stated. It should be noted that not all of the participants from 2015–16 are in the 2016–17 report, as there were four new farms in this year’s dataset. It is important to bear this in mind when comparing datasets between years. Reference is made at the start of each regional chapter on which farms are new to the project.

Please note that text explaining terms may be repeated within the different chapters.

What's new in 2016–17?

The Dairy Farm Monitor Report for 2016–17 includes a number of changes since last year's report.

- All Dairy Farm Monitor Project data from New South Wales, Victoria, South Australia, Western Australia and Tasmania now provide the baseline data for comparative purposes in DairyBase, Dairy Australia's national dairy industry database for farm level data.
- The Pasture Calculator used in the production of this report is not the Victorian DEDJTR Pasture Consumption Calculator. In 2016–17, pasture consumption figures have been calculated in DairyBase meaning results may not be directly comparable to previous years' reports
- In 2016–17 gross farm income does not include feed inventory change, as it has in previous years. Feed inventory change and, if applicable, change in the value of carry-over water are included as feed costs.
- Data in this report used standard values, which have been outlined in Appendix D. The standard values for livestock and imputed labour have remained unchanged since 2015–16, but irrigation water values have been revised. The standard values may vary from other organisation's standard values. Take care with directly comparing the results of multiple benchmarking studies without due diligence investigating the assumptions made in each data set.
- Australia's dairy industry greenhouse gas emissions estimator, the national greenhouse gas inventory (NGGI), was used in conjunction with the physical and financial data provided by participant farms which remains unchanged from last year but may differ to other Greenhouse Gas Emission calculator outputs.
- This year, NSW DFMP will not report on a regional top 25 % for the North and South groups, as has been done in the past. The top 25 % of farms will be selected from the whole group of 35 farms across the state. This is because the regional top 25 % is less than six farms, so is deemed by statisticians to be too small a sample size to be a valid selection.

Keep an eye on the project website for further reports and updates on the project at dairyaustralia.com.au/dairyfarmmonitor

Summary

Summary

In 2016–17 the data collected and analysed from 35 farms across New South Wales revealed that milk prices decreased by 6 % whilst costs remained similar on average. This led to decreased profitability on average of $154,811 earnings before interest and tax to result in an average return on assets of 2.2 %. Seasonal conditions were variable across the state, with higher than average rainfall in the North and average in the South. However, all regions experienced weather extremes during the year, including floods, heat waves and very dry spells.

The NSW dairy industry generally was affected by lower milk prices and difficult seasonal conditions in 2016–17, with state milk production declining by 5 % on the previous year to 1.13 billion litres.

For the farmers participating in the Dairy Farm Monitor Project, milk price in 2016–17 was down on average by 6 % on the previous year, from $7.34 to $6.89/kg MS. The decrease was mostly felt in the South region, due to the influence of the Victorian industry. South farms had a 7% decrease to an average of $6.48/kg MS for the year. Milk price in the North dropped 5 % to $7.28/kg MS, however those farms in the far north coast area held steady, on the back of strong competition for milk to meet the demands of the NSW and Southern Queensland liquid milk market.

Seasonal conditions in 2016–17 varied throughout the year, with periods of very wet conditions followed by some very dry months. Record high temperatures over prolonged periods were recorded in late January and February. Many farmers have remarked that 2016–17 was one of the most difficult years to manage for some time.

The variable season is reflected in a difference in the amount of pasture consumed and fodder conserved on farms. Farmers in the North grazed more but made less silage, with overall pasture consumption increasing to 8.8 t DM/ha. Farmers in the South had a decrease in pasture consumption to 8.2 t DM/ha.

Farm profitability declined this year compared to 2015–16. The average earnings before interest and tax (EBIT) was $0.92/kg MS (10 c/l), which was an 18 % decrease from the previous year.

Whole farm average earnings before interest and tax dropped to $154,811, while net farm income dropped to $74,505. This led to a corresponding reduction in return on assets to 2.2 % and return equity to 1.4 %, from 3.0 % and 2.1 % respectively last year.

Whilst this year there was decline in farm profit across the state, there was also again a clear difference in profit between the farms in the two regions.

The North

Across the North, most farms experienced good conditions in spring, with hot conditions in summer, before high rainfall in March, and then dry for the rest of the year. Milk prices on average dropped by 5 % to $7.24/kg MS (54 c/l), although the drop was minimal in the north coast and higher in the Hunter and mid north coast areas.

The average cost of production (including inventory change) was 4 % lower than the year before, at $7.50/ kg MS for the North. Farms fed a similar amount of purchased feed per cow but paid less for it, with concentrates averaging $376 per tonne of dry matter (t DM) for 2016–17.

Largely due to the drop in milk price, average whole farm earnings before interest and tax (EBIT) decreased to $104,143 per farm compared to $112,756 in 2015–16. Average return on assets improved slightly from 1.6 % in 2015–16 to 1.8 % in 2016–17. Because of the range in milk prices across the farms in the North region, some farms had lower EBIT, but some increased EBIT over the previous year. Therefore the average return on assets can be higher, despite a lower average EBIT. There were also new farms in the sample this year. Fourteen of the 18 farms in this group recorded a positive return on assets and equity.

The South

Most of the South region experienced drier seasonal conditions throughout 2016–17, after a wet winter resulted in close to average rainfall for the year.

Milk prices decreased by around 7 % over the previous year to $6.48/kg MS. Those farmers closer to the Murray region faced a larger drop in milk price than those further north and coastal.

Cost of production increased by 4 % in 2016–17, despite lower prices for purchased fed. Overall this led to a large decrease in EBIT to an average of $ 208,461 per farm this year, down by 50 % on the previous year's EBIT of $415,409. Thirteen of the 17 farms recorded positive return on assets, with the average for the group decreasing to 2.7 %, down from 4.7 % in 2015–16.

Farmer confidence

Following lower than average profits in the 2016–17 year, expectations about improving business conditions for the coming season were neutral, with 50 % expecting improvement and 40 % expecting no change.

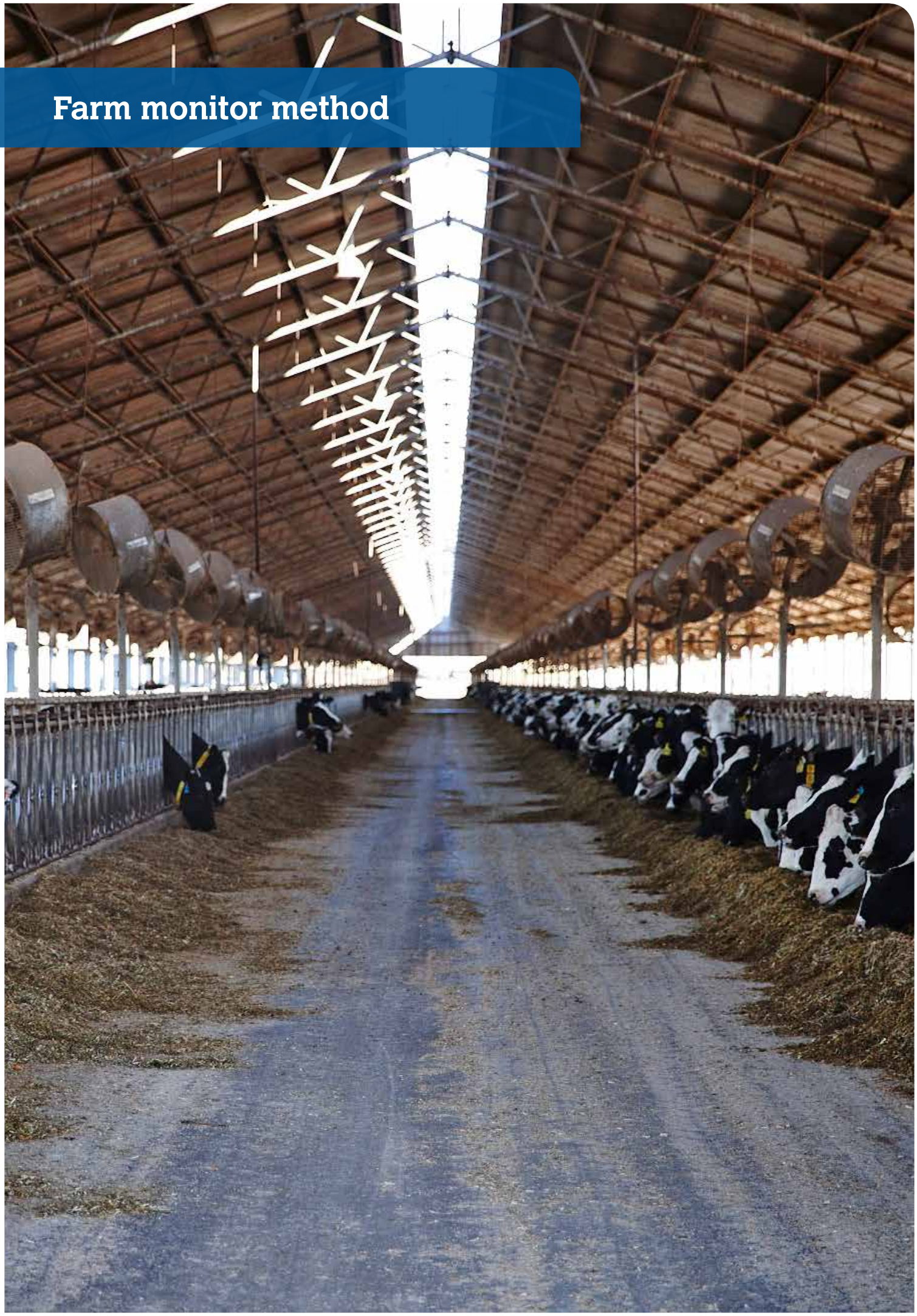
Intentions for increasing milk production next year were strongly positive in the North and moderately positive in the South, indicating an improvement in farmer confidence about the year ahead.

The major concerns facing participants for 2017–18 were related to input costs, milk price, increasing variability in weather patterns and seasonal conditions and the subsequent issues in managing feed supply.

Historical analysis

A historical analysis over the past six years of the project showed that 2016–17 continued the trend of the previous year in lower EBIT per farm and lower returns on assets and equity.

Farm monitor method



Farm monitor method

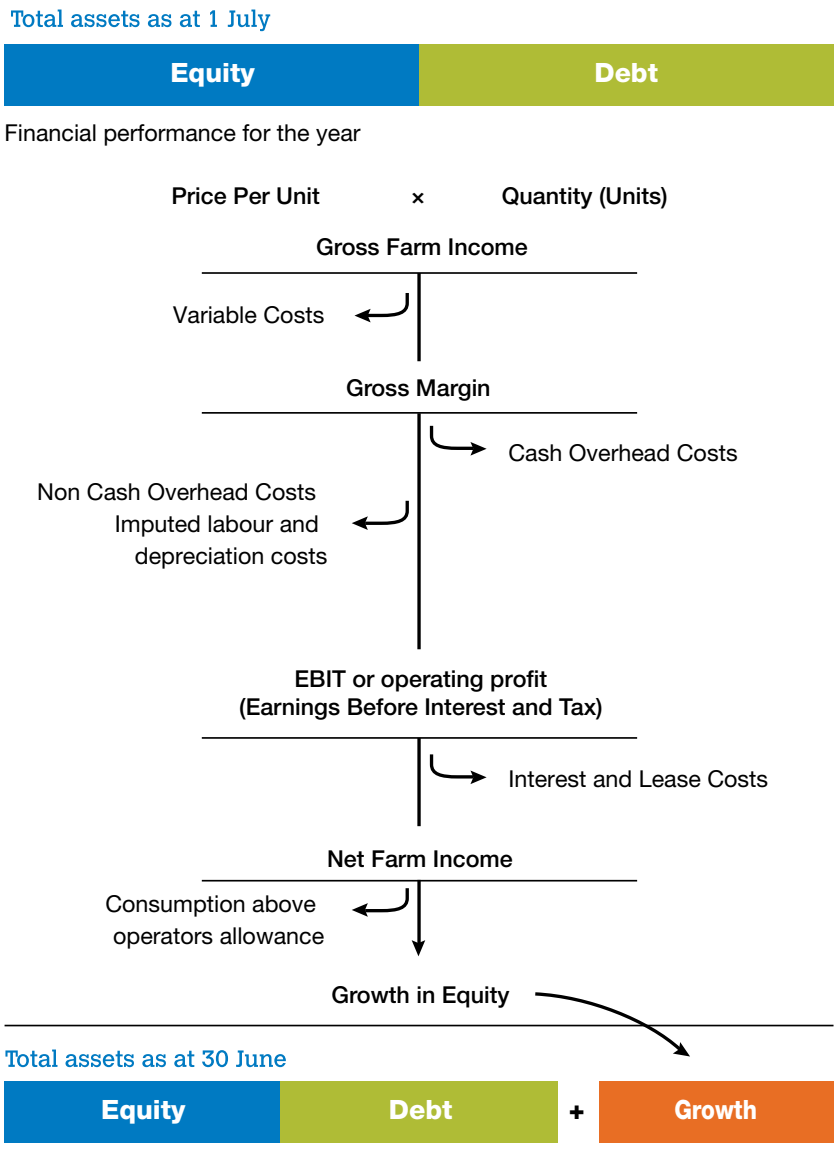
This chapter explains the method used in the Dairy Farm Monitor Project (DFMP) and defines the key terms used.

The method employed to generate the profitability and productivity data was adapted from that described in The Farming Game (Malcolm *et al.* 2005) and is consistent with previous Dairy Farm Monitor Project (DFMP) reports. Readers should be aware that not all benchmarking programs use the same method or terms for farm financial reporting. The allocation of items such as lease costs, overhead costs or imputed labour costs against the farm enterprises varies between financial benchmarking programs. Standard dollar values for items such as stock and feed on hand and imputed labour rates may also vary. For this reason, the results from different benchmarking programs should be compared with caution.

Figure 1 demonstrates how the different farm business economic terms fit together and are calculated. This has been adapted from an initial diagram developed by Bill Malcolm. The diagram shows the different profitability measures as costs are deducted from gross farm income. Growth is achieved by investing in assets which generate income. These assets can be owned with equity (one's own capital) or debt (borrowed capital). The amount of growth is dependent on the maximisation of income and minimisation of costs, or cost efficiency relative to income generation.

The performance of all participants in the project using this method is shown in Figure 2. Production and economic data are both displayed to indicate how the terms are calculated and how they in turn fit together.

Figure 1 Dairy farm monitor project method



Gross farm income

The farming business generates a gross farm income which is the sum of milk cash income (net), livestock trading profit, or other sources such as milk share dividends. The main source of income is from milk, which is calculated by multiplying price received per unit by the number of units. For example, dollars per kilogram milk solids multiplied by kilograms of milk solids produced. Subtracting certain costs from total income gives different profitability measures.

Variable costs

Variable costs are the costs specific to an enterprise, such as herd, shed and feed costs. These costs vary in relation to the size of the enterprise. Subtracting variable costs for the dairy enterprise only from gross farm income, gives the gross margin. Gross margins are a common method for comparing between similar enterprises and are commonly used in broad acre cropping and livestock enterprises. Gross margins are not generally referred to in economic analysis of dairy farming businesses due to the specific infrastructure investment required to operate a dairy farm making it less desirable to switch enterprise.

Overhead costs

Overhead costs are costs not directly related to an enterprise as they are expenses incurred through the general operating of the business. The DFMP separates overheads into cash and non-cash overheads, to distinguish between different cash flows within the business. Cash overheads include rates, insurance, and repairs and maintenance. Non-cash overheads include costs that are not actual cash receipts or expenditure; for example the amount of depreciation on a piece of equipment. Imputed operators' allowance for labour and management is also a non-cash overhead that must be costed and deducted from income if a realistic estimate of costs, profit and the return on the capital of the business is to be obtained.

Earnings before interest and tax

Earnings before interest and tax (EBIT) are calculated by subtracting variable and overhead costs from gross farm income. Earnings before interest and tax is sometimes referred to as operating profit and is the return from all the capital used in the business.

Net farm income

Net farm income is EBIT minus interest and lease costs and is the reward to the farmer's own capital. Interest and lease costs are viewed as financing expenses, either for borrowed money or leased land that is being utilised.

Net farm income is then used to pay tax and what is remaining is net profit or surplus and therefore growth, which can be invested into the business to expand the equity base, either by direct reinvestment or the payment of debt.

Return on assets and return on equity

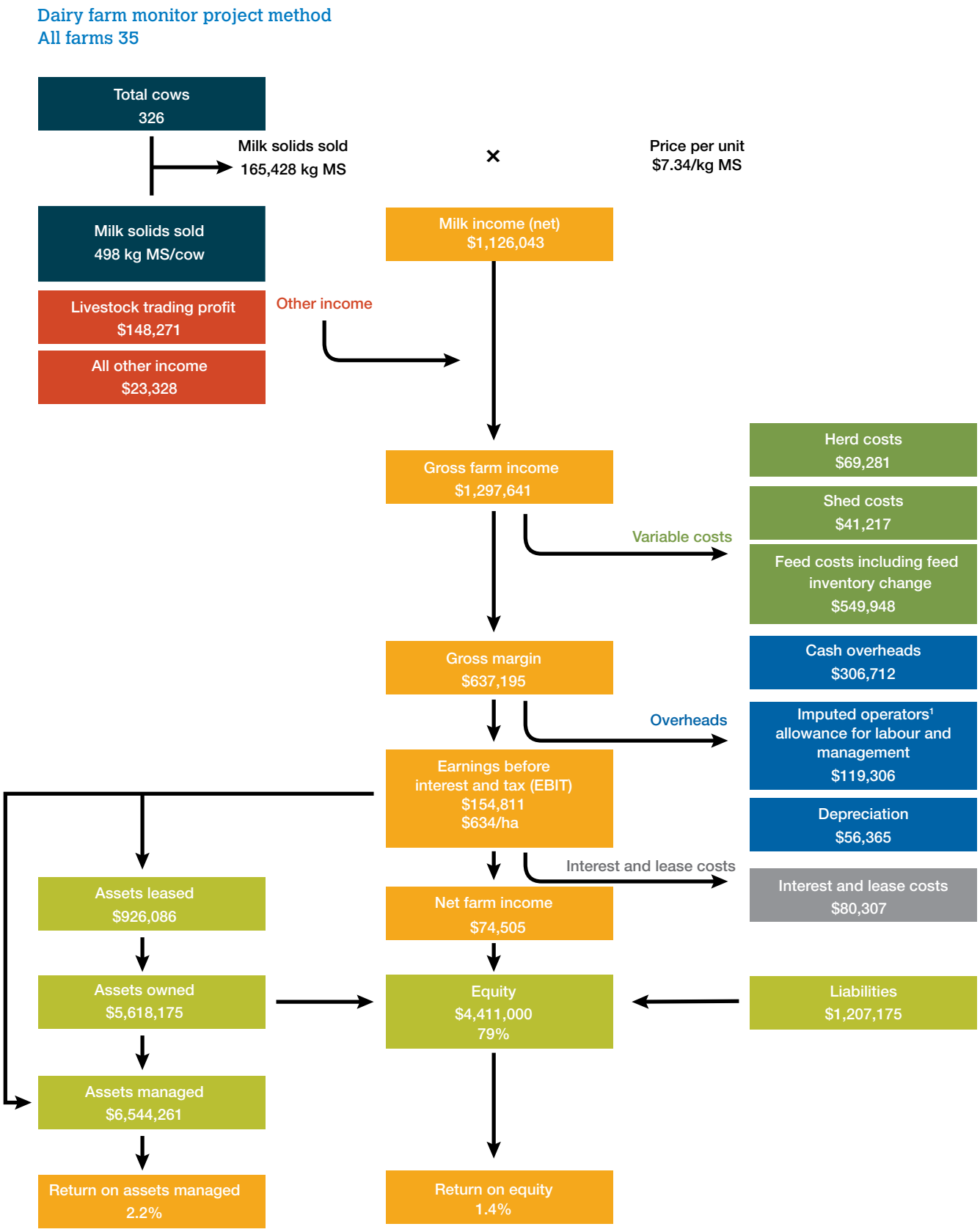
Two commonly used economic indicators of whole farm performance are return on assets (RoA) and return on equity (RoE). They measure the return to their respective capital base.

Return on assets indicates the overall earning of the total farm assets, irrespective of capital structure of the business. It is EBIT expressed as a percentage of the total assets under management in the farm business, including the value of leased assets. Return on assets is sometimes referred to as return on capital.

Earnings before interest and tax expressed as a return on total assets is the return from farming. There is also a further return to the asset from any increase in the value of the assets over the year, such as land value. If land value goes up 5 % over the year, this is added to the return from farming to give total return to the investment. This return to total assets can be compared with the performance of alternative investments with similar risk in the economy. In Figure 1, total assets are visually represented by debt and equity. The debt:equity ratio or equity percent of total capital varies depending on the detail of individual farm business and the situation of the owners, including their attitude towards risk.

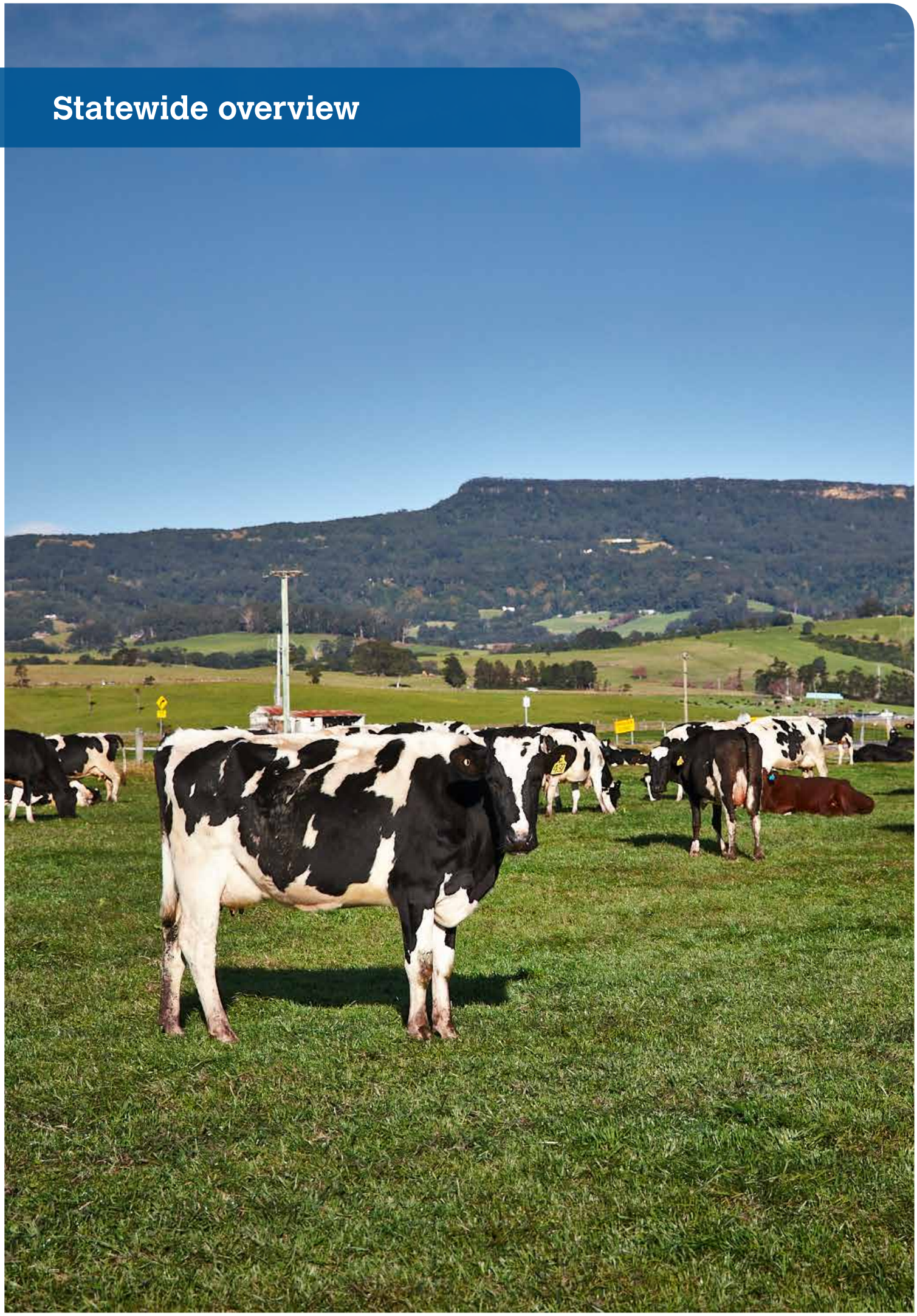
Return on equity measures the owner's rate of return on their own capital investment in the business. It is net farm income expressed as a percentage of total equity (one's own capital). The DFMP reports return on equity without capital appreciation. The return on equity is reported in Appendix Table 1 for (EBIT) each region.

Figure 2 Dairy farm monitor project method profit map – state average 2016–17 data[1]



[1] Profit map adapted from Queensland Dairy Accounting Scheme – 2010 with permission from Ray Murphy, Department of Agriculture, Fisheries and Forestry, Queensland.

Statewide overview



Statewide overview

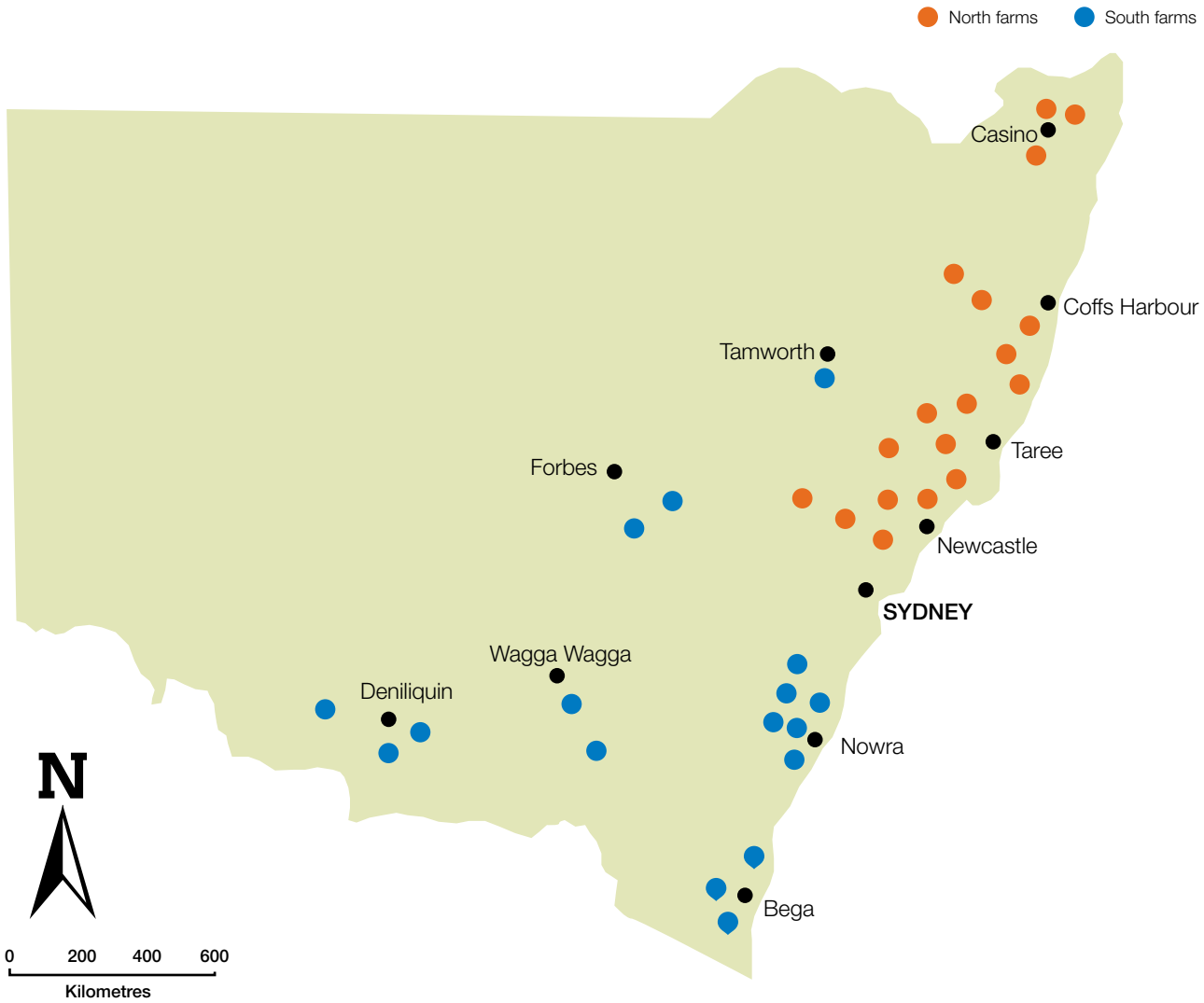
This section of the report presents the average performance and the range of physical and financial indicators for all 35 participant farms across New South Wales from the North and the South regions.

