



Dairy Farm Monitor Project
Tasmania
annual report 2015–16

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Contents

How to read this report	2
What's new in 2015–16?	2
Summary	3
Farm monitor method	5
Tasmania overview	9
Business confidence survey	25
Historical analysis	30
Appendices	32

List of figures

- Figure 1 Dairy farm monitor project method
- Figure 2 Dairy farm monitor project method profit map – state average 2015–16 data
- Figure 3 Distribution of participant farms in 2015–16 across Tasmania
- Figure 4 2015–16 annual rainfall and long term average rainfall of participant farms
- Figure 5 Monthly average rainfall (all farms)
- Figure 6 Gross farm income of per kilogram of milk solids
- Figure 7 Milk solids sold per hectare
- Figure 8 Milk sales vs calving pattern

- Figure 9 Whole farm variable and overhead costs per kilogram of milk solids
- Figure 10 Whole farm earnings before interest and tax per kilogram of milk solids
- Figure 11 Distribution of farms by return on assets
- Figure 12 Return on assets
- Figure 13 Distribution of farms by return on equity
- Figure 14 Return on equity
- Figure 15 Sources of whole farm metabolisable energy
- Figure 16 Estimated tonnes of home grown feed consumed per milking hectare
- Figure 17 Fertiliser application (kg/ha)
- Figure 18 Expectation of business returns
- Figure 19 Price and production expectations – milk
- Figure 20 Price and production expectations – fodder
- Figure 21 Cost expectations
- Figure 22 Major issues facing the dairy industry – the next 12 months
- Figure 23 Major issues facing the dairy industry – the next five years
- Figure 24 Historical EBIT and net farm income
- Figure 25 Historical return on assets and return on equity

List of tables

- Table 1 Farm physical data – state overview
- Table 2 Cost of production
- Table 3 Risk indicators
- Table 4 Fertiliser use

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
- › Tasmania overview
- › Business confidence survey
- › Historical analysis
- › Appendices

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

The report presents visual descriptions of data for the 2015–16 year. Data are presented for individual farms, as state 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 the population of farms in a given region due to the small sample size and farms not being randomly selected.

The top 25% of farms are presented as lighter coloured bars. Return on assets is the determinate used to identify the top 25% of producers as it provides an assessment of whole farm performance irrespective of differences in location and production system.

The Q1–Q3 data range for key indicators are presented to provide an indication of 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.

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 farmers are paid based on milk solids production.

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’; $\frac{120-80}{80} \times 100 = 50\%$, unless otherwise stated.

The top 25% consists of seven farms from 29 participants in the 2015–16 Tasmanian Dairy Farm Monitor Project.

Any reference to ‘last year’ refers to the 2014–15 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 2014–15 are in the 2015–16 report, as there were six new participants in this year’s dataset. It is important to bear this in mind when comparing datasets between years.

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

What’s new in 2015–16?

The Tasmanian Dairy Farm Monitor Report for 2015–16 includes a number of changes since last year’s report. The most significant highlights are:

- › The standard value for imputed owner operator and family labour was revised from \$25/hr to \$28/hr to reflect industry rates and inflation.
- › The standard value for livestock used to calculate livestock trading profit and asset values was revised to reflect market rates and inflation. For example a mature cow increased from \$1,100/head to \$1,500/head across all participant farms.
- › The standard values used to estimate the value of livestock, irrigation and the imputed operators’ allowance for labour and management are detailed in the Appendix B.
- › The cost of production calculation was revised to articulate the cost of production

on a cash basis, cash plus non-cash basis and also to identify the impact of inventory change on cost of production. This also now aligns with the reporting in Dairy Australia’s DairyBase.

Keep an eye on the project website for further reports and updates on the project at:

agriculture.vic.gov.au/dairyfarmmonitor or dairyaustralia.com.au/dairyfarmmonitor

Summary



Summary

In 2015–16 the data obtained from 29 farms in Tasmania revealed average whole farm earnings before interest and tax (EBIT) of \$246,639, a 48% decrease compared with the previous year. The average gross income was lower by 12% while the cost of production was 4% higher in 2015–16 compared with 2014–15. Milk sales increased slightly from 924 kg MS/ha in 2014–15 to 936 kg MS/ha in 2015–16. Return on assets was 3.9% compared with last year's 7.8%.

This is the third year of the Dairy Farm Monitor Project in Tasmania. The project aims to provide the Tasmanian dairy industry with valuable farm level data relating to profitability and production.

In 2015–16 dairy farm profitability declined for the third year in a row mainly as a result of a further decrease in milk price. The average EBIT was \$246,639 signalling a 48% decrease from \$478,462 the previous year. Net farm income also reduced by 67% from \$380,643 in 2014–15 to \$125,129 in 2015–16.

Of the 29 participants, 26 recorded a positive return on assets (RoA) with the average being 3.9% and the range was –3.5% to 10.8%, and the top 25% achieving 8.9% RoA.

Although there was a significant decrease in the average return on equity, 23 participants had positive return on equity. The average RoE was 0.8% in 2015–16 while the top 25% group had a RoE of 13.5%.

The average milk price received in 2015–16 was \$5.55/kg MS, a 10% decrease from \$6.19/kg MS in 2014–15. The milk price decrease occurred towards the end of the season which meant that most decisions for the season were based on receiving a higher milk price.

The average cost of production increased by 4% from \$5.02/kg MS last year to \$5.24/kg MS this year. The average cost of production for the top 25% was lower than the average at \$4.67/kg MS, which was only a 3% increase from \$4.54/kg MS last year.

Farmers sold slightly more milk solids per hectare, from 924 kg MS/ha in 2014–15 to 936 kg MS in 2015–16. However, there was a slight decrease in milk sold per cow from 447 kg MS/cow in 2014–15 to 444 kg MS/cow this year. Average milk fat was 4.5% and milk protein was 3.6%, both a 0.1% increase on the previous season.

Whilst it was climatically a challenging season, good autumn rainfall helped to achieve an increased pasture consumption of 10.7 t DM/ha compared to 10 t DM/ha in the previous season. Sixty-nine percent of energy in the cow's diet came from home grown feed.

There was a greater level of uncertainty regarding business returns for 2016–17 than expressed in previous years' surveys. This was not unexpected given the milk price and seasonal challenges experienced in 2015–16.

Milk price was again identified as the main issue of concern for the short term (12 months) and longer term (five years).

Farm monitor method



Farm monitor method

This chapter explains the methodology used in the Dairy Farm Monitor Project and defines the key terms used.

The method employed to generate the profitability and production 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.

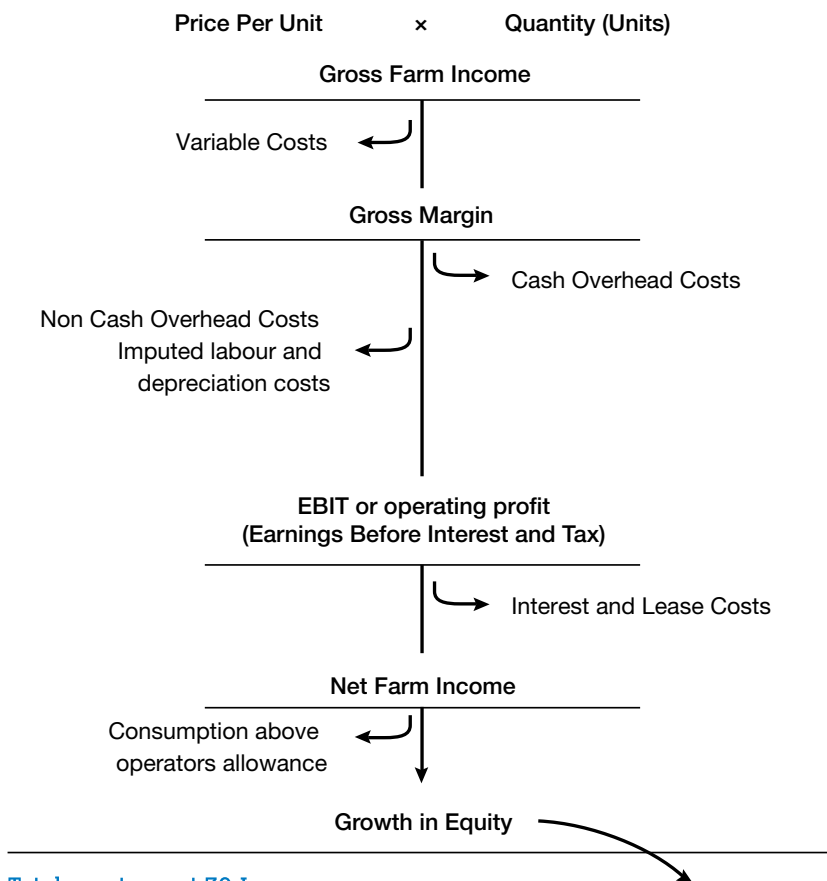
The performance of all participants in the project using this method is shown in Figure 2. Production and economic data are both displayed to indicate how the terms are calculated and how they in turn fit together.

Figure 1 Dairy farm monitor project method

Total assets as at 1 July



Financial performance for the year



Gross farm income

The farming business generates a gross farm income which is the sum of milk cash income (net), livestock trading profit, feed inventory change 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 sold. 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.

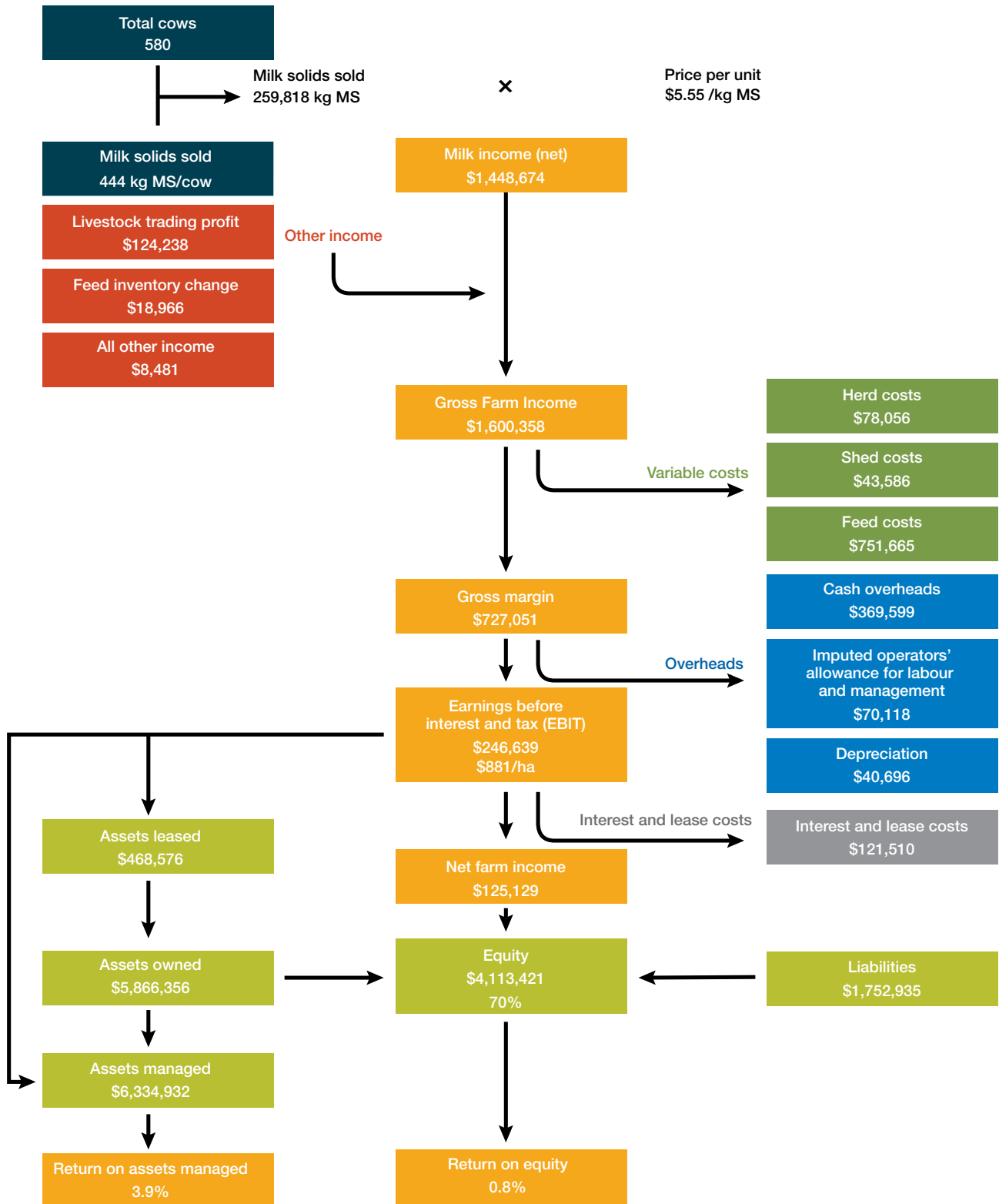
Return on assets indicates the overall earning of the total farm assets, irrespective of capital structure of the business. It is EBIT expressed as a percentage of the total assets under management in the farm business, including the value of leased assets. Return on assets is sometimes referred to as 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 RoE with and without capital appreciation. This is to distinguish between productivity gains (RoE without capital appreciation) and capital gains (RoE with capital appreciation). The RoE including capital appreciation is reported in Appendix Table A1.

Figure 2 Dairy farm monitor project method profit map – state average 2015–16 data¹

All farms 29



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

Tasmania overview



Tasmania overview

In 2015–16, Tasmania produced 883 million litres of milk, a slight reduction from the record production of 891 million litres last year. There were 434 dairy farms across the state and the number of dairy cows was steady at 146,000.

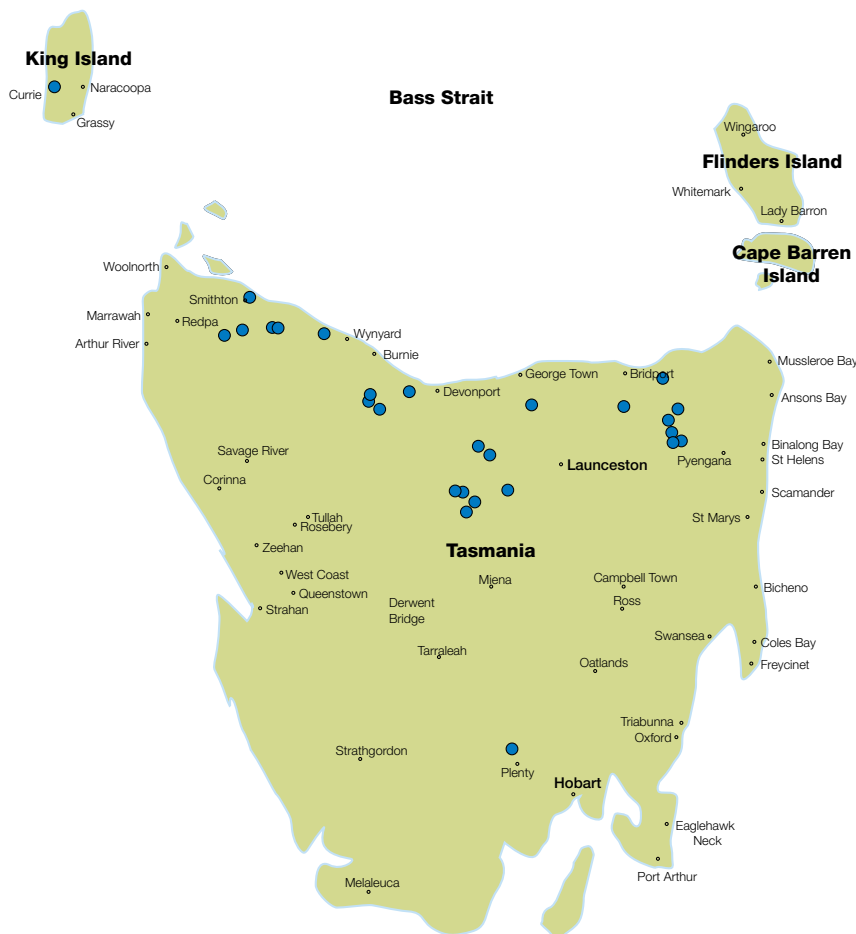
The number of registered dairy farms in Tasmania decreased from 440 in 2014–15 to 434 this year, similar to 435 in 2013–14. The majority of the farms are located in the higher rainfall (>1000 mm) regions of Tasmania along the northern coastline from Marrawah in the west to Pyengana in the east. There are a small number of farms on King Island and in the lower rainfall regions of the northern midlands and southern Tasmania.

Tasmania has a ryegrass dominant, pasture-based dairy industry with feeding systems ranging from very low input to high input systems. Peak pasture growth occurs in spring – for many farms this accounts for two-thirds of pasture growth for the season. Rainfall in Tasmania tends to be winter dominant.

Tasmania retains a seasonally based calving pattern with the majority of cows calved in spring but there are increasing numbers of farms that also calve some cows in autumn. Many Tasmanian dairy farms now use cross-breeding in their herds.

