

# Dairy Farm Monitor Project

Tasmania  
Annual Report 2013/14

# Acknowledgements

The cooperation, patience and goodwill of the farmers who willingly supplied their farm information are gratefully acknowledged.

The diligent work of the TIA Dairy Centre team who collected the data, especially Heidi Broun and Alison Hall.

The project was also made possible this year through the contributions of Andrew Wright, Derek Sands and Steven van Eldik who also collected farm data.

Thank you to the very professional support provided by the Dairy Farm Monitor Team at the Victorian Department of Economic Development, Jobs, Transport and Resources, in particular Natalie Nelson, Olive Montecillo, Claire Waterman and Ashleigh Michael.

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# Contents

Notes on the presentation of data in this report	2	<b>Figure 16</b>	Break-even price required per kilogram of milk solids sold	23	
<b>I. Summary</b>	<b>3</b>	<b>Figure 17</b>	Whole farm earnings before interest and tax per kilogram of milk solids	23	
Summary	4	<b>Figure 18</b>	Return on Assets	24	
<b>II. Farm monitor method</b>	<b>5</b>	<b>Figure 19</b>	Return on Equity	24	
Farm monitor method	6	<b>Figure 20</b>	Sources of whole farm metabolisable energy	25	
<b>III. Tasmania overview</b>	<b>9</b>	<b>Figure 21</b>	Estimated tonnes of home grown feed consumed per milking hectare	25	
Tasmania overview	10	<b>Figure 22</b>	Fertiliser application (kg/ha)	26	
2013/14 Seasonal conditions	11	<b>Figure 23</b>	Expected change to farm business returns in 2014/15	28	
Whole farm analysis	12	<b>Figure 24</b>	Producer expectations of price and production of milk in 2014/15	28	
Physical measures	16	<b>Figure 25</b>	Producer expectations of prices and production of fodder in 2014/15	29	
<b>IV. Statewide performance</b>	<b>18</b>	<b>Figure 26</b>	Producer expectations of costs for the dairy industry in 2014/15	29	
Statewide performance	19	<b>Figure 27</b>	Major issues for individual businesses – 12 month outlook	30	
Whole farm analysis	20	<b>Figure 28</b>	Major issues for individual businesses – 5 year outlook	30	
Feed consumption and fertiliser	25	<b>Figure 29</b>	2013/14 greenhouse gas emissions per tonne of milk solids sold (CO <sub>2</sub> equivalent)	33	
<b>V. Business confidence survey</b>	<b>27</b>				
Expectations and issues	28				
<b>VI. Greenhouse</b>	<b>31</b>				
2013/14 Greenhouse gas emissions	32				
<b>Appendices</b>	<b>34</b>				
Tasmania summary tables	35				
Glossary of terms	46				
<b>List of figures</b>		<b>List of tables</b>			
<b>Figure 1</b>	Dairy Farm Monitor Project method	6	<b>Table 1</b>	Average farm physical data—state overview	12
<b>Figure 2</b>	Dairy Farm Monitor Project Method profit map—Tasmanian state average data <sup>1</sup>	8	<b>Table 2</b>	Average farm financial performance per kilogram of milk solids	12
<b>Figure 3</b>	Distribution of participant farms across Tasmania	10	<b>Table 3</b>	Risk indicators	15
<b>Figure 4</b>	Monthly rainfall for 2013/14 compared to historical average	11	<b>Table 4</b>	Farm physical data	20
<b>Figure 5</b>	Average farm financial performance per kilogram milk solids	12	<b>Table 5</b>	Cost of production	22
<b>Figure 6</b>	Distribution of farms by Return on Assets	14	<b>Table A1</b>	Main Financial Indicators	35
<b>Figure 7</b>	Distribution of farms by Return on Equity	14	<b>Table A2</b>	Physical Information	36
<b>Figure 8</b>	Sources of whole farm metabolisable energy	16	<b>Table A3</b>	Purchased feed	38
<b>Figure 9</b>	Estimated tonnes of home grown feed consumed per milking hectare	16	<b>Table A4</b>	Variable costs	39
<b>Figure 10</b>	Nutrient application per hectare	17	<b>Table A5</b>	Overhead costs	41
<b>Figure 11</b>	Monthly distribution of milk production and calves born	17	<b>Table A6</b>	Variable costs	42
<b>Figure 12</b>	2013/14 annual rainfall and long-term average rainfall	19	<b>Table A7</b>	Overhead costs	44
<b>Figure 13</b>	Gross farm income per kilogram of milk solids	20	<b>Table A8</b>	Capital structure	45
<b>Figure 14</b>	Milk solids sold per hectare	21			
<b>Figure 15</b>	Whole farm variable and overhead costs per kilogram of milk solids	21			

# Notes on the presentation of data in this report

This section of the report defines and explains the calculations used and the data presented throughout the report.