Figure 3 shows the approximate location of participating farms.

Farms in the North region range in location from the Queensland border to the Hunter Valley along the coast and hinterland. They are generally characterised as having moderate to high rainfall, limited irrigation, a kikuyu/annual ryegrass pasture base with some use of summer forage crops.

The Southern group includes farms along the coast from Sydney to the Bega valley, and farms from the inland river systems of NSW, including the Central West and Riverina regions. They are generally characterised by lower rainfall, mainly irrigated perennial and annual pastures, greater use of forage crops, larger herds and bigger farms. Whilst this grouping reflects general similarities among farm systems and the influences on milk pricing across NSW, there is a wide range of farm characteristics within each group.

Figure 3 Distribution of participant farms in 2016–17 across New South Wales



2016–17 seasonal conditions

Seasonal conditions in 2016–17 were variable, with extremes of heat, record floods and very dry conditions all being experienced throughout the year.

It was a difficult season for coastal farmers, with a dry spring and record hot summer with heat waves in January and February. This was followed by above average rainfall in March, with the aftermath of Cyclone Debbie reaching down as far as Hunter. The Lismore region was devastated by a record level flood in March, with a number of dairy farms badly affected. The remainder of autumn was dry, with good rain again in June.

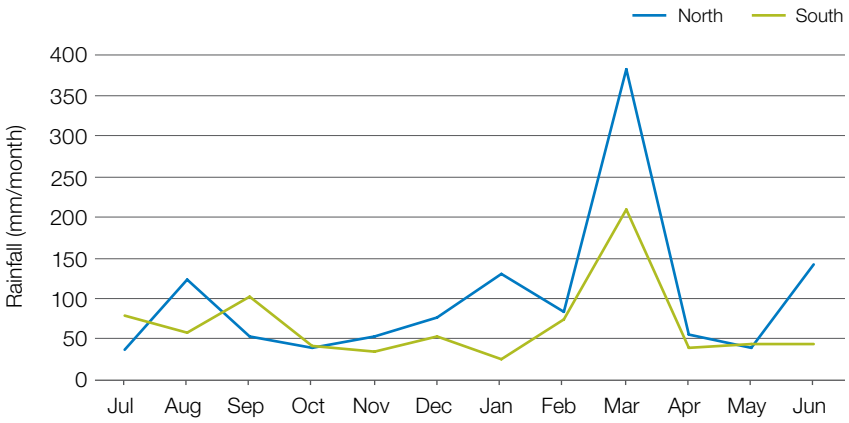
Farmers in the South started the year with very wet conditions and floods in central west and Riverina. Whilst making it a very difficult winter, the benefit followed with replenishment of water storages and good pasture conditions for spring and summer. Autumn was dry autumn before good rain in June, followed by very dry winter. Bega and the south coast had below average rain for the year, limiting pasture growth.

These conditions all contributed to difficult pasture growing conditions in most areas, especially for establishing winter feed. Heat waves in summer affected milk production, and the impact on herd reproductive performance may not be fully known until next year.

The regional sections provide more detail on the 2016–17 seasonal conditions.

Figure 4 shows the average monthly rainfall pattern in 2016–17 and the differences between the regions.

Figure 4 2016–17 monthly rainfall



Whole farm analysis

In 2016–17 farms in the South had larger herd size, farm size and higher milk solids per cow and per labour unit than the North farms. As in other years, the North farms received a higher average milk price than those in the South.

There were four new farms in the sample this year, replacing four who chose not to participate this year, to maintain the participation at 35 farms. This year saw a decrease in average herd size across the state, to 326 cows. This was a drop of an average of 30 cows milked on farms in both the North and the South.

The average rainfall across the state was higher than the previous year, particularly in the North which experienced a large rainfall event in March, while the South was lower than the year before.

Total usable area was lower across the sample group this year to the previous year, as was milk solids (MS) sold per cow across both regions. This was mainly due to the change in the participating farms. Stocking rate per usable hectare remained the same, but milk sold in kilograms of milk solids sold per hectare (kg MS/ha) increased, up from 618 kg MS/ha to 644 kg MS/ha. Labour efficiency per kilogram of milk solids remained similar across the state.

Milk price in 2016–17 was down on average by 6 % from the previous year, reducing from $7.34/kg MS to $6.89/kg MS this year. The decrease impacted both regions, with the South farms experienced a 7 % decrease to an average of $6.48/kg MS for the year. The North farms had a 5 % drop to $7.28/kg MS, although the far North Coast farms saw little change from the milk price they received last year.

Table 1 presents the average of some farm characteristics for the state and for each region. Further details can be found in the Appendix (Table 2) for each region.

Gross farm income

Gross farm income includes all farm income from milk sales, change in inventories of livestock or cash income from livestock trading. Income from sources such as milk share dividends is included as other farm income.

Across the state, income from sources other than milk accounted for 13 % of gross farm income, higher than last year. This was mainly driven by an increase in livestock trading profit in 2016–17. This is especially important this year due to feed inventory change not being considered in the gross farm income calculation. Feed inventory change in 2016–17 is included as a variable feed cost.

There was some variation in gross income per kilogram of milk solids between the two regions, mainly due to differences in milk price. The average milk price for all participants was $6.89/kg MS (50.4 c/l), a 6 % decrease from last year. Average milk price in the North was $7.28/kg MS (53.6 c/l) and in the South it was $6.48/kg MS (47 c/l).

Table 1 Farm physical data – State overview

Farm physical parameters	Statewide	North	South
Number of farms in sample	35	18	17
Herd size (max no. cows milked for at least 3 months)	326	259	396
Annual rainfall 2016–17 (mm)	1,019	1,216	810
Water used (irrigation + rainfall) (mm/ha)	1,302	1,537	1,052
Total usable area (hectares)	263	188	343
Stocking rate (milking cows per usable hectare)	1.3	1.4	1.2
Milk sold (kg MS/cow)	498	477	520
Milk sold (kg MS/ha)	646	680	611
Milk price received ($/kg MS)	$6.89	$7.28	$6.48
People productivity (milkers/FTE)	75	69	81
People productivity (kg MS/FTE)	36,928	32,708	41,397

Variable costs

Variable costs are costs directly associated with production, and include costs such as animal health, contract services, supplementary feeding, agistment, pasture costs and feed inventory change. Table 2 shows the largest cost category was purchased feed and agistment at $1.97/kg MS, which is 10% lower than the previous year.

Total feed costs, including home grown feed, purchased feed and agistment and feed inventory change, were $3.27/kg MS, and accounted for 84% of total variable costs on average for the state. See Appendix Table 6 for a breakdown of variable costs as a percentage of total costs in each region.

The gross margin is equal to gross farm income minus total variable costs. While commonly used to compare enterprises that have a similar capital structure like sheep or beef, it can be a useful measure in dairy to analyse changes on farm that do not require capital investment.

The statewide average gross margin was $4.03/kg MS, which was lower than the previous year ($4.28/kg MS).

Overhead costs

Overhead costs or 'fixed costs' are relatively unresponsive to small changes in the scale of operation of a business. Examples include depreciation, administration, repairs and maintenance and labour. Imputed labour cost is an estimate of the cost of the time spent in the business by people with a share in the business such as the owner, the owner's family or a sharefarmer who owns assets in the business.

Further information on imputed labour can be found in Appendix D.

The average total overhead costs this year was $3.11/kg MS compared with $3.16/kg MS in 2015–16. Both the North and South farms decreased overhead costs this year by a small amount.

Table 2 shows that in 2016–17 the North had higher average variable costs as well as higher average overhead costs on a per kilogram of milk solids basis compared to the South.

Table 2 Average farm financial performance per of kilogram milk solids and cents per litre – statewide

Farm income and cost category	Statewide		North		South	
Income	**$/kg MS**	**c/l**	**$/kg MS**	**c/l**	**$/kg MS**	**c/l**
Milk income (net)	6.89	50.4	7.28	53.6	6.48	47.0
Livestock trading profit	0.90	6.5	0.80	5.9	0.99	7.2
Other farm income	0.15	1.1	0.17	1.2	0.14	1.0
Total income	**7.94**	**58.1**	**8.25**	**60.7**	**7.62**	**55.2**
Variable costs						
Herd cost	0.38	2.7	0.35	2.6	0.40	2.9
Shed cost	0.26	1.9	0.31	2.3	0.22	1.6
Home grown feed cost	1.28	9.4	1.51	11.1	1.04	7.7
Purchased feed and agistment	1.97	14.2	1.90	13.8	2.04	14.7
Feed inventory change	0.02	0.1	0.06	0.4	-0.02	-0.2
Total variable costs	**3.91**	**28.4**	**4.12**	**30.1**	**3.68**	**26.6**
Gross margin						
per kilogram of milk solids	**4.03**	**29.6**	**4.13**	**30.6**	**3.93**	**28.6**
Overhead costs						
Repairs and maintenance	0.49	3.6	0.55	4.1	0.43	3.1
Employed labour	0.90	6.5	0.95	6.9	0.85	6.2
All other overheads	0.41	3.0	0.42	3.1	0.40	2.8
Imputed labour	0.95	7.1	1.08	8.1	0.81	6.0
Depreciation	0.36	2.7	0.38	2.8	0.35	2.5
Total overhead costs	**3.11**	**22.8**	**3.38**	**24.9**	**2.83**	**20.6**
Earnings before interest and tax						
per kilogram of milk solids	**0.92**	**6.8**	**0.75**	**5.7**	**1.10**	**8.0**

Earnings before interest and tax

Earnings before interest and tax (EBIT) are the gross farm income, less variable costs and overhead costs including non-cash costs. As EBIT excludes tax and interest and lease costs, it can be used to analyse the operational efficiency of the whole farm business.

Average EBIT was 18% lower across the state this year at $0.92/kg MS compared to $1.12/kg MS in 2015–16. This decrease in EBIT was influenced by a significant 36% drop in the South region, down from $1.72/kg MS to $1.10/kg MS. Participant farms in the North had a small increase in EBIT, up from $0.62/kg MS to $0.75/kg MS.

Figures 17 and 28 in the regional sections present the EBIT of sample farms.

Return on assets and equity

Return on assets is the EBIT expressed as a percentage of total farm assets under management and hence is an indicator of the earning power of total assets, irrespective of capital structure. Similarly, it can be considered as an indicator of the overall efficiency of use of the resources that are involved in a given production system and not elsewhere in the economy.

The average return on assets for participants across the state was 2.2%, down from last year's 3.0%. The return on assets ranged from negative 2.0 % to 13.6% (Figure 6 and Appendix Tables B1 and C1). Four farms in the North and four in the South recorded a negative EBIT and therefore a negative return on assets in 2016–17.

Figure 6 shows the majority of farms had a return on assets between 0% and 5%.

Return on equity (RoE) is the net farm income (earnings before interest and tax less interest and lease charges) expressed as a percentage of owner's equity. Items not accounted for in net farm income are capital expenditure, principal loan repayments and tax. Return on equity is a measure of the owners' rate of return on their investment.

The average RoE for the 35 farms was 1.4% in 2016–17, down from 2.1% last year, with a large range from negative 9% to 18% (Figure 7).

Further discussion of return on assets and return on equity occur in the risk section below and later in the regional chapters. Appendix Tables B1 and C1 present all the return on assets and return on equity for the participant farms for each region.

Figure 5 Average earnings before interest and tax per kilogram of milk solids sold

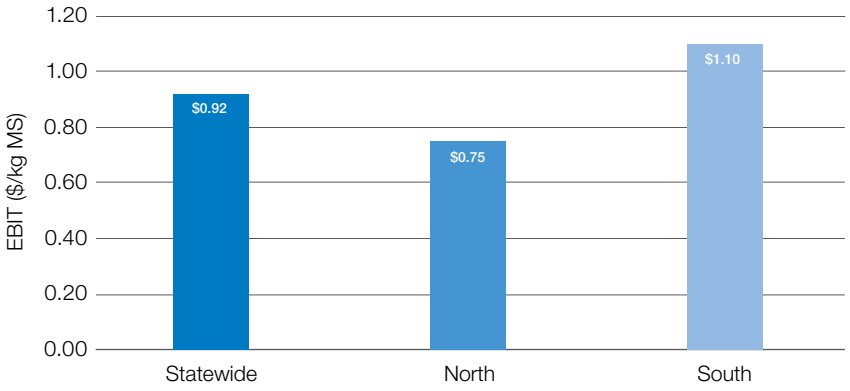


Figure 6 Distribution of farms by return on assets

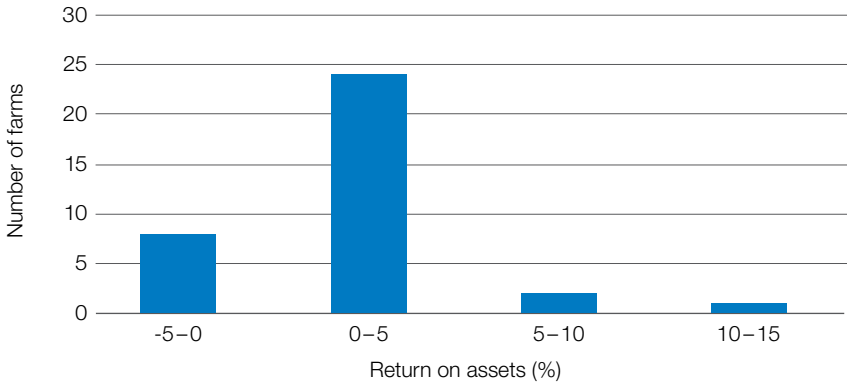
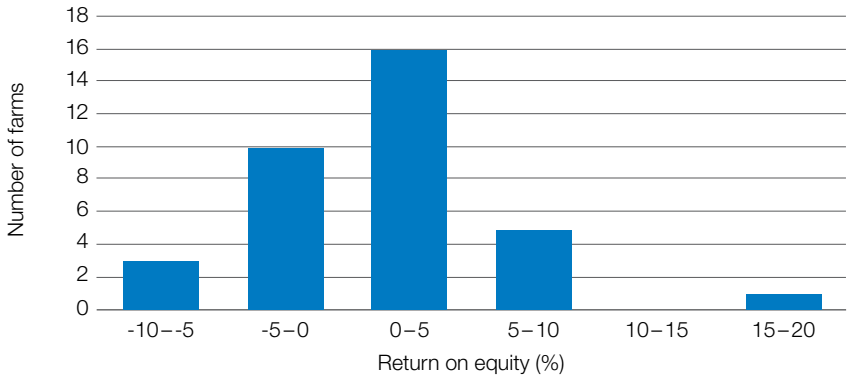


Figure 7 Distribution of farms by return on equity



Risk

"Risk is conventionally classified into two types: business risk and financial risk. Business risk is the risk any business faces regardless of how it is financed. It comes from production and price risk, uncertainty and variability. 'Business risk' refers to variable yields of crops, reproduction rates, disease outbreaks, climatic variability, unexpected changes in markets and prices, fluctuations in inflation and interest rates, and personal mishap….' Financial risk' derives from the proportion of other people's money that is used in the business relative to the proportion of owner-operator's capital…"[2]

Table 3 presents some key risk indicators. Refer to Appendix D for the definition of terms used in Table 3. The indicators in Table 3 can also be found in Appendix Table A1 for the state and in Appendix Tables, B1 and C1 for each region.

All farms are exposed to business and financial risk. It is through managing risk that greater profits can be made. It is also the case that by accepting a level of risk in one area of business, a greater risk in another area can be avoided.

Using the example of feed sources, dairy farmers are generally better at dairy farming than they are at grain production. Thus by allowing someone who is experienced in producing grain to supply them, they lessen the production and other business risks as well as the financial risks they would have exposed themselves to by including extensive cropping in their own business.

The trade-off is that they are in turn exposed to price and supply risks.

The trade-off between perceived risk and expected profitability will dictate the level of risk a given individual is willing to take. It then holds that in regions where risk is higher, less risk is taken. While in good times this will result in lower returns, in more challenging times it will lessen the losses.

The higher the risk indicator (or lower with equity %) in Table 3, the greater the exposure to the risk of a shock in those areas of the business. Further, the data in Appendix Tables 4 and 5 are in cost per kilograms of milk solids sold. This data set is best used as risk indicators, given it is measured against the product produced and sold currently and not the capital invested.

This year there was an increase in equity levels across the state, with an average of 79% compared to 76% last year. Caution should be exercised when comparing equity between years as the farm sample changes.

The cost structure ratio provides variable costs as a proportion of total costs. A lower ratio implies that overhead costs comprised a greater proportion of total costs which in turn indicates less flexibility in the business. Table 3 shows that across the state for every $1.00 spent, $0.56 was used to cover variable costs, however it is worth noting that cost structure varies between regions and farms. One hundred minus this percentage gives the proportion of total costs that are overhead costs.

The debt servicing ratio shows interest and lease costs, as a proportion of gross farm income, reported as a percentage. The ratio of 6% this year is the same as last year. It indicates that on average farms repaid $0.06 of every dollar of gross farm income to their creditors. Average debt per cow decreased on last year.

The benefit of taking risks and borrowing money can be seen when farm incomes yield a higher return on equity than on their return on assets. In 2016–17, 12 of the 35 (or 29%) of participant farms received a return on equity greater than their return on assets.

This year, all farms in the NSW Dairy Farm Monitor project sourced at least some of their metabolisable energy (ME) from imported feeds and are therefore somewhat exposed to fluctuations in prices and supply in the market for feed. In 2016–17 on average, North farms sourced a smaller proportion of their diet from imported feed compared to 2015–16, down from 48% to 38%. South farms remained unchanged in the proportion of purchased feed.

Table 3 Risk indicators – Statewide and by region

	Statewide	North	South
Cost structure (proportion of total costs that are variable costs)	55%	54%	56%
Debt servicing ratio (percentage of income as finance costs)	6%	6%	7%
Debt per cow ($)	$3,816	$3,427	$4,227
Equity percentage (ownership of total assets managed)	79%	80%	76%
Percentage of feed imported (as a percentage of total ME)	41%	38%	43%

[2] Malcolm, L.R., Makeham, J.P. and Wright, V. (2005), The Farming Game, Agricultural Management and Marketing, Cambridge University Press, New York. p180

Physical measures

Feed consumption

The contribution of different feed sources to the total ME consumed on the farm is presented in Figure 8. This includes feed consumed by dry cows and young stock.

A cow's diet can consist of grazed pasture, harvested forage, crops, concentrates and other imported feeds.

In the North farms grazed pasture made up 46 % of the diet in cows and concentrates 34 %. In the South farms it was 47 % from pasture and 35 % of the diet coming from concentrates. Farms in both regions also sourced just under 20 % of ME from hay and silage.

Appendix Table 3 provides further information on purchased feed.

The average estimated home grown feed consumed per milking hectare is shown in Figure 9. Both Figures 8 and 9 were estimated using the pasture consumption calculator in DairyBase which is reasonably similar but not directly comparable to figures published in previous years using the DEDJTR Pasture Consumption Calculator.

Total home grown feed consumed on the milking area (by direct grazing plus conservation) in 2016–17 was higher than 2015–16 in the North, and lower in the South.

The North directly grazed 7.2 t DM/ha, and conserved 1.5 t DM/ha. The South consumed an average of 6.5 t DM/ha of direct grazed pasture and conserved 1.7 t DM/ha.

Figure 8 Sources of whole farm metabolisable energy

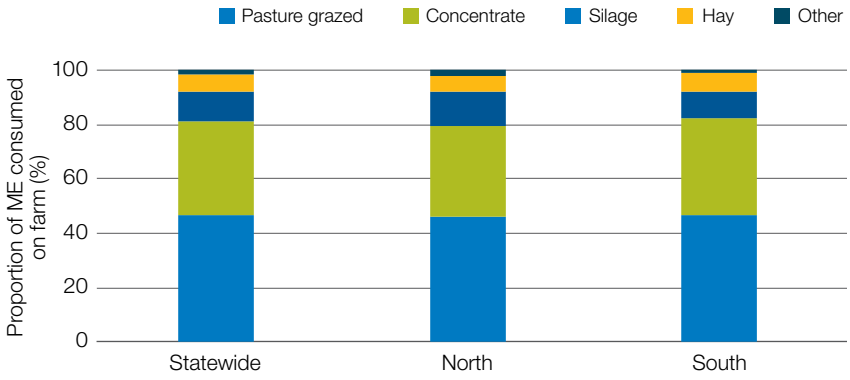
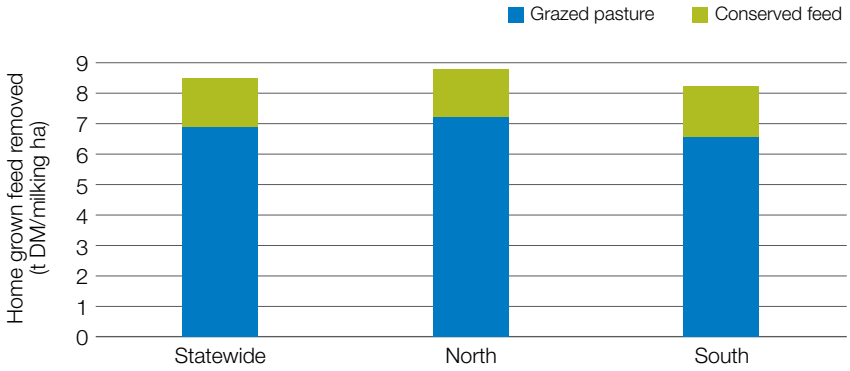


Figure 9 Sources of whole farm metabolisable energy



Appendix Table 2 gives estimates of quantity of home grown feed consumed per milking hectare of sample farms across the state. The data presented in Figure 9 account only for the consumption of pasture that occurred on the milking area whether by milking, dry or young stock.

Several of the farms in the project grew fodder crops for silage or grain on the non-milking area. These tonnages were calculated as part of the total feed produced on the farm usable area, but may not be captured as home grown feed consumed on the milking area. So some farms may appear as low consumers of pasture by direct grazing, but may actually grow and consume large tonnages of fodder over the whole farm or usable area.

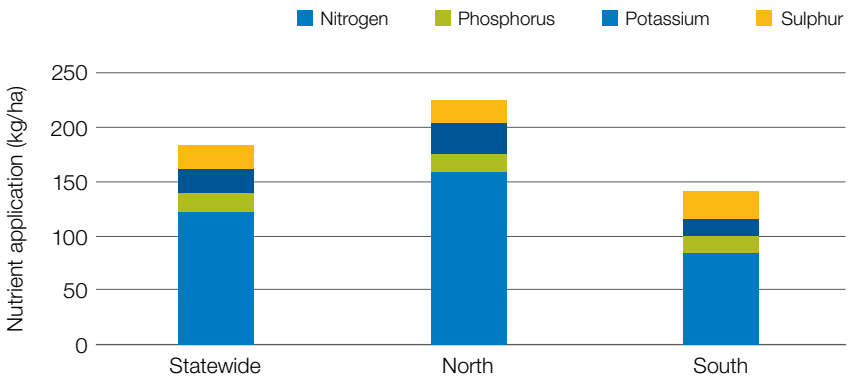
Fertiliser application

Application of nutrients in 2016–17 increased in both regions from the previous year. Average fertiliser usage on the usable area for the State was: nitrogen at 123 kg/ha, phosphorus 16 kg/ha, potassium at 22 kg/ha, and sulphur at 23 kg/ha.

It should be noted that water availability, pasture species, soil type, pasture management, seasonal variation in response rates to fertilisers, variations in long-term fertiliser strategies plus other factors will all influence pasture growth and fertiliser application strategies. These particular strategies are not captured as part of this project.

Appendix Table 2 provides further information on fertiliser application for each region.

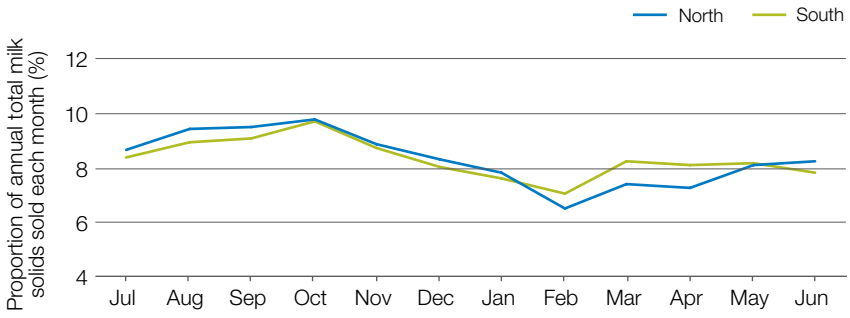
Figure 10 Nutrient application per hectare



Milk production

Figure 11 shows the average distribution of monthly milk sold across both regions of NSW, and reflects the flatter milk supply required by processors for the liquid milk market. While production is very similar for most of the year it can be seen that the North farms in 2016–17 had a drop in production in autumn relative to the South, reflective of the very hot conditions for farms in that region.