Twenty-nine farms provided data for the 2015–16 Tasmanian Dairy Farm Monitor report, 23 of these farms had participated in previous years and six were new participants. The approximate location of the participating farms is shown in Figure 3.

Figure 3 Distribution of participant farms in 2015–16 across Tasmania



2015–16 seasonal conditions

Seasonal conditions in 2015–16 were challenging for the Tasmanian dairy industry with snow, fires and floods impacting many farms.

While the graph in Figure 4 shows the annual rainfall for 2015–16 was close to the long-term average, the timing of rainfall events had a negative impact on pasture growth in spring and hence milk production for the season.

In winter, there were several snowfall events, with snow falling down to sea level on one occasion. Rainfall in spring was lower than average which led to low amounts of pasture being conserved as silage and hay. With the low spring rainfall, conditions were drier than typical and there were multiple fire events and severe smoke haze for extended periods over summer. Fires in north west and central north Tasmania impacted on the dairy community.

Late summer and autumn rainfall meant the impact of reduced forage conservation in spring was reduced and farmers were able to continue milking and maintain cow body condition at target levels. Extreme rainfall events over winter (as seen in Figure 5) led to flooding in many dairy regions. Some farms lost a significant number of stock due to the flooding with many more experiencing infrastructure and pasture damage.

Top 25%* – The top 25% are shown as the lighter bars in all graphs as ranked by return on assets.

Figure 4 2015–16 annual rainfall and long term average rainfall of participant farms

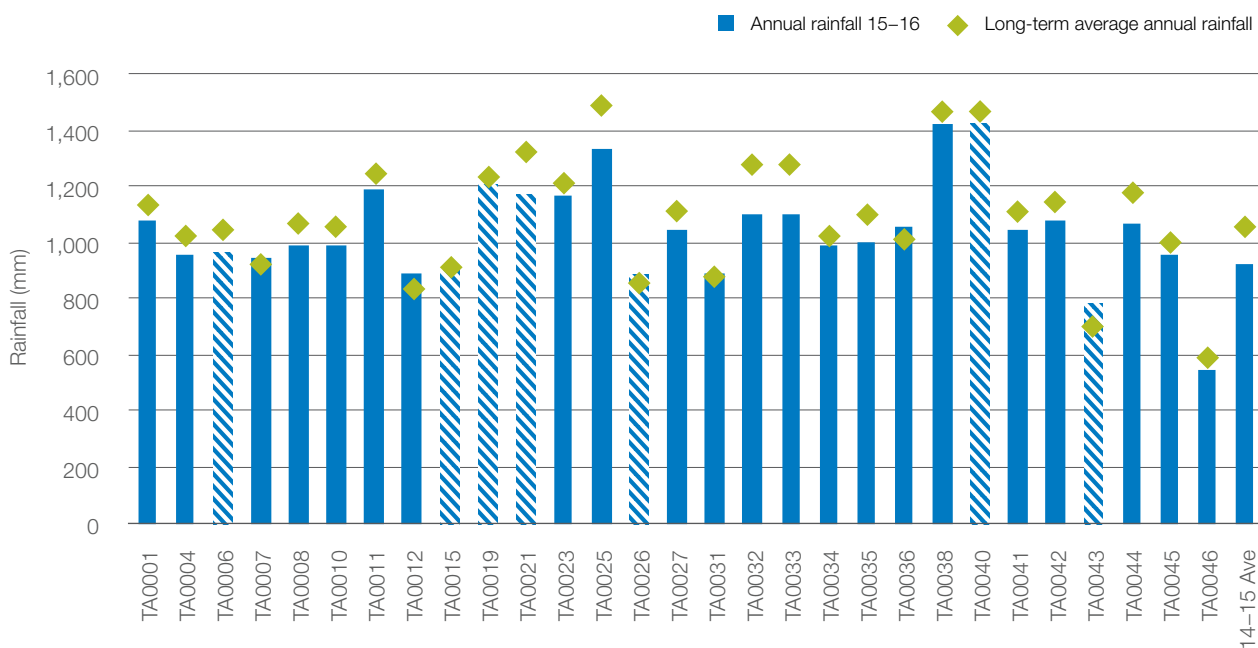
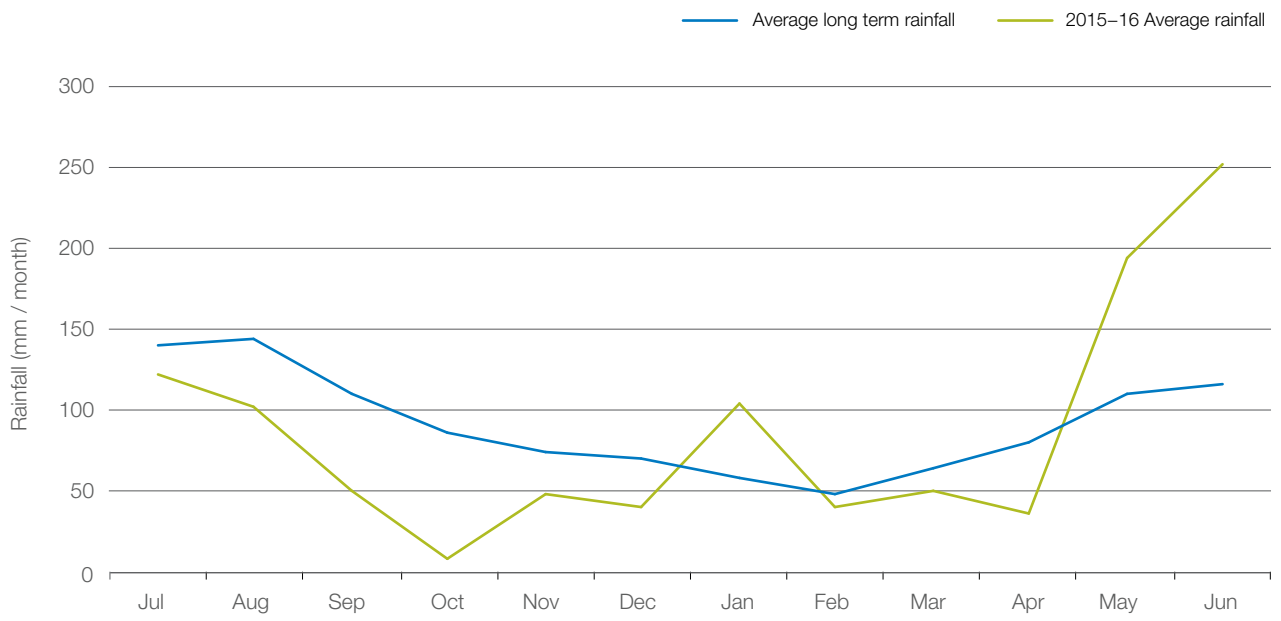


Figure 5 Monthly average rainfall (all farms)



Whole farm analysis

In 2015–16 the combined effect of lower milk prices received and slightly higher cost of production led to a 50% reduction in average EBIT, from \$1.84/kg MS in 2014–15 to \$0.92/kg MS this year. The top 25% farms sold more milk solids per cow and per hectare, and had higher gross income per kg milk solids sold at similar cost of production than the average of all participant farms, resulting in an average EBIT of \$1.90/kg MS.

Twenty-nine farms provided data for the Tasmanian Dairy Farm Monitor Project in 2015–16. Key whole farm physical parameters for Tasmania are presented below in Table 1.

Average herd size increased in 2015–16 to 580 cows from 545 cows in 2014–15.

Rainfall was 13% higher than the previous year and the total amount of water used increased by 15%.

The average total usable area increased by 22 hectares (8%) to 302 ha. This combined with the increased herd size resulted in the stocking rate remaining at

2.1 cows/ha for the third season in a row.

There was very little change in milk sold between 2014–15 and 2015–16 with milk sold per cow reducing by 3 kg MS/cow, 1% lower and milk sold per hectare increasing by 12 kg MS/ha, 1% higher.

There was a further 10% decrease in milk price in 2015–16, from \$6.19/kg MS last year to \$5.55/kg MS this year.

The average labour efficiency of all participants increased by 15%, from 61,600 kg MS/FTE in 2014–15 to 62,053 kg MS/FTE in 2015–16.

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

The physical characteristics of the top 25% farms only partly explained their ability to be more profitable. Caution must be taken when looking at the physical parameters in isolation.

The top 25% had lower total usable area and higher stocking rate as the Tasmanian average. Milk sold per cow and per hectare were both higher for the top 25% than for the average. This was also a characteristic of the top performing group in 2013–14.

The top 25% had higher labour efficiency in terms of milk solids per full time equivalent (FTE) with 74,369 kg MS/FTE compared to the average at 62,053 kg MS/FTE.

Table 1 Farm physical data – State overview

Farm physical parameters	Average	Q1 to Q3 range	Top 25% average
Herd size (no. cows milked for at least 3 months)	580	394–830	532
Annual rainfall 2015–16	1,044	962–1,105	1,051
Water used (irrigation + rainfall) (mm/ha)	1,250	1,111–1,306	1,219
Total usable area (hectares)	302	197–417	258
Milking cows per usable hectares	2.1	1.7–2.6	2.3
Milk sold (kg MS /cow)	444	391–479	464
Milk sold (kg MS /ha)	936	679–1,169	1,060
Home grown feed as % of ME consumed	69%	62%–76%	71%
Labour efficiency (milking cows/FTE)	141	120–159	162
Labour efficiency (kg MS/FTE)	62,053	50,062–65,778	74,369

Gross farm income

Gross farm income is inclusive of all farm incomes. It includes income from milk sales, livestock trading profit, milk factory shares and increases/decreases of feed inventories.

Figure 6 shows how milk income dominates gross income forming 91% of total farm income. Other income consists of livestock trading profit, feed inventory change and other farm income.

Figure 6 also shows the variation in gross income per kilogram of milk solids from \$4.53/kg MS to \$7.54/kg MS. Average gross farm income was \$6.10/kg MS which was 12% lower than last year. The top 25% of farms averaged \$6.58/kg MS.

The decrease in gross farm income in 2015–16 was reflective of the

lower milk price received this year. On average milk price received dropped by 10%, from \$6.19/kg MS in 2014–15 to \$5.55/kg MS this year. The top 25% received a milk price of \$5.95/kg MS.

Milk solids sold

Average milk solids sold was slightly higher this year at 936 kg MS/ha compared to 924 kg MS/ha in 2014–15 (Figure 7). The top 25% sold an average of 1,060 kg MS/ha, 13% higher than the average of all participants. As can be seen in Figure 7, there is wide variation in the amount of milk solids sold per hectare, ranging from 325 kg MS/ha to 1,563 kg MS/ha. Some of this variation is due to strategies employed by different farmers in managing non-milking stock. Because milk sold per hectare is calculated on the total dairy area

which includes the support area, farms which utilise their whole farm as milking area and use agistment for non-milking animals tend to have higher milk solids sold per hectare.

Milk sales versus calving pattern

Figure 8 shows the average monthly milk sales for all participant farms against the monthly distribution of calves born. Tasmanian farms have spring dominant calving patterns, with 86% of calves born between July and October. Milk sales generally peaks three months after peak calving, with milk sales at the highest level in October and with another small peak in March in-line with the autumn calving period.

Figure 6 Gross farm income of per kilogram of milk solids

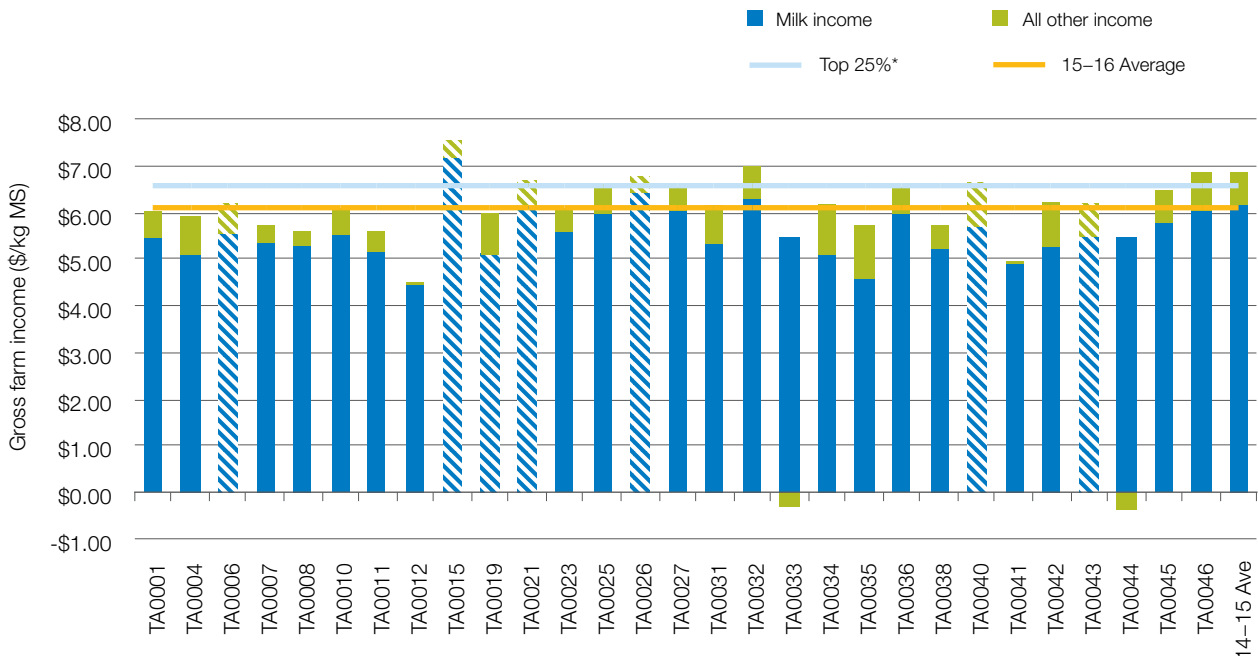


Figure 7 Milk solids sold per hectare

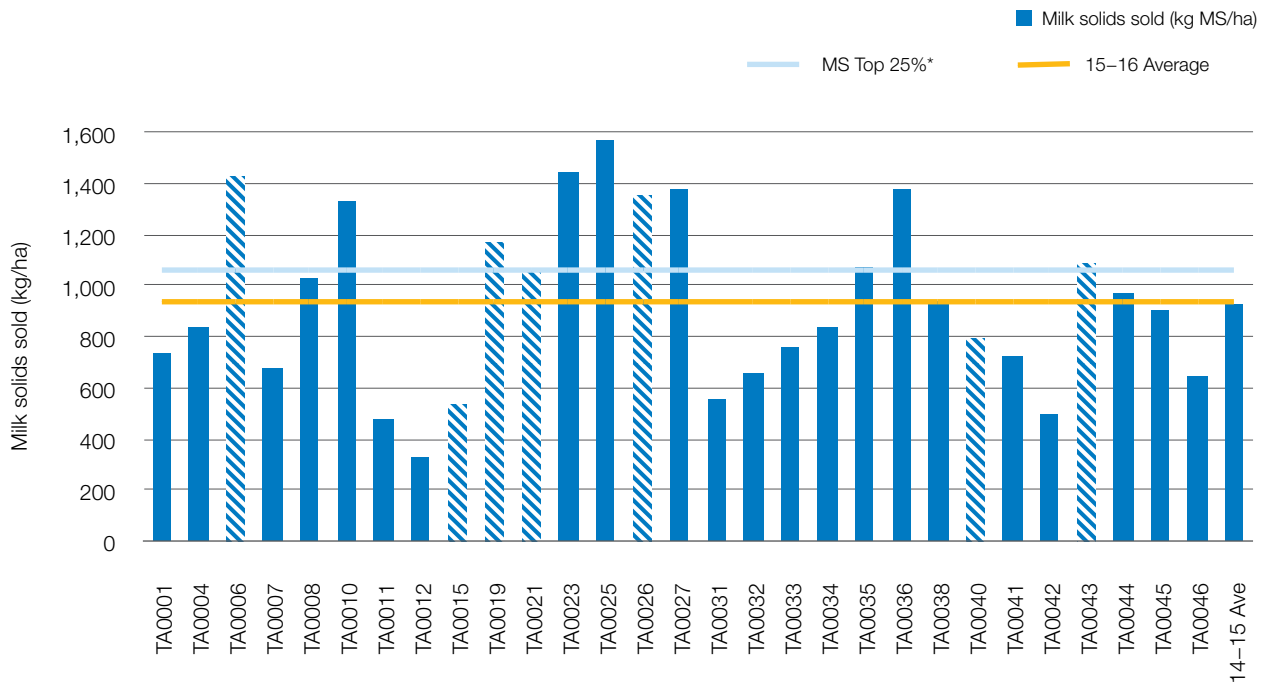
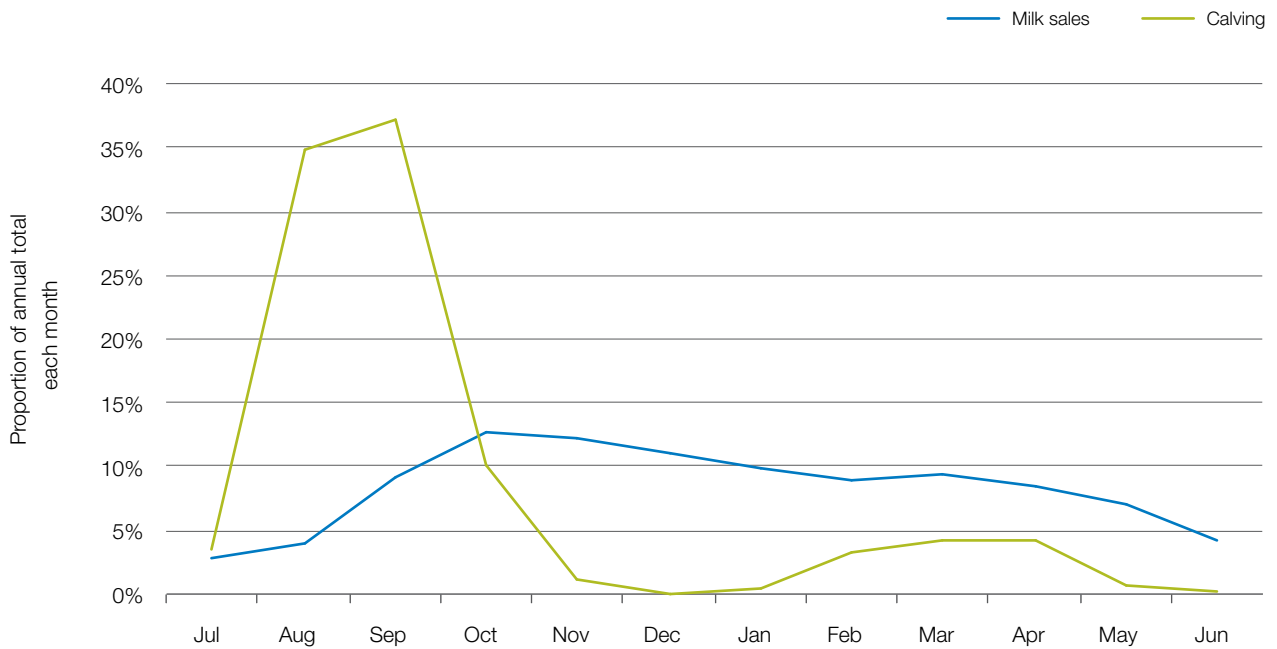