This section is not to be confused with *Section II. Farm monitor method* which discusses the method for the farm data analysis.

This report is presented in the following parts:

- > Summary
- > Farm monitor method
- > Tasmania overview
- > Statewide performance
- > Business confidence survey
- > Greenhouse gas emissions
- > 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 published in this report should not be taken to represent population averages as the participant farms were not selected via random population sampling.

The report presents visual descriptions of the data for the 2013/14 year. Data is presented for individual farms, Tasmanian averages and Tasmanian top 25% of farms ranked by return on assets. Reported averages are calculated as the mean. These averages should in no way be considered averages for the population of farms given the small sample size and farms are not randomly selected.

The top 25% of farms are presented as lighter coloured diagonally shaded bars in the statewide performance section of this report. Return on assets is the determinant of the top producers as it provides an assessment of the performance of the whole farm while accounting for differences in location and production system.

The Q1–Q3 data range for key indicators is also presented in the tables to give 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 Q3 value is the quartile 3 value. That is, the value of which one quarter (25%) of data in that range is greater than. This means that the middle 50% of data sits between the Q1–Q3 data range.

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

Milk production data is presented in kilograms of milk solids as farms are paid according to milk solids.

The report will focus on measures on a per kilogram of milk solids basis, with occasional referral to measure on a per hectare or per cow basis. The appendix tables contain the majority of financial information in a per kilogram of milk solids basis.

The method used is a combination of that used in the Livestock Farm Monitor Project, and various other referenced sources. Attention should be paid to the method when directly comparing figures from this report with those generated via other means. More detail on the method is provided in Part II. Farm monitor method.

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

Top 25% consists of eight farms from across the state.

Please note that text around explanations of terms will be repeated within the different chapters.



## I. Summary

# Summary

Data from 31 farms in Tasmania reveal that in 2013/14 high milk prices and favourable seasonal conditions contributed to strong farm profitability. The average whole farm earnings before interest and tax (EBIT) was \$537,937, and average return on assets was 9.6%.

While using the Dairy Farm Monitor data collection method for the past three years, this is the first year of the Tasmanian data being reported in the national format.

In 2013/14, all farms participating in the Tasmanian Dairy Farm Monitor Project experienced higher than average rainfall. The average milk price was \$6.87 /kg MS and all participant farms achieved a positive return on assets.

This milk price and return on assets was higher than that of 2012/13. Operating costs were \$5.16/kg MS and the average EBIT was \$2.44/kg MS. The major costs were purchased feed and agistment (\$1.61/kg MS), home grown feed (\$0.91/kg MS) and employed labour (\$0.74/kg MS).