Figure 11 Monthly distribution of milk solids sold

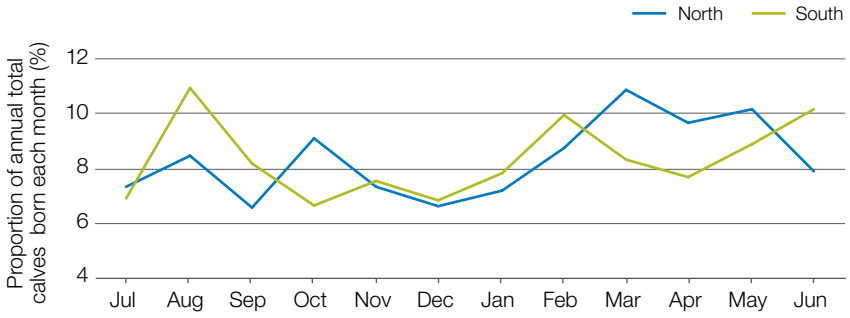


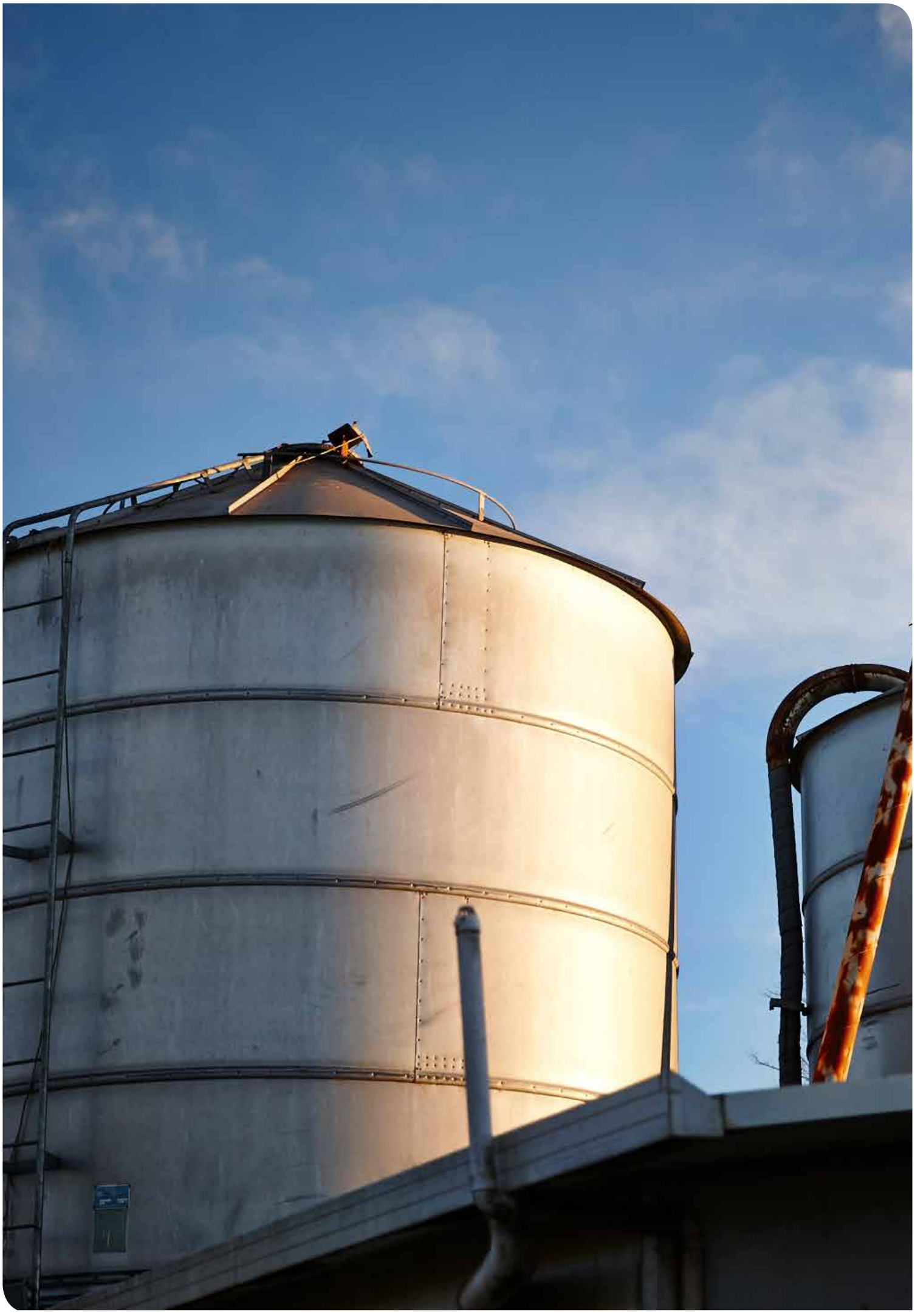
Calving pattern

In order to achieve the milk production curve shown in Figure 11, cows need to be calving all year round, and this is evident in the graph of monthly calving pattern in Figure 12. The South farms this year showed a peak calving period in spring and another smaller peak in autumn. The North farms showed an autumn peak calving period.

The lowest calving period occurs throughout the hotter summer months in both regions.

Figure 12 Monthly distribution of calves born





The North

The North

There was one new farm in the North group this year, and two farms from last year did not participate.

Although 2016–17 was a wetter year than the previous one, is was characterized by some very dry months interspersed with some very heavy rainfall events. This was particularly severe on the North coast of NSW where major flooding followed the aftermath of a tropical cyclone in March. Late summer brought several prolonged heat waves, with record temperatures both day and night. This affected milk production, cow reproduction and health, and delayed pasture establishment in autumn for annual winter species.

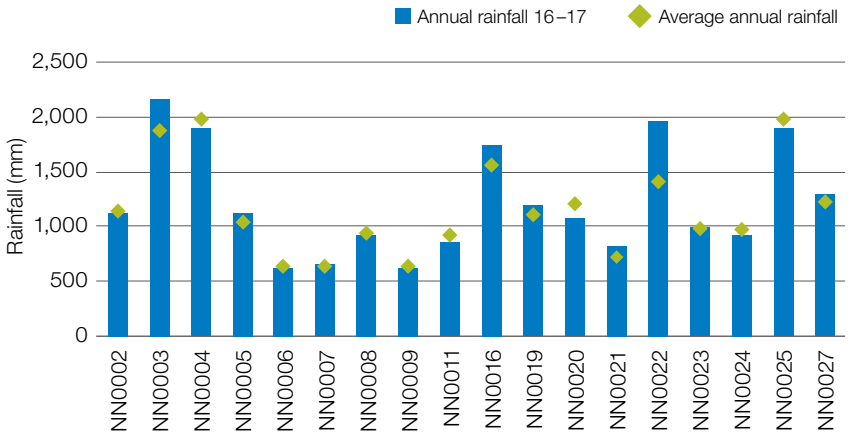
Participant dairy farmers in the North received an average milk price of $7.28/kg MS sold this year, down from $7.65/kg MS in the previous year. The price reduction was felt more in the Hunter and Midcoast farms, while far north coast milk prices remained fairly similar to the previous year.

Good prices were received for cull cattle, and more farmers reared bull calves for meat than in other years, thus improving the cash flow position for some farmers. Grain and fodder prices were generally favourable, and supply plentiful.

Most farms received around their average long term rainfall, as can be seen in Figure 13.

The average cost of concentrates this year was $376/t DM, down from $401/t DM last year. North farmers fed about the same purchased feed per milker at 2.5t DM/head.

Figure 13 2016–17 annual rainfall and long term average rainfall – North



Whole farm analysis

The farms in this year's group for the North had higher milk production per cow and per hectare than the previous year.

The North participants on average also consumed more home grown feed, both per hectare and as a percentage of the whole diet mainly due to the higher rainfall and the lower grain price.

Labour efficiency ranged from 27,000 to 35,000 kg MS/full time equivalent (kg MS/FTE). This indicates that some used labour more efficiently than others.

Key whole farm physical parameters for the North are presented below in Table 4. The Q1–Q3 range shows the band in which the middle 50 % of farms for each parameter sit.

As explained on page 4 of this report, the top 25 % shown are across all farms in the state, not just for each region, due to the small sample size.

Table 4 Farm physical data – North

Farm physical parameters	North average	Q1 to Q3 range	Top 25 % average
Annual rainfall 2016–17 (mm)	1,216	874–1,627	1,150
Water used (irrigation + rainfall) (mm/ha)	1,537	1,179–1,830	1,492
Total usable area (hectares)	188	110–247	229
Milking cows per usable hectare	1.4	1.1–1.7	1.5
Milk sold (kg MS/cow)	477	458–508	517
Milk sold (kg MS/ha)	680	547–775	761
Home grown feed as % of ME consumed	62%	60–67%	53%
Labour efficiency (milking cows/FTE)	69	62–74	86
Labour efficiency (kg MS/FTE)	32,708	27,788–35,308	42,907

Gross farm income

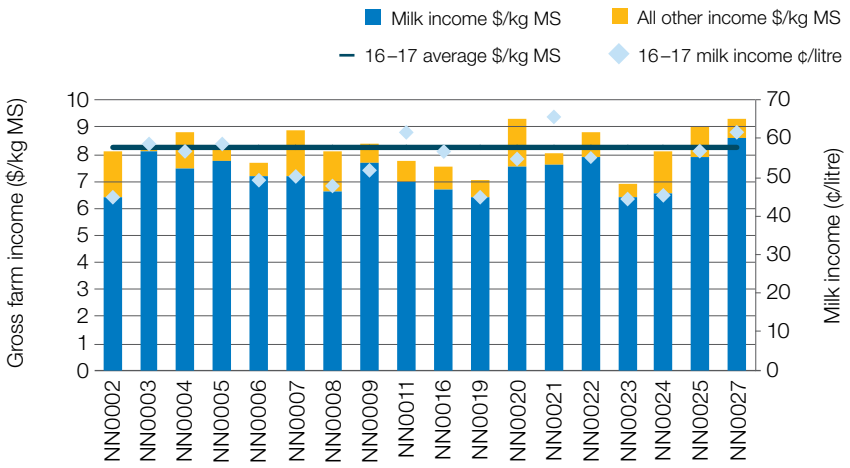
Gross farm income includes all farm income relating to the dairy farm business, whether that is income from milk sales, a change in inventories of livestock, cash income from livestock trading, or other dairy related income. Feed inventory change and if applicable, change in the value of carry-over water are included as feed costs.

The average gross farm income of $8.25/kg MS included milk income ($7.28/kg MS) plus all other income associated with the dairy business operation ($0.97/kg MS).

This year's average gross farm income was 3 % lower than last year's average (excluding feed inventory change). The milk price received was down 5 %, but this was partially offset by higher other farm income, which increased by 19 % from last year. The higher prices for cull cattle continued to boost other farm income this year.

Figure 14 shows the gross farm income for each farm.

Figure 14 Gross farm income per kilogram of milk solids – North



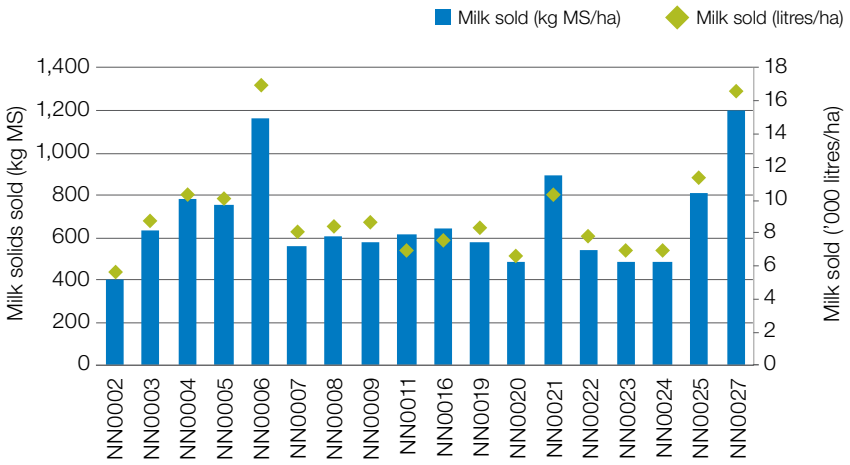
Milk solids sold

Average milk solids sold per hectare increased this year to 680 kg MS/ha (9,250 litres/ha), shown as the green diamonds in Figure 15. The range this year was between 400 kg MS/ha and 1,201 kg MS/ha (5,694 to 16,999 litres/ha).

Average milk solids sold per cow were higher than last year, at 477 kg MS/cow, with a range of 350 kg MS/cow to 584 kg MS/cow.

Figure 15 shows the kilograms of milk solids sold per usable hectare for each farm.

Figure 15 Milk solids per hectare – North



Variable costs

Variable costs include herd, shed and feed costs (shown as the yellow bars in Figure 16). Feed inventory change and if applicable, change in the value of carry-over water are considered as feed costs this year.

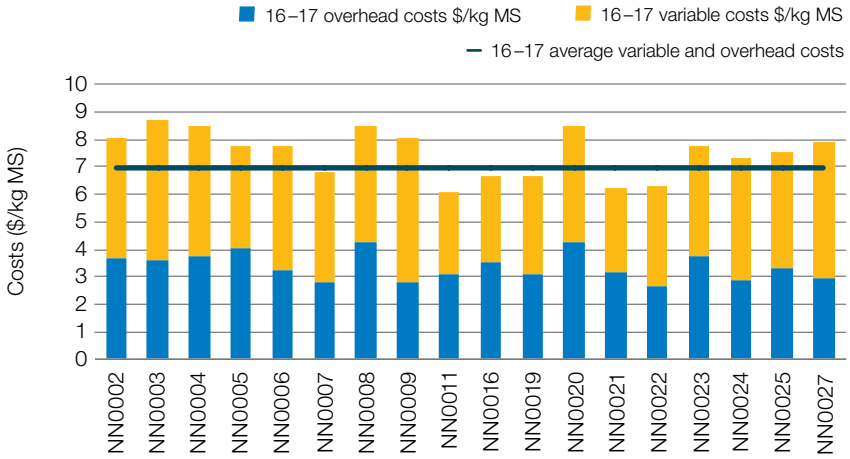
On average, variable costs including feed inventory change decreased in 2016–17 to $4.12/kg MS (30.8 c/l), down from $4.31/kg MS last year. Variable costs ranged from $2.98/kg MS to $5.22/kg MS for farms in the North.

Feed costs are the largest variable cost, accounting for 84 % of total variable costs. Average feed cost was $3.46/kg MS (25.3 c/l).

The average cost of home-grown feed was $1.51/kg MS; while purchased feed and agistment cost $1.90/kg MS.

A breakdown of variable costs for the individual businesses on a dollar per kilogram of milk solids sold basis is shown in Appendix Table B4.

Figure 16 Whole farm variable and overhead costs per kilogram of milk solids – North



Overhead costs

Overhead costs are those that do not vary greatly with the level of production. The Dairy Farm Monitor Project includes cash overheads such as employed labour, rates and insurance as well as non-cash costs such as imputed owner operator and family labour and depreciation of plant and equipment.

The overhead costs this year ranged from $2.62/kg MS to $4.27/kg MS (shown as blue bars in Figure 16).

The average overhead costs for 2016–17 at $3.38/kg MS (19.1 c/l) were lower than the previous year when they were $3.58/kg MS (25.9 c/l).

Farms that regularly perform well do so by keeping overhead costs low and managing variable costs according to the season.

The main overhead cost category is labour, both employed and imputed, which account for 60 % of total overheads.

The percentage breakdown of the individual totals expressed as percentages are presented in Appendix Table B6.

Table 5 Cost of production – North

Farm costs	North average		Q1 to Q3 range	State top 25 % average	
Variable costs	**$/kg MS**	**c/l**	**$/kg MS**	**$/kg MS**	**c/l**
Herd costs	0.35	2.6	0.27–0.45	0.33	2.4
Shed costs	0.31	2.3	0.23–0.37	0.24	1.8
Purchased feed and agistment	1.90	13.8	1.55–2.31	2.07	14.7
Home grown feed cost	1.51	11.1	1.29–1.76	1.01	7.5
Total variable costs	**4.06**	**29.7**	**3.49–4.51**	**3.66**	**26.3**
Overhead costs					
Employed labour cost	0.95	6.9	0.56–1.07	0.74	5.3
Repairs and maintenance	0.55	4.1	0.41–0.67	0.44	3.2
All other overheads	0.42	3.1	0.31–0.51	0.35	2.6
Total cash overheads	**1.92**	**14.0**	**1.56–2.07**	**1.54**	**11.1**
Cash cost of production	**5.98**	**43.7**	**5.19–6.51**	**5.19**	**37.4**
Depreciation	0.38	2.8	0.27–0.43	0.31	2.3
Imputed labour costs	1.08	8.1	0.74–1.43	0.76	5.7
Non-cash overheads	**1.46**	**10.9**	**1.14–1.87**	**1.07**	**8.0**
Cost of production without inventory changes	**7.45**	**54.6**	**6.69–8.03**	**6.26**	**45.4**
Inventory change					
+/– feed inventory change	0.06	0.4	-0.01–0.14	-0.02	-0.1
+/– livestock inventory change – purchase	-0.17	-1.3	-0.38–0.09	-0.24	-1.6
Cost of production with inventory change	7.33	53.8	6.61–7.98	6.01	43.7

Due to rounding, the adding of average cost categories may not equal to the total cost value, which is also rounded off to the nearest cent.

Cost of production

Cost of production gives an indication of the cost of producing a kilogram of milk solids. It is calculated as variable costs plus overhead costs (cash and non-cash) and accounts for changes in fodder and livestock inventory.

Table 5 shows that the average cost of production with inventory changes decreased this year to $7.33/kg MS (53.8 c/l) from $7.76/kg MS in 2015–16. The decrease in cost of production was largely due to lower purchased feed and agistment costs, and lower imputed labour.

Earnings before interest and tax

Earnings before interest and tax (EBIT) is gross farm income less variable and overhead costs (cash and non-cash).

The average EBIT across farms this year improved to $0.75/kg MS (5.7 c/l) compared to $0.62/kg MS (4.6 c/l) last year.

Figure 17 shows a wide range in EBIT across the North farms, from negative $0.80/kg MS to $2.48/kg MS sold. Fourteen of the North farms recorded a positive EBIT, with four farms in the negative. The top 25% farms in the state recorded an average EBIT of $2.20/kg MS (16.1 c/l), highlighting the strength of these well run businesses. The management ability of the farmers is a crucial contributing factor to strong performance, which is not presented in this financial data. The timing of management decisions and a focus on two or three critical factors that contribute most to profit were some of the characteristics of the top performing farms.

Return on assets and equity

Return on assets is the EBIT expressed as a percentage of total assets under management. It is an indicator of the overall earning power of total assets, irrespective of capital structure. Figures 18 and 19 show RoA and RoE excluding capital appreciation.

The return on assets was slightly improved for participant farms this year, with an average of 1.8%, up from 1.6% the previous year. Four farms had a negative or zero return on assets. The range was negative 1.4% to 6.9%.

Return on equity (RoE) is the net farm income expressed as a percentage of owner equity. It is a measure of the owner's rate of return on investment. The average RoE was higher this year at 0.8% compared with negative 0.1 % last year. There was a wide range of return on equity reflecting the various capital structures of businesses in Northern NSW. Eight farms recorded a negative RoE as shown in Figure 19.

Figure 17 Whole farm earnings before interest and tax per kilogram of milk solids – North

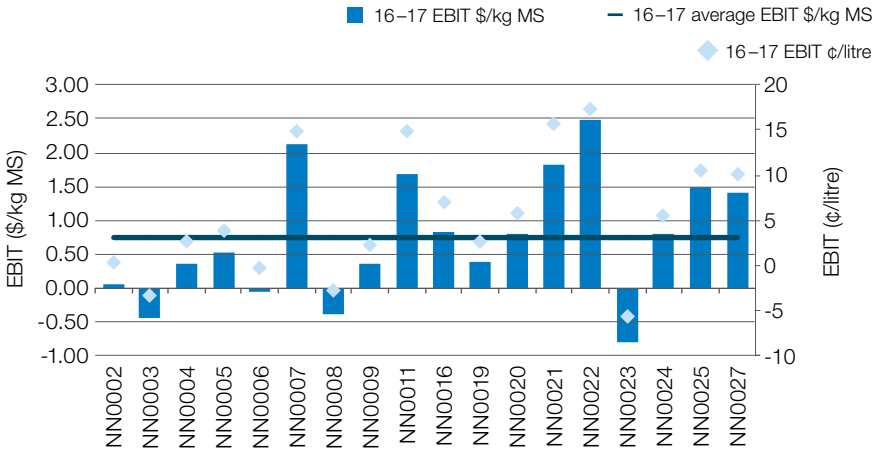


Figure 18 Return on assets – North

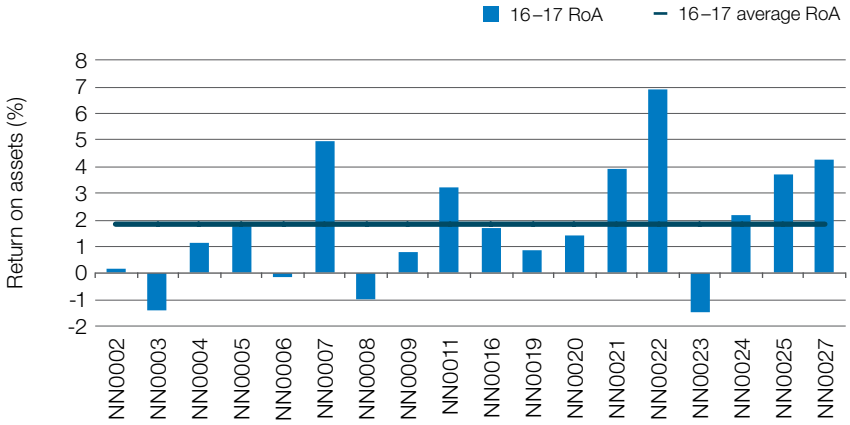
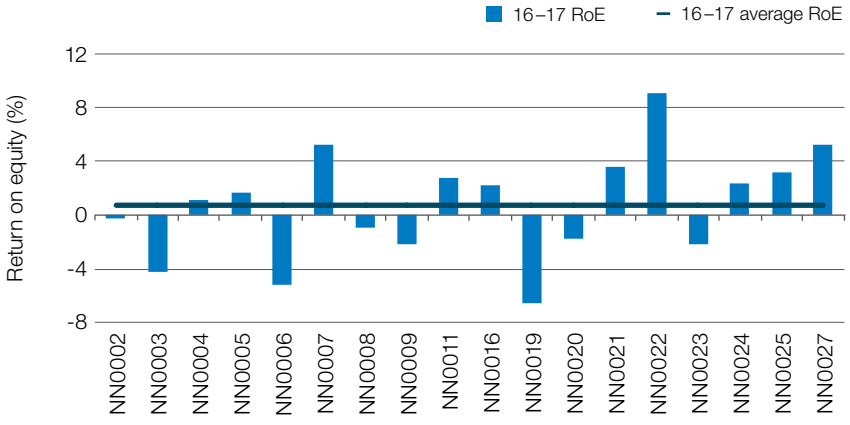


Figure 19 Return on equity – North



Feed consumption and fertiliser

Farms in the North exhibited a wide range of feeding systems, and directly grazed pasture was the main source of metabolisable energy on the majority of the farms in this region. The amount of pasture in the diet was higher than the previous year.

Feed consumption

The relative contribution of each feed type to the metabolisable energy (ME) consumption on each farm is shown in Figure 20. The broad range of different sources of ME used on individual farms is evident. Grazed pasture supplied 50 % or more of ME consumed on 10 of the 18 farms this year, with the average being 47 %, and the range was between 14 % and 62 %. The portion of the ME consumed derived from concentrates stayed the same this year at an average across the group of 33 %. All participant farms fed silage as part of their ME consumed with the range of between 2 % and 34 %, lower than the previous year on average. Hay accounted for 5 % of ME consumed on average.

This combination of more pasture, less silage and same level of concentrates reflects the better pasture growing conditions overall, despite seasonal variation on many North farms.

Figure 21 shows the estimated home grown feed consumed per milking hectare for farms in the North.

This year the amount directly grazed increased substantially from last year and the amount conserved was lower than last year. Total pasture harvested for the North on average was 8.8 t DM/ha, which was higher than the previous year of 8.3 t DM/ha. This included an average of 7.2 t DM/ha directly grazed and 1.5 t DM/ha conserved.

Figure 20 Sources of whole farm metabolisable energy – North

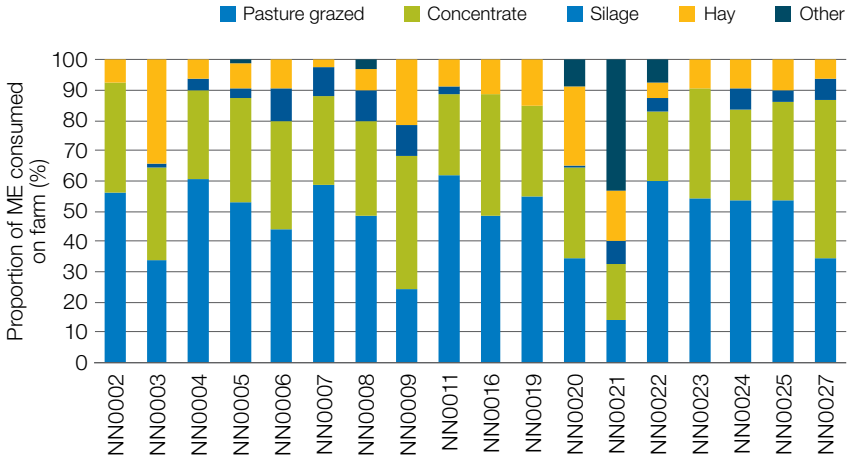
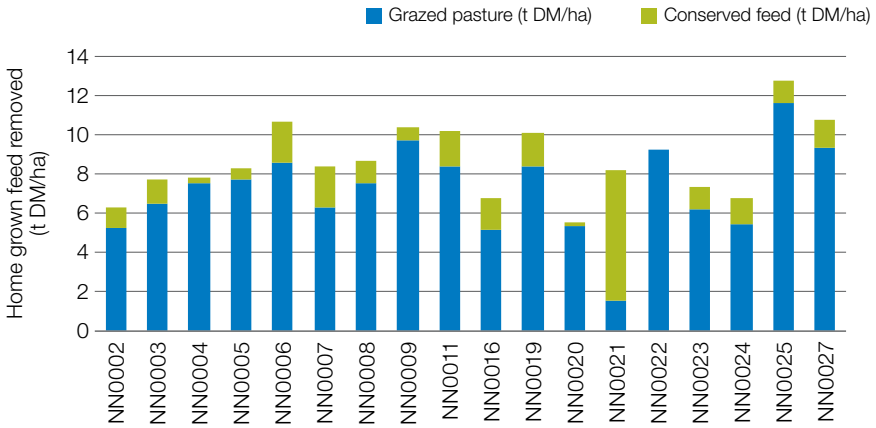


Figure 21 Estimated tonnes of home grown feed consumed per milking hectare – North



Grazed pasture consumption was estimated using DairyBase in 2016–17, not the previously used DEDJTR Pasture Consumption calculator, by using a back calculation method. It should be noted that there can be a number of sources of error in this method including incorrect estimation of liveweight, amounts of fodder and concentrates fed, ME concentration of fodder and concentrate, ME concentration of pasture, wastage of feed and associative effects between feeds when they are digested by the animal. Comparing pasture consumption estimated using the back calculation method between farms can lead to incorrect conclusions due to errors in each farm's estimate and it is best to compare pasture consumption on the same farm over time using the same method of estimation. Caution should be taken when comparing this year's results with previous years.

This graph only shows pasture and fodder consumed on the milking area. It does not include fodder grown and conserved on the non-milking area. A number of farms grew fodder crops for silage or hay that were additional sources of home grown feed that are not reflected in Figure 21.

Fertiliser application

All farms in the North applied some fertiliser to their crops and pasture. Farms in the North applied a higher level of all the four macro nutrients: nitrogen, phosphorus, potassium and sulphur in 2016–17 compared to last year (Figure 22).

Average nitrogen use was 159 kg/ha, phosphorus 17 kg/ha, potassium 28 kg/ha and sulphur 22 kg/ha this year.