Figure 8 Milk sales vs calving pattern



Variable costs

Variable costs (Figure 9) are costs that change directly according to the amount of output and are measured in cost per kilogram of milk solids. Variable costs include herd, shed and feed costs.

The average variable costs of the participant farms were 5% higher than last year. Typically when milk price decreases, there is also a decline in variable costs but as the milk price decrease occurred towards the end of the season, many of the variable costs had already been committed.

The range of variable costs was from \$1.77/kg MS to \$4.43/kg MS, with an average of \$3.27/kg MS.

Total feed costs, including home grown feed, purchased feed and agistment, accounted for 86% of total variable costs.

Concentrates were the largest single feed cost category, costing farmers \$1.36/kg MS in 2015–16, up from \$1.33/kg MS the previous year.

Fertiliser (\$0.47/kg MS) and agistment (\$0.27/kg MS) are the next largest variable costs.

Variable costs for the top 25% were 8% lower than average at \$3.02/kg MS. While the top 25% spent slightly more on herd costs, they spent less on irrigation, hay and silage making and agistment per kg of milk solids sold.

Appendix Table A4 shows the variable costs per kilogram of milk solids sold and the percentage breakdown can be found in Appendix Table A6.

Overhead costs

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

Figure 9 illustrates the overhead costs per kilogram of milk solids. This includes the cash overhead costs and non-cash overhead costs (for imputed owner/operator and family labour and depreciation).

The average overhead cost for 2015–16 was \$1.91/kg MS

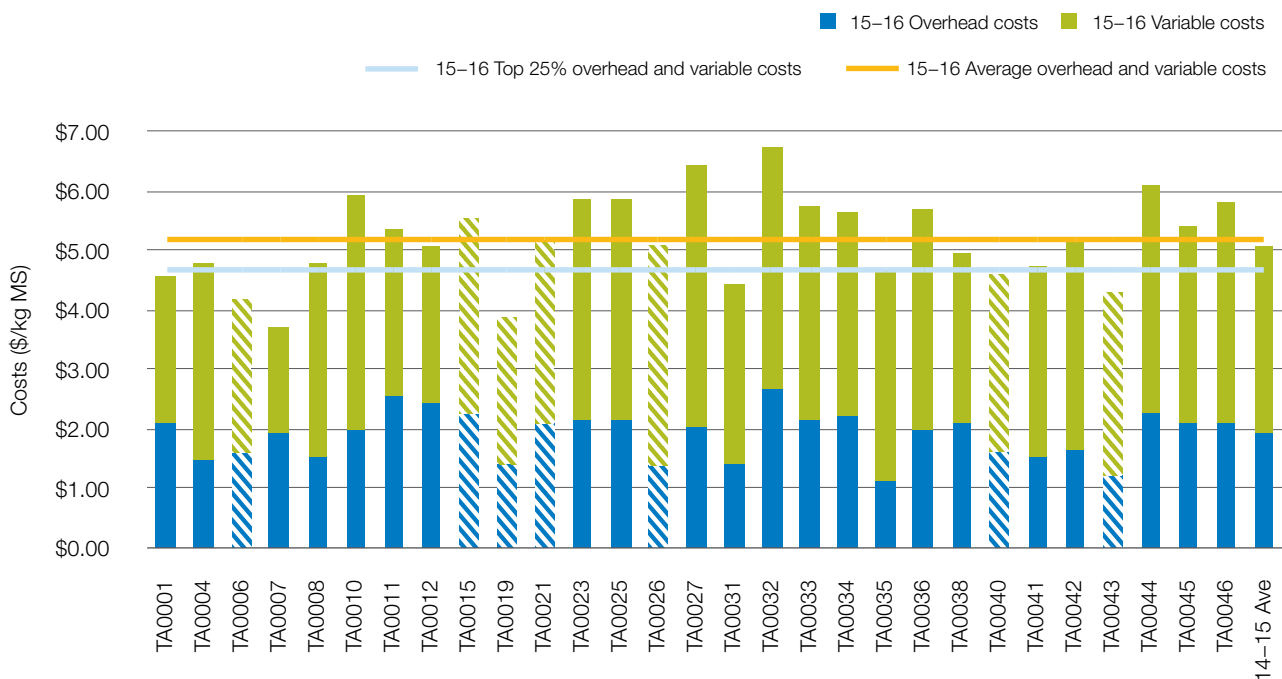
compared with \$1.94/kg MS in 2014–15. The range of overhead costs during 2015–16 was between \$1.15/kg MS and \$2.65/kg MS.

Labour cost (\$1.19/kg MS) was the largest overhead cost with employed labour at an average of \$0.88/kg MS and imputed labour at \$0.31/kg MS. Together, these two labour costs make up 59% of total overhead costs, similar to last year's 58%. The total labour cost last year was \$1.13/kg MS.

The ability to maintain lower overhead costs appears to be a key to performing in the top 25% for Tasmania. The top 25% have a lower overhead cost at \$1.65/kg MS. The main difference between the average and top 25% is the employed labour cost at \$0.88/kg MS and \$0.73/kg MS, respectively.

Table 2 provides an indication of the range of overheads per kilogram of milk solids sold. The breakdown of overheads costs can be found in Appendix Table A5 and Appendix Table A7.

Figure 9 Whole farm variable and overhead costs per kilogram of milk solids



Cost of production

Cost of production gives an indication of the average cost of producing a kilogram of milk solids. It is calculated as variable plus overhead costs and accounts for changes in fodder inventory and livestock trading losses. Including changes in fodder inventory is important to establish the true costs to the business. The changes in

fodder inventory account for the net cost of feed from what was fed out, conserved, purchased and stored over the year. Livestock trading loss is also considered in the cost of production where there is a net livestock depreciation or reduced stock numbers.

Table 2 shows the average cost of production was \$5.24/kg MS, which was a 4% increase from last year.

The top 25% of farms had a cost of production of \$4.67/kg MS compared to \$4.54/kg MS in 2014–15.

Table 2 shows the imputed owner/operator and family labour and depreciation costs separated out, allowing owner/operators to distinguish their own cost of labour and where cash flow occurs in the business.

Table 2 Cost of production

Farm Costs	Average	Q1 to Q3 range	Top 25% average
Variable costs			
Herd costs	\$0.29	\$0.25–\$0.33	\$0.32
Shed costs	\$0.17	\$0.13–\$0.22	\$0.18
Purchased feed and agistment	\$1.85	\$1.58–\$2.27	\$1.73
Home grown feed costs	\$0.97	\$0.80–\$1.13	\$0.79
Total variable costs	\$3.27	\$2.98–\$3.70	\$3.02
Overhead costs			
Employed labour cost	\$0.88	\$0.60–\$1.09	\$0.73
Repairs and maintenance	\$0.31	\$0.24–\$0.42	\$0.27
All other cash overheads	\$0.24	\$0.13–\$0.30	\$0.21
Total cash overheads	\$1.43	\$1.09–\$1.80	\$1.22
Cash cost of production (\$/kg MS)	\$4.70	\$4.24–\$5.43	\$4.24
Depreciation	\$0.16	\$0.04–\$0.20	\$0.17
Imputed labour costs	\$0.31	\$0.00–\$0.51	\$0.27
Non-cash overheads	\$0.48	\$0.08–\$0.77	\$0.44
Cost of production without inventory changes (\$/kg MS)	\$5.18	\$4.65–\$5.75	\$4.67
Inventory change			
+/- feed inventory change	–\$0.06	\$–0.1–\$0.02	–\$0.03
+/- livestock inventory change – purchases	\$0.11	\$–0.21–\$0.23	\$0.02
Cost of production with inventory change (\$/kg MS)	\$5.24	\$4.75–\$5.68	\$4.67

Earnings before interest and tax

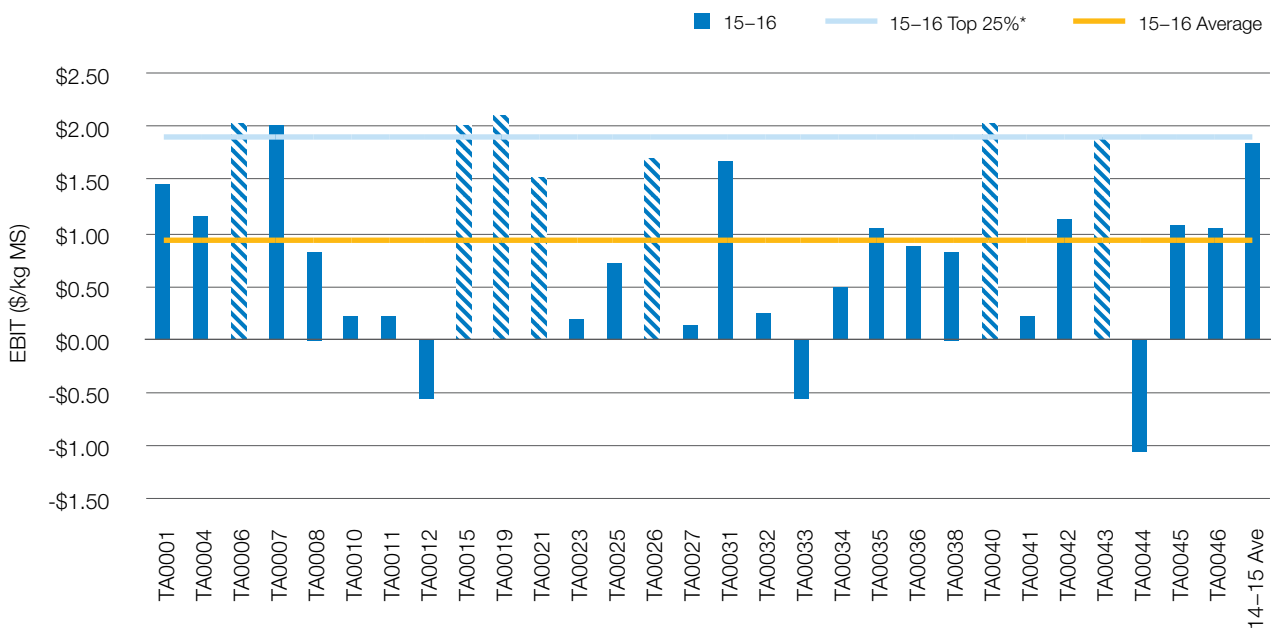
Earnings before interest and tax (EBIT) is the gross farm income less variable and overhead costs. As EBIT excludes interest and lease costs, it is a valuable measure of operating profit.

On average, EBIT was \$0.92/kg MS in comparison to \$1.84/kg MS in 2014–15 (Figure 10). The median EBIT was \$1.03/kg MS.

While the EBIT of the top 25% also declined, it remained almost one dollar higher than the average at \$1.90/kg MS; this difference was similar to last year's.

The lower milk price was a major contributor to the decreased EBIT. Three farms had a negative EBIT in 2015–16 compared to last year when all but one farm achieved a positive EBIT.

Figure 10 Whole farm earnings before interest and tax per kilogram of milk solids



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.

Figure 11 to Figure 14 were calculated excluding capital appreciation. For return on equity including capital appreciation refer to the Appendices.

The return on assets ranged from -3.5% to 10.8%, with an average of 3.9% and median value of 4.4% (Figure 11 and Appendix Table A1). Of the 29 farms, 26 recorded positive return on assets, compared to 29 of 30 farms last year.

The average return on assets for participants across the state was 3.9%, down from last year's 7.8% (Figure 12). The average return on

assets for the top 25% was 8.9%, compared to 13.1% in 2014–15.

The variation between farms' return on assets (Figure 12) is indicative of the variation between farms' EBIT, except where those farms with a similar EBIT, managed total assets of a different value. These results are a reflection of the total economic result on the farm.

Figure 11 Distribution of farms by return on assets

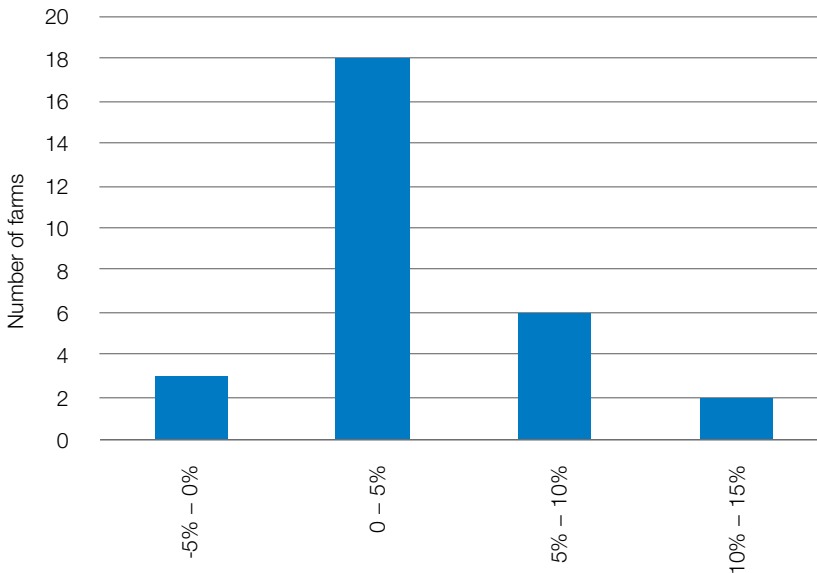
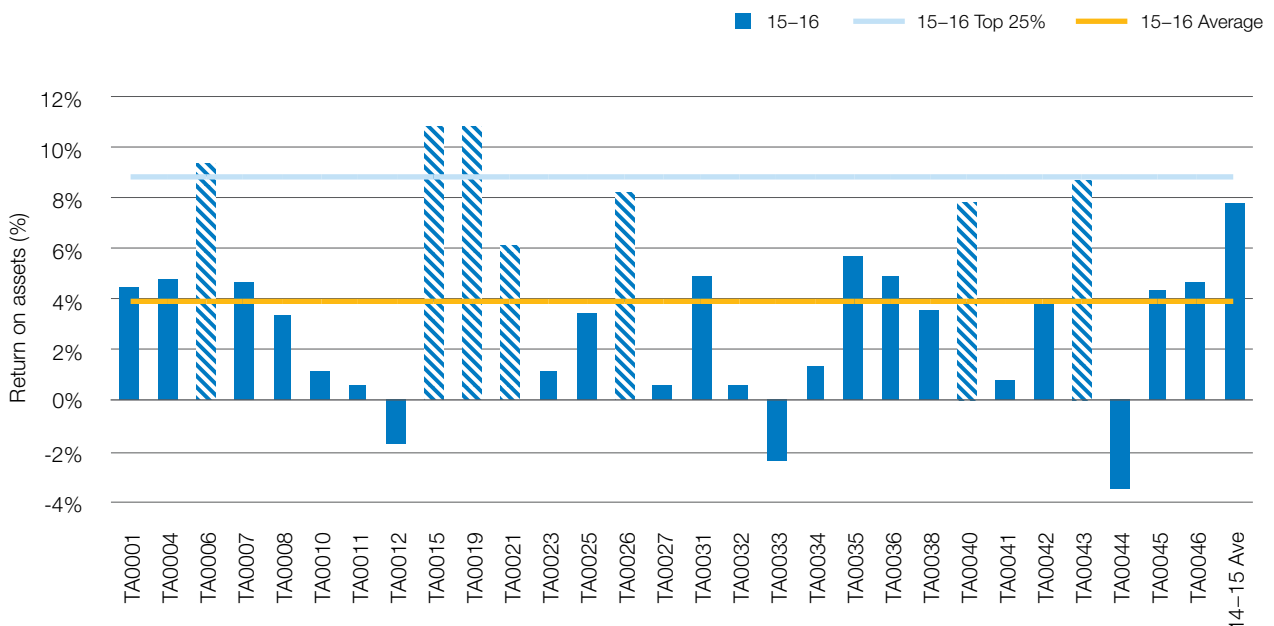


Figure 12 Return on assets



Return on equity (RoE) is the net farm income expressed as a percentage of owners' equity. It is a measure of the owners' rate of return on their investment.