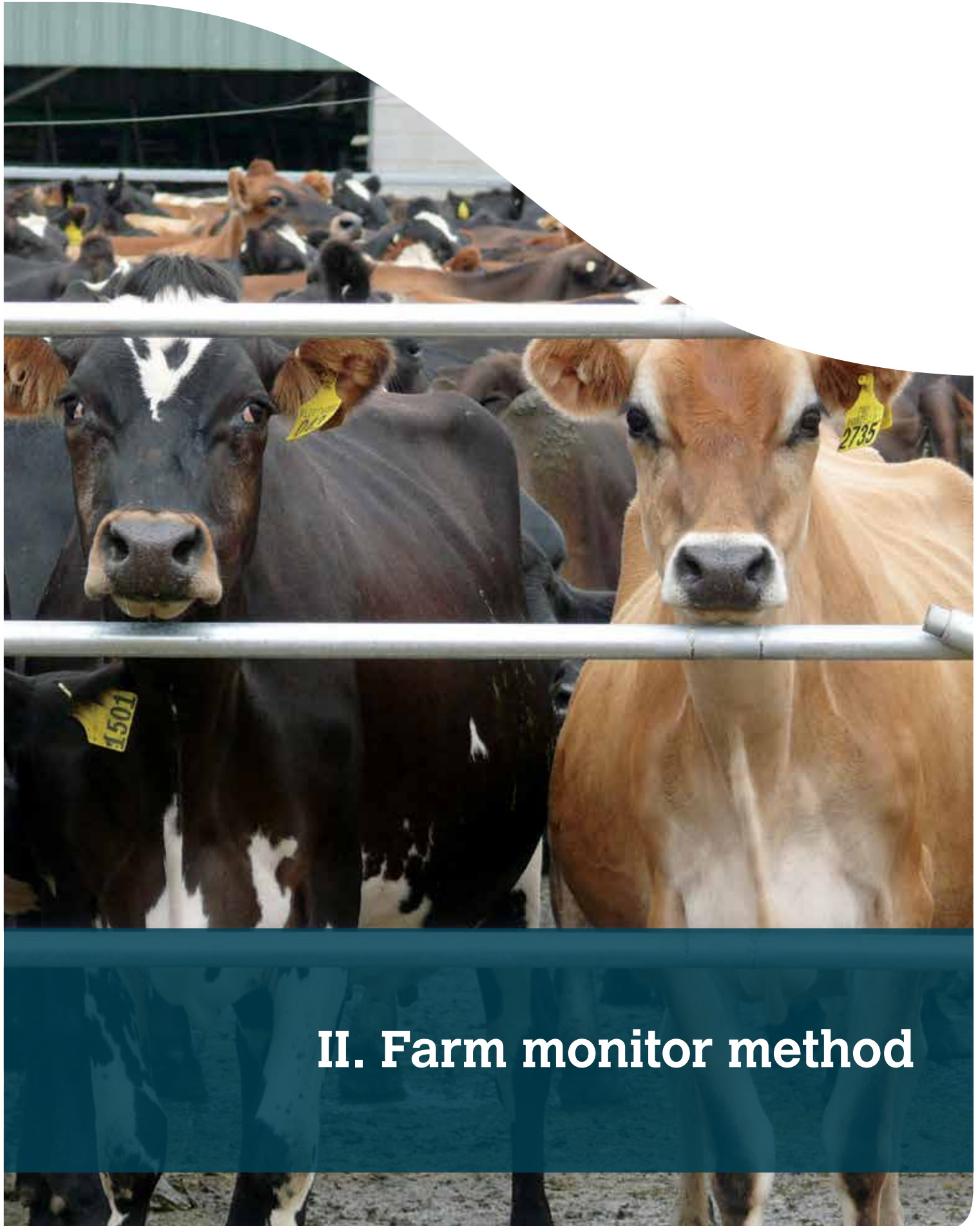
Twenty-eight percent of the energy consumed on-farm was from imported feed with 23% of the energy consumed on-farm being in the form of concentrate and the remainder consisting mainly of either home-grown or purchased fodder (pasture, hay or silage).

On average directly grazed, home-grown pasture consumption was 9.0 t DM/ha with a further 0.6 t DM/ha of pasture conserved.

Following a positive 2013/14 year, expectations for the coming season are variable. Recognising the high milk price year, the majority of farmers across the state expect to see a decrease in milk price in 2014/15 and over 90% of farms are intending to increase or have no change to milk production. Labour was the main issue facing farmers over the next 12 months while milk price was the major long term issue.

A greenhouse gas emission audit showed the average level of greenhouse gases emitted was 13 tonnes of carbon dioxide equivalents per tonne of milk solids.





## II. Farm monitor method

# Farm monitor method

This section of the report explains the method behind the figures in the Dairy Farm Monitor Project and what they mean. It helps put farm business economic terminology into context.

The method employed to generate the profitability and production data in this report was adapted from that described in *The Farming Game* (Malcolm et al. 2005) and is consistent with that used in other state's Dairy Farm Monitor Project reports. Readers should be aware that not all benchmarking programs use the same methodology or terminology for farm financial reporting. The allocation of items such as lease costs, overhead costs or imputed labour costs against the farm enterprises will vary between financial benchmarking programs. Standard dollar values for things 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. Dairy Farm Monitor Project method