This fertiliser usage, along with the higher rainfall across the year, provides some explanation for the higher grazed pasture consumed on North farms this year.

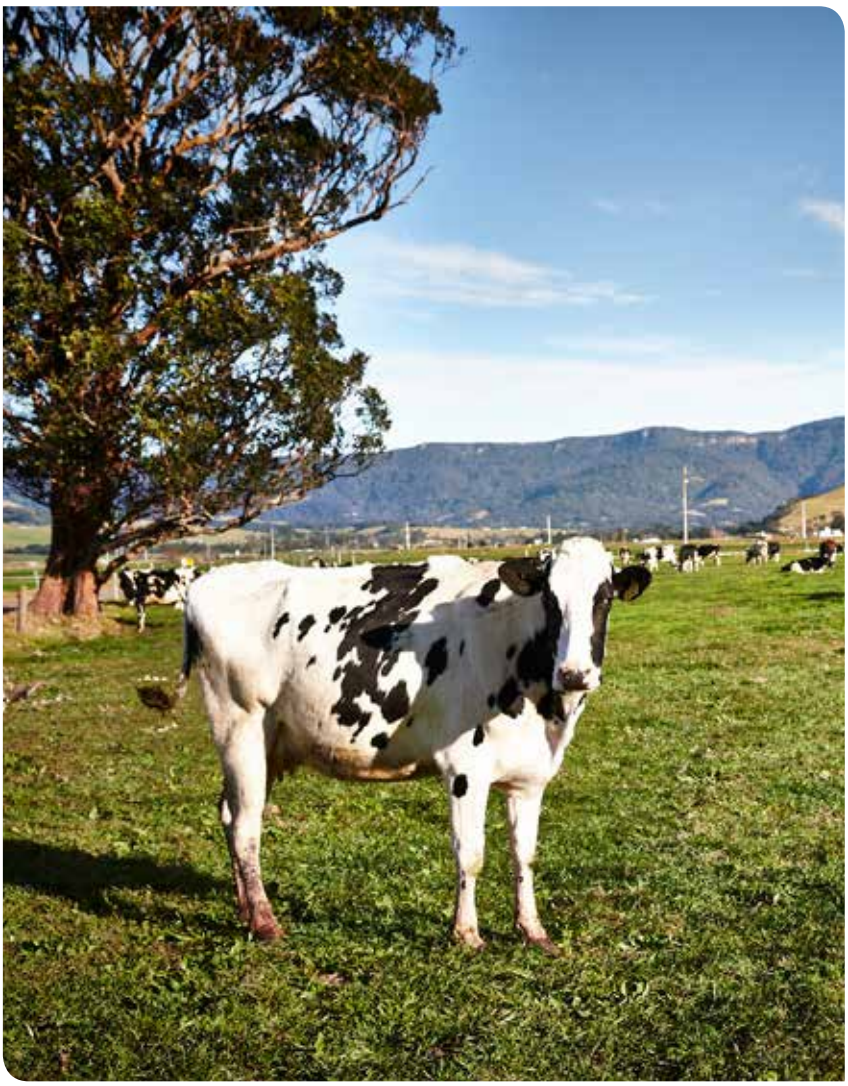
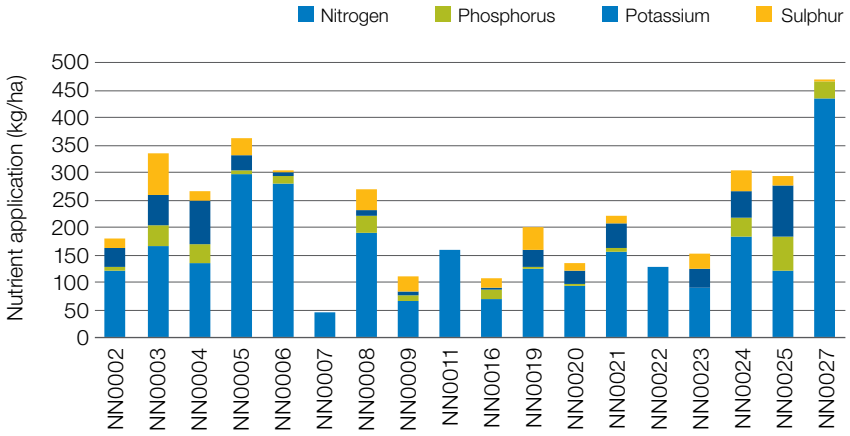
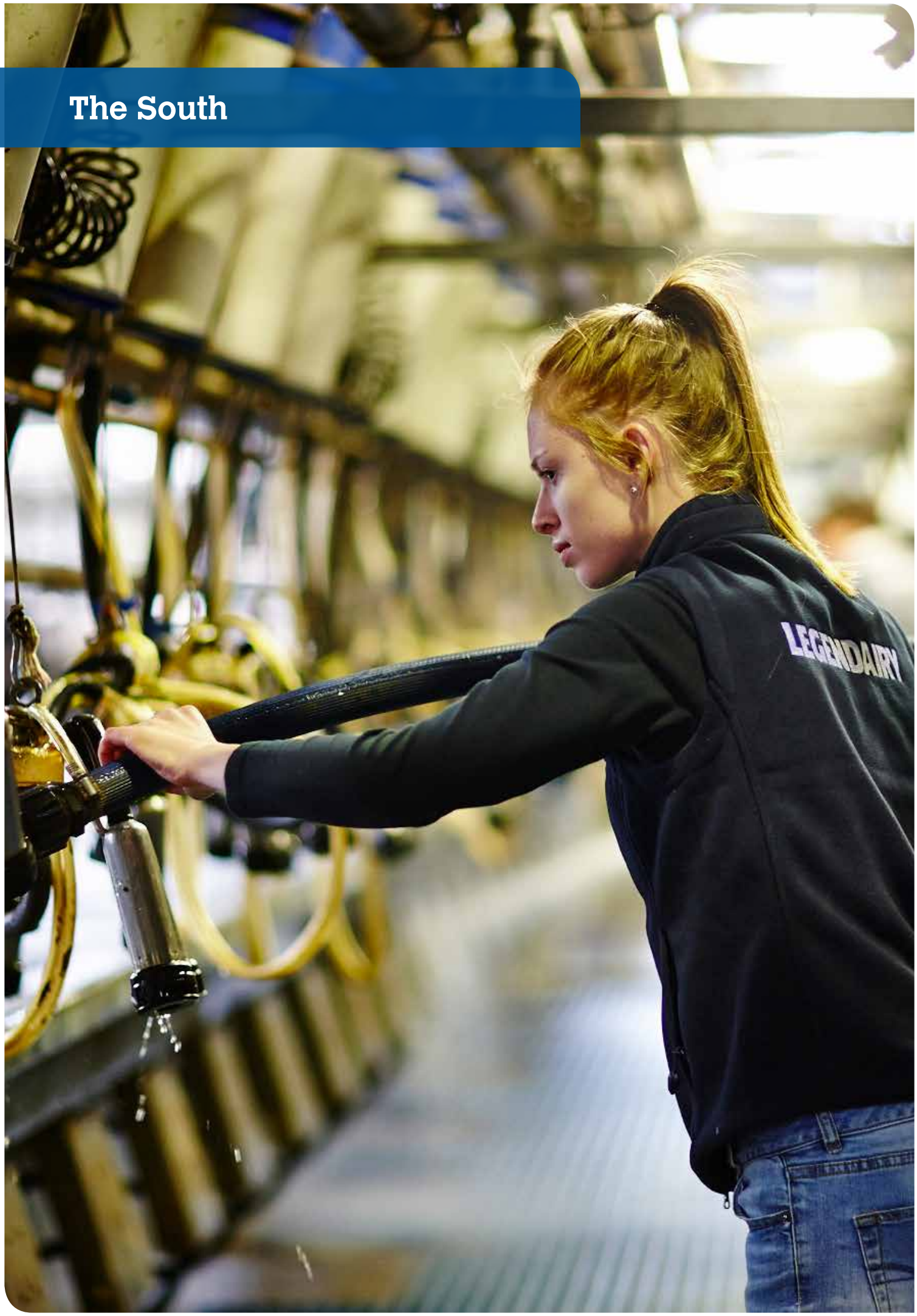


Figure 22 Nutrient application per hectare – North



The South



The South

There were three new farms in the South group Dairy Farm Monitor Project this year, and two farms from last year did not participate.

Most of the Southern NSW region started the year with very wet conditions, with floods in the central west and Riverina. While the wet winter made managing herds and pastures very difficult, it led to a replenishment of water storages and good pasture conditions for spring and summer. Dry autumn conditions were experienced before some good rain in June. Coastal farms around Bega and Nowra had below average rain for the year therefore limiting pasture growth for the year.

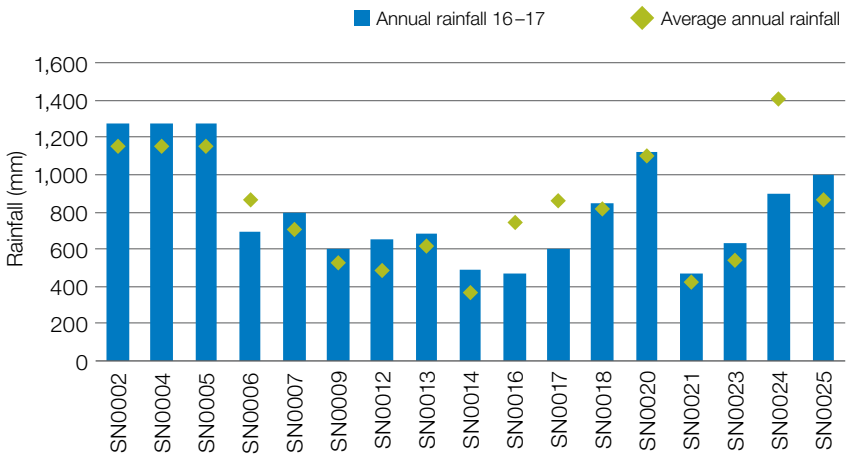
Participant dairy farmers in the South received an average milk price of $6.48/kg MS sold this year, down from $6.97/kg MS in the previous year. The price reduction from the previous season had a greater impact on the Bega and Riverina farms, while south coast and highlands farms experienced milk prices reductions to a lesser degree.

Good prices were received for cull cattle, and more farmers reared bull calves for meat than in other years, thus helping to offset the lower milk price for some farmers. Grain and fodder prices were generally favourable, and supply plentiful.

Seasonal conditions were generally challenging with some isolated and localised seasonal impacts such as water inundation or periods of dry experienced across the region. This resulted in a wide range of annual rainfall compared to long term averages as shown in Figure 23.

The average cost of concentrates this year was $336t DM, down from $382t DM last year. South farmers fed more purchased feed per milker at 3.2t DM/head compared to last year and to the North region.

Figure 23 2016–2017 annual rainfall and long term average rainfall – South



Whole farm analysis

In 2016-17 farms in the South received an average milk price of $6.48. This resulted in reduced earnings before interest and tax of $208,461 or return on assets of 2.7%, down from 4.7% last year.

The physical characteristics of the top 25 % of farms (ranked by return on assets) generally lie within the middle 50 % of the South group.

The key characteristics where the state's top 25 % have higher performance were labour efficiency (both on a per cow and per kg MS basis) and kilograms of milk solids sold per hectare (kg MS/ha).

The farm size was larger than average for the state's top 25 % this year.

Gross farm income

Gross farm income includes all farm income relating to the dairy farm business, whether that is income from milk sales, a change in inventories of livestock, cash income from livestock trading, or other dairy related income.

The average gross farm income of $7.62/kg MS included milk income ($6.48/kg MS) plus all other income associated with the dairy business operation ($1.13/kg MS).

This year's average gross farm income was 4 % lower than last year's average. The milk price received lowered by 7 % from last year, but this reduction was partially offset by higher other farm income, which increased from last year. The higher prices for cull cattle continued to boost other farm income this year. Figure 24 shows the gross farm income for each farm.

Figure 24 Gross farm income per kilogram of milk solids – South

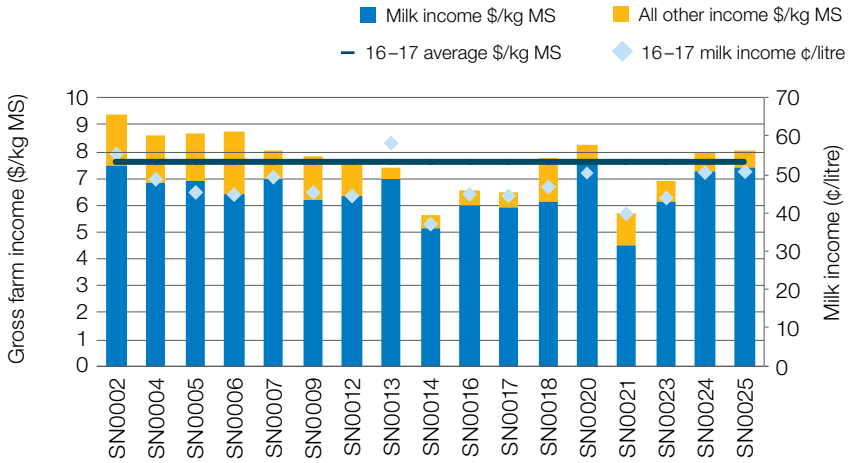


Table 6 Farm physical data – South

Farm physical parameters	South average	Q1 to Q3 range	25 % average
Annual rainfall 2016–17 (mm)	810	607–1,003	1,150
Water used (irrigation + rainfall) (mm/ha)	1,052	883–1,179	1,492
Total usable area (hectares)	343	180–367	229
Milking cows per usable hectares	1.2	0.9–1.5	1.5
Milk sold (kg MS/cow)	520	478–561	517
Milk sold (kg MS/ha)	611	415–841	761
Home grown feed as % of ME consumed	57 %	53 %–64 %	53%
Labour efficiency (milking cows/FTE)	81	64–93	86
Labour efficiency (kg MS/FTE)	41,397	32,538–51,935	42,907

Milk solids sold

Average milk solids sold per hectare increased this year to 611 kg MS/ha (8,540 litres/ha), shown as the diamonds in Figure 25. The range this year was between 299 kg MS/ha and 988 kg MS/ha (3,912 litres/ha to 14,801 litres/ha).

The average milk solids sold per cow were lower than last year, at 520 kg MS/cow (7,186 litres/cow), with a range between 420 kg MS/cow and 591 kg MS/cow.

Variable costs

Variable costs include herd, shed and feed costs (shown as the yellow bars in Figure 26). Feed inventory change and, if applicable, change in the value of carry-over water are considered as feed costs this year.

On average, variable costs including feed inventory change increased in 2016–17 to $3.68/kg MS (26.6 c/l), up from $3.52/kg MS last year. Variable costs ranged from $1.92/kg MS to $5.06/kg MS for farms in the South.

Feed costs are the largest variable cost, accounting for 83 % of total variable costs. Average feed costs including feed inventory change was $3.07/kg MS (22.2 c/l).

The average cost of home-grown feed was $1.04/kg MS; while purchased feed and agistment cost $2.04/kg MS.

A breakdown of variable costs for the individual businesses on a dollar per kilogram of milk solids sold basis is shown in Appendix Table C4.

Figure 25 Milk solids per hectare – South

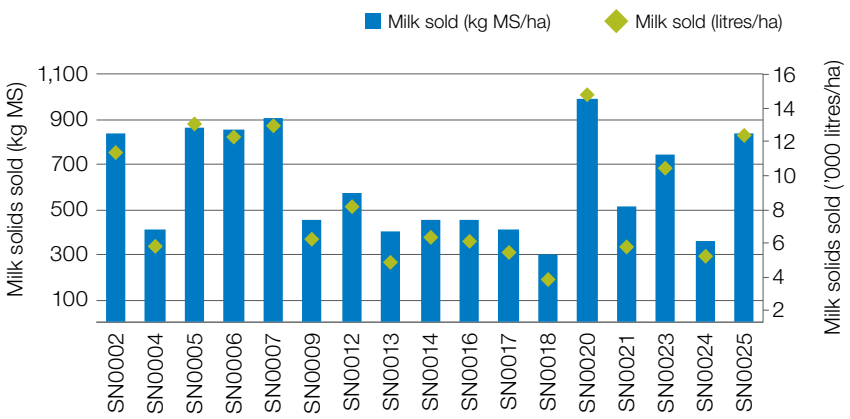
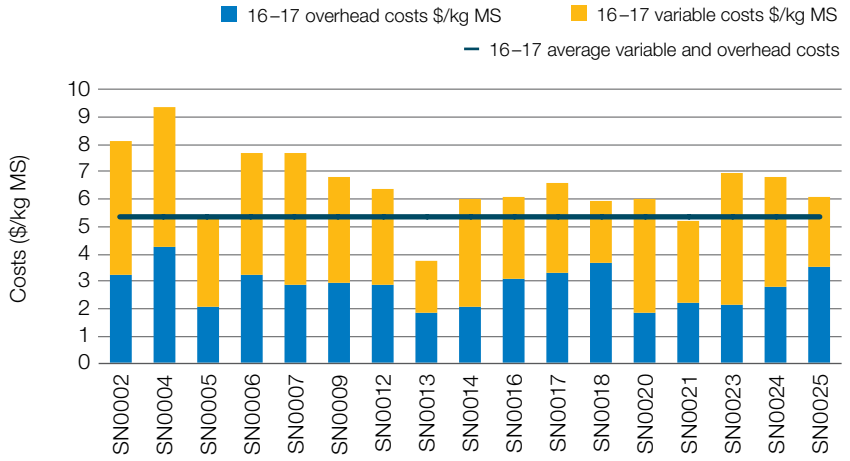


Figure 26 Whole farm variable and overhead costs per kilogram of milk solids – South



Overhead costs

Overhead costs are those that do not vary greatly with the level of production. The Dairy Farm Monitor Project includes cash overheads such as employed labour, rates and insurance as well as non-cash costs such as imputed owner operator and family labour and depreciation of plant and equipment.

The overhead costs this year ranged from $1.82/kg MS to $4.28/kg MS (shown as blue bars in Figure 26).

The average overhead costs for 2016–17 were higher than the previous year at $2.83/kg MS (20.6 c/l).

Farms that regularly perform well do so by keeping overhead costs low and managing variable costs according to the season.

The main overhead cost category is labour, both employed and imputed, which account for 59 % of total overheads, similar to the North.

The percentage breakdown of the individual totals expressed as percentages is presented in Appendix Table C7.

Cost of production

Cost of production gives an indication of the cost of producing a kilogram of milk solids. It is calculated as variable costs plus overhead costs (cash and non-cash) and accounts for changes in fodder and livestock inventory.

Table 7 shows that the average cost of production with inventory changes increased this year to $6.46/kg MS (46.9 c/l) from $6.09/kg MS in 2015–16. The increase in cost of production was due to both higher variable and overhead costs.

Earnings before interest and tax

Earnings before interest and tax (EBIT) is gross farm income less variable and overhead costs (cash and non-cash).

The average EBIT across farms this year decreased to $1.10/kg MS (8.0 c/l) compared to $1.72/kg MS (12.5 c/l) last year.

Figure 27 shows a wide range in EBIT across the South farms, from negative $0.77/kg MS to $3.61/kg MS sold. Thirteen of the South farms recorded a positive EBIT, with four farms recording a negative result.

The top 25 % farms in the state recorded an average EBIT of $2.20/kg MS (16.1 c/l), highlighting the strength of these well run businesses. The management ability of the farmers is a crucial contributing factor to strong performance, which is not presented in this financial data. The timing of management decisions and a focus on two or three critical factors that contribute most to profit were some of the characteristics of the top performing farms.

Figure 27 Whole farm earnings before interest and tax per kilogram of milk solids – South

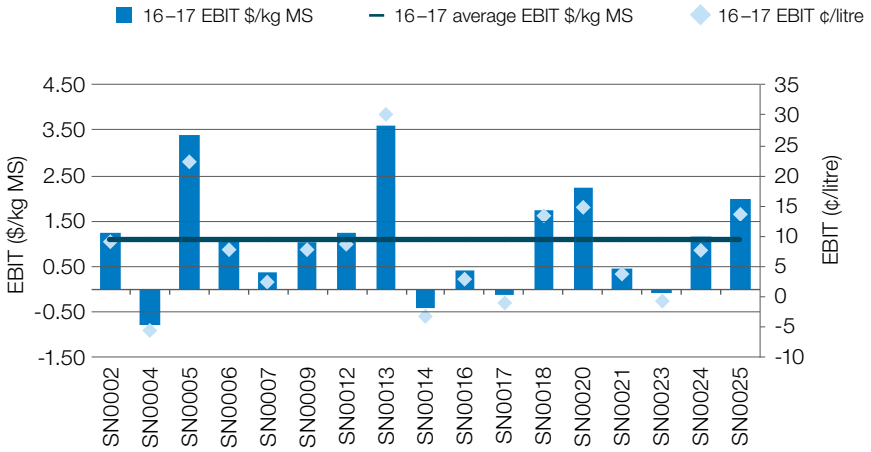


Table 7 Cost of production – South

Farm costs	South average		Q1 to Q3 range	State top 25 % average	
Variable costs	**$/kg MS**	**c/l**	**$/kg MS**	**$/kg MS**	**c/l**
Herd costs	0.40	2.9	0.27–0.53	0.33	2.4
Shed costs	0.22	1.6	0.17–0.26	0.24	1.8
Purchased feed and agistment	2.04	14.7	1.74–2.40	2.07	14.7
Home grown feed costs	1.04	7.7	0.62–1.37	1.01	7.5
Total variable costs	**3.70**	**26.8**	**3.15–4.12**	**3.66**	**26.3**
Overhead costs					
Employed labour cost	0.85	6.2	0.58–1.15	0.74	5.3
Repairs and maintenance	0.43	3.1	0.29–0.48	0.44	3.2
All other overheads	0.40	2.8	0.27–0.47	0.35	2.6
Total cash overheads	**1.67**	**12.1**	**1.39–1.79**	**1.54**	**11.1**
Cash cost of production ($/kg MS)	**5.37**	**38.9**	**4.88–5.94**	**5.19**	**37.4**
Depreciation	0.35	2.5	0.21–0.44	0.31	2.3
Imputed labour costs	0.81	6.0	0.50–1.10	0.76	5.7
Non-cash overheads	**1.16**	**8.5**	**0.91–1.42**	**1.07**	**8.0**
Cost of production without inventory changes ($/kg MS)	**6.53**	**47.4**	**5.97–7.12**	**6.26**	**45.4**
Inventory change					
+/– feed inventory change	-0.02	-0.2	-0.06–0.08	-0.02	-0.1
+/– livestock inventory change – purchase	-0.05	-0.3	-0.21–0.15	-0.24	-1.6
Cost of production with inventory change ($/kg MS)	**6.46**	**46.9**	**6.01–7.25**	**6.01**	**43.7**

Due to rounding, the adding of average cost categories may not equal to the total cost value, which is also rounded off to the nearest cent.

Return on assets and equity

Return on assets (RoA) is the EBIT expressed as a percentage of total assets under management. It is an indicator of the overall earning power of total assets, irrespective of capital structure. Figures 28 and 29 show RoA and RoE excluding capital appreciation.

The return on assets was lower for participant farms this year, with an average of 2.7 %, down from 4.7 % in the previous year. Four farms had a negative or zero return on assets. The range was negative 2.2 % to 13.6 %.

Land value is a major component of the assets under management, and it is worth noting that there is a huge variation in market values for land in the South region. Farm locations include the Southern highlands close to Sydney as well as the Southern Riverina region where land values have been separated from water entitlement and are relatively low.

Return on equity (RoE) is the net farm income expressed as a percentage of owner equity. It is a measure of the owner's rate of return on investment. The average was lower this year at 2.1 % compared with 4.7 % last year. There was a wide range of return on equity reflecting the various capital structures of businesses in Southern NSW. Four farms recorded a negative RoE.

Figure 28 Return on assets – South

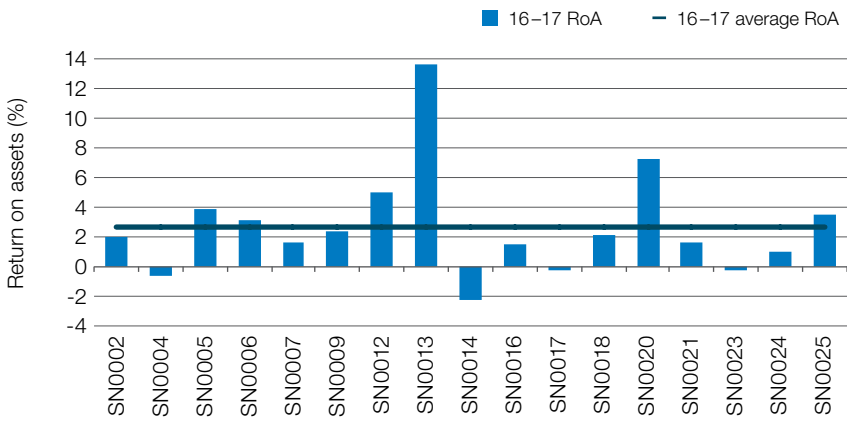
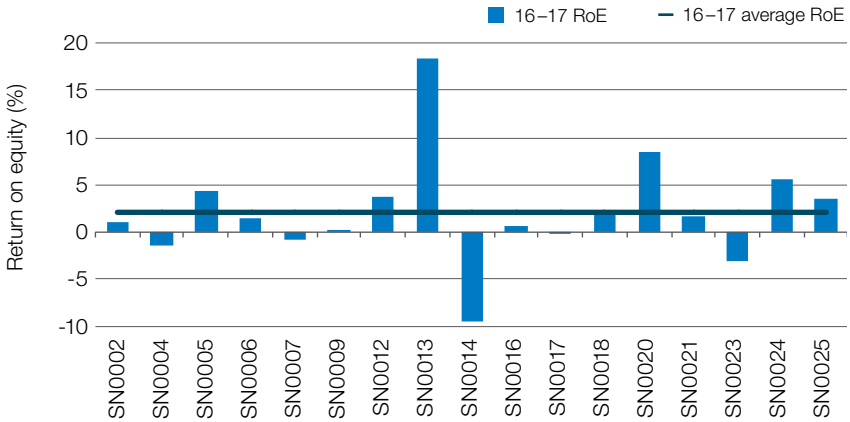


Figure 29 Return on equity – South



Feed consumption and fertiliser use

South farms exhibited a wide range of feeding systems, and directly grazed pasture was the main source of metabolisable energy on the majority of the farms in this region.

Feed consumption

The relative contribution of each feed type to the metabolisable energy (ME) consumption on each farm is shown in Figure 30. The broad range of different sources of ME used on individual farms is evident. Grazed pasture supplied 50 % or more of ME consumed on only five of the 17 farms this year, with the average being 44 %, with a range of between 25 % and 59 %. The portion of the ME consumed from concentrates was lower this year at an average across the group of 35 %.

All participant farms except for two fed silage as part of their ME consumed with the range of between 0 % and 28 %, with an average of 12 %, higher than the previous year. Hay accounted for 8 % of ME consumed on average.

This combination of more pasture and silage and a lower level of concentrates reflects the better pasture growing conditions overall, despite seasonal variation and challenges on many South participant farms.

Figure 31 shows the estimated home grown feed consumed per milking hectare for farms in the South.