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. A negative return on equity will result when total interest and lease payments exceed the EBIT. When the percentage of RoE increases compared to RoA, it is the result of a higher return from the additional assets than the interest or lease rate.

The average RoE for the 29 farms was 0.8% in 2015–16 in contrast to 10% last year (Figure 13).

The median return on equity was 3.7%. Six farms out of the 29 had a negative return on equity (Figure 14).

The top 25% group achieved 16% return on equity in 2014–15, whereas this year the top 25% recorded an average of 13.5%.

Average interest and lease costs were \$0.56/kg MS while for the top 25% they were \$0.41/kg MS.

In Figure 14, the axis has been modified to allow for better presentation of return on equity

received by all participant farms in the project. Farm TA0019 had a return on equity of 27.5% and TA0033 had a return on equity of -95.1% in 2015–16 which, if shown in their entirety, would not allow for adequate presentation of the other farms' return on equity.

Average capital values can be seen in Appendix A8.

Further discussion of return on assets and return on equity occur in the risk section below. Appendix Table A1 presents all the return on assets and return on equity for the participant farms.

Figure 13 Distribution of farms by return on equity

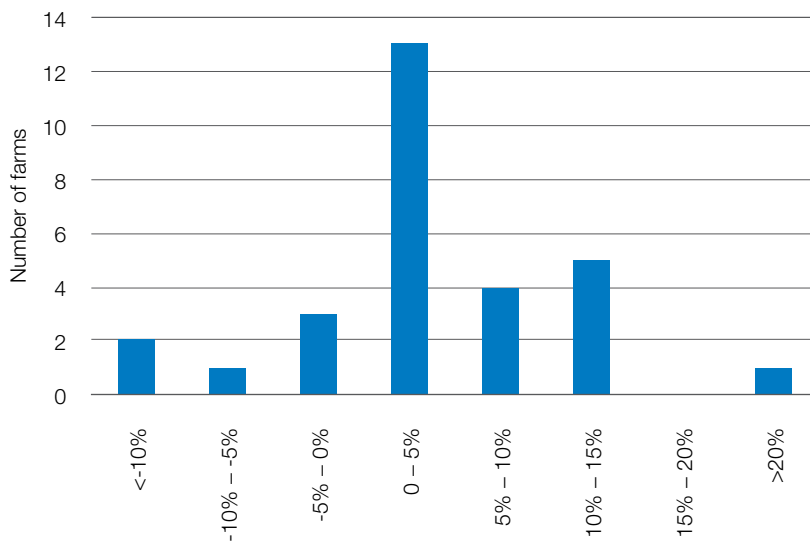
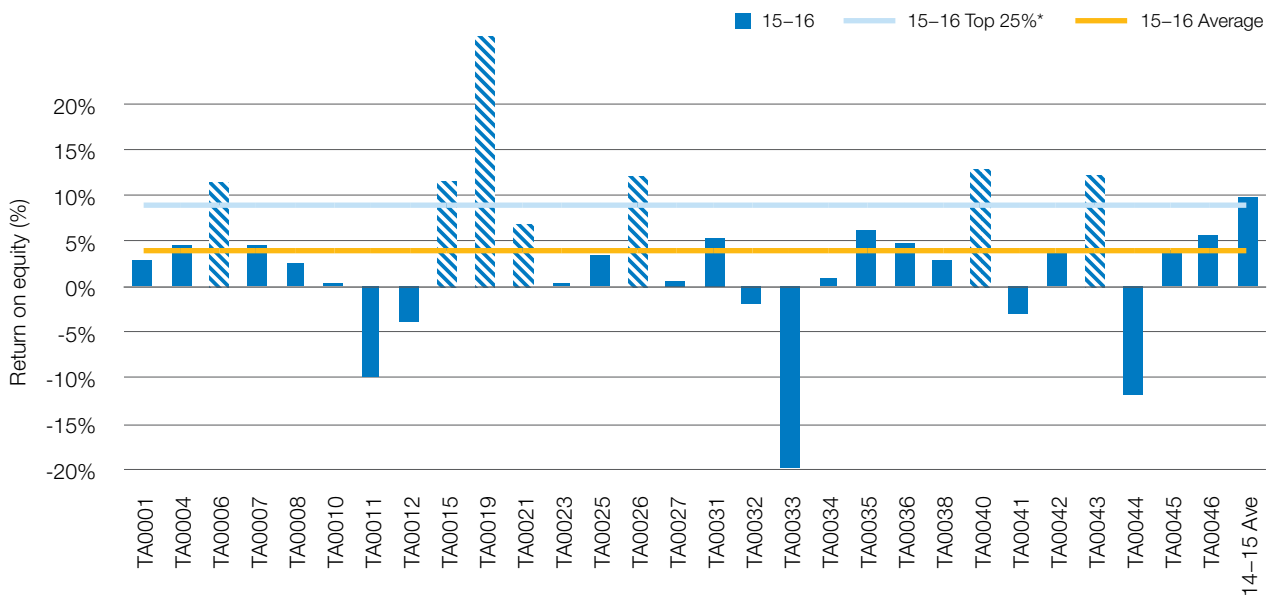


Figure 14 Return on equity



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 B for the definition of terms used in Table 3. The indicators in Table 3 can also be found in Appendix Tables A1, A3 and A8.

Exposure to risk in business is entirely rational if not unavoidable. 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.

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 that in turn indicates less flexibility in the business. Table 3 shows that across the state for every \$1.00 spent, \$0.63 was used to cover variable costs. One hundred minus this gives the proportion of total costs that are overhead costs.

The debt services ratio shows interest and lease costs as a

proportion of gross farm income. The ratio increased from 6% in 2014–15 to 10% this year and indicates that on average farms repaid \$0.10 of every dollar of gross farm income to their creditors.

The benefit of taking on risk and borrowing money can be seen when farm incomes yield a higher return on equity than on return on assets. This year there were only 10 out of the 29 participants (34%) who achieved a higher return on equity than return on assets compared to 17 of the 30 participant farms (57%) in 2014–15.

This year there was a decrease in the average equity, from 74% to 70%. Caution should be exercised when comparing equity between years as there has been a change of farms in the sample.

This year, all farms in the 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 2015–16 the percentage of feed imported remained the same as the previous year at 31%.

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

Table 3 Risk indicators

	2013–14	2014–15	2015–16
Cost structure (proportion of total costs that are variable costs)	59%	62%	63%
Debt servicing ratio (percentage of income as finance costs)	6%	6%	10%
Debt per cow	\$2,660	\$2,601	\$3,141
Equity percentage (ownership of total assets managed)	75%	74%	70%
Percentage of feed imported (as a % of total ME)	28%	31%	31%

Physical measures

Home grown feed provided an average of 69% of the total metabolisable energy (ME) on participant farms this year. Concentrates supplied 26% of metabolisable energy.

Feed consumption

Pasture consumption is calculated as the gap between the total energy required on farm for all livestock classes and the energy provided from concentrates, silage, hay and other sources. A further description of the Energetics method used to calculate energy sources and feed consumption can be found in Appendix B.

The contribution of different feed sources to the total ME consumed on the farm is presented in Figure 15. 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.

Grazed pasture made up the majority of the diet with an average of 65% of the diet being derived from directly grazed pasture.

The next biggest component of energy in the diet is concentrates at 26%, followed by silage at 6% and hay at 3%.

The percentage of ME supplied by concentrates ranged from 14% to 40%.

Appendix Table A3 provides further information on purchased feed.

Grazed pasture consumption was estimated by using a back calculation method.

Average pasture consumption in 2015–16 was 10.7 t DM/ha compared to 10 t DM/ha last year (Figure 16). The top 25% achieved average pasture consumption of 12 t DM/ha, slightly higher than last year's 11.5 t DM/ha.

The average amount of fodder conserved in 2015–16 was 0.5 t DM/ha compared to 0.7 t DM/ha in 2014–15.

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.

More details on how pasture consumption was calculated can be found in Appendix B.

Figure 15 Sources of whole farm metabolisable energy

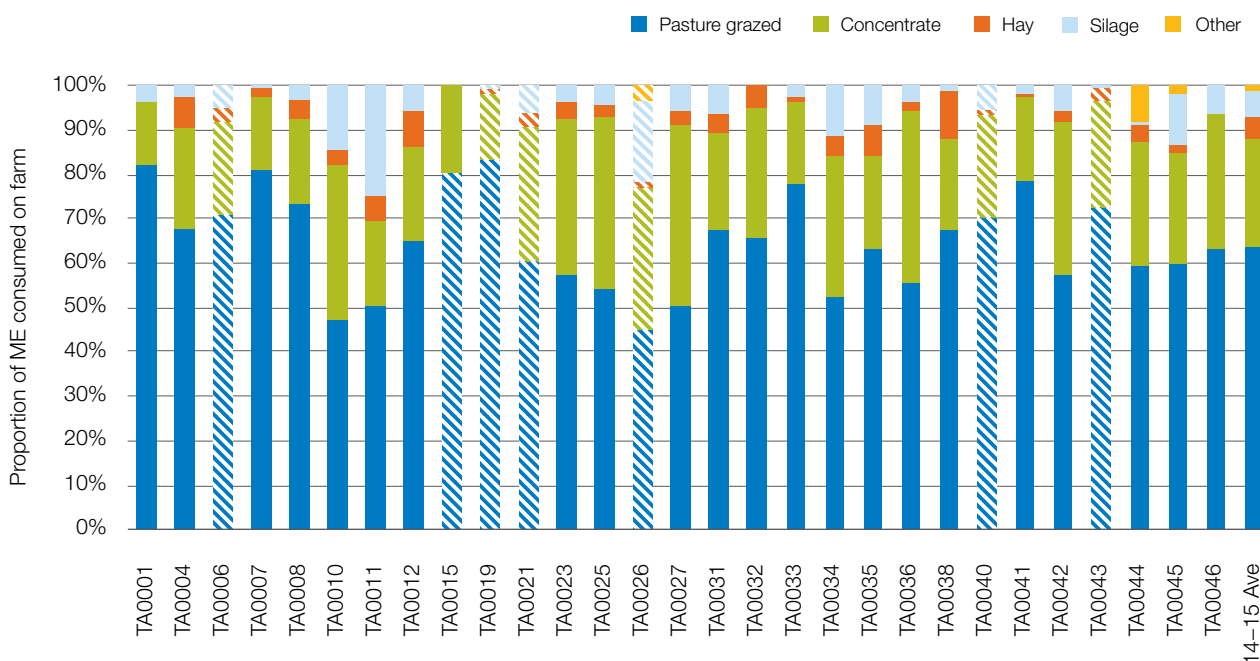
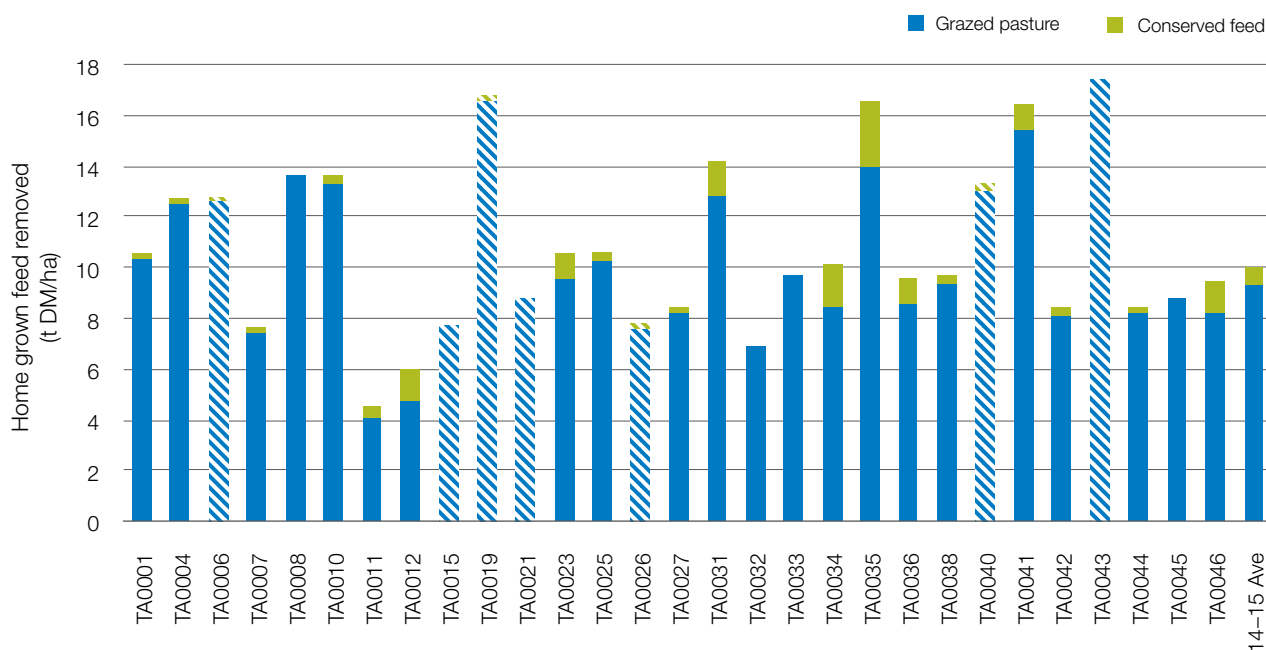


Figure 16 Estimated tonnes of home grown feed consumed per milking hectare



Fertiliser application

Table 4 shows the average application rate of nitrogen, phosphorus, potassium and sulphur per hectare for participants in the DFMP over the past three seasons.

The total amount of nutrients applied in 2015-16 at an average of 265 kg/ha was similar to the previous year at 267 kg/ha.

Farms in the top 25% (based on return on assets) applied 39 kg/ha more of nitrogen and 11 kg/ha less of sulphur. Phosphorus and potassium applications were the same as the average for all participant farms.

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. Details of these particular strategies are not captured as part of this project.

Appendix Table A2 provides further information on fertiliser application.

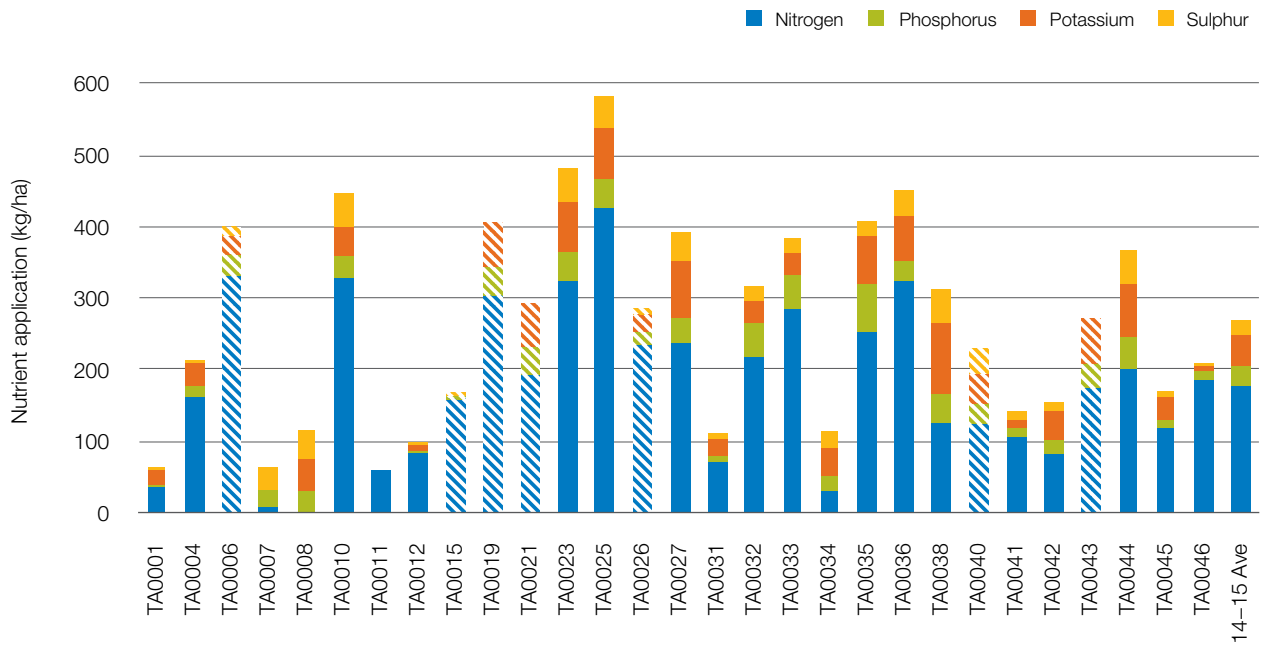
Table 4 Fertiliser use

	2013-14	2014-15	2015-16
Nitrogen kg/ha	152	177	179
Phosphorus kg/ha	27	27	27
Potassium kg/ha	35	43	40
Sulphur kg/ha	21	20	20

Farms in Tasmania used a wide range of fertilisers and fertiliser application rates, both between farms and with the mix of key macronutrients on individual farms (Figure 17).