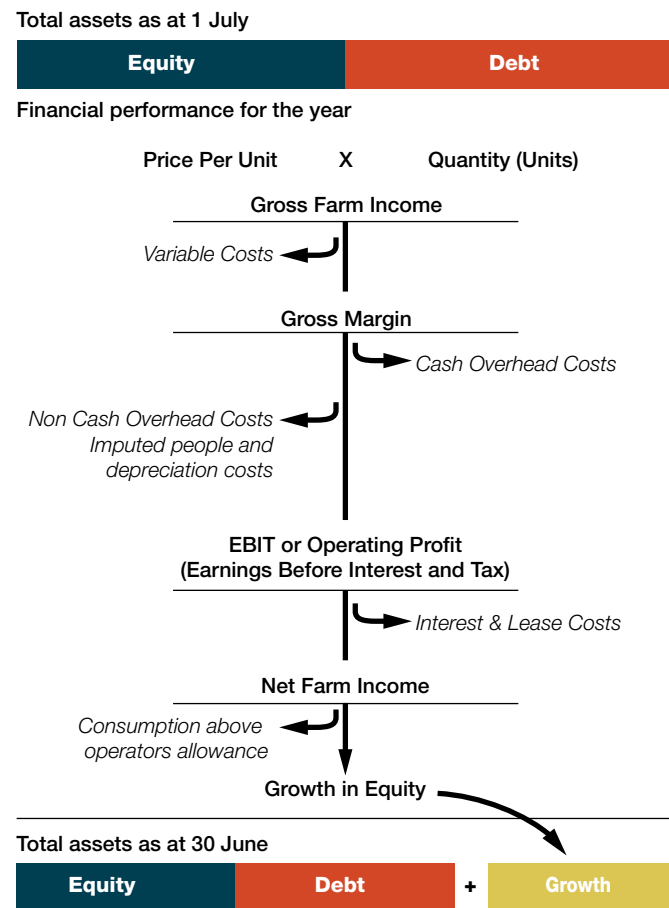


Figure 1 demonstrates how all of the different farm business economic terms relate to each other and are calculated. It is adapted from an initial diagram obtained from Bill Malcolm (2008) at the University of Melbourne. The diagram shows the different profitability measures as certain costs deducted from total income. It also discusses capital and growth.

Growth is achieved by investing in assets which generate income. These assets can be owned with equity (one's own capital) and debt (borrowed capital), as shown in Figure 1. In order for the assets to generate income they need to be farmed and managed, which involves incurring costs. The amount of growth is dependant on the maximisation of income and minimisation of costs, or cost efficiency relative to income generation.

The method is also shown using the state average results in Figure 2. Production and economic data are identified to indicate how the terms are calculated and how they interrelate.

## Gross farm income

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

## Variable costs

Variable costs are costs that are specific to an enterprise, such as herd, shed and feed costs. These costs vary directly in relation to the size of the enterprise. Subtracting variable costs from gross farm income, only for the dairy enterprise, gives a 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.



## Overhead costs

Overhead costs, are costs that are not directly related to an enterprise as they are expenses incurred through the general operating of the business. The Dairy Farm Monitor Project separates overheads into cash overheads and non cash overheads, to distinguish between cash flows of the business. Cash overheads are those fixed costs such as 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 an item of farm 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) is calculated by subtracting variable and overhead costs from gross farm income. EBIT 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 calculated using 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 left over is net profit or surplus and therefore growth, as it 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 and return on equity. They measure the financial 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 or operating profit expressed as a percentage of the total assets under management in the farm business, including the value of leased assets. EBIT 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. Return on assets is sometimes referred to as return on capital.

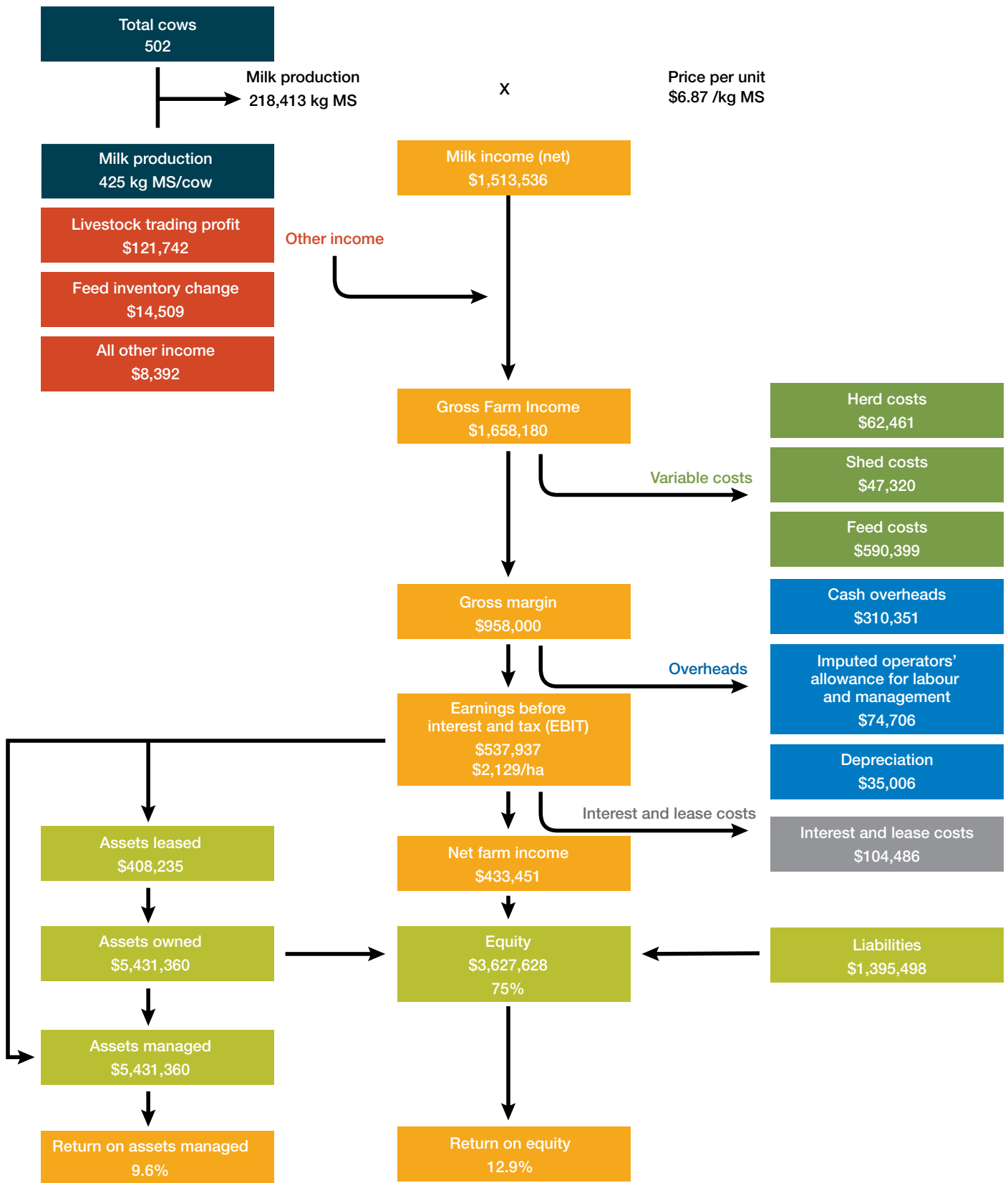
Return on assets enables a more complete assessment to be made of individual and between different farming businesses as it ignores how the operation is financed, while also accounting for the difference in the productive capacity of land in different areas and regions.