Figure 30 Sources of whole farm metabolisable energy – South

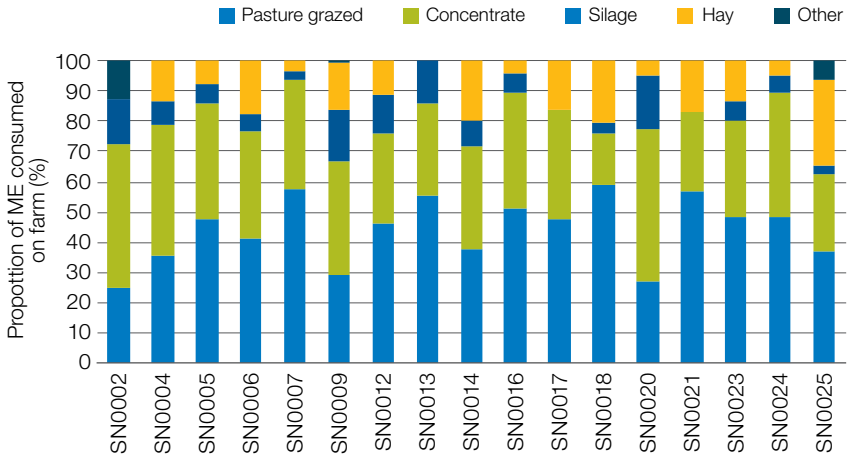
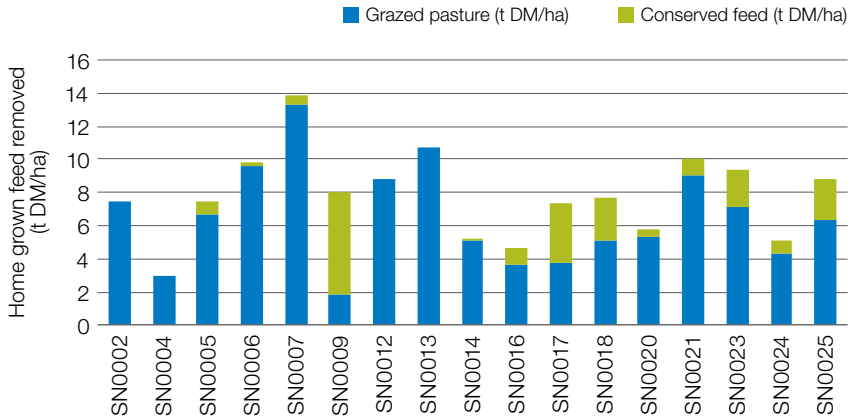


Figure 31 Estimated tonnes of home grown feed consumed per milking hectare – South

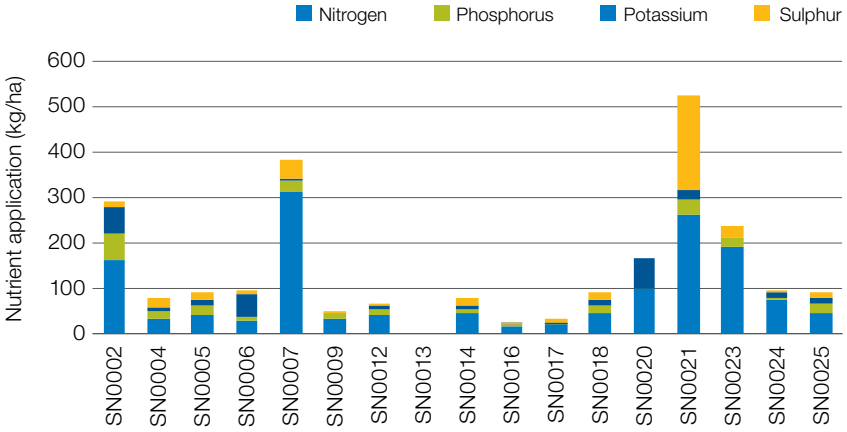


Total pasture harvested for the South on average was 8.2 t DM/ha, which was lower than the previous year of 8.4 t DM/ha. This year the amount directly grazed was about the same, but the amount conserved was down. This included an average of 6.5 t DM/ha directly grazed and 1.7 t DM/ha conserved.

Grazed pasture consumption was estimated using DairyBase this year by using a back calculation method. It should be noted that there can be a number of sources of error in this method including incorrect estimation of liveweight, amounts of fodder and concentrates fed, ME concentration of fodder and concentrate, ME concentration of pasture, wastage of feed and associative effects between feeds when they are digested by the animal. Comparing pasture consumption estimated using the back calculation method between farms can lead to incorrect conclusions due to errors in each farm's estimate and it is best to compare pasture consumption on the same farm over time using the same method of estimation. Noting the pasture consumption calculation was different this year, caution should be taken when comparing this year's results with previous years.

This graph only shows pasture and fodder consumed on the milking area. It does not include fodder grown and conserved on the non-milking area. A number of farms grew fodder crops for silage or hay that were additional sources of home grown feed that are not reflected in Figure 31.

Figure 32 Nutrient application per hectare – South

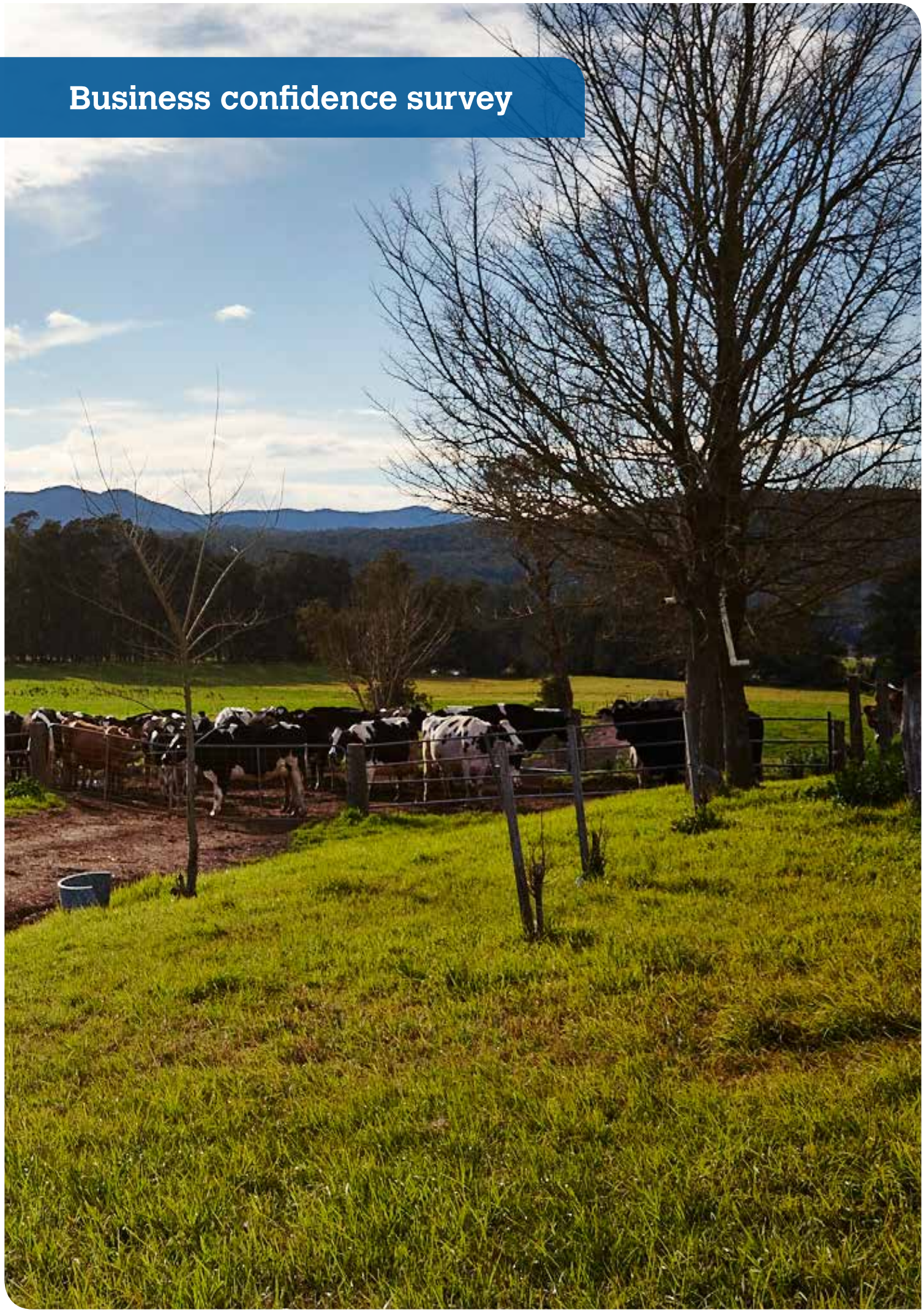


Fertiliser application

The proportion of nutrients in fertiliser applied per hectare on South farm in 2016–17 are shown in Figure 32. Total average nutrients applied for the year were very similar to 2015–16, with the exception of sulphur which was higher. Application rates in 2016–17 were: nitrogen 85 kg/ha, with phosphorus 16 kg/ha, potassium 16 kg/ha and sulphur 24 kg/ha.

As in previous years, SN0013 did not apply fertiliser in 2016–17. The individual values relating to Figure 32 can be found in Appendix Table C2.

Business confidence survey



Expectations and issues

Responses to this business confidence survey were made in July and August 2017 with regard to the 2017–18 financial year and the next five years to 2021–22.

Expectations for business returns

Following lower average profits in the 2016–17 year, and the wetter though challenging seasonal conditions, farmers' expectations for the coming season were to some degree positive. About 50 % of farmers in the North, and 47 % in the South expected an improvement in business returns.

Responses to the survey were made with consideration to all aspects of farming, including climate and market conditions for all products bought and sold.

While expectations of the coming year were spread across categories, there were some regional differences, as shown in Figure 33.

Around 78 % of the participants in the North had an expectation of an improvement or no change in farm business returns in 2017–18. In the South, 47 % of participants expected an improvement and 35 % no change to business returns. Both groups had 11 % expecting a deterioration in operating conditions, while 11 % of North and only 6 % of South farmers were not sure.

Price and production expectations – milk

Expectations about milk price in 2017–18 were similar between the regions. About 50 % were expecting an increase and 40 % expected no change.

As shown in Figure 34, the majority of respondents intend to increase milk production, with 72 % of North and 53 % of South signalling this. The remaining participants indicated no change to production, and 6 % in the South indicating milk production could decrease.

Figure 33 Expected change to farm business returns 2017–18

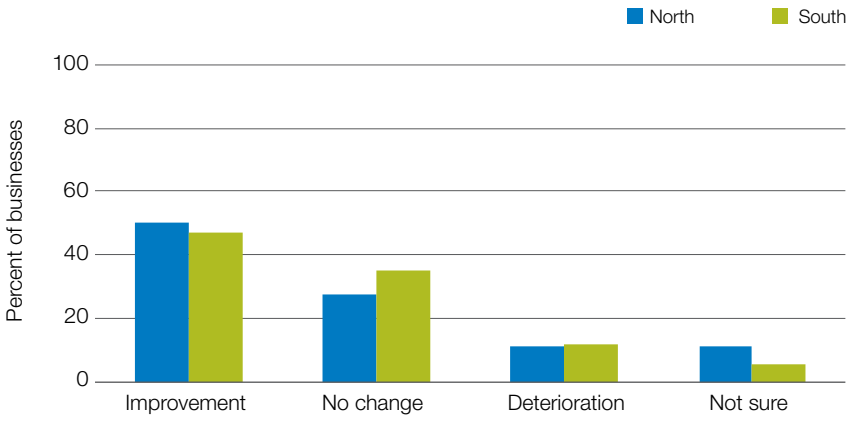
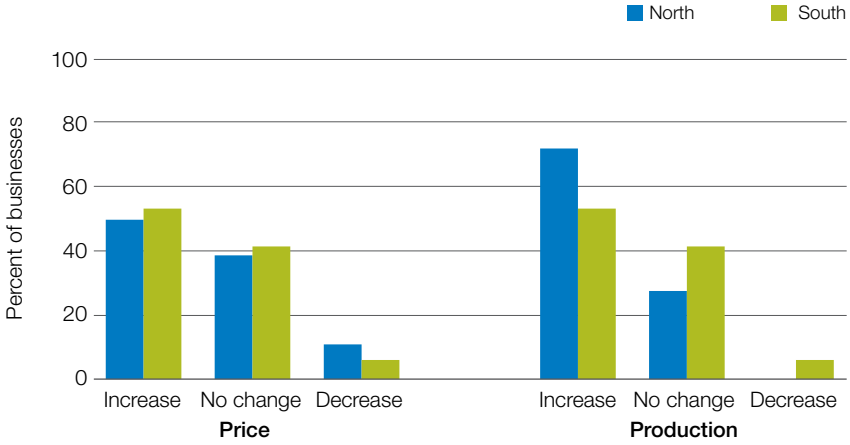


Figure 34 Producer expectations of prices and production of milk 2017–18



Production expectations – fodder

The question of farmers' expectations of fodder price was not asked in this year's survey.

Over 65% participating farmers in the North expected fodder production to increase, with the remaining 35% expecting to remain stable in 2017-18 (Figure 35). In the South the respondents were split at 40% each for increasing or remaining stable for expected fodder production coming year; 20% expected production of fodder to decrease.

Cost expectations

Data presented in Figure 36 below represent the expectations of costs for the dairy industry.

The majority of farmers in all categories expected input costs to increase or remain unchanged in the year ahead. Over 70% of the farmers across the state were expecting purchased feed costs to increase. Among the irrigators, over 50% predicted an increase in irrigation costs to their business, with over 40% expecting no change.

Figure 35 Producer expectations of production of fodder 2017–18

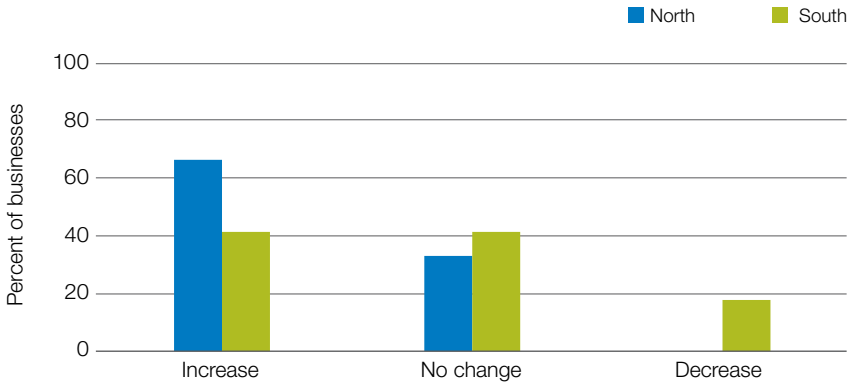


Figure 36 Producer expectations of cost for the dairy industry 2017–18

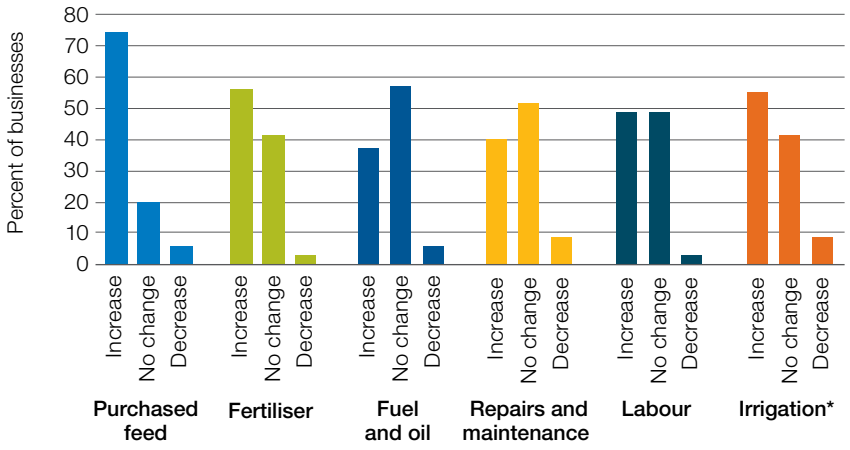


Figure 38 Major issues for individual businesses – 12 month outlook

1 Input costs **20%**

2 Milk price **20%**

3 Climate/seasonal conditions **18%**

4 Pasture/fodder **16%**

5 Succession planning **13%**

6 Water **7%**

7 Labour **6**%

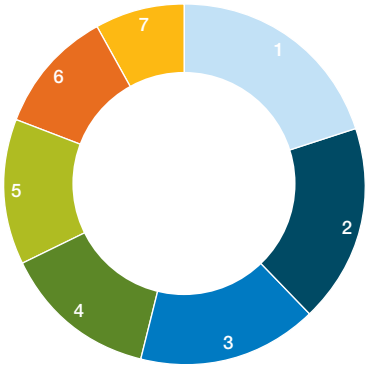


Figure 39 Major issues for individual businesses – Five year outlook

1 Milk price **20%**

2 Input costs **18%**

3 Climate/seasonal conditions **16%**

4 Pasture/fodder **14%**

5 Succession planning **13%**

6 Labour **11**%

7 Water **8%**

Major issues in the dairy industry – the next 12 months

The participants were asked if any of the seven issues was a major issue or not important in the 2017–18.

Figure 37 shows that input costs, milk price, seasonal conditions and pasture/fodder supply were the issues farmers most thought to be major concerns in the next 12 months.

A number of participants commented on seasonal variability becoming more common, and the concern about the drier than average winter and early spring and late frosts, and the impact it may have on the grain harvest and the ability to conserve fodder in spring.

Major issues in the dairy industry – the next five years

The participants identified key issues for their business over the next five years (Figure 38).

The ranking of the top four major concerns in the next five years was similar to those in the next 12 months. Milk price was identified as the leading issue for farmers in the state, as well as climate/seasonal conditions, input costs, pasture/fodder, succession planning and labour.

Farmers were also concerned about:

- Business expansion and purchase of additional land
- Continue to run a profitable business; focus on profitability and assets; to increase production
- Capital investment, infrastructure upgrade
- Future of the dairy industry in view of the fluctuating milk price and increasing input costs
- Debt management and impact of an increase in interest rate on the farm business.

Greenhouse gas emissions

2016–17 Greenhouse gas emissions

The average level of emission from participating farms was 20 t CO_2-e/t MS in 2016–17, higher than last year's 14.6 t CO_2-e/t MS. This year there were changes in the method of estimating greenhouse gas emissions which increased total emissions and therefore emissions intensity. This increase is partly due to higher number of livestock, higher fertiliser usage, and lower milk solids on average per farm, so the intensity of emissions relative to milk solids production has increased.

Carbon dioxide equivalents (CO_2-e) are used to standardise the greenhouse potentials from different gases. The Global Warming Potential (GWP) is the index used to convert relevant non-carbon dioxide gases to a carbon dioxide equivalent. This is calculated by multiplying the quantity of each gas by its GWP. All of the data in this section are in CO_2-e tonnes and expressed per tonne of milk solids produced (CO_2-e/t MS).

In 2016 the method of estimating Australia's dairy industry greenhouse gas emissions (NGGI) altered to reflect new research outcomes and align with international guidelines. The GWP for the three gases that are discussed in this report have altered to 1: 25: 298 (CO_2: CH_4: N_2O). Other changes were decreasing the proportion of waste (dung and urine) deposited onto pastures while the milking herd graze and changes to the emission factors for N_2O emissions from nitrogen fertiliser and animal waste. In addition, the estimation of greenhouse gas emissions now include a pre-farm gate emission source. These are the greenhouse gases emitted with the manufacturing of fertilisers and the production of purchased fodder, grain and concentrates.

The distribution of different emissions for 2016–17 for each farm is shown in Figure 39. Greenhouse gas emissions per tonne of milk solids produced ranged from 11.4 t CO_2-e/t MS to 26.7 t CO_2-e/t MS with an average emission level of 20 t CO_2-e/t MS.

Methane was identified as the main greenhouse gas emitted from dairy farms, accounting for 15.1 t CO_2-e/t MS, 76 % of all greenhouse emissions. Methane produced from ruminant digestion (enteric CH_4) was the major source of emissions from all farms in this report, with an average of 65 % of total emissions. Methane from effluent ponds accounted for 11 % of total emissions on average across the state in 2016–17.

The most efficient strategy to reduce enteric CH_4 production is manipulating the diet by increasing the feed quality through improved pastures or supplementation with particular concentrates and fat supplements. However, it is recommended that fats should not constitute more than 6–7 % of the dietary dry matter intake.

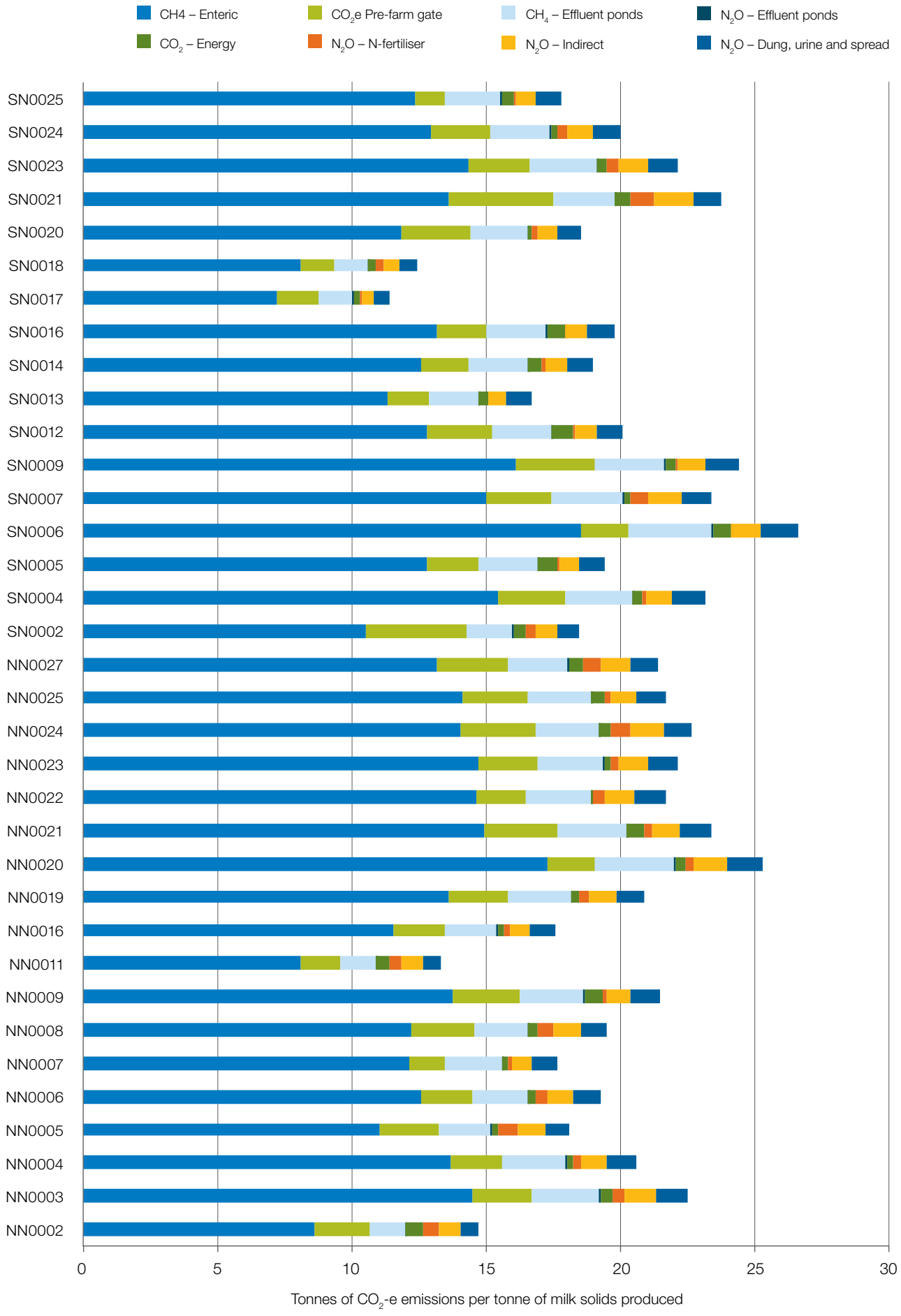
The second main greenhouse gas emission was CO_2 being produced primarily from fossil fuel consumption as either electricity or petrochemicals. The NGGI calculates carbon emissions from both pre-farm gates and on-farm sources. Carbon dioxide accounted for 13 % of total emissions (2.6 t CO_2-e/t MS); 11 % from pre-farm gates sources and 2 % from on-farm energy sources. Output levels were highly dependent on the source of electricity used with most farms using black coal generated electricity, and some supplementing their electricity from the grid with renewable sources. There are a number of technologies available to improve energy efficiency in the dairy while reducing electricity costs.

The third main greenhouse gas emission was nitrous oxide, accounting for 11 % of total emissions or 2.3 t CO_2-e/t MS. Nitrous oxide emissions on dairy farms are primarily derived from direct emissions; including nitrogen fertiliser application, effluent management systems, and animal excreta (dung and urine), as well as indirect emissions such as from ammonia and nitrate loss in soils.

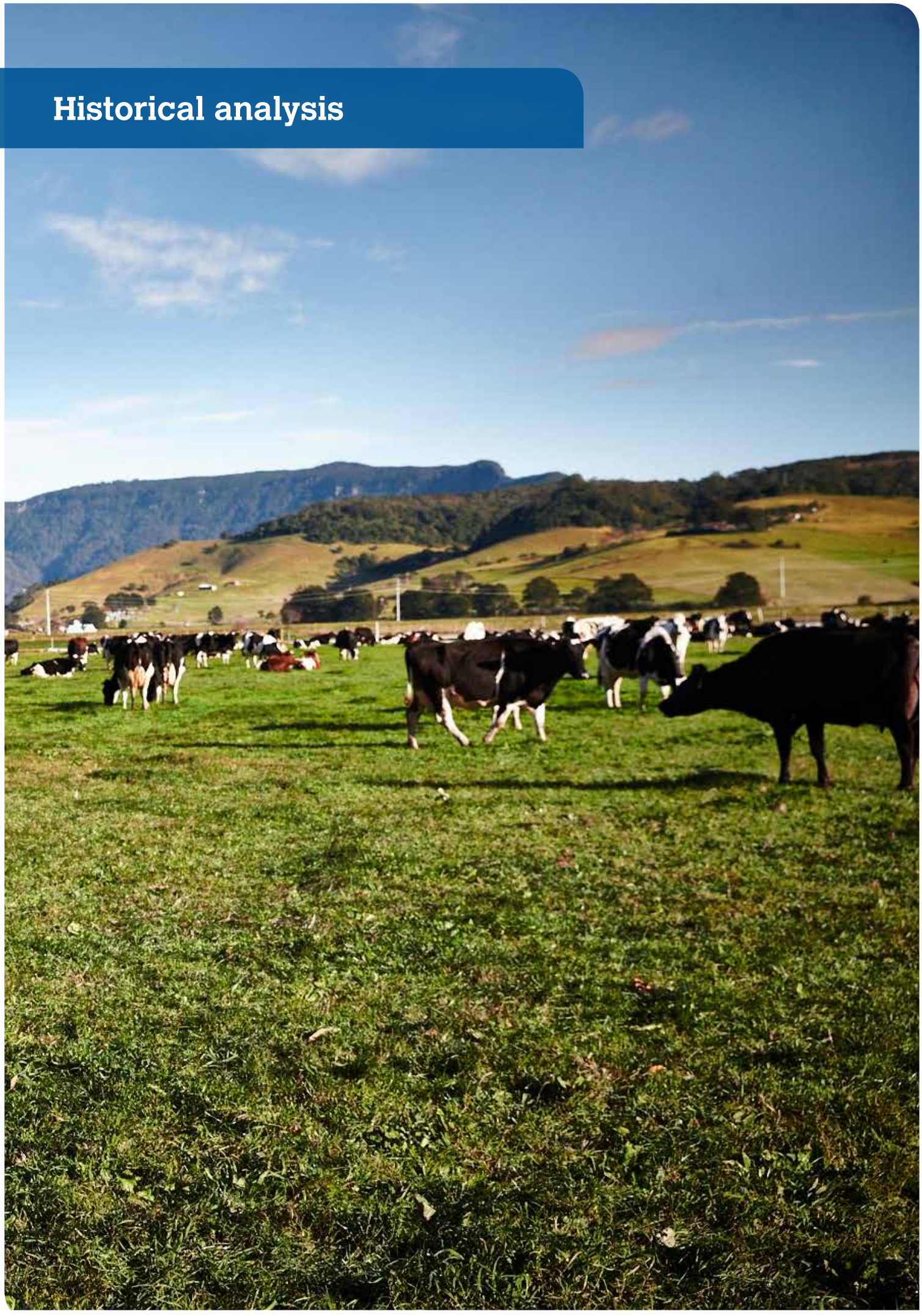
Nitrous oxide emissions from fertiliser accounted for 1.7 % of total emissions, effluent ponds accounted for 0.2 % and excreta accounted for 5 %. Nitrous oxide from indirect emissions was 4.7 %. Nitrous oxide emissions are highest in warm, waterlogged soils with readily available nitrogen. Over application of nitrogen, high stocking intensity and flood irrigation are all potential causes of increased nitrogen loss as N_2O. Strategic fertiliser management practices can reduce N_2O emissions and improve nitrogen efficiency.