Nitrogen was the main nutrient applied by participant farms, varying from 0 kg/ha up to 427 kg/ha, a similar range to the previous season. Only one farm out of the 29 participants did not use any nitrogen. On the other hand, there was one farm that applied nitrogen only.

Figure 17 Fertiliser application (kg/ha)



Business confidence survey



Expectations and issues

There was a greater level of uncertainty regarding business returns for 2016–17 given the milk price and seasonal challenges experienced in 2015–16. Milk price was again identified as the main issue of concern for the short term (12 months) and longer term (five years).

Responses to this business confidence survey were made in August 2016 to November 2016 with regard to the 2016–17 financial year and the next five years to 2021–22. Not all of the 29 farms provided responses to the business confidence survey.

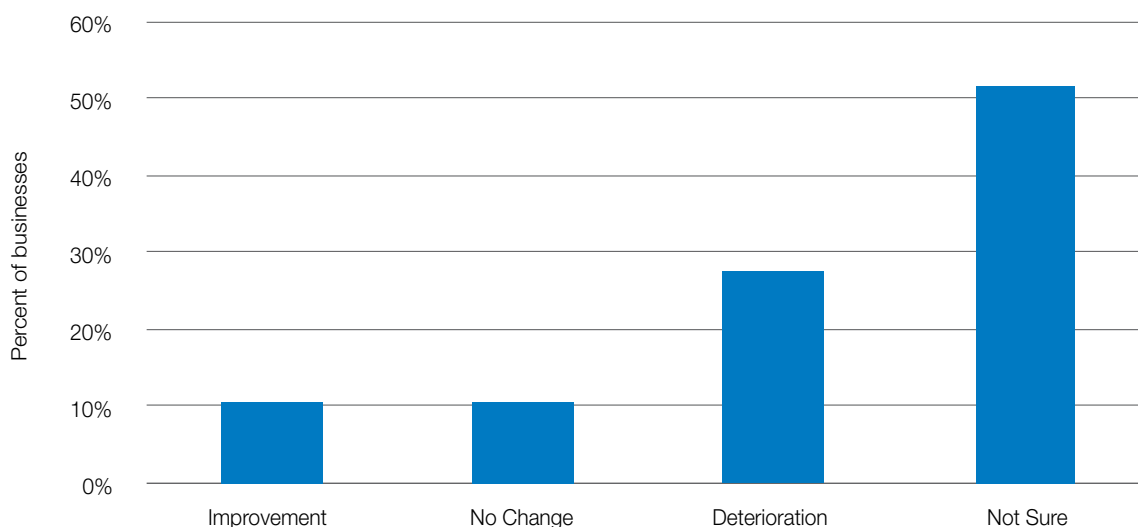
Expectation for business returns

Responses to the survey took into consideration all aspects of farming including climate and market conditions for all products bought and sold.

Following a challenging season and a significant milk price decrease, there was a greater amount of uncertainty regarding expected business returns for the 2015–16 season compared to last year.

Only 10% of respondents expected an improvement in business returns for the 2016–17 season compared to 13% the previous season (Figure 18). Nearly 30% expected lower business returns but the majority (52%) were uncertain what to expect. In 2014–15, 17% expected lower business returns and 57% were uncertain.

Figure 18 Expectation of business returns



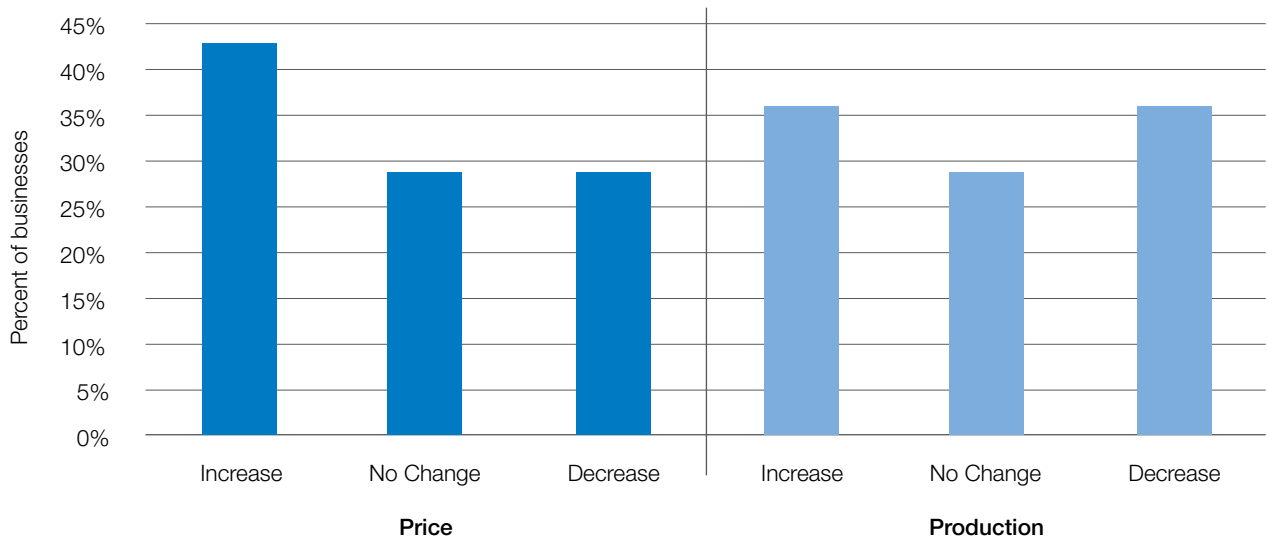
Price and production expectations – Milk

Forty-three percent of respondents expected milk price to increase with 29% expecting no change and 29% expecting a decline (Figure 19).

In 2014–16, 8% of the respondents expected milk price to increase, with 46% expecting no change and 46% expecting a decrease to milk price received.

An equal number of participants (five farmers) expected their milk production to either increase or decrease, equivalent to 36% of participants. Last year, none of the participants expected their milk production to decline, 62% planned to increase production and 38% to maintain their production level.

Figure 19 Price and production expectations – milk

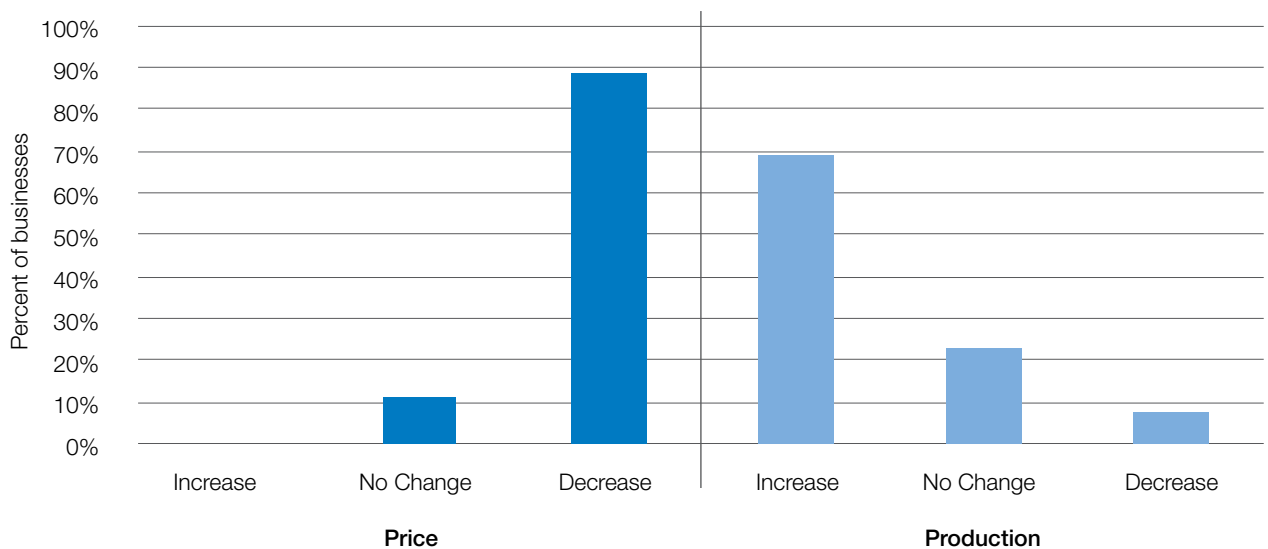


Price and production expectations – Fodder

The vast majority (89%) of participants expected the price of

fodder to decrease with the remainder expecting no change to price. There was also a strong expectation that more fodder would be produced in 2016–17.

Figure 20 Price and production expectations – fodder



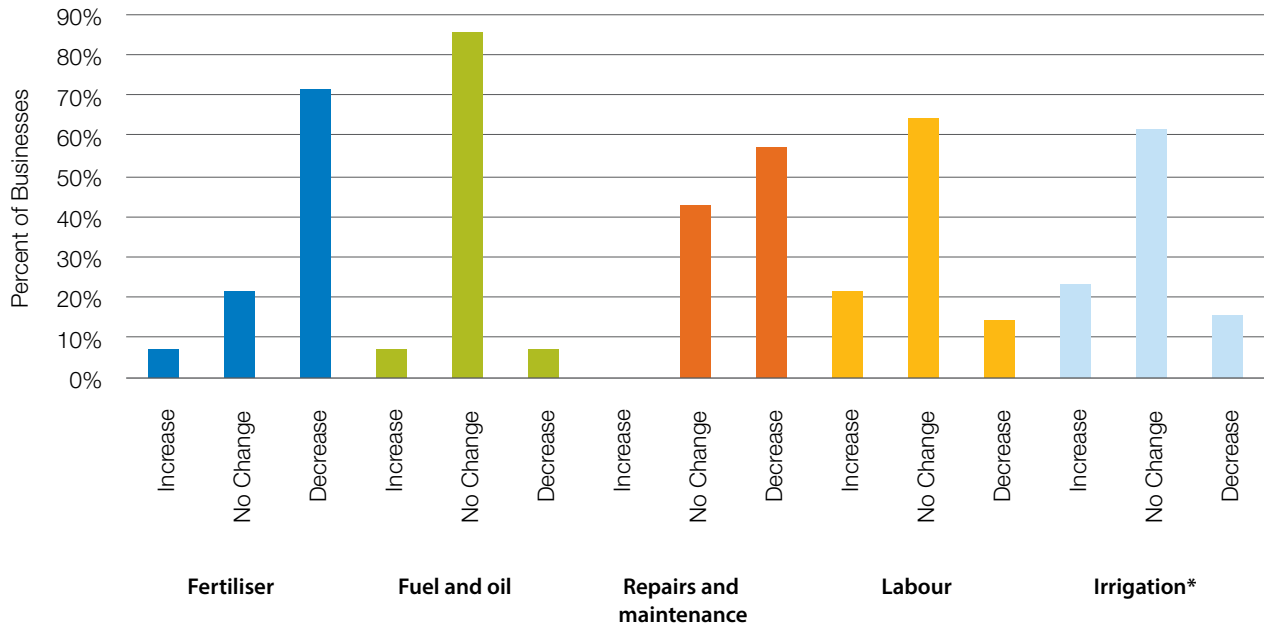
Cost expectations

The majority of farmers expected a decrease in fertiliser costs, no change to fuel and oil costs, a decrease in repairs and maintenance, and no change to labour and irrigation costs. Interestingly, in the three years of

the DFMP in Tasmania, farmers expected repairs and maintenance costs to decrease.

In 2013–14 and 2014–15, repairs and maintenance costs were the same at \$0.39/kg MS and this year the cost was reduced slightly to \$0.31/kg MS.

Figure 21 Cost expectations



**only includes responses from 13 farms with irrigation*

Major issues facing the dairy industry – the next 12 months

Figure 22 provides a summary of the key issues identified by participants for the coming 12 months.

Milk price was the major concern (33% of responses this year compared to 17% in 2014–15) followed by various costs, cashflow management and feed supply.

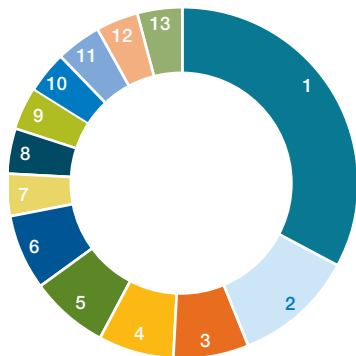


Figure 22 Major issues facing the dairy industry – the next 12 months

- 1 Milk price **33%**
- 2 Input cost **11%**
- 3 Cash flow management **7%**
- 4 Feed supply **7%**
- 5 Fodder and grain prices **7%**
- 6 Labour **7%**
- 7 Calf rearing **4%**
- 8 Capital expenditure **4%**
- 9 Freight **4%**
- 10 Positive outlook **4%**
- 11 Processing industry **4%**
- 12 Repairs and maintenance cost **4%**
- 13 Seasonal variability **4%**

Major issues facing the dairy industry – the next five years

When asked to consider the major issues facing the dairy industry over the next five years, milk price was still the major concern, 32% of the responses (11% in 2014–15). Labour and input costs were also mentioned.

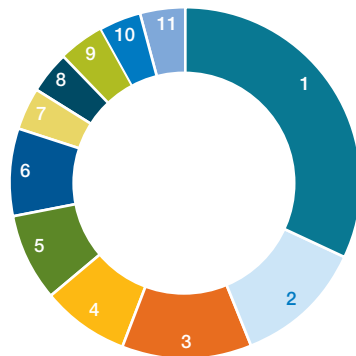


Figure 23 Major issues facing the dairy industry – the next 5 years

- 1 Milk price **32%**
- 2 Input cost **12%**
- 3 Labour **12%**
- 4 Business sustainability **8%**
- 5 Fodder and grain price **8%**
- 6 Herd management and expansion **8%**
- 7 Animal welfare **4%**
- 8 Consumers' attitude to farming **4%**
- 9 Debt management **4%**
- 10 Seasonal variability **4%**
- 11 Succession planning **4%**

Historical analysis



Historical analysis

This section compares the performance of participant farms in the Dairy Farm Monitor Project over the past three years. While figures are adjusted for inflation to allow comparison between years, it should be noted that the farms participating each year are not all the same.

The average EBIT and net farm income of participants have been decreasing for the past two years, as seen in Figure 24.

The participants' average earnings before interest and taxes were \$538,000 in 2013–14 and \$478,000 in 2014–15 (both figures adjusted for inflation). This year, EBIT was \$246,639, almost half of the EBIT observed in 2014–15.

The net farm income decreased by 67% from \$384,000 in 2014–15 (adjusted for inflation) to \$125,000 this year.

Declining milk price has been one of the key causes of this decline. The prices received for milk were \$7.05/kg MS in 2013–14 and \$6.26/kg MS in 2014–15 (both figures adjusted for inflation).

The milk price received this year was again lower at \$5.55/kg MS.

Return on assets has declined from 9.6% in 2013–14 to 3.9% in 2015–16.

The average return on equity was higher than return on assets in 2013–14 and 2014–15 but dropped below return on assets in 2015–16. This indicates that on average in 2015–16, the returns from the additional assets managed did not cover the costs of borrowings nor leasing, unlike the previous two years.