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 Dairy Farm Monitor Project reports return on equity with and without capital appreciation. This is to distinguish between productivity gains (return on equity without capital appreciation) and capital gains (return on equity with capital appreciation).

Figure 2. Dairy Farm Monitor Project Method profit map—Tasmanian state average data<sup>1</sup>

Dairy Farm Monitor Project Method



1. Profit map adapted from Queensland Dairy Accounting Scheme—2010 with permission from Ray Murphy, Department of Employment, Economic Development and Innovation, Queensland.



### **III. Tasmania overview**



# Tasmania overview

Tasmania produces approximately 805 million litres of milk or 8.7% of milk produced in Australia. Dairy farms are mainly located in the northern part of the state including King Island.

There are 435 dairy farms in Tasmania. The majority of these farms are located in the higher rainfall (> 1000 mm) regions of Tasmania along the northern coastline from Marawah in the west to Pyengana in the east.

A small, but growing, percentage of farms are in the lower rainfall regions of northern midlands and southern Tasmania. In general rainfall is winter dominant.

The Circular Head region of Tasmania in the west tends to have higher summer rainfall than other regions and as a consequence, less irrigation takes place in this region.

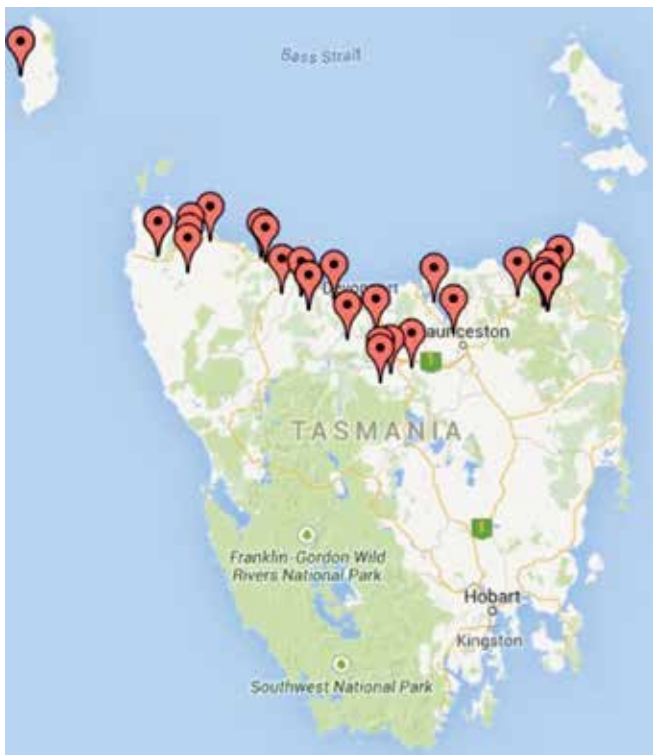
Tasmania has a ryegrass dominant, pasture-based dairy industry but a range of feeding systems built on that pasture base from very low input to high input farms. Peak pasture growth occurs in spring – for many farms this accounts for two-thirds of pasture growth for the season.