There is a growing importance to understand and monitor greenhouse gas emissions, and these are likely to become more important into the future. To find detailed information on the Australian National Greenhouse Gas Inventory, strategies for reducing greenhouse gasses and more details on sources of greenhouse gases on dairy farms visit the Australian Department of the Environment's website at environment.gov.au/climate-change

Figure 40 2016–17 greenhouse gas emissions per tonne of milk solids produced (CO_2 equivalent)



Historical analysis



Historical analysis

This section compares the performance of participant farms in the Dairy Farm Monitor Project over the past six years. The historical analysis compares the trends in farm performance within and between the two regions. While figures are adjusted for inflation to allow comparison between years it should be noted that the same farms do not participate each year and care needs be taken when comparing the performance across years. The data for the historical analysis can be found in Appendix Tables 9 and 10 for the state and each region.

Over the six year history of the project in NSW, profitability has varied considerably. 2016–17 was characterised by the second lowest milk prices in the six year history of the project, which influenced a drop in EBIT. The highest returns were in the first and fourth years, and the lowest in the second year, with marginal improvement in the third year. This trend is common to both the North and South regions; however the farms in the South have had higher profitability than the North in all six years since 2011–12.

The North

The graphs below show the trends in profits and returns over the past five years. The six-year average for return on assets (Figure 40) for the North is 1.6%, with a range of 0.8% to 3.0%. The five-year average return on equity was 0.0%, with a range of negative 1.7% to 2.2%.

Figure 41 Historical whole farm performance – North

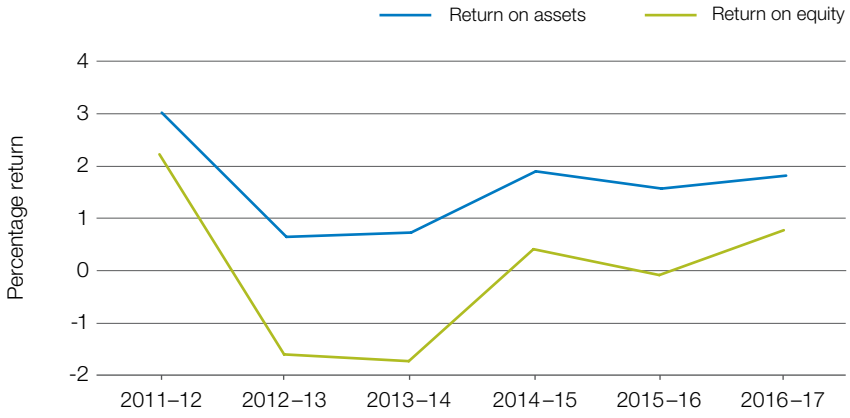


Figure 41 shows the trend in earnings before interest and tax (EBIT) and in net farm income (NFI). The difference between EBIT and net farm income is interest and lease costs. The six-year average (in real terms – including inflation) for EBIT for North farms was $102,298/farm, with a range of $57,522/farm to $157,595/farm.

Regarding net farm income, for two out of the five years the average was negative, meaning many farms made a loss after covering the cost of debt servicing and leasing. The average net farm income over the five years was negative $9,974/farm.

In 2012–13 farm profitability fell with the milk price declining year-on-year coinciding with a rise in input costs. The milk prices improved in 2013–14, but farmers were still recovering from the difficult previous year so profits were again relatively low.

Profit and returns were stronger in 2015–16, with higher milk prices and favourable seasonal conditions.

The 2016–17 year saw a stable milk price in the North, but higher production costs led to a lower level of profit.

A return on assets becomes a lesser return on equity when the rate of interest on loans or lease on leased capital is greater than the return from the additional assets managed. This has not been the case in the North for the six years, with return on equity being consistently lower than return on assets.

The South

The graphs below show the trends in profits and returns over the past six years. The six-year average for return on assets (Figure 42) for the South is 4.3 %, with a range of 2.7 to 5.5 %; and for return on equity the average was 3.8 %, with a range of 0.5 to 5.7 %.

Figure 43 shows the trend in earnings before interest and tax (EBIT) and in net farm income. The difference between EBIT and net farm income is interest and lease costs. The six-year average EBIT for South farms was $313,967 with a range of $153,687/farm to $437,556/farm.

As experienced in the North, in 2012–13 farm profitability fell with the milk price declining and input costs rising. The milk prices improved in 2013–14, but farmers were still recovering from the difficult previous year so profits were again relatively low.

Profit and returns were stronger in the 2015–16, with higher milk prices and favourable seasonal conditions.

In 2016–17 South participants saw a decline in milk prices, while only a small change to cost of production, leading to lower profit per farm. However, average return on assets for the South farms in 2016–17 was 2.7 %, was the (equal) lowest in the six-year history of the project.

Figure 42 Historical whole farm profitability (real $) – North

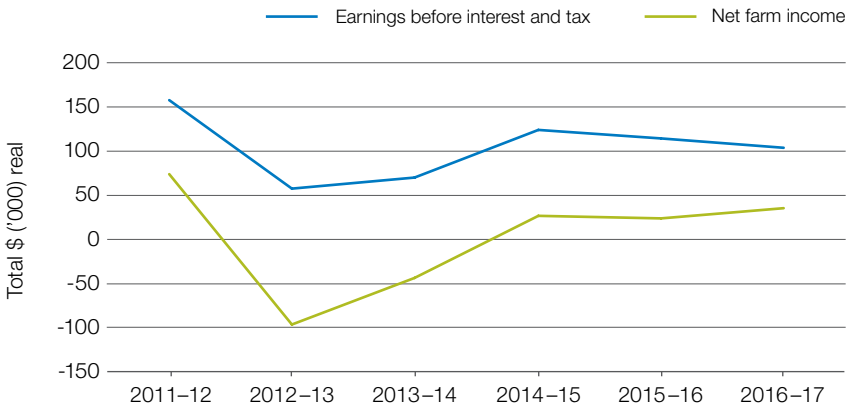


Figure 43 Historical whole farm performance – South

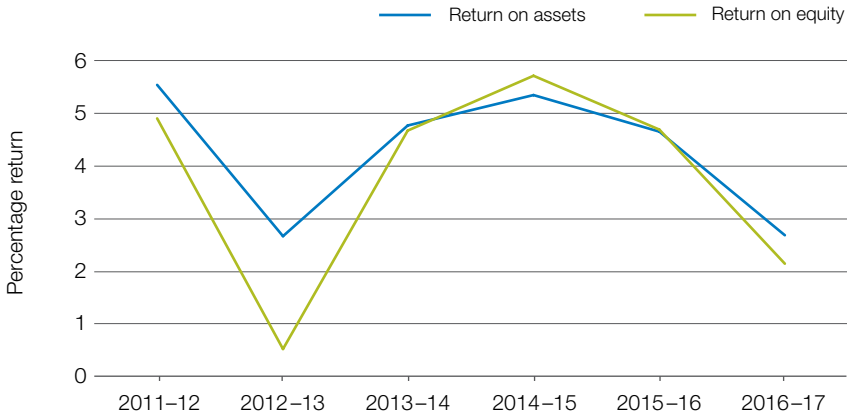
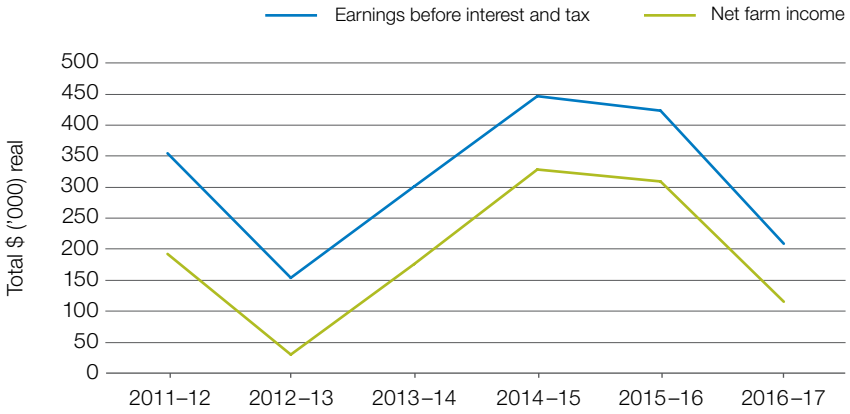


Figure 44 Historical whole farm profitability (real $) – South



Regional comparison

Profitability performance of the two regions over the last six years is compared in Figures 44 to 47.

In 2016–17 both regions experienced a small downturn in profit level compared to the previous year. In comparison 2012–13 was the year with lowest returns.

The South has performed well over time, and for total earnings before interest and tax in real terms the South's performance had surpassed that of the North for each of the six years. This region has also received a lower milk price than the North each year in the history of the project, reflecting the influence of the Victorian milk market. In contrast, the majority of the milk from Northern New South Wales is used for liquid domestic milk supply in both New South Wales and south east Queensland.

Despite the lower milk price, the South farms have generated a higher EBIT, higher return on assets and higher return on equity each year than the North farms. This is primarily due to the cost of production in the South being consistently lower than the North.

Figure 45 Regional historical earnings before interest and tax (real $)

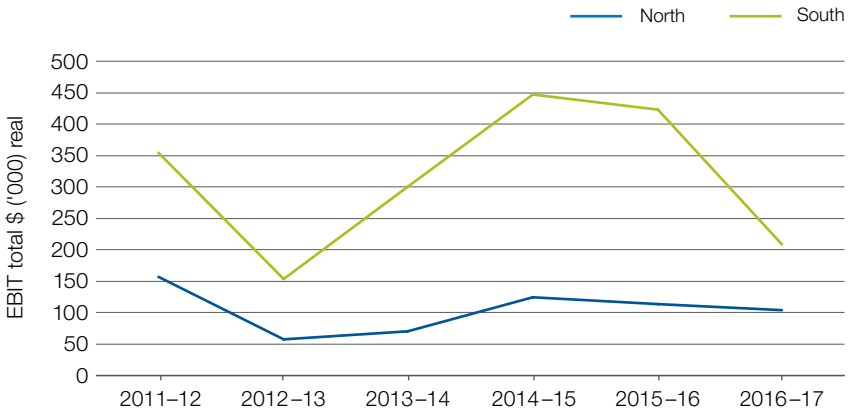


Figure 46 Regional historical net farm income (real $)

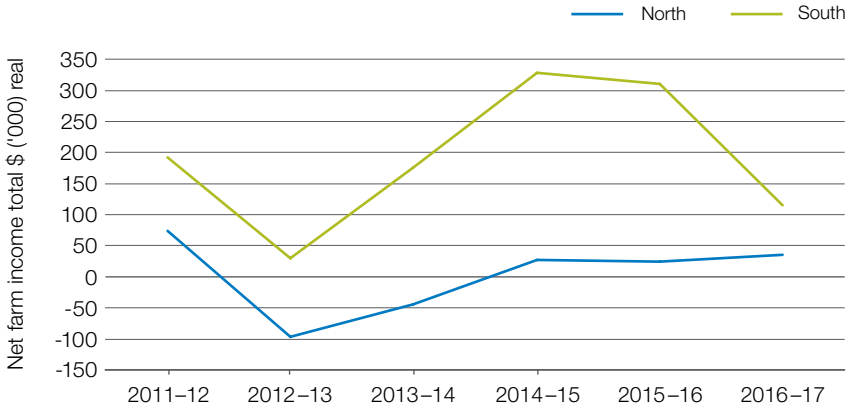


Figure 47 Regional historical return on assets

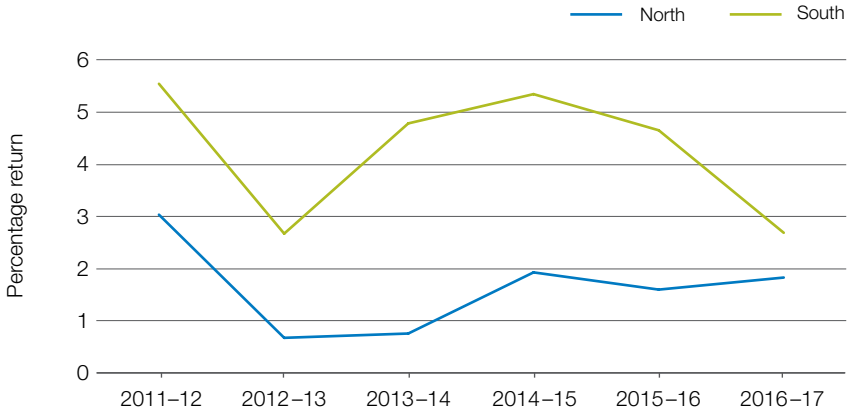
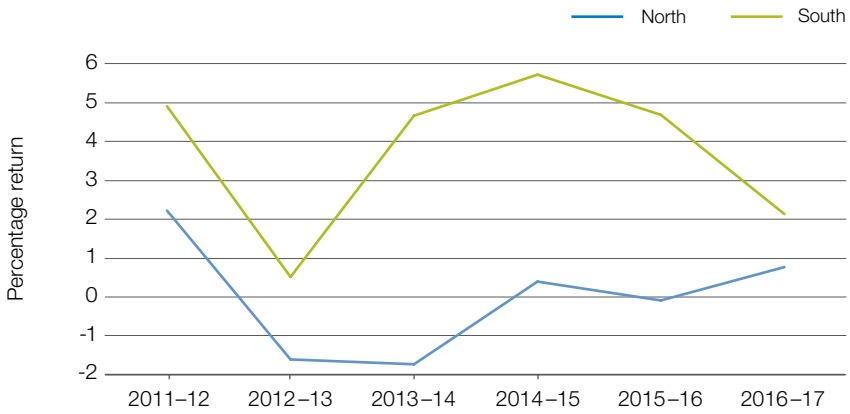
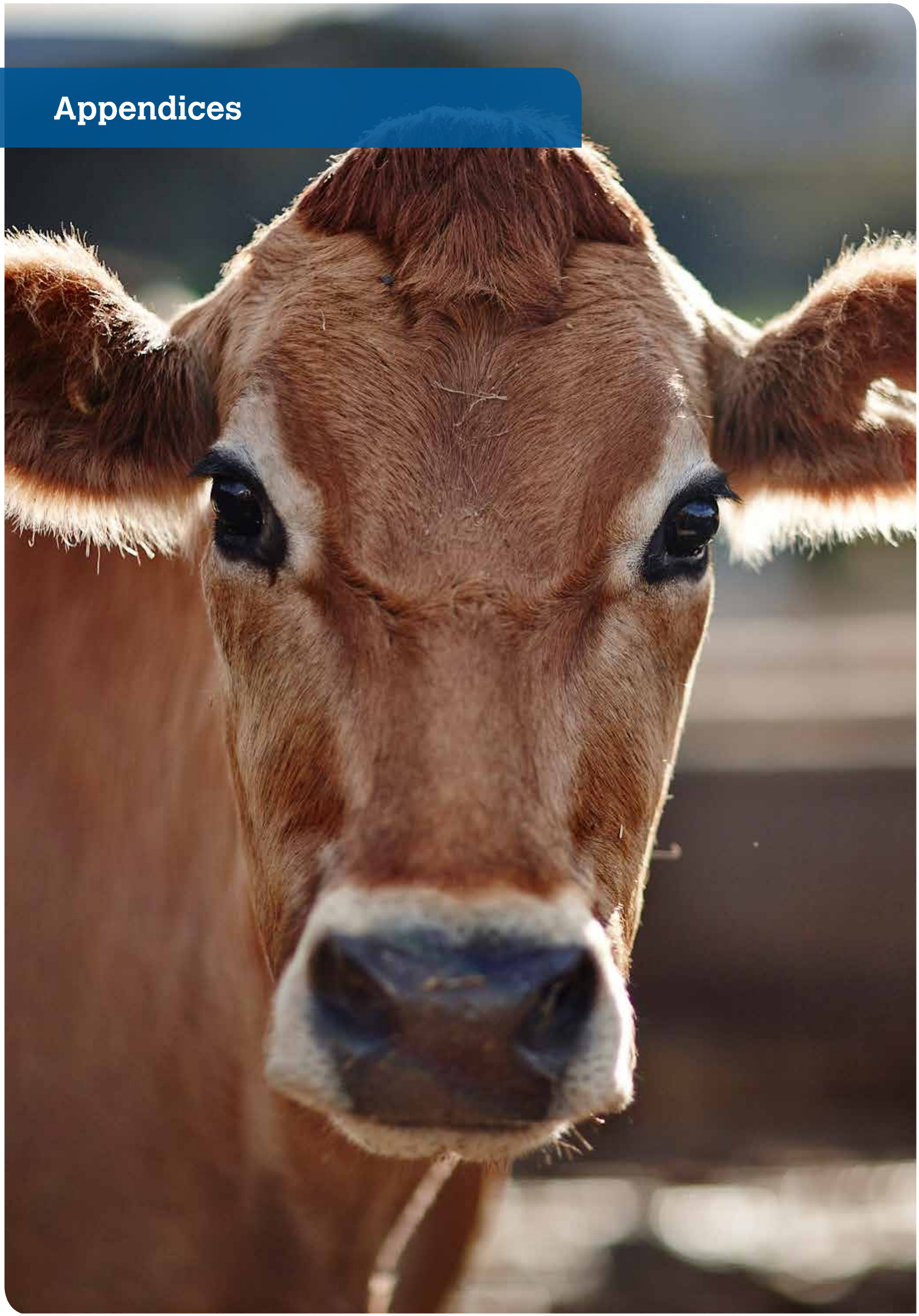


Figure 48 Regional historical return on equity



Appendices



Appendix A **Statewide summary tables**

Table A1 Main financial indicators – statewide

	Milk income (net)	All other income	Gross farm income	Total variable costs	Total overhead costs	Cost structure (variable costs/ total costs)	Earnings before interest and tax	Return on assets (exc. capital apprec.)	Interest and lease charges	Debt servicing ratio	Net farm income	Return on equity
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	%	$/kg MS	%	$/kg MS	% of income	$/kg MS	%
Average	6.89	1.05	7.94	3.91	3.11	56	0.92	2.2	0.51	6	0.41	1.4
Top 25 %	7.44	1.01	8.45	3.64	2.61	58	2.20	5.9	0.53	6	1.67	6.8

Table A2 Physical information – statewide

	Total usable area	Milking area	Water used	Number of milking cows	Milking cows per usable area	Milk sold	Milk sold	Fat	Protein
	ha	ha	mm/ha	hd	hd/ha	kg MS/cow	kg MS/ha	%	%
Average	263	121	1,302	326	1.3	498	646	4.0	3.3
Top 25 %	229	105	1,492	322	1.5	517	761	4.0	3.3

	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Nitrogen application	Phosphorous application	Potassium application	Sulphur application	Labour efficiency	Labour efficiency
	t DM/ha	t DM/ha	% of ME	kg/ha	kg/ha	kg/ha	kg/ha	hd/FTE	kg MS/FTE
Average	6.9	1.6	59 %	123.4	16.3	22.0	22.5	75	36,928
Top 25 %	7.7	2.1	53 %	119.3	14.4	25.6	5.9	86	42,907

* On milking area

Table A3 Purchased feed – statewide

	Purchased feed per milker	Concentrate price	Silage price	Hay price	Other feed price	Average purchased feed price	Average ME of purchased feed	Average purchased feed price	Percent of total energy imported
	t DM/hd	$/t DM	$/t DM	$/t DM	$/t DM	$/t DM	MJ ME/kg	c/MJ	% of ME
Average	2.9	357	–	–	–	–	–	–	41
Top 25 %	3.4	376	–	–	–	–	–	–	47

Table A4 Variable costs – statewide

	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
Average	0.13	0.18	0.07	0.12	0.14	0.64	0.40	0.16	0.20
Top 25 %	0.08	0.16	0.09	0.11	0.13	0.57	0.27	0.14	0.12

	Fuel and oil	Pasture improvement/ cropping	Other feed costs	Fodder purchases	Grain/ concentrates/ other	Agistment costs	Total feed costs	Total variable costs
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
Average	0.14	0.25	0.12	0.29	1.59	0.08	3.27	3.91
Top 25 %	0.17	0.21	0.11	0.45	1.58	0.04	3.07	3.64

Table A5 Overhead costs – statewide

	Rates	Registration and insurance	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/ operator and family labour	Total overheads
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
Average	0.07	0.12	0.49	0.22	0.90	1.80	0.36	0.95	3.11
Top 25 %	0.08	0.11	0.44	0.16	0.74	1.54	0.31	0.76	2.61

Table A6 Variable costs % – statewide

	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
Average	1.9	2.5	1.0	1.8	2.0	9.1	5.6	2.4	2.9
Top 25 %	1.2	2.5	1.4	1.8	2.1	9.1	3.9	2.5	1.8

	Fuel and oil	Pasture improvement/ cropping	Other feed costs	Fodder purchases	Grain/ concentrates/ other	Agistment costs	Total feed costs	Total variable costs
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
Average	2.0	3.5	1.7	4.3	22.8	1.1	46.4	55.5
Top 25 %	2.7	3.1	1.6	7.4	25.6	0.6	48.9	58.0

Table A7 Overhead costs – statewide

	Rates	Registration and insurance	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/ operator and family labour	Total overheads
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
Average	1.0	1.7	7.0	3.1	12.5	25.3	5.3	13.9	44.5
Top 25 %	1.3	1.7	6.9	2.7	11.5	24.0	5.1	12.9	42.0

Table A8 Capital structure – statewide

Farm assets				
	Land value	Land value	Permanent water value	Permanent water value
	$/ha	$/cow	$/ha	$/cow
Average	18,111	13,113	1,559	1,317
Top 25 %	20,977	12,738	2,203	1,706

Other farm assets (per usable hectare)				
Plant and equipment	Livestock	Hay and grain	Other assets	Total assets
$/ha	$/ha	$/ha	$/ha	$/ha
2,303	2,927	246	450	23,879
2,336	3,195	188	289	27,771

Liabilities	
Liabilities per usable hectare	Liabilities per milking cow
$/ha	$/cow
5,140	3,816
5,227	3,695

Equity	
Equity per usable hectare	Average equity
$/ha	%
18,739	79
22,543	77

Table A9 Historical data – statewide
Average farm income, costs and profit per kilogram of milk solids

	Income				Variable costs							
	Milk income (net)		Gross farm income		Herd costs		Shed costs		Feed costs		Total variable costs	
Year	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)
2011–12	6.88	7.58	7.76	8.55	0.33	0.36	0.27	0.30	3.02	3.32	3.62	3.99
2012–13	6.43	6.92	7.20	7.75	0.33	0.35	0.28	0.30	3.18	3.42	3.79	4.08
2013–14	7.15	7.46	8.00	8.35	0.31	0.32	0.30	0.31	3.46	3.61	4.06	4.24
2014–15	7.46	7.68	8.44	8.69	0.32	0.33	0.29	0.30	3.55	3.65	4.16	4.28
2015–16	7.34	7.48	8.23	8.38	0.35	0.35	0.27	0.27	3.33	3.39	3.94	4.02
2016–17	6.89	6.89	7.94	7.94	0.38	0.38	0.26	0.26	3.27	3.27	3.91	3.91
Average		**7.34**		**8.28**		**0.35**		**0.29**		**3.44**		**4.09**

Note: 'Real' dollar values are the nominal values converted to 2016–17 dollar equivalents by the consumer price index (CPI) to allow for inflation.
The gross income in 2016–17 did not include feed inventory changes and changes to the value of carry-over water. These were included in feed costs.