Figure 24 Historical EBIT and net farm income

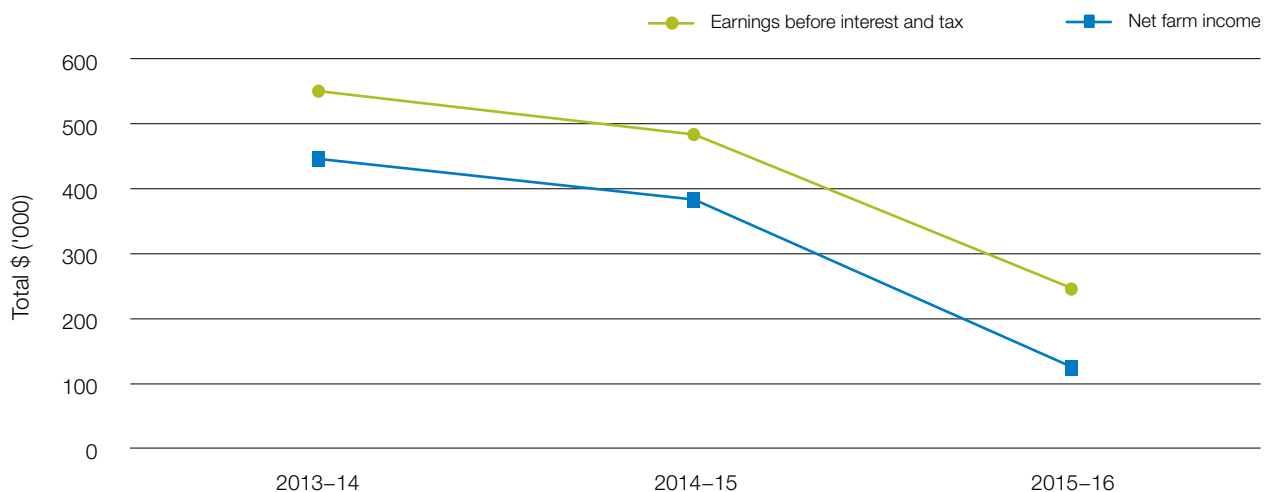
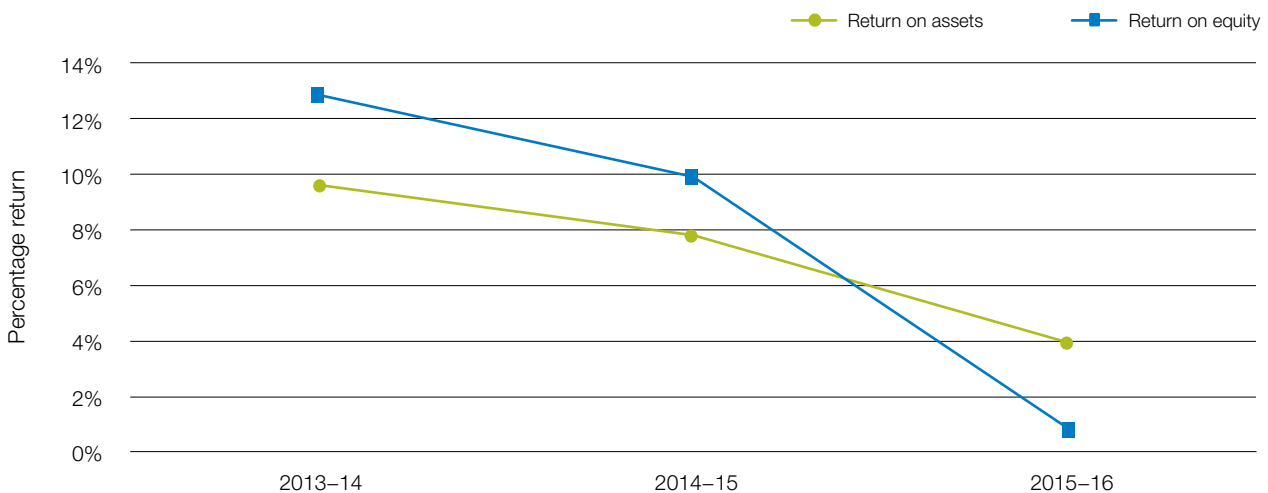


Figure 25 Historical return on assets and return on equity



Appendices



Appendix A: Tasmania summary tables

Table A1 Main Financial indicators

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 (excl. capital apprec.)	Interest and lease charges	Debt servicing ratio	Net farm income	Return on equity	Return on equity (incl. capital apprec.)
	\$/ kg MS	\$/ kg MS	\$/ kg MS	\$/ kg MS	\$/ kg MS	%	\$/ kg MS	%	\$/ kg MS	% of income	\$/ kg MS	%	%
TA0001	\$5.47	\$0.58	\$6.06	\$2.50	\$2.09	54%	\$1.47	4.5%	\$1.04	17.3%	\$0.43	3.0%	-5.2%
TA0004	\$5.09	\$0.82	\$5.91	\$3.26	\$1.50	69%	\$1.15	4.9%	\$0.56	9.5%	\$0.59	4.7%	9.3%
TA0006	\$5.55	\$0.65	\$6.20	\$2.57	\$1.60	62%	\$2.03	9.4%	\$0.30	4.8%	\$1.73	11.5%	11.9%
TA0007	\$5.35	\$0.38	\$5.73	\$1.77	\$1.94	48%	\$2.02	4.7%	\$0.69	12.1%	\$1.32	4.6%	20.5%
TA0008	\$5.29	\$0.32	\$5.61	\$3.24	\$1.55	68%	\$0.82	3.4%	\$0.40	7.1%	\$0.42	2.7%	2.7%
TA0010	\$5.54	\$0.59	\$6.13	\$3.89	\$2.02	66%	\$0.23	1.2%	\$0.16	2.5%	\$0.07	0.5%	0.5%
TA0011	\$5.15	\$0.43	\$5.58	\$2.82	\$2.56	52%	\$0.20	0.6%	\$1.27	22.7%	-\$1.06	-9.8%	-9.6%
TA0012	\$4.44	\$0.09	\$4.53	\$2.61	\$2.47	51%	-\$0.55	-1.7%	\$0.45	9.9%	-\$1.00	-3.9%	-3.8%
TA0015	\$7.19	\$0.35	\$7.54	\$3.27	\$2.26	59%	\$2.01	10.8%	\$0.15	2.0%	\$1.86	11.5%	11.4%
TA0019	\$5.12	\$0.87	\$5.98	\$2.46	\$1.41	64%	\$2.11	10.8%	\$0.65	10.8%	\$1.46	27.5%	29.8%
TA0021	\$6.15	\$0.55	\$6.70	\$3.09	\$2.09	60%	\$1.53	6.1%	\$0.84	12.5%	\$0.69	6.9%	6.8%
TA0023	\$5.59	\$0.49	\$6.08	\$3.73	\$2.15	63%	\$0.20	1.1%	\$0.12	2.0%	\$0.07	0.4%	1.6%
TA0025	\$5.98	\$0.62	\$6.60	\$3.74	\$2.15	64%	\$0.70	3.5%	\$0.00	0.0%	\$0.70	3.5%	3.5%
TA0026	\$6.42	\$0.36	\$6.79	\$3.70	\$1.38	73%	\$1.70	8.2%	\$0.52	7.7%	\$1.18	12.1%	12.0%
TA0027	\$6.02	\$0.56	\$6.58	\$4.43	\$2.02	69%	\$0.13	0.6%	\$0.00	0.0%	\$0.13	0.6%	7.5%
TA0031	\$5.34	\$0.81	\$6.15	\$3.05	\$1.41	68%	\$1.68	4.9%	\$0.72	11.7%	\$0.97	5.3%	5.3%
TA0032	\$6.28	\$0.71	\$6.98	\$4.10	\$2.65	61%	\$0.23	0.6%	\$0.68	9.8%	-\$0.45	-1.9%	-23.9%
TA0033	\$5.49	-\$0.30	\$5.19	\$3.58	\$2.16	62%	-\$0.56	-2.3%	\$3.02	58.3%	-\$3.58	-95.1%	-245.1%
TA0034	\$5.10	\$1.06	\$6.16	\$3.43	\$2.24	60%	\$0.49	1.4%	\$0.17	2.8%	\$0.32	1.0%	1.0%
TA0035	\$4.60	\$1.10	\$5.70	\$3.50	\$1.15	75%	\$1.04	5.7%	\$0.13	2.4%	\$0.91	6.3%	5.9%
TA0036	\$6.01	\$0.56	\$6.57	\$3.69	\$1.99	65%	\$0.89	4.9%	\$0.00	0.0%	\$0.89	4.9%	7.6%
TA0038	\$5.19	\$0.57	\$5.76	\$2.83	\$2.11	57%	\$0.82	3.6%	\$0.27	4.7%	\$0.54	3.0%	6.3%
TA0040	\$5.70	\$0.94	\$6.64	\$2.98	\$1.62	65%	\$2.03	7.8%	\$0.04	0.6%	\$2.00	12.9%	12.8%
TA0041	\$4.89	\$0.07	\$4.96	\$3.24	\$1.52	68%	\$0.20	0.8%	\$0.99	20.0%	-\$0.79	-3.1%	-3.1%
TA0042	\$5.27	\$0.99	\$6.26	\$3.50	\$1.64	68%	\$1.12	3.8%	\$0.51	8.2%	\$0.61	3.7%	3.8%
TA0043	\$5.49	\$0.71	\$6.20	\$3.07	\$1.22	72%	\$1.92	8.7%	\$0.38	6.0%	\$1.54	12.2%	12.3%
TA0044	\$5.44	-\$0.41	\$5.03	\$3.83	\$2.27	63%	-\$1.06	-3.5%	\$0.85	16.9%	-\$1.91	-11.9%	-11.3%
TA0045	\$5.79	\$0.67	\$6.46	\$3.29	\$2.11	61%	\$1.06	4.4%	\$0.64	9.9%	\$0.42	4.1%	4.3%
TA0046	\$6.01	\$0.84	\$6.85	\$3.70	\$2.12	64%	\$1.03	4.7%	\$0.69	10.1%	\$0.35	5.6%	5.7%
Average	\$5.55	\$0.55	\$6.10	\$3.27	\$1.91	63%	\$0.92	3.9%	\$0.56	9.7%	\$0.36	0.8%	-4.1%
Top 25%*	\$5.95	\$0.63	\$6.58	\$3.02	\$1.65	65%	\$1.90	8.9%	\$0.41	6.4%	\$1.49	13.5%	13.9%

* The top 25% are bold and italicised

Table A2 Physical information

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	%	%
TA0001	196	144	1,412	364	1.9	396	735	4.8%	3.8%
TA0004	142	74	1,126	260	1.8	453	832	4.6%	3.4%
TA0006	87	87	1,188	278	3.2	446	1,427	4.8%	3.6%
TA0007	191	212	1,111	417	2.2	311	679	4.3%	3.4%
TA0008	450	300	1,306	940	2.1	494	1,032	3.9%	3.3%
TA0010	218	124	1,407	500	2.3	583	1,337	4.1%	3.4%
TA0011	305	195	1,197	374	1.2	387	474	4.6%	3.5%
TA0012	554	282	922	460	0.8	391	325	4.5%	3.5%
TA0015	411	247	921	476	1.2	461	534	4.8%	3.5%
TA0019	115	115	1,211	394	3.4	341	1,169	4.5%	3.5%
TA0021	262	222	1,479	500	1.9	555	1,058	4.1%	3.3%
TA0023	300	300	1,523	940	3.1	461	1,445	4.6%	3.8%
TA0025	240	240	1,784	860	3.6	436	1,563	4.6%	3.8%
TA0026	255	252	1,092	750	2.9	460	1,354	4.9%	3.7%
TA0027	210	210	1,265	660	3.1	438	1,376	4.4%	3.7%
TA0031	762	234	1,033	925	1.2	459	558	5.2%	3.9%
TA0032	226	160	1,238	370	1.6	397	650	4.5%	3.5%
TA0033	161	143	1,279	365	2.3	334	757	4.5%	3.4%
TA0034	241	142	1,208	350	1.5	572	831	3.3%	3.2%
TA0035	435	260	1,286	1,050	2.4	443	1,068	5.0%	4.0%
TA0036	180	180	1,297	527	2.9	472	1,381	4.6%	3.8%
TA0038	197	153	1,665	440	2.2	419	936	4.2%	3.2%
TA0040	260	123	1,619	430	1.7	479	793	4.3%	3.4%
TA0041	249	135	1,207	480	1.9	375	723	4.7%	3.5%
TA0042	450	150	1,183	402	0.9	554	495	4.0%	3.4%
TA0043	417	205	1,026	895	2.1	507	1,088	4.6%	3.7%
TA0044	234	234	1,223	620	2.6	367	971	4.9%	3.7%
TA0045	514	350	1,101	950	1.8	489	903	4.5%	3.6%
TA0046	497	274	945	830	1.7	384	642	4.5%	3.9%
Average	302	198	1,250	580	2.1	444	936	4.5%	3.6%
Top 25%*	258	179	1,219	532	2.3	464	1,060	4.6%	3.5%

* The top 25% are bold and italicised

Table A2 Physical information (continued)

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
TA0001	10.3	0.2	84%	34.5	5.3	19.9	5.3	105	41,764
TA0004	12.5	0.2	72%	162.9	13.8	31.8	3.1	141	63,830
TA0006	12.6	0.1	72%	331.9	29.6	25.7	12.4	139	62,057
TA0007	7.5	0.2	82%	6.3	23.2	3.4	29.0	104	32,436
TA0008	13.6	0.0	76%	0.0	31.1	44.4	39.1	127	62,568
TA0010	13.3	0.3	55%	328.3	31.5	38.2	48.3	80	46,839
TA0011	4.1	0.4	73%	60.3	0.0	0.0	0.0	107	41,315
TA0012	4.7	1.3	73%	84.5	2.4	6.9	3.8	124	48,659
TA0015	7.7	0.0	80%	159.6	3.5	0.0	4.4	121	55,590
TA0019	16.6	0.2	83%	304.0	40.0	61.0	0.0	179	61,106
TA0021	8.8	0.0	68%	193.1	38.5	60.5	0.0	111	61,347
TA0023	9.6	1.0	62%	325.5	37.7	72.7	45.9	159	73,451
TA0025	10.3	0.3	56%	426.9	40.8	68.4	45.6	130	56,854
TA0026	7.6	0.2	46%	234.9	17.9	24.8	7.4	231	106,046
TA0027	8.2	0.2	52%	238.9	33.4	78.6	41.6	169	74,068
TA0031	12.9	1.3	76%	69.9	9.8	22.9	6.1	154	70,591
TA0032	6.8	0.0	66%	216.2	46.9	32.9	20.3	133	52,887
TA0033	9.6	0.0	78%	284.5	48.9	31.2	16.9	150	50,062
TA0034	8.5	1.7	60%	32.1	20.8	35.9	24.5	120	68,626
TA0035	13.9	2.6	70%	252.7	66.6	68.7	19.4	210	92,909
TA0036	8.6	1.0	59%	322.2	27.9	66.9	34.5	120	56,490
TA0038	9.3	0.4	68%	126.1	38.1	99.3	47.2	118	49,591
TA0040	13.1	0.2	76%	124.6	28.5	40.8	35.9	127	60,997
TA0041	15.4	1.0	81%	108.2	9.4	14.3	11.8	175	65,778
TA0042	8.1	0.3	66%	81.4	22.1	39.1	13.1	89	49,329
TA0043	17.4	0.0	74%	174.6	34.3	62.4	0.0	224	113,441
TA0044	8.3	0.2	60%	200.5	43.6	74.1	47.9	165	60,479
TA0045	8.8	0.0	65%	117.0	14.5	31.1	7.8	124	60,715
TA0046	8.2	1.3	69%	185.5	11.8	8.0	4.6	155	59,702
Average	10.2	0.5	69%	178.9	26.6	40.1	19.9	141	62,053
Top 25%*	12.0	0.1	71%	217.5	27.5	39.3	8.6	162	74,369

* The top 25% are bold and italicised
** on milking area

Table A3 Purchased feed

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
TA0001	0.8	\$432				\$432	11.1	3.9	16%
TA0004	1.6	\$454		\$259		\$406	12.1	3.5	28%
TA0006	1.2	\$385	\$321	\$235		\$365	11.8	3.2	28%
TA0007	0.7	\$323	\$367	\$287		\$323	11.9	2.8	18%
TA0008	1.6	\$549		\$329		\$496	11.3	4.6	24%
TA0010	2.9	\$474	\$226	\$269		\$432	12.1	3.7	45%
TA0011	0.9	\$354		\$480		\$355	12.5	2.9	27%
TA0012	1.2	\$351				\$351	12.5	2.8	27%
TA0015	1.1	\$604				\$604	12.0	5.1	20%
TA0019	0.9	\$428		\$150		\$396	12.2	3.3	17%
TA0021	2.1	\$473	\$267	\$353		\$459	13.1	3.6	32%
TA0023	1.7	\$436		\$341		\$433	12.3	3.6	38%
TA0025	2.0	\$391	\$181	\$285		\$372	12.0	3.2	44%
TA0026	2.5	\$468	\$320	\$318	\$283	\$411	11.7	3.6	54%
TA0027	2.3	\$438	\$206	\$203		\$388	11.9	3.4	48%
TA0031	1.2	\$461		\$125		\$438	12.2	3.7	24%
TA0032	1.6	\$420		\$128		\$387	12.1	3.3	34%
TA0033	0.7	\$420				\$420	12.5	3.4	22%
TA0034	1.4	\$461		\$156		\$447	12.4	3.7	40%
TA0035	1.2	\$405		\$169		\$387	11.7	3.4	30%
TA0036	1.8	\$425				\$425	12.5	3.4	41%
TA0038	1.5	\$483	\$1,050	\$267		\$429	11.8	3.8	32%
TA0040	1.5	\$452		\$165		\$449	12.5	3.7	24%
TA0041	0.9	\$409				\$409	12.0	3.4	19%
TA0042	2.2	\$507				\$507	12.4	4.1	34%
TA0043	1.2	\$503				\$503	13.0	3.9	26%
TA0044	1.9	\$441		\$153	\$330	\$395	11.8	3.5	40%
TA0045	2.0	\$427	\$225	\$191	\$353	\$371	11.9	3.3	35%
TA0046	1.6	\$400				\$400	12.0	3.4	31%
Average	1.5	\$440	\$352	\$243	\$322	\$420	12.1	3.6	31%
Top 25%*	1.5	\$473				\$455	12.3	3.8	29%