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 cows in autumn. Many Tasmanian dairy farms now use cross-breeding in their herd.

In 2013/14, Tasmania produced 805 million litres of milk, which is the highest production achieved in the state.

The approximate location of the participating farms is shown in Figure 3.

Figure 3. Distribution of participant farms across Tasmania



# 2013/14 Seasonal conditions

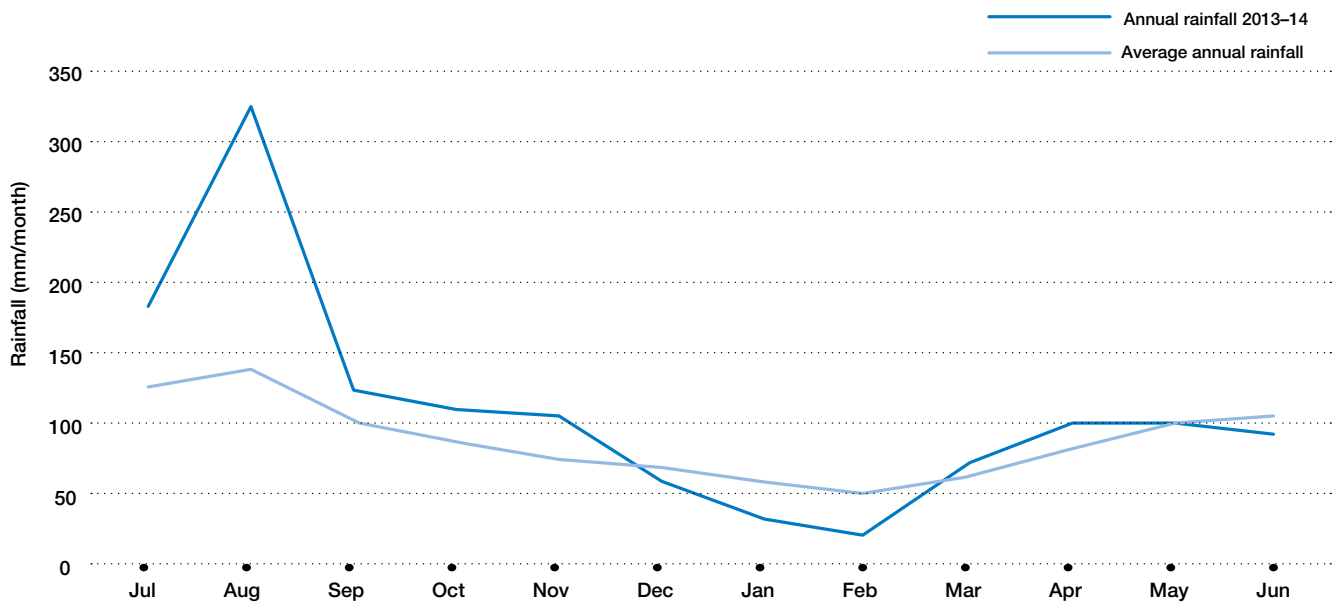
The 2013/14 season began with a mild winter which maintained good pasture growth rates in the lead-up to the main calving period.

This was followed by a wetter than average spring which resulted in low pasture growth during this period and lower than average conserved forage. Autumn rainfall was higher than average which helped maintain milk production through this period and also reduced the impact of low conserved forage reserves.

Tasmanian milk production reached a record high of 804.5 million litres in 2013/14 or 8.7% of national milk production.

The average rainfall received in 2013/14 for most was 20% higher than the annual long-term with a higher winter occurrence in all areas (Figure 4).

Figure 4. Monthly rainfall for 2013/14 compared to historical average



# Whole farm analysis

Thirty-one farms provided data for the Tasmanian Dairy Farm Monitor Project. The average herd size of these farms is 502 cows with an average stocking rate of 2.1 cows per useable hectare.

A summary of the physical parameters of the farms participating in the Tasmanian Dairy Farm Monitor project is provided in Table 1. Average milk production for 2013/14 was 425 kg MS/cow and the average milk price was \$6.87/kg MS. People productivity was high with 134 cows milked per Full Time Equivalent (FTE) and 56,675 kg MS per FTE.