Average farm income, costs and profit per kilogram of milk solids

	Overhead costs						Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease charges		Net farm income			
Year	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Return on assets	Return on equity
2011–12	1.56	1.72	1.24	1.37	2.80	3.09	1.34	1.47	0.59	0.65	0.75	0.83	4.3	3.6
2012–13	1.71	1.84	1.19	1.28	2.90	3.12	0.51	0.55	0.62	0.67	-0.10	-0.11	1.7	-0.5
2013–14	1.80	1.88	1.25	1.31	3.05	3.19	0.88	0.92	0.62	0.65	0.26	0.27	2.6	1.2
2014–15	1.71	1.76	1.25	1.29	2.96	3.05	1.32	1.36	0.60	0.61	0.72	0.74	3.5	2.8
2015–16	1.75	1.78	1.41	1.44	3.16	3.22	1.12	1.14	0.54	0.55	0.58	0.59	3.0	2.1
2016–17	1.80	1.80	1.31	1.31	3.11	3.11	0.92	0.92	0.51	0.51	0.41	0.41	2.2	1.4
Average		**1.80**		**1.33**		**3.13**		**1.06**		**0.61**		**0.45**	**2.9**	**1.8**

Table A10 Historical data – statewide
Average farm physical information

	Total usable area	Milking area	Water used	Number of milking cows	Milking cows per useable area	Milk sold	Milk sold	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Concentrate price	
Year	ha	ha	mm/ha	hd	hd/ha	kg MS/ cow	kg MS/ ha	t DM/ha	t DM/ha	% of ME	Nominal ($/t DM)	Real ($/t DM)
2011–12	300	133	1,270	375	1.4	478	663	6.4	1.3	57	304	335
2012–13	329	140	1,064	349	1.2	492	608	6.9	1.3	56	323	347
2013–14	301	119	876	309	1.1	504	569	6.0	1.1	57	412	431
2014–15	287	128	1,268	338	1.2	506	602	6.5	1.8	58	413	425
2015–16	287	126	1,092	351	1.3	504	618	6.2	2.1	55	392	400
2016–17	263	121	1,302	326	1.3	498	646	6.9	1.6	59	357	357
Average	**295**	**128**	**1,145**	**341**	**1.3**	**497**	**618**	**6.5**	**1.6**	**57**		**382**

* From 2006–07 to 2010–11 estimated grazed pasture and conserved feed was calculated per usable hectare
From 2011–12 estimated grazed pasture and conserved feed was calculated per hectare of milking area

Appendix B **North summary tables**

Table B1 Main financial indicators – North

Farm number	Milk income (net)	All other income	Gross farm income	Total variable costs	Total overhead costs	Cost structure (variable costs/ total costs)	Earnings before interest and tax	Return on assets (exc. capital apprec.)	Interest and lease charges	Debt servicing ratio	Net farm income	Return on equity
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	%	$/kg MS	%	$/kg MS	% of income	$/kg MS	%
NN0002	6.39	1.71	8.10	4.36	3.67	54	0.07	0.1	0.16	2	-0.09	-0.2
NN0003	8.11	0.16	8.27	5.15	3.57	59	-0.45	-1.4	0.39	5	-0.84	-4.2
NN0004	7.48	1.33	8.81	4.69	3.76	55	0.36	1.1	0.00	0	0.36	1.1
NN0005	7.77	0.52	8.29	3.74	4.03	48	0.51	1.7	0.00	0	0.51	1.7
NN0006	7.21	0.49	7.70	4.48	3.27	58	-0.04	-0.1	0.88	11	-0.92	-5.2
NN0007	7.20	1.72	8.91	3.95	2.83	58	2.13	4.9	0.44	5	1.69	5.3
NN0008	6.62	1.52	8.14	4.26	4.26	50	-0.38	-1.0	0.00	0	-0.38	-1.0
NN0009	7.69	0.71	8.41	5.22	2.83	65	0.35	0.8	0.94	11	-0.59	-2.2
NN0011	6.99	0.79	7.79	2.98	3.13	49	1.68	3.2	0.44	6	1.25	2.8
NN0016	6.70	0.81	7.51	3.17	3.50	47	0.84	1.7	0.63	8	0.21	2.3
NN0019	6.42	0.64	7.05	3.55	3.11	53	0.39	0.8	1.34	19	-0.95	-6.6
NN0020	7.55	1.76	9.30	4.23	4.27	50	0.81	1.4	1.38	15	-0.58	-1.7
NN0021	7.58	0.48	8.05	3.08	3.16	49	1.82	3.9	0.25	3	1.57	3.7
NN0022	7.91	0.89	8.80	3.70	2.62	59	2.48	6.9	0.87	10	1.61	9.1
NN0023	6.39	0.53	6.92	3.99	3.73	52	-0.80	-1.4	0.29	4	-1.09	-2.2
NN0024	6.53	1.58	8.12	4.44	2.86	61	0.82	2.2	0.12	1	0.70	2.5
NN0025	7.92	1.13	9.05	4.29	3.28	57	1.48	3.7	0.63	7	0.86	3.2
NN0027	8.57	0.75	9.31	4.95	2.96	63	1.41	4.3	0.56	6	0.85	5.3
Average	**7.28**	**0.97**	**8.25**	**4.12**	**3.38**	**55**	**0.75**	**1.8**	**0.52**	**6**	**0.23**	**0.8**

Table B2 Physical information – North

Farm number	Total usable area	Milking area	Water used	Number of milking cows	Milking cows per usable area	Milk sold	Milk sold	Fat	Protein
	ha	ha	mm/ha	hd	hd/ha	kg MS/cow	kg MS/ha	%	%
NN0002	108	50	1,625	85	0.8	508	400	3.8	3.2
NN0003	248	89	2,169	451	1.8	350	636	3.9	3.3
NN0004	95	80	1,896	165	1.7	449	780	4.2	3.4
NN0005	193	100	1,305	300	1.6	489	760	4.2	3.4
NN0006	101	87	879	252	2.5	465	1,167	3.7	3.1
NN0007	255	130	1,114	252	1.0	567	561	3.8	3.1
NN0008	192	85	1,278	230	1.2	506	606	4.0	3.3
NN0009	424	96	1,105	480	1.1	513	580	3.4	3.3
NN0011	260	140	1,583	330	1.3	486	616	4.9	3.9
NN0016	114	90	1,741	173	1.5	424	642	5.2	3.3
NN0019	194	93	1,834	235	1.2	476	577	3.9	3.1
NN0020	177	65	1,154	187	1.1	459	485	4.1	3.2
NN0021	88	50	1,149	167	1.9	471	894	4.9	3.8
NN0022	198	79	2,393	284	1.4	378	542	3.9	3.1
NN0023	85	36	1,422	90	1.1	458	485	3.8	3.2
NN0024	243	124	1,253	250	1.0	471	484	3.8	3.1
NN0025	260	120	1,956	400	1.5	529	814	4.0	3.1
NN0027	158	77	1,819	325	2.1	584	1,201	3.9	3.3
Average	**188**	**88**	**1,537**	**259**	**1.4**	**477**	**680**	**4.1**	**3.3**

Farm number	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Nitrogen application	Phosphorous application	Potassium application	Sulphur application	Labour efficiency	Labour efficiency
	t DM/ha	t DM/ha	% of ME	kg/ha	kg/ha	kg/ha	kg/ha	hd/FTE	kg MS/FTE
NN0002	5.3	1.1	64	120.5	6.7	37.7	16.4	52	26,340
NN0003	6.5	1.2	70	167.0	38.1	53.6	75.5	78	27,185
NN0004	7.6	0.3	65	134.3	35.3	78.8	17.6	56	25,353
NN0005	7.7	0.6	72	297.7	7.2	25.6	32.5	65	31,875
NN0006	8.6	2.1	60	281.1	12.7	5.6	4.9	74	34,542
NN0007	6.4	2.0	68	46.9	0.0	0.0	0.0	65	37,144
NN0008	7.6	1.1	60	191.4	30.0	9.4	39.3	68	34,500
NN0009	9.8	0.6	51	65.2	11.9	7.1	27.8	65	33,456
NN0011	8.4	1.8	73	159.2	0.0	0.0	0.0	74	35,986
NN0016	5.2	1.6	60	69.3	19.3	2.5	15.6	65	27,678
NN0019	8.4	1.8	67	123.9	3.2	31.3	44.2	72	34,230
NN0020	5.4	0.1	62	92.8	4.0	24.4	13.8	61	28,118
NN0021	1.5	6.6	38	157.8	6.5	43.7	15.5	81	38,196
NN0022	9.3	0.0	62	127.8	0.0	0.0	0.0	118	44,563
NN0023	6.2	1.1	64	89.5	0.0	34.2	28.6	60	27,486
NN0024	5.5	1.3	64	183.4	34.0	47.9	38.0	67	31,686
NN0025	11.6	1.2	66	122.1	60.0	96.4	15.1	66	35,006
NN0027	9.3	1.5	42	436.1	31.6	0.0	2.5	61	35,409
Average	**7.2**	**1.5**	**62**	**159.2**	**16.7**	**27.7**	**21.5**	**69**	**32,708**

** On milking area

Table B3 Purchased feed – North

Farm number	Purchased feed per milker	Concentrate price	Silage price	Hay price	Other feed price	Average purchased feed price	Average ME of purchased feed	Average purchased feed price	Percent of total energy imported
	t DM/hd	$/t DM	$/t DM	$/t DM	$/t DM	$/t DM	MJ ME/kg	c/MJ	of ME
NN0002	2.3	511							36
NN0003	1.4	421							30
NN0004	2.2	429							35
NN0005	1.7	261			627				28
NN0006	2.3	327							40
NN0007	2.4	612							32
NN0008	2.8	350			242				40
NN0009	3.8	344							49
NN0011	1.7	300							27
NN0016	2.3	270							40
NN0019	2.3	378							33
NN0020	2.7	470			255				38
NN0021	3.8	376			246				62
NN0022	2.4	498			262				38
NN0023	2.4	285							36
NN0024	2.8	282							36
NN0025	2.7	327							34
NN0027	3.8	329							58
Average	**2.5**	**376**			**326**				**38**

Table B4 Variable costs – North

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
NN0002	0.17	0.16	0.00	0.13	0.24	0.70	0.58	0.16	0.09
NN0003	0.17	0.16	0.07	0.13	0.12	0.65	0.74	0.00	0.86
NN0004	0.16	0.17	0.00	0.14	0.24	0.72	0.47	0.04	0.27
NN0005	0.18	0.25	0.08	0.13	0.05	0.68	0.76	0.25	0.16
NN0006	0.12	0.15	0.07	0.18	0.19	0.71	0.62	0.28	0.20
NN0007	0.05	0.12	0.00	0.12	0.11	0.39	0.08	0.42	0.21
NN0008	0.12	0.21	0.01	0.12	0.11	0.58	0.56	0.03	0.04
NN0009	0.16	0.31	0.01	0.15	0.17	0.80	0.19	0.36	0.39
NN0011	0.09	0.08	0.09	0.18	0.08	0.53	0.22	0.71	0.04
NN0016	0.00	0.11	0.05	0.18	0.26	0.60	0.22	0.00	0.47
NN0019	0.10	0.09	0.04	0.12	0.18	0.52	0.58	0.15	0.04
NN0020	0.02	0.18	0.00	0.30	0.20	0.70	0.41	0.02	0.39
NN0021	0.03	0.20	0.14	0.11	0.13	0.59	0.38	0.14	0.35
NN0022	0.00	0.22	0.25	0.09	0.12	0.68	0.28	0.05	0.00
NN0023	0.11	0.20	0.00	0.19	0.21	0.71	0.84	0.19	0.17
NN0024	0.20	0.19	0.09	0.10	0.11	0.68	0.89	0.03	0.27
NN0025	0.17	0.27	0.10	0.15	0.21	0.90	0.62	0.04	0.20
NN0027	0.10	0.21	0.10	0.24	0.10	0.75	0.56	0.23	0.05
Average	**0.11**	**0.18**	**0.06**	**0.15**	**0.16**	**0.66**	**0.50**	**0.17**	**0.23**

Farm number	Fuel and oil	Pasture improvement/ cropping	Other feed costs	Fodder purchases	Grain/ concentrates/ other	Agistment costs	Total feed costs	Total variable costs
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
NN0002	0.25	0.21	0.00	0.00	2.32	0.05	3.66	4.36
NN0003	0.18	0.39	0.24	0.00	1.69	0.19	4.50	5.15
NN0004	0.10	0.36	0.07	0.49	1.68	0.45	3.97	4.69
NN0005	0.08	0.27	0.01	0.24	0.99	0.00	3.06	3.74
NN0006	0.08	0.62	0.12	0.21	1.31	0.38	3.76	4.48
NN0007	0.11	0.37	0.10	0.09	2.26	0.00	3.55	3.95
NN0008	0.17	0.43	0.24	0.62	1.35	0.00	3.68	4.26
NN0009	0.21	0.22	0.42	0.42	2.15	0.03	4.42	5.22
NN0011	0.22	0.27	0.00	0.00	1.05	0.00	2.45	2.98
NN0016	0.14	0.15	0.05	0.00	1.49	0.00	2.56	3.17
NN0019	0.07	0.23	0.03	0.16	1.63	0.00	3.03	3.55
NN0020	0.14	0.29	0.00	0.00	2.12	0.11	3.52	4.23
NN0021	0.28	0.38	0.14	0.00	0.85	0.02	2.48	3.08
NN0022	0.18	0.22	0.04	0.42	1.75	0.00	3.02	3.70
NN0023	0.09	0.33	0.00	0.04	1.42	0.00	3.28	3.99
NN0024	0.10	0.34	0.36	0.45	1.29	0.00	3.76	4.44
NN0025	0.18	0.23	0.04	0.39	1.69	0.00	3.40	4.29
NN0027	0.22	0.35	0.46	0.37	1.80	0.17	4.20	4.95
Average	**0.16**	**0.32**	**0.13**	**0.22**	**1.60**	**0.08**	**3.46**	**4.12**

Table B5 Overhead costs – North

Farm number	Rates	Registration and insurance	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/ operator and family labour	Total overheads
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
NN0002	0.09	0.34	0.34	0.26	0.91	1.94	0.36	1.37	3.67
NN0003	0.06	0.06	0.54	0.37	1.41	2.44	0.27	0.87	3.57
NN0004	0.07	0.06	0.67	0.10	0.94	1.85	0.27	1.65	3.76
NN0005	0.05	0.13	0.90	0.33	1.42	2.84	0.46	0.73	4.03
NN0006	0.04	0.11	0.60	0.17	1.02	1.93	0.44	0.90	3.27
NN0007	0.04	0.06	0.44	0.14	0.87	1.56	0.22	1.06	2.83
NN0008	0.00	0.00	0.93	0.20	2.75	3.89	0.37	0.00	4.26
NN0009	0.04	0.12	0.20	0.29	1.04	1.70	0.38	0.76	2.83
NN0011	0.04	0.19	0.40	0.11	0.36	1.11	0.57	1.45	3.13
NN0016	0.07	0.07	0.51	0.17	0.51	1.32	0.37	1.81	3.50
NN0019	0.04	0.13	0.48	0.20	1.24	2.09	0.36	0.66	3.11
NN0020	0.11	0.13	0.87	0.28	0.62	2.00	0.75	1.52	4.27
NN0021	0.16	0.24	0.70	0.12	0.42	1.65	0.40	1.11	3.16
NN0022	0.09	0.11	0.64	0.07	0.55	1.47	0.28	0.88	2.62
NN0023	0.15	0.12	0.36	0.45	0.00	1.08	0.20	2.44	3.73
NN0024	0.05	0.10	0.26	0.28	0.87	1.56	0.32	0.97	2.86
NN0025	0.09	0.19	0.44	0.23	1.08	2.02	0.53	0.72	3.28
NN0027	0.04	0.06	0.65	0.31	1.04	2.10	0.21	0.64	2.96
Average	**0.07**	**0.12**	**0.55**	**0.23**	**0.95**	**1.92**	**0.38**	**1.08**	**3.38**

Table B6 Variable costs % – North

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
NN0002	2.1	2.0	0.0	1.7	3.0	8.7	7.2	2.0	1.2
NN0003	1.9	1.8	0.8	1.5	1.4	7.4	8.5	0.0	9.9
NN0004	1.9	2.0	0.0	1.7	2.9	8.5	5.6	0.5	3.2
NN0005	2.3	3.2	1.0	1.6	0.6	8.8	9.8	3.2	2.1
NN0006	1.5	2.0	0.9	2.3	2.5	9.2	8.0	3.6	2.5
NN0007	0.8	1.7	0.0	1.8	1.6	5.8	1.2	6.2	3.1
NN0008	1.4	2.5	0.1	1.5	1.3	6.8	6.6	0.3	0.4
NN0009	2.0	3.9	0.1	1.8	2.1	9.9	2.4	4.5	4.9
NN0011	1.4	1.3	1.5	3.0	1.4	8.6	3.7	11.7	0.6
NN0016	0.1	1.7	0.8	2.7	3.9	9.1	3.4	0.0	7.1
NN0019	1.5	1.3	0.6	1.7	2.6	7.8	8.6	2.2	0.6
NN0020	0.3	2.1	0.0	3.6	2.3	8.3	4.9	0.2	4.5
NN0021	0.4	3.2	2.2	1.7	2.0	9.5	6.0	2.2	5.6
NN0022	0.0	3.4	3.9	1.4	2.0	10.8	4.5	0.7	0.0
NN0023	1.5	2.6	0.0	2.5	2.7	9.2	10.9	2.5	2.2
NN0024	2.7	2.7	1.2	1.3	1.4	9.4	12.2	0.4	3.8
NN0025	2.3	3.5	1.3	2.0	2.8	11.8	8.1	0.5	2.7
NN0027	1.2	2.7	1.3	3.1	1.2	9.5	7.1	2.9	0.6
Average	**1.4**	**2.4**	**0.9**	**2.0**	**2.1**	**8.8**	**6.6**	**2.4**	**3.0**

Farm number	Fuel and oil	Pasture improvement/ cropping	Other feed costs	Fodder purchases	Grain/ concentrates/ other	Agistment costs	Total feed costs	Total variable costs
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
NN0002	3.1	2.7	0.0	0.0	28.8	0.6	45.6	54.3
NN0003	2.1	4.5	2.7	0.0	19.4	2.1	51.6	59.0
NN0004	1.2	4.3	0.8	5.8	19.9	5.4	46.9	55.5
NN0005	1.1	3.5	0.1	3.1	12.8	0.0	39.3	48.1
NN0006	1.1	8.1	1.5	2.8	16.9	4.9	48.6	57.8
NN0007	1.6	5.4	1.5	1.3	33.4	0.0	52.4	58.2
NN0008	2.0	5.0	2.8	7.3	15.9	0.0	43.2	50.0
NN0009	2.7	2.7	5.2	5.2	26.7	0.3	54.9	64.8
NN0011	3.7	4.3	0.0	0.0	17.2	0.0	40.2	48.8
NN0016	2.1	2.3	0.7	0.0	22.3	0.0	38.4	47.5
NN0019	1.0	3.4	0.5	2.4	24.4	0.0	45.5	53.3
NN0020	1.7	3.4	0.0	0.0	25.0	1.3	41.5	49.7
NN0021	4.5	6.1	2.2	0.0	13.6	0.3	39.8	49.3
NN0022	2.8	3.5	0.7	6.7	27.8	0.0	47.7	58.5
NN0023	1.1	4.3	0.0	0.5	18.4	0.0	42.5	51.7
NN0024	1.4	4.7	4.9	6.2	17.6	0.0	51.5	60.9
NN0025	2.3	3.0	0.6	5.1	22.3	0.0	44.9	56.7
NN0027	2.8	4.5	5.9	4.7	22.7	2.1	53.1	62.6
Average	**2.1**	**4.2**	**1.7**	**2.8**	**21.4**	**0.9**	**46.0**	**54.8**

Table B7 Overhead costs – North

Farm number	Rates	Registration and insurance	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/ operator and family labour	Total overheads
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
NN0002	1.2	4.2	4.2	3.2	11.4	24.2	4.5	17.0	45.7
NN0003	0.6	0.7	6.2	4.2	16.2	27.9	3.1	9.9	41.0
NN0004	0.9	0.7	8.0	1.2	11.1	21.8	3.2	19.5	44.5
NN0005	0.6	1.7	11.6	4.3	18.3	36.5	6.0	9.4	51.9
NN0006	0.5	1.5	7.7	2.1	13.1	25.0	5.7	11.6	42.2
NN0007	0.7	0.9	6.5	2.1	12.8	23.0	3.3	15.6	41.8
NN0008	0.0	0.0	10.9	2.4	32.3	45.6	4.4	0.0	50.0
NN0009	0.5	1.5	2.4	3.6	13.0	21.1	4.7	9.4	35.2
NN0011	0.7	3.2	6.6	1.8	5.9	18.1	9.4	23.7	51.2
NN0016	1.1	1.0	7.6	2.5	7.6	19.8	5.6	27.2	52.5
NN0019	0.6	2.0	7.2	2.9	18.6	31.3	5.4	9.9	46.7
NN0020	1.3	1.5	10.2	3.3	7.3	23.6	8.8	17.9	50.3
NN0021	2.6	3.9	11.2	1.9	6.8	26.4	6.5	17.8	50.7
NN0022	1.5	1.8	10.2	1.1	8.6	23.2	4.4	13.9	41.5
NN0023	1.9	1.6	4.6	5.9	0.0	14.0	2.6	31.7	48.3
NN0024	0.7	1.4	3.5	3.9	11.9	21.4	4.4	13.3	39.1
NN0025	1.1	2.5	5.8	3.0	14.2	26.7	7.1	9.5	43.3
NN0027	0.5	0.7	8.2	3.9	13.2	26.6	2.7	8.1	37.4
Average	**0.9**	**1.7**	**7.4**	**3.0**	**12.3**	**25.3**	**5.1**	**14.7**	**45.2**

Table B8 Capital structure – North

Farm assets				
	Land value	Land value	Permanent water value	Permanent water value
	$/ha	$/cow	$/ha	$/cow
Average	16,751	12,406	3,670	2,753

Other farm assets (per usable hectare)				
Plant and equipment	Livestock	Hay and grain	Other assets	Total assets
$/ha	$/ha	$/ha	$/ha	$/ha
2,424	3,201	187	748	23,846

Liabilities	
Liabilities per usable hectare	Liabilities per milking cow
$/ha	$/cow
5,559	3,856

Equity	
Equity per usable hectare	Average equity
$/ha	%
18,905	80

Table B9 Historical data – North
Average farm income, costs and profit per kilogram of milk solids

	Income				Variable costs							
	Milk income (net)		Gross farm income		Herd costs		Shed costs		Feed costs		Total variable costs	
Year	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)
2011–12	7.13	7.85	8.04	8.86	0.35	0.38	0.29	0.32	3.17	3.49	3.81	4.20
2012–13	6.83	7.35	7.46	8.03	0.33	0.36	0.32	0.35	3.34	3.60	4.00	4.30
2013–14	7.17	7.49	8.01	8.36	0.30	0.31	0.37	0.39	3.68	3.84	4.35	4.54
2014–15	7.62	7.84	8.61	8.86	0.35	0.36	0.36	0.37	3.78	3.89	4.48	4.61
2015–16	7.65	7.79	8.46	8.62	0.34	0.35	0.31	0.32	3.61	3.67	4.26	4.34
2016–17	7.28	7.28	8.25	8.25	0.35	0.35	0.31	0.31	3.46	3.46	4.12	4.12
Average		**7.60**		**8.50**		**0.35**		**0.34**		**3.66**		**4.35**

Note: 'Real' dollar values are the nominal values converted to 2016–17 dollar equivalents by the consumer price index (CPI) to allow for inflation.
The gross income in 2016–17 did not include feed inventory changes and changes to the value of carry-over water. These were included in feed costs.

Average farm income, costs and profit per kilogram of milk solids

	Overhead costs						Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease charges		Net farm income			
Year	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Return on assets	Return on equity
2011–12	1.76	1.94	1.44	1.59	3.20	3.53	1.03	1.13	0.45	0.49	0.58	0.64	3.0	2.2
2012–13	1.99	2.14	1.26	1.36	3.25	3.49	0.22	0.23	0.58	0.62	-0.36	-0.39	0.7	-1.6
2013–14	2.02	2.12	1.34	1.40	3.36	3.51	0.29	0.31	0.64	0.66	-0.34	-0.36	0.8	-1.7
2014–15	1.87	1.92	1.45	1.49	3.31	3.41	0.82	0.84	0.63	0.65	0.19	0.19	1.9	0.4
2015–16	1.96	2.00	1.62	1.65	3.58	3.65	0.62	0.63	0.53	0.54	0.09	0.09	1.6	-0.1
2016–17	1.92	1.92	1.46	1.46	3.38	3.38	0.75	0.75	0.52	0.52	0.23	0.23	1.8	0.8
Average		**2.01**		**1.49**		**3.50**		**0.65**		**0.58**		**0.07**	**1.6**	**0.0**

Table B10 Historical data – North
Average farm physical information

	Total usable area	Milking area	Water used	Number of milking cows	Milking cows per useable area	Milk sold	Milk sold	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Concentrate price	
Year	ha	ha	mm/ha	hd	hd/ha	kg MS/ cow	kg MS/ ha	t DM/ha	t DM/ha	% of ME	Nominal ($/t DM)	Real ($/t DM)
2011–12	250	109	1,398	300	1.3	461	598	5.9	1.8	62	307	339
2012–13	335	130	1,323	361	1.3	460	615	7.4	1.4	58	335	360
2013–14	231	102	974	272	1.2	471	590	5.8	1.2	60	444	464
2014–15	215	95	1,430	259	1.3	477	606	6.4	1.8	59	434	447
2015–16	210	94	1,139	289	1.4	463	636	5.9	2.3	52	401	408
2016–17	188	88	1,537	259	1.4	477	680	7.2	1.5	62	376	376
Average	**238**	**103**	**1,300**	**290**	**1.3**	**468**	**621**	**6.4**	**1.7**	**59**		**399**

* From 2006–07 to 2010–11 estimated grazed pasture and conserved feed was calculated per usable hectare
From 2011–12 estimated grazed pasture and conserved feed was calculated per hectare of milking area

Appendix C **South summary tables**

Table C1 Main financial indicators – South

Farm number	Milk income (net)	All other income	Gross farm income	Total variable costs	Total overhead costs	Cost structure (variable costs/ total costs)	Earnings before interest and tax	Return on assets (exc. capital apprec.)	Interest and lease charges	Debt servicing ratio	Net farm income	Return on equity
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	%	$/kg MS	%	$/kg MS	% of income	$/kg MS	%
SN0002	7.45	1.92	9.38	4.93	3.20	61	1.24	2.1	0.84	9	0.40	1.2
SN0004	6.82	1.76	8.58	5.06	4.28	54	-0.77	-0.6	0.46	5	-1.23	-1.4
SN0005	6.90	1.79	8.68	3.23	2.07	61	3.38	3.9	0.50	6	2.87	4.3
SN0006	6.42	2.34	8.76	4.39	3.26	57	1.11	3.2	0.87	10	0.24	1.4
SN0007	6.99	1.08	8.07	4.82	2.86	63	0.38	1.6	0.50	6	-0.12	-0.7
SN0009	6.21	1.64	7.85	3.83	2.96	56	1.06	2.4	1.05	13	0.00	0.0
SN0012	6.32	1.27	7.59	3.47	2.88	55	1.25	5.0	0.75	10	0.50	3.8
SN0013	7.00	0.37	7.37	1.92	1.84	51	3.61	13.6	0.56	8	3.05	18.4
SN0014	5.12	0.49	5.60	3.92	2.11	65	-0.42	-2.2	0.52	9	-0.94	-9.5
SN0016	6.00	0.55	6.55	2.99	3.12	49	0.44	1.5	0.28	4	0.15	0.7
SN0017	5.93	0.52	6.45	3.27	3.29	50	-0.11	-0.2	0.00	0	-0.11	-0.2
SN0018	6.11	1.62	7.72	2.30	3.67	38	1.76	2.2	0.31	4	1.45	2.3
SN0020	7.55	0.71	8.27	4.19	1.82	70	2.26	7.3	0.22	3	2.04	8.4
SN0021	4.53	1.15	5.68	2.99	2.25	57	0.44	1.7	0.01	0	0.43	1.7
SN0023	6.16	0.77	6.92	4.83	2.15	69	-0.06	-0.3	0.41	6	-0.47	-3.2
SN0024	7.29	0.65	7.94	3.96	2.83	58	1.15	1.0	0.90	11	0.25	5.5
SN0025	7.44	0.63	8.07	2.52	3.55	42	1.99	3.6	0.49	6	1.51	3.6
Average	**6.48**	**1.13**	**7.62**	**3.68**	**2.83**	**56**	**1.10**	**2.7**	**0.51**	**7**	**0.59**	**2.1**