* The top 25% are bold and italicised

Table A4 Variable costs

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
TA0001	\$0.09	\$0.15	\$0.05	\$0.09	\$0.07	\$0.46	\$0.14	\$0.29	\$0.06
TA0004	\$0.06	\$0.25	\$0.02	\$0.05	\$0.11	\$0.49	\$0.47	\$0.22	\$0.14
TA0006	\$0.08	\$0.09	\$0.08	\$0.06	\$0.04	\$0.35	\$0.41	\$0.04	\$0.02
TA0007	\$0.07	\$0.07	\$0.01	\$0.05	\$0.15	\$0.36	\$0.19	\$0.20	\$0.04
TA0008	\$0.14	\$0.24	\$0.01	\$0.09	\$0.07	\$0.55	\$0.19	\$0.19	\$0.17
TA0010	\$0.15	\$0.12	\$0.08	\$0.08	\$0.04	\$0.47	\$0.51	\$0.25	\$0.22
TA0011	\$0.08	\$0.16	\$0.13	\$0.19	\$0.05	\$0.61	\$0.16	\$0.32	\$0.23
TA0012	\$0.02	\$0.08	\$0.05	\$0.10	\$0.13	\$0.37	\$0.65	\$0.15	\$0.16
TA0015	\$0.07	\$0.13	\$0.10	\$0.17	\$0.10	\$0.56	\$0.82	\$0.04	\$0.00
TA0019	\$0.11	\$0.12	\$0.03	\$0.13	\$0.10	\$0.49	\$0.64	\$0.00	\$0.03
TA0021	\$0.16	\$0.14	\$0.12	\$0.10	\$0.06	\$0.60	\$0.41	\$0.21	\$0.02
TA0023	\$0.11	\$0.17	\$0.02	\$0.10	\$0.09	\$0.49	\$0.51	\$0.24	\$0.11
TA0025	\$0.10	\$0.13	\$0.00	\$0.08	\$0.07	\$0.38	\$0.60	\$0.25	\$0.05
TA0026	\$0.03	\$0.17	\$0.09	\$0.08	\$0.05	\$0.42	\$0.37	\$0.11	\$0.02
TA0027	\$0.13	\$0.14	\$0.01	\$0.12	\$0.11	\$0.51	\$0.50	\$0.10	\$0.13
TA0031	\$0.07	\$0.19	\$0.01	\$0.07	\$0.04	\$0.39	\$0.50	\$0.34	\$0.18
TA0032	\$0.05	\$0.12	\$0.01	\$0.10	\$0.03	\$0.30	\$0.67	\$0.30	\$0.02
TA0033	\$0.13	\$0.16	\$0.01	\$0.08	\$0.00	\$0.39	\$0.79	\$0.28	\$0.00
TA0034	\$0.09	\$0.25	\$0.00	\$0.07	\$0.15	\$0.56	\$0.53	\$0.29	\$0.06
TA0035	\$0.05	\$0.17	\$0.09	\$0.05	\$0.02	\$0.38	\$0.67	\$0.21	\$0.23
TA0036	\$0.11	\$0.13	\$0.02	\$0.10	\$0.12	\$0.47	\$0.49	\$0.29	\$0.09
TA0038	\$0.00	\$0.08	\$0.01	\$0.08	\$0.09	\$0.26	\$0.51	\$0.07	\$0.01
TA0040	\$0.11	\$0.20	\$0.01	\$0.09	\$0.04	\$0.45	\$0.34	\$0.26	\$0.03
TA0041	\$0.07	\$0.12	\$0.02	\$0.06	\$0.17	\$0.44	\$0.33	\$0.55	\$0.09
TA0042	\$0.06	\$0.16	\$0.08	\$0.07	\$0.09	\$0.46	\$0.59	\$0.16	\$0.12
TA0043	\$0.15	\$0.23	\$0.02	\$0.19	\$0.04	\$0.63	\$0.37	\$0.27	\$0.10
TA0044	\$0.07	\$0.10	\$0.09	\$0.12	\$0.00	\$0.38	\$0.50	\$0.18	\$0.00
TA0045	\$0.09	\$0.11	\$0.16	\$0.09	\$0.10	\$0.55	\$0.36	\$0.05	\$0.26
TA0046	\$0.13	\$0.18	\$0.01	\$0.08	\$0.09	\$0.49	\$0.47	\$0.29	\$0.16
Average	\$0.09	\$0.15	\$0.05	\$0.09	\$0.08	\$0.46	\$0.47	\$0.21	\$0.09
Top 25%*	\$0.10	\$0.16	\$0.06	\$0.12	\$0.06	\$0.50	\$0.48	\$0.13	\$0.03

* The top 25% are bold and italicised

Table A4 Variable costs (continued)

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
TA0001	\$0.10	\$0.02	\$0.00	\$0.07	\$0.94	\$0.41	\$2.04	\$2.50
TA0004	\$0.08	\$0.09	\$0.09	\$0.23	\$1.19	\$0.26	\$2.77	\$3.26
TA0006	\$0.07	\$0.17	\$0.00	\$0.23	\$0.89	\$0.39	\$2.22	\$2.57
TA0007	\$0.11	\$0.04	\$0.00	\$0.07	\$0.70	\$0.07	\$1.41	\$1.77
TA0008	\$0.04	\$0.22	\$0.18	\$0.32	\$1.37	\$0.00	\$2.69	\$3.24
TA0010	\$0.09	\$0.03	\$0.00	\$0.35	\$1.92	\$0.05	\$3.42	\$3.89
TA0011	\$0.12	\$0.15	\$0.00	\$0.09	\$0.82	\$0.32	\$2.21	\$2.82
TA0012	\$0.10	\$0.10	\$0.02	\$0.00	\$1.04	\$0.00	\$2.24	\$2.61
TA0015	\$0.09	\$0.18	\$0.10	\$0.00	\$1.48	\$0.00	\$2.71	\$3.27
TA0019	\$0.08	\$0.02	\$0.06	\$0.18	\$0.96	\$0.00	\$1.98	\$2.46
TA0021	\$0.07	\$0.00	\$0.00	\$0.10	\$1.68	\$0.00	\$2.49	\$3.09
TA0023	\$0.01	\$0.08	\$0.00	\$0.17	\$1.57	\$0.55	\$3.25	\$3.73
TA0025	\$0.02	\$0.05	\$0.00	\$0.17	\$1.64	\$0.57	\$3.36	\$3.74
TA0026	\$0.03	\$0.06	\$0.01	\$0.61	\$1.70	\$0.38	\$3.28	\$3.70
TA0027	\$0.23	\$0.09	\$0.00	\$0.33	\$1.85	\$0.69	\$3.92	\$4.43
TA0031	\$0.07	\$0.12	\$0.00	\$0.15	\$1.16	\$0.13	\$2.67	\$3.05
TA0032	\$0.24	\$0.30	\$0.05	\$0.13	\$1.55	\$0.54	\$3.80	\$4.10
TA0033	\$0.14	\$0.24	\$0.06	\$0.11	\$0.92	\$0.65	\$3.19	\$3.58
TA0034	\$0.15	\$0.12	\$0.11	\$0.02	\$1.55	\$0.02	\$2.87	\$3.43
TA0035	\$0.00	\$0.07	\$0.46	\$0.05	\$1.01	\$0.42	\$3.12	\$3.50
TA0036	\$0.01	\$0.06	\$0.00	\$0.00	\$1.65	\$0.62	\$3.22	\$3.69
TA0038	\$0.11	\$0.01	\$0.09	\$0.59	\$1.18	\$0.00	\$2.57	\$2.83
TA0040	\$0.08	\$0.09	\$0.02	\$0.33	\$1.38	\$0.00	\$2.53	\$2.98
TA0041	\$0.09	\$0.02	\$0.04	\$0.00	\$1.02	\$0.65	\$2.79	\$3.24
TA0042	\$0.09	\$0.03	\$0.01	\$0.00	\$2.03	\$0.00	\$3.04	\$3.50
TA0043	\$0.01	\$0.07	\$0.00	\$0.00	\$1.18	\$0.43	\$2.44	\$3.07
TA0044	\$0.08	\$0.07	\$0.00	\$0.14	\$2.01	\$0.47	\$3.45	\$3.83
TA0045	\$0.04	\$0.17	\$0.01	\$0.46	\$1.32	\$0.06	\$2.74	\$3.29
TA0046	\$0.08	\$0.30	\$0.18	\$0.02	\$1.71	\$0.00	\$3.22	\$3.70
Average	\$0.08	\$0.10	\$0.05	\$0.17	\$1.36	\$0.27	\$2.81	\$3.27
Top 25%*	\$0.06	\$0.08	\$0.03	\$0.21	\$1.33	\$0.17	\$2.52	\$3.02

* The top 25% are bold and italicised

Table A5 Overhead costs

Farm number	Rates	Registration and insurance	Farm insurance	Repairs and maintenance	Bank charges	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	\$/ kg MS	\$/ kg MS
TA0001	\$0.05	\$0.03	\$0.09	\$0.34	\$0.06	\$0.08	\$0.67	\$1.32	\$0.16	\$0.61	\$2.09
TA0004	\$0.04	\$0.04	\$0.11	\$0.04	\$0.03	\$0.07	\$0.18	\$0.51	\$0.07	\$0.92	\$1.50
TA0006	\$0.04	\$0.05	\$0.00	\$0.11	\$0.00	\$0.07	\$0.44	\$0.72	\$0.34	\$0.54	\$1.60
TA0007	\$0.08	\$0.10	\$0.00	\$0.21	\$0.00	\$0.13	\$1.40	\$1.92	\$0.02	\$0.00	\$1.94
TA0008	\$0.04	\$0.02	\$0.06	\$0.35	\$0.02	\$0.13	\$0.50	\$1.12	\$0.05	\$0.38	\$1.55
TA0010	\$0.04	\$0.01	\$0.04	\$0.42	\$0.00	\$0.06	\$0.58	\$1.16	\$0.15	\$0.71	\$2.02
TA0011	\$0.04	\$0.09	\$0.00	\$0.43	\$0.00	\$0.19	\$0.69	\$1.44	\$0.20	\$0.93	\$2.56
TA0012	\$0.11	\$0.10	\$0.00	\$0.31	\$0.00	\$0.18	\$1.53	\$2.23	\$0.16	\$0.07	\$2.47
TA0015	\$0.04	\$0.01	\$0.07	\$0.64	\$0.01	\$0.06	\$0.89	\$1.72	\$0.14	\$0.41	\$2.26
TA0019	\$0.00	\$0.03	\$0.00	\$0.12	\$0.00	\$0.00	\$1.09	\$1.24	\$0.17	\$0.00	\$1.41
TA0021	\$0.04	\$0.02	\$0.04	\$0.26	\$0.19	\$0.35	\$0.60	\$1.50	\$0.20	\$0.39	\$2.09
TA0023	\$0.02	\$0.00	\$0.03	\$0.46	\$0.00	\$0.05	\$1.56	\$2.12	\$0.04	\$0.00	\$2.15
TA0025	\$0.03	\$0.00	\$0.03	\$0.42	\$0.00	\$0.03	\$1.60	\$2.12	\$0.03	\$0.00	\$2.15
TA0026	\$0.05	\$0.00	\$0.04	\$0.27	\$0.00	\$0.07	\$0.87	\$1.30	\$0.08	\$0.00	\$1.38
TA0027	\$0.03	\$0.00	\$0.03	\$0.48	\$0.00	\$0.08	\$1.37	\$1.99	\$0.03	\$0.00	\$2.02
TA0031	\$0.02	\$0.05	\$0.00	\$0.30	\$0.00	\$0.06	\$0.66	\$1.09	\$0.14	\$0.18	\$1.41
TA0032	\$0.08	\$0.04	\$0.19	\$0.37	\$0.00	\$0.24	\$0.88	\$1.80	\$0.36	\$0.49	\$2.65
TA0033	\$0.04	\$0.00	\$0.10	\$0.11	\$0.00	\$0.11	\$1.49	\$1.84	\$0.08	\$0.24	\$2.16
TA0034	\$0.09	\$0.04	\$0.12	\$0.26	\$0.01	\$0.15	\$0.41	\$1.08	\$0.71	\$0.44	\$2.24
TA0035	\$0.02	\$0.01	\$0.05	\$0.31	\$0.00	\$0.06	\$0.41	\$0.86	\$0.11	\$0.18	\$1.15
TA0036	\$0.02	\$0.00	\$0.03	\$0.43	\$0.00	\$0.04	\$1.45	\$1.97	\$0.02	\$0.00	\$1.99
TA0038	\$0.04	\$0.10	\$0.00	\$0.53	\$0.00	\$0.05	\$0.70	\$1.42	\$0.18	\$0.51	\$2.11
TA0040	\$0.03	\$0.11	\$0.00	\$0.24	\$0.01	\$0.09	\$0.40	\$0.88	\$0.20	\$0.55	\$1.62
TA0041	\$0.03	\$0.02	\$0.08	\$0.21	\$0.01	\$0.15	\$0.98	\$1.49	\$0.03	\$0.00	\$1.52
TA0042	\$0.04	\$0.05	\$0.00	\$0.13	\$0.00	\$0.03	\$0.78	\$1.03	\$0.09	\$0.53	\$1.64
TA0043	\$0.02	\$0.00	\$0.03	\$0.26	\$0.00	\$0.02	\$0.83	\$1.17	\$0.04	\$0.00	\$1.22
TA0044	\$0.03	\$0.02	\$0.09	\$0.33	\$0.01	\$0.07	\$1.07	\$1.63	\$0.29	\$0.35	\$2.27
TA0045	\$0.01	\$0.00	\$0.03	\$0.24	\$0.00	\$0.07	\$0.73	\$1.09	\$0.61	\$0.41	\$2.11
TA0046	\$0.02	\$0.00	\$0.06	\$0.39	\$0.48	\$0.06	\$0.77	\$1.78	\$0.03	\$0.30	\$2.12
Average	\$0.04	\$0.03	\$0.05	\$0.31	\$0.03	\$0.10	\$0.88	\$1.43	\$0.16	\$0.31	\$1.91
Top 25%*	\$0.03	\$0.03	\$0.03	\$0.27	\$0.03	\$0.09	\$0.73	\$1.22	\$0.17	\$0.27	\$1.65

* The top 25% are bold and italicised

Table A6 Variable costs

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
TA0001	1.9%	3.3%	1.2%	2.0%	1.6%	10.0%	3.2%	6.3%	1.2%
TA0004	1.2%	5.2%	0.5%	1.1%	2.3%	10.3%	9.9%	4.3%	3.0%
TA0006	1.9%	2.1%	1.9%	1.6%	1.1%	8.5%	9.9%	1.0%	0.4%
TA0007	1.9%	1.8%	0.4%	1.4%	4.1%	9.6%	5.1%	5.4%	1.1%
TA0008	2.8%	5.1%	0.2%	1.8%	1.5%	11.5%	4.0%	3.7%	3.6%
TA0010	2.5%	2.0%	1.4%	1.4%	0.7%	7.9%	8.6%	4.2%	3.7%
TA0011	1.4%	2.9%	2.5%	3.6%	1.0%	11.4%	2.9%	5.9%	4.4%
TA0012	0.4%	1.5%	1.0%	2.0%	2.5%	7.4%	12.8%	3.0%	3.2%
TA0015	1.3%	2.3%	1.8%	3.1%	1.7%	10.2%	14.9%	0.7%	0.0%
TA0019	2.7%	3.2%	0.9%	3.2%	2.6%	12.6%	16.6%	0.0%	0.7%
TA0021	3.2%	2.8%	2.4%	2.0%	1.3%	11.6%	8.0%	4.0%	0.3%
TA0023	1.8%	2.9%	0.3%	1.6%	1.6%	8.3%	8.7%	4.1%	1.8%
TA0025	1.6%	2.3%	0.0%	1.3%	1.2%	6.4%	10.2%	4.3%	0.9%
TA0026	0.6%	3.4%	1.7%	1.5%	1.0%	8.2%	7.2%	2.1%	0.3%
TA0027	1.9%	2.2%	0.2%	1.8%	1.8%	7.9%	7.8%	1.5%	1.9%
TA0031	1.6%	4.3%	0.2%	1.7%	0.9%	8.6%	11.3%	7.6%	4.1%
TA0032	0.7%	1.8%	0.1%	1.4%	0.4%	4.5%	9.9%	4.5%	0.4%
TA0033	2.2%	2.9%	0.2%	1.5%	0.1%	6.8%	13.7%	4.9%	0.0%
TA0034	1.6%	4.3%	0.0%	1.3%	2.6%	9.9%	9.4%	5.2%	1.1%
TA0035	1.2%	3.6%	2.0%	1.2%	0.3%	8.2%	14.4%	4.4%	4.9%
TA0036	1.9%	2.2%	0.3%	1.7%	2.0%	8.2%	8.7%	5.2%	1.5%
TA0038	0.0%	1.6%	0.2%	1.6%	1.9%	5.3%	10.3%	1.5%	0.2%
TA0040	2.4%	4.4%	0.2%	1.9%	0.9%	9.7%	7.3%	5.7%	0.6%
TA0041	1.5%	2.5%	0.4%	1.2%	3.6%	9.3%	7.0%	11.6%	1.9%
TA0042	1.2%	3.1%	1.6%	1.4%	1.7%	8.9%	11.5%	3.2%	2.2%
TA0043	3.5%	5.4%	0.4%	4.4%	1.0%	14.6%	8.7%	6.3%	2.4%
TA0044	1.2%	1.7%	1.5%	1.9%	0.0%	6.2%	8.2%	3.0%	0.0%
TA0045	1.7%	2.1%	2.9%	1.6%	1.9%	10.2%	6.7%	1.0%	4.7%
TA0046	2.2%	3.1%	0.1%	1.4%	1.5%	8.3%	8.1%	5.0%	2.7%
Average	1.7%	3.0%	0.9%	1.8%	1.5%	9.0%	9.1%	4.1%	1.8%
Top 25%*	2.2%	3.4%	1.3%	2.5%	1.4%	10.8%	10.4%	2.8%	0.7%