Figure 5 provides a visual representation of the average farm financial performance. The blue colours represent income per kilogram of milk solids added vertically to give gross farm income. From gross farm income, we can subtract the variable costs, to give the dark green gross margin values. From the gross margin we subtract the overhead costs to give us the orange earnings before interest and tax. The legend for Figure 5 and the values for each category can be found in Table 2.

Table 1. Average farm physical data—state overview

Farm Physical Parameters	Tasmania
Number of farms in sample	31
Herd size (no. cows milked for at least 3 months)	502
Annual rainfall 13/14	1,342
Water used (irrigation + rainfall) (mm/ha)	1,475
Total useable area (ha)	260
Stocking rate (milking cows per useable hectare)	2.1
Milk solids sold (kg MS/cow)	425
Milk solids sold (kg MS/ha)	894
Milk price received (\$/kg MS)	\$6.87
People productivity (milkers / FTE)	134
People productivity (kg MS / FTE)	56,675

Figure 5. Average farm financial performance per kilogram milk solids  
(Refer to Table 2 for the legend)

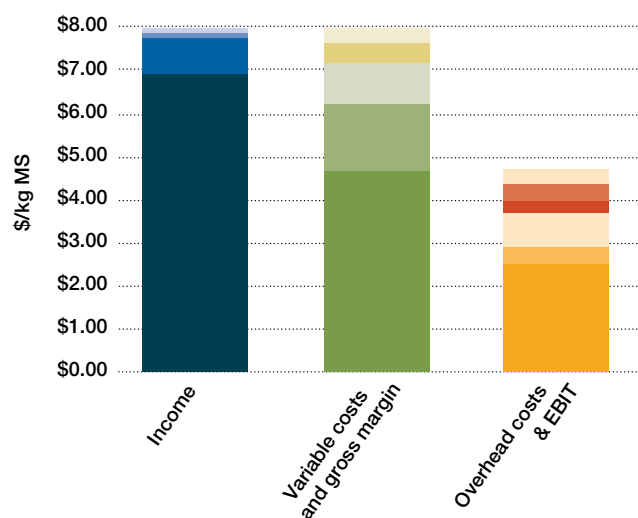


Table 2. Average farm financial performance per kilogram of milk solids

Farm income and cost category	Statewide
<b>Income</b>	
per Kg MS	
Feed inventory change	\$0.07
Other farm income	\$0.06
Livestock trading profit	\$0.59
Milk income (net)	\$6.87
<b>Gross farm income</b>	<b>\$7.59</b>
<b>Variable costs</b>	
Shed cost	\$0.23
Herd cost	\$0.28
Home grown feed cost	\$0.91
Purchased feed and agistment	\$1.61
<b>Total variable costs</b>	<b>\$3.02</b>
<b>Gross margin</b>	
per kilogram of milk solids	\$4.58
<b>Overhead costs</b>	
All other overheads	\$0.28
Repairs and maintenance	\$0.39
Depreciation	\$0.21
Employed labour	\$0.74
Imputed labour	\$0.51
<b>Total overhead costs</b>	<b>\$2.14</b>
<b>Earnings before interest and tax</b>	
per kilogram of milk solids	\$2.44



## Gross farm income

Gross farm income includes all farm income, whether that is income from milk sales, a change in inventories of stock or feed or cash income from livestock trading. Income from sources such as milk share dividends and colostrum sales is included in other farm income.

## Variable costs

Variable costs are costs directly associated with production. Examples include animal health, contract services, supplementary feeding, agistment and pasture costs. Figure 5 shows the large cost of purchased feed and agistment (seen as mid green). Home grown feed was the other major variable cost. The total cost of feed accounted for 83% of total variable costs. See Appendix A Table 6 for a breakdown of variable costs as a percentage of total (variable plus overhead) costs.

The gross margin is equal to gross farm income minus total variable costs. While commonly used to compare enterprises that can use 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 \$4.58/kg MS for 2013/14.

## 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 the cost of people's time. 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 that owns assets in the business. The imputed labour cost is calculated as \$25 per hour of labour performed by either the owner-operator or family members.

Total overhead costs for 2013/14 were \$2.14/kg MS with total labour costs being 58% of this total.

## Earnings before interest and tax

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

The average EBIT for the state was \$2.44/kg MS.

## Return on assets and equity

Return on assets is the earnings before interest and tax 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 this production system and not elsewhere in the economy.

The average return on assets for participants across the state was 9.6%, with a range from 2.7% to 17.4% (Figure 6).

Return on equity is the net farm income (earnings before interest and tax less interest and lease charges) expressed as a percentage of owner 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 owner's rate of return on their investment.

The average return on equity for the 31 farms during 2013/14 was 12.9% with a range from 0.7% to 49.6% (Figure 7).