Table C2 Physical information – South

Farm number	Total usable area	Milking area	Water used	Number of milking cows	Milking cows per usable area	Milk sold	Milk sold	Fat	Protein
	ha	ha	mm/ha	hd	hd/ha	kg MS/cow	kg MS/ha	%	%
SN0002	196	80	1,473	290	1.5	566	838	4.0	3.4
SN0004	159	115	1,273	132	0.8	499	415	3.9	3.2
SN0005	207	120	1,602	320	1.5	561	867	3.4	3.2
SN0006	168	71	822	286	1.7	503	854	3.9	3.1
SN0007	888	330	1,366	1,366	1.5	591	909	3.8	3.2
SN0009	280	156	883	272	1.0	466	452	3.9	3.4
SN0012	318	101	1,093	323	1.0	563	572	3.8	3.2
SN0013	212	53	1,179	205	1.0	420	407	4.6	3.7
SN0014	430	185	913	365	0.8	539	457	3.9	3.3
SN0016	443	277	533	420	0.9	480	455	4.0	3.4
SN0017	180	80	733	132	0.7	561	412	4.0	3.5
SN0018	361	140	1,109	195	0.5	552	299	4.3	3.4
SN0020	367	219	1,124	625	1.7	580	988	3.5	3.1
SN0021	1,030	434	873	1,132	1.1	471	517	4.9	3.9
SN0023	110	82	915	180	1.6	455	745	3.9	3.2
SN0024	305	124	896	230	0.8	478	361	3.7	3.2
SN0025	172	70	1,096	265	1.5	546	841	3.6	3.3
Average	**343**	**155**	**1,052**	**396**	**1.2**	**520**	**611**	**4.0**	**3.3**

Farm number	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Nitrogen application	Phosphorous application	Potassium application	Sulphur application	Labour efficiency	Labour efficiency
	t DM/ha	t DM/ha	% of ME	kg/ha	kg/ha	kg/ha	kg/ha	hd/FTE	kg MS/FTE
SN0002	7.4	0.0	25	162.1	59.2	58.6	13.1	64	36,005
SN0004	3.0	0.0	53	31.8	19.1	8.1	20.3	41	20,371
SN0005	6.7	0.7	56	43.1	20.4	9.8	19.0	85	47,723
SN0006	9.6	0.2	62	28.0	9.6	47.9	12.1	90	45,007
SN0007	13.4	0.5	61	313.9	25.5	1.3	41.5	98	57,613
SN0009	1.8	6.2	51	32.8	13.2	0.0	1.0	76	35,610
SN0012	8.8	0.0	52	42.0	11.3	9.4	0.9	58	32,853
SN0013	10.7	0.0	59	0.0	0.0	0.0	0.0	146	61,159
SN0014	5.1	0.1	64	46.3	9.6	6.2	16.5	97	52,274
SN0016	3.7	1.0	58	14.6	4.5	1.0	2.3	67	31,976
SN0017	3.8	3.6	64	18.3	3.2	1.7	8.3	57	31,899
SN0018	5.1	2.6	83	45.3	16.5	11.1	18.3	48	26,265
SN0020	5.3	0.5	33	97.8	0.0	70.8	0.0	93	54,111
SN0021	9.0	1.0	73	264.4	33.7	18.8	210.5	110	51,935
SN0023	7.2	2.2	60	190.7	20.8	0.0	26.0	93	42,123
SN0024	4.4	0.8	54	76.3	3.9	9.6	0.3	68	32,538
SN0025	6.4	2.5	65	46.2	18.2	16.5	11.1	81	44,283
Average	**6.5**	**1.7**	**57**	**85.5**	**15.8**	**15.9**	**23.6**	**81**	**41,397**

** On milking area

Table C3 Purchased feed – South

Farm number	Purchased feed per milker	Concentrate price	Silage price	Hay price	Other feed price	Average purchased feed price	Average ME of purchased feed	Average purchased feed price	Percent of total energy imported
	t DM/hd	$/t DM	$/t DM	$/t DM	$/t DM	$/t DM	MJ ME/kg	c/MJ	of ME
SN0002	6.2	452							75
SN0004	3.9	301							47
SN0005	3.3	360							44
SN0006	2.6	351							38
SN0007	3.0	342			1,074				39
SN0009	4.6	326			124				49
SN0012	4.6	265							48
SN0013	2.5	225							41
SN0014	2.4	394							36
SN0016	2.7	316							42
SN0017	2.5	482							36
SN0018	1.4	255							17
SN0020	4.9	388							67
SN0021	1.7	268							27
SN0023	2.7	421							40
SN0024	3.0	314							46
SN0025	2.1	258			179				35
Average	**3.2**	**336**			**459**				**43**

Table C4 Variable costs – South

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
SN0002	0.07	0.23	0.19	0.04	0.09	0.62	0.26	0.09	0.00
SN0004	0.28	0.24	0.04	0.08	0.11	0.76	0.42	0.00	0.11
SN0005	0.12	0.17	0.05	0.08	0.09	0.50	0.16	0.04	0.06
SN0006	0.08	0.25	0.01	0.12	0.13	0.58	0.26	0.11	0.21
SN0007	0.19	0.25	0.25	0.03	0.23	0.95	0.41	0.32	0.00
SN0009	0.42	0.15	0.00	0.14	0.15	0.86	0.14	0.08	0.12
SN0012	0.11	0.19	0.09	0.08	0.09	0.56	0.20	0.09	0.20
SN0013	0.00	0.02	0.00	0.08	0.17	0.28	0.00	0.29	0.00
SN0014	0.15	0.29	0.09	0.09	0.07	0.68	0.51	0.21	0.23
SN0016	0.12	0.10	0.04	0.06	0.08	0.39	0.10	0.18	0.05
SN0017	0.07	0.05	0.05	0.07	0.17	0.41	0.16	0.16	0.22
SN0018	0.14	0.09	0.00	0.11	0.08	0.42	0.43	0.23	0.19
SN0020	0.10	0.10	0.11	0.09	0.10	0.51	0.12	0.00	0.00
SN0021	0.08	0.12	0.12	0.13	0.09	0.53	0.79	0.49	0.50
SN0023	0.20	0.06	0.01	0.10	0.20	0.56	0.50	0.17	0.45
SN0024	0.52	0.28	0.22	0.13	0.02	1.17	0.24	0.00	0.07
SN0025	0.08	0.27	0.00	0.16	0.22	0.73	0.31	0.00	0.52
Average	**0.16**	**0.17**	**0.07**	**0.09**	**0.12**	**0.62**	**0.29**	**0.14**	**0.17**

Farm number	Fuel and oil	Pasture improvement/ cropping	Other feed costs	Fodder purchases	Grain/ concentrates/ other	Agistment costs	Total feed costs	Total variable costs
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
SN0002	0.13	0.15	0.00	0.89	2.77	0.07	4.31	4.93
SN0004	0.19	0.15	0.00	0.49	1.93	0.07	4.31	5.06
SN0005	0.05	0.10	0.00	0.37	1.81	0.05	2.73	3.23
SN0006	0.18	0.22	0.39	0.26	1.73	0.16	3.81	4.39
SN0007	0.07	0.57	0.81	0.19	1.55	0.00	3.87	4.82
SN0009	0.19	0.11	0.26	0.30	2.10	0.00	2.97	3.83
SN0012	0.30	0.13	0.21	0.99	1.12	0.01	2.90	3.47
SN0013	0.13	0.01	0.00	0.31	0.95	0.00	1.64	1.92
SN0014	0.11	0.28	0.05	0.24	1.44	0.13	3.24	3.92
SN0016	0.03	0.20	0.00	0.34	1.52	0.12	2.60	2.99
SN0017	0.06	0.13	0.00	0.00	2.19	0.00	2.87	3.27
SN0018	0.08	0.07	0.00	0.00	0.66	0.00	1.88	2.30
SN0020	0.05	0.09	0.00	1.10	1.99	0.12	3.68	4.19
SN0021	0.11	0.33	0.05	0.00	0.99	0.13	2.46	2.99
SN0023	0.11	0.33	0.00	0.43	1.83	0.46	4.27	4.83
SN0024	0.09	0.10	0.29	0.32	1.62	0.07	2.80	3.96
SN0025	0.17	0.25	0.00	0.12	0.65	0.11	1.79	2.52
Average	**0.12**	**0.19**	**0.12**	**0.37**	**1.58**	**0.09**	**3.07**	**3.68**

Table C5 Overhead costs – South

Farm number	Rates	Registration and insurance	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/ operator and family labour	Total overheads
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
SN0002	0.11	0.15	0.81	0.12	0.36	1.54	0.42	1.24	3.20
SN0004	0.16	0.16	0.44	0.54	1.58	2.88	0.49	0.92	4.28
SN0005	0.10	0.06	0.27	0.15	1.15	1.73	0.21	0.13	2.07
SN0006	0.03	0.19	0.48	0.18	1.47	2.35	0.56	0.36	3.26
SN0007	0.01	0.02	0.51	0.65	1.47	2.67	0.19	0.00	2.86
SN0009	0.07	0.02	0.43	0.19	1.08	1.78	0.38	0.80	2.96
SN0012	0.03	0.19	0.37	0.21	0.91	1.70	0.47	0.70	2.88
SN0013	0.04	0.02	0.17	0.18	0.00	0.41	0.32	1.10	1.84
SN0014	0.03	0.09	0.26	0.19	0.58	1.16	0.24	0.71	2.11
SN0016	0.04	0.12	0.32	0.09	1.03	1.60	0.44	1.08	3.12
SN0017	0.19	0.11	0.48	0.09	1.37	2.25	0.36	0.68	3.29
SN0018	0.01	0.16	0.38	0.30	0.90	1.75	0.33	1.59	3.67
SN0020	0.09	0.08	0.27	0.06	0.69	1.19	0.13	0.50	1.82
SN0021	0.03	0.08	0.45	0.05	0.77	1.39	0.40	0.46	2.25
SN0023	0.03	0.15	0.29	0.09	0.17	0.73	0.10	1.32	2.15
SN0024	0.11	0.20	0.45	0.26	0.77	1.79	0.11	0.94	2.83
SN0025	0.05	0.18	0.88	0.25	0.18	1.54	0.72	1.29	3.55
Average	**0.07**	**0.12**	**0.43**	**0.21**	**0.85**	**1.67**	**0.35**	**0.81**	**2.83**

Table C6 Variable costs % – South

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
SN0002	0.9	2.9	2.3	0.5	1.1	7.7	3.1	1.0	0.0
SN0004	3.0	2.6	0.5	0.9	1.1	8.1	4.5	0.0	1.2
SN0005	2.3	3.1	0.9	1.5	1.7	9.5	3.1	0.7	1.2
SN0006	1.1	3.2	0.1	1.5	1.7	7.6	3.4	1.5	2.7
SN0007	2.5	3.3	3.2	0.4	3.0	12.4	5.3	4.2	0.0
SN0009	6.2	2.3	0.0	2.1	2.2	12.7	2.0	1.1	1.8
SN0012	1.8	3.0	1.4	1.2	1.4	8.9	3.1	1.3	3.1
SN0013	0.0	0.5	0.0	2.2	4.6	7.3	0.0	7.6	0.0
SN0014	2.4	4.8	1.5	1.4	1.1	11.3	8.4	3.4	3.8
SN0016	1.9	1.6	0.7	1.0	1.3	6.4	1.7	2.9	0.9
SN0017	1.1	0.8	0.8	1.0	2.5	6.2	2.4	2.4	3.4
SN0018	2.3	1.5	0.1	1.8	1.3	7.0	7.2	3.8	3.2
SN0020	1.7	1.7	1.9	1.5	1.7	8.4	2.0	0.0	0.0
SN0021	1.4	2.3	2.2	2.5	1.6	10.1	15.1	9.3	9.5
SN0023	2.8	0.9	0.1	1.4	2.8	8.0	7.2	2.5	6.4
SN0024	7.6	4.1	3.3	1.9	0.4	17.2	3.5	0.0	1.0
SN0025	1.3	4.5	0.1	2.7	3.6	12.1	5.0	0.0	8.5
Average	**2.4**	**2.5**	**1.1**	**1.5**	**2.0**	**9.5**	**4.5**	**2.5**	**2.7**

Farm number	Fuel and oil	Pasture improvement/ cropping	Other feed costs	Fodder purchases	Grain/ concentrates/ other	Agistment costs	Total feed costs	Total variable costs
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
SN0002	1.6	1.9	0.0	10.9	34.1	0.9	52.9	60.6
SN0004	2.1	1.6	0.0	5.2	20.6	0.8	46.1	54.2
SN0005	1.0	1.9	0.0	7.0	34.1	0.9	51.5	60.9
SN0006	2.4	2.9	5.1	3.4	22.6	2.1	49.8	57.4
SN0007	0.9	7.4	10.5	2.5	20.1	0.0	50.3	62.7
SN0009	2.9	1.6	3.8	4.5	30.9	0.0	43.7	56.4
SN0012	4.7	2.0	3.2	15.7	17.7	0.1	45.8	54.6
SN0013	3.5	0.2	0.0	8.2	25.4	0.0	43.8	51.1
SN0014	1.8	4.6	0.9	3.9	24.0	2.2	53.7	65.1
SN0016	0.5	3.2	0.0	5.5	24.8	2.0	42.5	49.0
SN0017	0.9	2.0	0.0	0.0	33.4	0.0	43.7	49.9
SN0018	1.3	1.2	0.0	0.0	11.0	0.0	31.5	38.5
SN0020	0.8	1.4	0.0	18.3	33.1	2.0	61.3	69.7
SN0021	2.1	6.3	0.9	0.0	18.8	2.4	46.9	57.1
SN0023	1.5	4.7	0.0	6.1	26.2	6.5	61.2	69.2
SN0024	1.3	1.4	4.2	4.8	23.9	1.0	41.1	58.3
SN0025	2.8	4.1	0.0	2.0	10.8	1.9	29.4	41.5
Average	**1.9**	**2.8**	**1.7**	**5.8**	**24.2**	**1.3**	**46.8**	**56.2**

Table C7 Overhead costs – South

Farm number	Rates	Registration and insurance	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/ operator and family labour	Total overheads
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS	$/kg MS
SN0002	1.3	1.8	10.0	1.5	4.4	18.9	5.2	15.3	39.4
SN0004	1.7	1.7	4.7	5.8	16.9	30.8	5.2	9.8	45.8
SN0005	1.8	1.1	5.1	2.9	21.7	32.6	3.9	2.5	39.1
SN0006	0.4	2.5	6.3	2.4	19.2	30.7	7.3	4.6	42.6
SN0007	0.2	0.3	6.7	8.4	19.2	34.7	2.5	0.0	37.3
SN0009	1.0	0.2	6.4	2.8	15.9	26.2	5.7	11.7	43.6
SN0012	0.5	3.0	5.8	3.3	14.3	26.9	7.4	11.1	45.4
SN0013	1.1	0.6	4.4	4.9	0.0	11.0	8.6	29.3	48.9
SN0014	0.5	1.5	4.4	3.2	9.7	19.2	3.9	11.8	34.9
SN0016	0.6	1.9	5.3	1.5	16.9	26.2	7.1	17.7	51.0
SN0017	2.9	1.7	7.4	1.4	20.8	34.2	5.5	10.4	50.1
SN0018	0.2	2.7	6.3	5.1	15.1	29.4	5.6	26.6	61.5
SN0020	1.5	1.3	4.4	1.0	11.5	19.7	2.2	8.3	30.3
SN0021	0.7	1.5	8.7	1.0	14.7	26.5	7.7	8.8	42.9
SN0023	0.5	2.1	4.2	1.3	2.4	10.4	1.4	18.9	30.8
SN0024	1.7	3.0	6.6	3.8	11.3	26.3	1.6	13.8	41.7
SN0025	0.8	3.0	14.5	4.0	3.0	25.4	11.9	21.2	58.5
Average	**1.0**	**1.7**	**6.5**	**3.2**	**12.8**	**25.2**	**5.5**	**13.1**	**43.8**

Table C8 Capital structure – South

Farm assets				
	Land value	Land value	Permanent water value	Permanent water value
	$/ha	$/cow	$/ha	$/cow
Average	20,687	15,503	1,818	1,851

Other farm assets (per usable hectare)				
Plant and equipment	Livestock	Hay and grain	Other assets	Total assets
$/ha	$/ha	$/ha	$/ha	$/ha
2,174	2,636	350	440	23,915

Liabilities	
Liabilities per usable hectare	Liabilities per milking cow
$/ha	$/cow
6,064	4,790

Equity	
Equity per usable hectare	Average equity
$/ha	%
18,564	76

Table C9 Historical data – South
Average farm income, costs and profit per kilogram of milk solids

	Income				Variable costs							
	Milk income (net)		Gross farm income		Herd costs		Shed costs		Feed costs		Total variable costs	
Year	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)
2011–12	6.64	7.31	7.48	8.24	0.31	0.35	0.25	0.27	2.86	3.15	3.42	3.77
2012–13	6.03	6.49	6.95	7.47	0.32	0.35	0.24	0.26	3.01	3.24	3.57	3.85
2013–14	7.12	7.44	7.98	8.34	0.32	0.33	0.21	0.22	3.20	3.34	3.73	3.90
2014–15	7.28	7.49	8.25	8.49	0.30	0.30	0.21	0.22	3.28	3.37	3.79	3.90
2015–16	6.97	7.10	7.94	8.10	0.35	0.36	0.21	0.22	3.01	3.06	3.57	3.64
2016–17	6.48	6.48	7.62	7.62	0.40	0.40	0.22	0.22	3.07	3.07	3.68	3.68
Average		**7.05**		**8.04**		**0.35**		**0.23**		**3.21**		**3.79**

Note: 'Real' dollar values are the nominal values converted to 2016–17 dollar equivalents by the consumer price index (CPI) to allow for inflation.
The gross income in 2016–17 did not include feed inventory changes and changes to the value of carry-over water. These were included in feed costs.

Average farm income, costs and profit per kilogram of milk solids

	Overhead costs						Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease charges		Net farm income			
Year	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Nominal ($/kg MS)	Real ($/kg MS)	Return on assets	Return on equity
2011–12	1.35	1.49	1.05	1.16	2.40	2.65	1.65	1.82	0.73	0.80	0.92	1.02	5.5	4.9
2012–13	1.44	1.55	1.12	1.20	2.56	2.75	0.81	0.87	0.66	0.71	0.15	0.17	2.7	0.5
2013–14	1.54	1.61	1.16	1.21	2.69	2.81	1.56	1.63	0.61	0.64	0.95	0.99	4.8	1.2
2014–15	1.52	1.57	1.02	1.05	2.55	2.62	1.91	1.97	0.56	0.57	1.35	1.39	5.3	5.7
2015–16	1.49	1.52	1.17	1.19	2.66	2.71	1.72	1.75	0.55	0.56	1.17	1.19	4.7	4.7
2016–17	1.67	1.67	1.16	1.16	2.83	2.83	1.10	1.10	0.51	0.51	0.59	0.59	2.7	2.1
Average		**1.57**		**1.16**		**2.73**		**1.52**		**0.63**		**0.89**	**4.3**	**3.2**

Table C10 Historical data – South
Average farm physical information

	Total usable area	Milking area	Water used	Number of milking cows	Milking cows per useable area	Milk sold	Milk sold	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Concentrate price	
Year	ha	ha	mm/ha	hd	hd/ha	kg MS/ cow	kg MS/ ha	t DM/ha	t DM/ha	% of ME	Nominal ($/t DM)	Real ($/t DM)
2011–12	351	156	1,142	450	1.5	495	728	6.8	0.9	52	301	332
2012–13	323	151	805	337	1.1	523	601	6.5	1.2	55	311	334
2013–14	381	139	765	350	1.0	541	546	6.2	1.0	54	377	394
2014–15	372	165	1,076	430	1.1	540	597	6.7	1.8	57	389	400
2015–16	379	164	1,036	425	1.1	552	597	6.5	1.9	57	382	390
2016–17	343	155	1,052	396	1.2	520	611	6.5	1.7	57	336	336
Average	**358**	**155**	**979**	**398**	**1.2**	**528**	**613**	**6.5**	**1.4**	**55**		**364**

* From 2006–07 to 2010–11estimated grazed pasture and conserved feed was calculated per usable hectare
From 2011–12 estimated grazed pasture and conserved feed was calculated per hectare of milking area

Appendix D **Glossary of terms, abbreviations and standard values**

All other income

Income to the farm from all sources except milk. Includes livestock trading profit, dividends, interest payments received, and rent from farm cottages.

Annual hours

Total hours worked by a person during the given twelve month period.

Appreciation

An increase in the value of an asset in the market place. Often only applicable to land value.

Asset

Anything managed by the farm, whether it is owned or not. Assets include owned land and buildings, leased land, plant and machinery, fixtures and fittings, trading stock, farm investments (i.e. Farm Management Deposits), debtors, and cash.

Cash overheads

All fixed costs that have a cash cost to the business. Includes all overhead costs except imputed labour costs and depreciation.

Cost of production

The cost of producing the main product of the business; milk. Usually expressed in terms of the main enterprise output i.e. dollars per kilogram of milk solids. It is reported at the following levels;

- Cash cost of production; variable costs plus cash overhead costs
- Cost of production excluding inventory changes; variable costs plus cash and non-cash overhead costs
- Cost of production including inventory changes; variable costs plus cash and non-cash overhead costs, accounting for feed inventory change and livestock inventory change minus livestock purchases

Cost structure

Variable costs as a percentage of total costs, where total costs equals variable costs plus overhead costs.

Debt servicing ratio

Interest and lease costs as a percentage of gross farm income.

Depreciation

Decrease in value over time of capital asset, usually as a result of using the asset. Depreciation is a non-cash cost of the business, but reduces the book value of the asset and is therefore a cost.

Earnings before interest and tax (EBIT)

Gross income minus total variable and total overhead costs.

EBIT %

The ratio of EBIT compared to gross income. Indicates the percentage of each dollar of gross income that is retained as EBIT.

Employed labour cost

Cash cost of any paid employee, including on-costs such as superannuation and WorkCover.

Equity

Total assets minus total liabilities. Equal to the total value of capital invested in the farm business by the owner/operator(s).

Equity %

Total equity as a percentage of the total assets owned. The proportion of the total assets owned by the business.

Farm income

See gross farm income.

Feed costs

Cost of fertiliser, irrigation (including effluent), hay and silage making, fuel and oil, pasture improvement, fodder purchases, grain/concentrates, agistment and lease costs associated with any of the above costs, and feed inventory change.

Feed inventory change

An estimate of the feed on hand at the start and end of the financial year to capture feed used in the production of milk and livestock.

Finance costs

See interest and lease costs.

Full time equivalent (FTE)

Standardised labour unit. Equal to 2,400 hours a year. Calculated as 48 hours a week for 50 weeks a year.

Grazed area

Total usable area minus any area used only for fodder production during the year.

Grazed pasture

Calculated using the energetics method. Grazed pasture is calculated as the gap between total energy required by livestock over the year and amount of energy available from other sources (hay, silage, grain and concentrates).

Total energy required by livestock is a factor of age, weight, growth rate, pregnancy and lactation requirements, distance to shed, terrain and number of animals.

Total energy available is the sum of energy available from all feed sources except pasture, calculated as (weight (kg) x dry matter content (DM %) x metabolisable energy (MJ/kg DM)).

Gross farm income

Farm income including milk sales, livestock trading and other income such as income from grants and rebates.

Gross margin

Gross farm income minus total variable costs.

Herd costs

Cost of artificial insemination (AI) and herd tests, animal health and calf rearing.

Imputed

An estimated amount, introduced into economic management analysis to allow reasonable comparisons between years and between other businesses.

Imputed labour cost

An allocated allowance for the cost of owner/operator, family and sharefarmer time in the business, valued at $28 per hour.

Interest and lease costs

Total interest plus total lease costs paid.

Labour cost

Cost of the labour resource on farm. Includes both imputed and employed labour costs.

Labour efficiency

FTEs per cow and per kilogram of milk solid. Measures of productivity of the total labour resources in the business.

Labour resource

Any person who works in the business, be they the owner, family, sharefarmer or employed on a permanent, part time or contract basis.

Liability

Money owed to someone else, e.g. family or a financial institute such as a bank.

Livestock trading profit

An estimate of the annual contribution to gross farm income by accounting for the changes in the number and value of livestock during the year. It is calculated as the trading income from sales minus purchases, plus changes in the value and number of livestock on hand at the start and end of the year, and accounting for births and deaths. An increase in livestock trading indicates there was an appreciation of livestock or an increase in livestock numbers over the year.

Metabolisable energy

Energy available to livestock in feed, expressed in megajoules per kilogram of dry matter (MJ/kg DM).

Milk income

Income through the sales of milk. This is net of compulsory levies and charges.

Milking area

Total usable area minus out-blocks or run-off areas.

Net farm income

Previously reported as business profit.

Earnings before interest and tax (EBIT) minus interest and lease costs. The amount of profit available for capital investment, loan principal repayments and tax.

Nominal terms

Dollar values or interest rates that include an inflation component.

Number of milkers

Total number of cows milked for at least three months.

Other income

Income to the farm from other farm owned assets and external sources. Includes dividends, interest payments received, and rents from farm cottages.

Overhead costs

All fixed costs incurred by the farm business e.g. rates, administration, depreciation, insurance and imputed labour. Interest, leases, capital expenditure, principal repayments and tax are not included.

Real terms

Dollar values or interest rates that have no inflation component.

Return on assets (RoA)

Earnings before interest and tax divided by the value of total assets under management, including owned and leased land.

Return on equity (RoE)

Net farm income divided by the value of total equity.

Shed costs

Cost of shed power and dairy supplies such as filter socks, rubberware, vacuum pump oil etc.

Total income

See gross farm income.

Total usable area

Total hectares managed minus the area of land which is of little or no value for livestock production e.g. house and shed area.

Total water used

Total rainfall plus average irrigation water used expressed as millimetres per hectare, where irrigation water is calculated as; (total megalitres of water used/total usable area) x 100.

Variable costs

All costs that vary with the size of production in the enterprise e.g. herd, shed and feed costs (including feed inventory change).

List of abbreviations

AI	Artificial insemination
CH_4	Methane gas
CO_2	Carbon dioxide gas
CO_2-e	Carbon dioxide equivalent
CoP	Cost of production
DEDJTR	Department of Economics Development, Jobs, Transport and Resources, Victoria
DFMP	Dairy Farm Monitor Project
DM	Dry matter of feed stuffs
EBIT	Earnings before interest and tax
FTE	Full time equivalent
GWP	Global Warming Potential
ha	Hectare(s)
hd	Head of cattle
HRWS	High Reliability Water Shares
kg	Kilograms
LRWS	Low Reliability Water Shares
ME	Metabolisable energy (MJ/kg)
MJ	Megajoules of energy
mm	Millimetres. 1 mm is equivalent to 4 points or 1/25 of an inch of rainfall
MS	Milk solids (proteins and fats)
N_2O	Nitrous oxide gas
Q1	First quartile, i.e. the value of which one quarter, or 25%, of data in that range is less than
Q3	Third quartile, i.e. the value of which one quarter, or 25%, of data in that range is greater than
RoA	Return on assets
RoE	Return on equity
t	Tonne = 1,000 kg

Standard values

Irrigation values

The standard values to estimate the inventory values of irrigation water were:

Category	Opening value ($/ML)	Closing value ($/ML)
HRWS	1,012	1,250
LRWS	230	230
Carry over water	200	200

Livestock values

The standard vales used to estimate the inventory values of livestock were:

Category	Opening value ($/hd)	Closing value ($/hd)
Mature cows	1,500	1,500
14–15 heifers	1,050	1,500
15–16 heifers	450	1,050
16–17 calves		450
Mature bulls	1,500	1,500

Imputed owner/operator and family labour

In 2016–17 the imputed owner/operator and family labour rate was $28/hr based on a full time equivalent (FTE) working 48 hours/week for 50 weeks of the year.





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