* The top 25% are bold and italicised

Table A6 Variable costs (continued)

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
TA0001	2.2%	0.5%	0.0%	1.5%	20.6%	9.0%	44.4%	54.4%
TA0004	1.7%	1.9%	1.8%	4.9%	24.9%	5.4%	58.2%	68.6%
<i>TA0006</i>	<i>1.6%</i>	<i>4.0%</i>	<i>0.0%</i>	<i>5.5%</i>	<i>21.4%</i>	<i>9.4%</i>	<i>53.1%</i>	<i>61.6%</i>
TA0007	2.8%	0.9%	0.0%	1.9%	18.8%	1.9%	38.0%	47.6%
TA0008	0.9%	4.5%	3.8%	6.7%	28.5%	0.0%	56.1%	67.6%
TA0010	1.6%	0.6%	0.0%	5.9%	32.5%	0.9%	57.9%	65.9%
TA0011	2.2%	2.7%	0.0%	1.6%	15.3%	6.0%	41.0%	52.4%
TA0012	2.0%	2.0%	0.5%	0.0%	20.4%	0.0%	44.0%	51.4%
<i>TA0015</i>	<i>1.7%</i>	<i>3.2%</i>	<i>1.8%</i>	<i>0.0%</i>	<i>26.8%</i>	<i>0.0%</i>	<i>49.0%</i>	<i>59.2%</i>
<i>TA0019</i>	<i>2.0%</i>	<i>0.4%</i>	<i>1.7%</i>	<i>4.8%</i>	<i>24.9%</i>	<i>0.0%</i>	<i>51.0%</i>	<i>63.6%</i>
<i>TA0021</i>	<i>1.3%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>1.9%</i>	<i>32.5%</i>	<i>0.0%</i>	<i>48.1%</i>	<i>59.7%</i>
TA0023	0.2%	1.3%	0.0%	2.9%	26.7%	9.4%	55.1%	63.4%
TA0025	0.3%	0.9%	0.0%	3.0%	27.9%	9.7%	57.1%	63.5%
<i>TA0026</i>	<i>0.5%</i>	<i>1.2%</i>	<i>0.2%</i>	<i>11.9%</i>	<i>33.5%</i>	<i>7.5%</i>	<i>64.6%</i>	<i>72.8%</i>
TA0027	3.6%	1.5%	0.0%	5.1%	28.7%	10.7%	60.8%	68.7%
TA0031	1.6%	2.7%	0.1%	3.4%	26.1%	3.0%	59.7%	68.4%
TA0032	3.5%	4.4%	0.8%	2.0%	22.9%	8.0%	56.3%	60.8%
TA0033	2.4%	4.3%	1.1%	1.9%	16.0%	11.3%	55.6%	62.4%
TA0034	2.7%	2.2%	1.9%	0.3%	27.4%	0.4%	50.6%	60.5%
TA0035	0.0%	1.5%	9.9%	1.1%	21.7%	9.0%	66.9%	75.2%
TA0036	0.2%	1.1%	0.0%	0.0%	29.1%	10.9%	56.7%	64.9%
TA0038	2.2%	0.3%	1.8%	12.0%	23.9%	0.0%	52.1%	57.4%
<i>TA0040</i>	<i>1.8%</i>	<i>1.9%</i>	<i>0.5%</i>	<i>7.2%</i>	<i>30.0%</i>	<i>0.0%</i>	<i>55.0%</i>	<i>64.7%</i>
TA0041	1.9%	0.4%	0.8%	0.1%	21.4%	13.7%	58.7%	68.1%
TA0042	1.8%	0.6%	0.2%	0.0%	39.5%	0.0%	59.1%	68.0%
<i>TA0043</i>	<i>0.3%</i>	<i>1.7%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>27.6%</i>	<i>10.0%</i>	<i>57.0%</i>	<i>71.6%</i>
TA0044	1.3%	1.2%	0.0%	2.2%	33.0%	7.7%	56.6%	62.8%
TA0045	0.8%	3.1%	0.2%	8.6%	24.5%	1.1%	50.8%	60.9%
TA0046	1.4%	5.1%	3.0%	0.4%	29.5%	0.0%	55.3%	63.6%
Average	1.6%	1.9%	1.0%	3.3%	26.1%	5.0%	54.1%	63.1%
Top 25%*	1.3%	1.8%	0.6%	4.5%	28.1%	3.8%	54.0%	64.7%

* The top 25% are bold and italicised

Table A7 Overhead costs

Farm number	Rates	Registration and insurance	Farm insurance	Repairs and maintenance	Bank charges	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	% of costs	% of costs
TA0001	1.0%	0.7%	1.9%	7.5%	1.3%	1.8%	14.7%	28.8%	3.5%	13.3%	45.6%
TA0004	0.9%	0.8%	2.3%	0.9%	0.5%	1.4%	3.9%	10.8%	1.4%	19.2%	31.4%
TA0006	1.0%	1.3%	0.0%	2.6%	0.0%	1.7%	10.6%	17.3%	8.1%	13.0%	38.4%
TA0007	2.2%	2.8%	0.0%	5.5%	0.0%	3.6%	37.7%	51.8%	0.6%	0.0%	52.4%
TA0008	0.8%	0.3%	1.3%	7.4%	0.4%	2.7%	10.5%	23.3%	1.1%	7.9%	32.4%
TA0010	0.7%	0.2%	0.7%	7.1%	0.0%	1.0%	9.9%	19.6%	2.6%	11.9%	34.1%
TA0011	0.8%	1.7%	0.0%	7.9%	0.0%	3.5%	12.7%	26.7%	3.7%	17.3%	47.6%
TA0012	2.2%	2.0%	0.0%	6.1%	0.0%	3.6%	30.0%	44.0%	3.2%	1.5%	48.6%
TA0015	0.6%	0.2%	1.3%	11.6%	0.1%	1.1%	16.1%	31.0%	2.5%	7.3%	40.8%
TA0019	0.0%	0.7%	0.0%	3.2%	0.0%	0.0%	28.0%	31.9%	4.5%	0.0%	36.4%
TA0021	0.8%	0.3%	0.8%	5.1%	3.7%	6.7%	11.7%	29.0%	3.8%	7.5%	40.3%
TA0023	0.3%	0.0%	0.5%	7.8%	0.0%	0.8%	26.5%	35.9%	0.6%	0.0%	36.6%
TA0025	0.5%	0.0%	0.6%	7.1%	0.0%	0.5%	27.2%	35.9%	0.6%	0.0%	36.5%
TA0026	0.9%	0.1%	0.7%	5.2%	0.0%	1.4%	17.1%	25.5%	1.7%	0.0%	27.2%
TA0027	0.4%	0.0%	0.5%	7.4%	0.0%	1.3%	21.2%	30.8%	0.5%	0.0%	31.3%
TA0031	0.5%	1.0%	0.0%	6.7%	0.0%	1.4%	14.7%	24.3%	3.2%	4.1%	31.6%
TA0032	1.2%	0.5%	2.8%	5.5%	0.1%	3.6%	13.1%	26.7%	5.3%	7.2%	39.2%
TA0033	0.8%	0.0%	1.7%	1.8%	0.1%	1.9%	25.9%	32.1%	1.4%	4.1%	37.6%
TA0034	1.5%	0.6%	2.1%	4.7%	0.2%	2.7%	7.3%	19.1%	12.6%	7.8%	39.5%
TA0035	0.4%	0.1%	1.1%	6.6%	0.0%	1.3%	8.9%	18.5%	2.5%	3.9%	24.8%
TA0036	0.4%	0.0%	0.5%	7.5%	0.0%	0.7%	25.6%	34.7%	0.4%	0.0%	35.1%
TA0038	0.9%	2.0%	0.0%	10.7%	0.0%	1.1%	14.1%	28.7%	3.6%	10.3%	42.6%
TA0040	0.7%	2.3%	0.0%	5.1%	0.2%	1.9%	8.7%	19.0%	4.3%	11.9%	35.3%
TA0041	0.7%	0.3%	1.7%	4.5%	0.1%	3.2%	20.7%	31.2%	0.7%	0.0%	31.9%
TA0042	0.8%	0.9%	0.0%	2.6%	0.0%	0.5%	15.1%	20.0%	1.7%	10.3%	32.0%
TA0043	0.5%	0.1%	0.8%	6.1%	0.0%	0.6%	19.4%	27.4%	1.0%	0.0%	28.4%
TA0044	0.5%	0.3%	1.5%	5.5%	0.1%	1.2%	17.5%	26.7%	4.7%	5.8%	37.2%
TA0045	0.2%	0.1%	0.6%	4.4%	0.1%	1.3%	13.5%	20.1%	11.3%	7.6%	39.1%
TA0046	0.3%	0.0%	1.0%	6.7%	8.2%	1.1%	13.3%	30.7%	0.5%	5.2%	36.4%
Average	0.8%	0.7%	0.8%	5.9%	0.5%	1.8%	17.1%	27.6%	3.2%	6.1%	36.9%
Top 25%*	0.7%	0.7%	0.5%	5.6%	0.6%	1.9%	15.9%	25.9%	3.7%	5.7%	35.3%

* The Top 25% are bold and italicised

Table A8 Capital structure

	FARM ASSETS				OTHER FARM ASSETS (PER USABLE HECTARE)				Total assets
	Land value	Land value	Permanent water value	Permanent water value	Plant and equipment	Livestock	Hay and grain	Other assets	
	\$/ha	\$/cow	\$/ha	\$/cow	\$/ha	\$/ha	\$/ha	\$/ha	\$/ha
Average	\$14,570	\$7,705	\$1,867	\$909	\$1,190	\$3,817	\$177	\$225	\$21,069
Top 25%*	\$14,024	\$7,441			\$1,608	\$4,323	\$148	\$1	\$20,872

	LIABILITIES		ASSETS	
	Liabilities per usable hectare	Liabilities per milking cow	Equity per usable hectare	Average equity
	\$/ha	\$/cow	\$/ha	%
Average	\$6,199	\$3,141	\$14,870	70%
Top 25%*	\$8,516	\$3,749	\$12,356	63%

Table A9 Historical data – Tasmania

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

Year	INCOME				VARIABLE COSTS							
	Milk income (net)		Gross farm income		Herd costs		Shed costs		Feed costs		Total variable costs	
	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)
2013–14	\$6.87	\$7.05	\$7.59	\$7.79	\$0.28	\$0.28	\$0.23	\$0.24	\$2.51	\$2.58	\$3.02	\$3.10
2014–15	\$6.19	\$6.26	\$6.90	\$6.97	\$0.29	\$0.29	\$0.20	\$0.20	\$2.65	\$2.67	\$3.13	\$3.16
2015–16	\$5.55	\$5.55	\$6.10	\$6.10	\$0.29	\$0.29	\$0.17	\$0.17	\$2.81	\$2.81	\$3.27	\$3.27
Average		\$6.28		\$6.95		\$0.29		\$0.20		\$2.69		\$3.18

Note: 'Real' dollar values are the nominal values converted to 2015–16 dollar equivalents by the consumer price index (CPI) to allow for inflation

Table A9 Historical data – Tasmania
Average farm income, costs and profit per kilogram of milk solids (continued)

Year	OVERHEAD COSTS					
	Cash overhead costs		Non-cash overhead costs		Total overhead costs	
	Nominal (\$/kg MS)	Real (\$/kg MS)	Nominal (\$/kg MS)	Real (\$/kg MS)	Nominal (\$/kg MS)	Real (\$/kg MS)
2013–14	\$1.41	\$1.45	\$0.73	\$0.75	\$2.14	\$2.19
2014–15	\$1.34	\$1.35	\$0.60	\$0.60	\$1.94	\$1.96
2015–16	\$1.43	\$1.43	\$0.48	\$0.48	\$1.91	\$1.91
Average		\$1.41		\$0.61		\$2.02

Note: 'Real' dollar values are the nominal values converted to 2015–16 dollar equivalents by the consumer price index (CPI) to allow for inflation

Year	PROFIT							
	Earnings before interest and tax		Interest and lease charges		Net farm income		Return on assets	Return on equity
	Nominal (\$/kg MS)	Real (\$/kg MS)	Nominal (\$/kg MS)	Real (\$/kg MS)	Nominal (\$/kg MS)	Real (\$/kg MS)		
2013–14	\$2.44	\$2.50	\$0.47	\$0.48	\$1.97	\$2.02	9.6%	12.9%
2014–15	\$1.84	\$1.86	\$0.42	\$0.43	\$1.41	\$1.43	7.8%	9.9%
2015–16	\$0.92	\$0.92	\$0.56	\$0.56	\$0.36	\$0.36	3.9%	0.8%
Average		\$1.76		\$0.49		\$1.27	7.1%	7.9%

Note: 'Real' dollar values are the nominal values converted to 2015–16 dollar equivalents by the consumer price index (CPI) to allow for inflation

Table A10 Historical data – Tasmania
Average farm physical information

Year	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	
	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)
2013–14	260	178	1,475	502	2.1	425	894	9.0	0.6	72%	\$437	\$448
2014–15	280	191	1,084	545	2.1	447	924	9.3	0.7	69%	\$429	\$434
2015–16	302	198	1,250	580	2.1	444	936	10.2	0.5	69%	\$440	\$440
Average	291	194	1,167	562	2.1	439	918	9.5	0.6	70%		\$441

*From 2011–12 estimated grazed pasture and conserved feed was calculated per hectare of milking area

Appendix B: Glossary of terms

All other income

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

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 (ie 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 ie 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 costs, 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 managed. 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.

Finance costs

See interest and lease costs.

Full time equivalent (FTE)

Standardised labour unit. Equal to 2,400 hours a year. Calculated as 50 hours a week for 48 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 and 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 and feed trading gains 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, eg 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 usable area

Total hectares managed minus the area of land which is of little or no value for livestock production eg 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 eg herd, shed and feed costs.

List of abbreviations

AI	Artificial insemination	kg	Kilograms
CH₄	Methane gas	LRWS	Low Reliability Water Shares.
CO₂	Carbon dioxide gas	ME	Metabolisable energy (MJ/kg)
CO_{2-e}	Carbon dioxide equivalent	MJ	Megajoules of energy
CoP	Cost of production	mm	Millimetres. 1 mm is equivalent to 4 points or 1/25th of an inch of rainfall
DFMP	Dairy Farm Monitor Project	MS	Milk solids (proteins and fats)
DM	Dry matter of feed stuffs	N₂O	Nitrous oxide gas
DEDJTR	Department of Economic Development, Jobs, Transport and Resources, Victoria	Q1	First quartile, i.e. the value of which one quarter, or 25%, of data in that range is <i>less than</i>
EBIT	Earnings before interest and tax	Q3	Third quartile, i.e. the value of which one quarter, or 25%, of data in that range is <i>greater than</i>
FTE	Full time equivalent	RoA	Return on assets
GWP	Global Warming Potential	RoE	Return on equity
ha	Hectare(s)	t	Tonne = 1,000 kg
hd	Head of cattle		
HRWS	High Reliability Water Shares		

Standard values

Livestock values

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

Category	Opening value (\$/hd)	Closing value (\$/hd)
Mature cows	\$1,500	\$1,500
13–14 heifers	\$1,050	\$1,500
14–15 heifers	\$450	\$1,050
15–16 calves		\$450
14–15 bulls	\$450	\$750
13–14 bulls	\$750	\$1,500
Mature bulls	\$1,500	\$1,500

Imputed owner/operator and family labour

In 2015–16 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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