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

Figure 6. Distribution of farms by Return on Assets

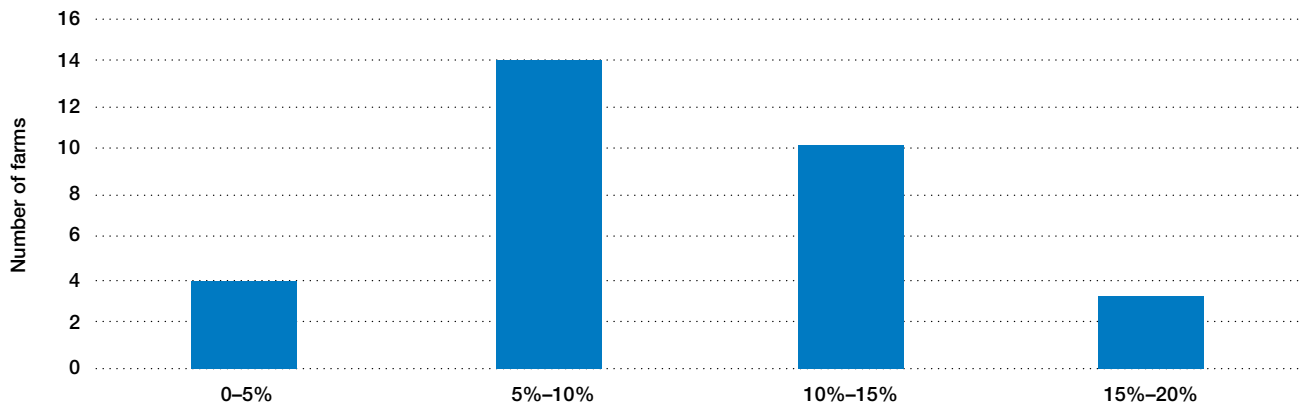
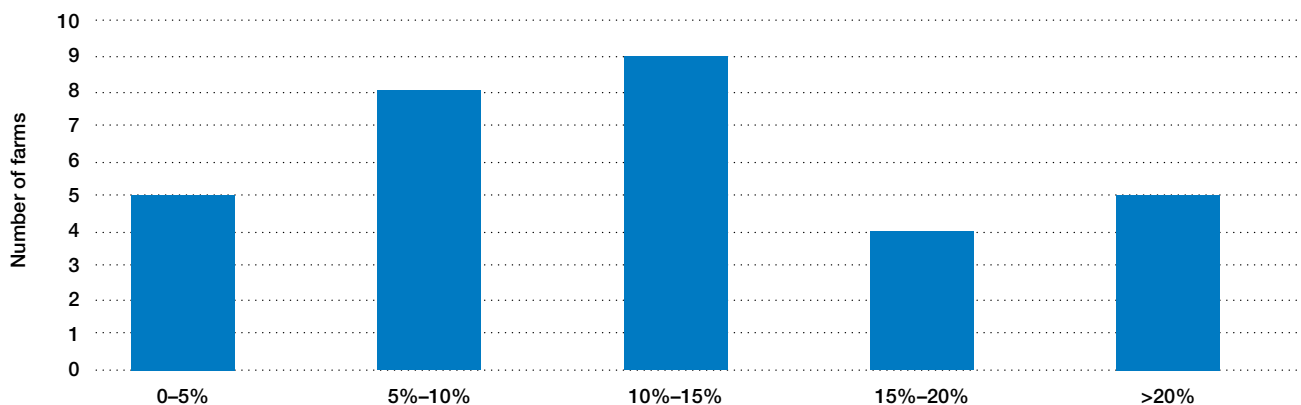


Figure 7. Distribution of farms by Return on Equity



## 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. '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..."<sup>2</sup>

Table 3 presents some risk indicators. Refer to the glossary of terms for the definition of terms used in Table 3.

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. With the example of feed sources, dairy farmers are generally better at dairy farming than they are at grain production, partly due to the most appropriate use of their land resource. 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 business. The trade-off is that they are exposed to price and supply risks, which historically have been lower.

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

Only one participant farm did not use any imported feeds, all the remaining farms sourced at least some of their metabolisable energy (ME) from imported feeds and are therefore somewhat exposed to the fluctuations in prices and supply in the market for feed. The average price of purchased feed in 2013/14 was \$402 per tonne DM.

Table 3. Risk indicators

	Statewide
Cost structure (proportion of total costs that are variable costs)	59%
Debt service ratio (percentage of income as finance costs)	6.2%
Debt per cow	\$2,660
Equity percentage (ownership of total assets managed)	75%
Percentage of feed imported (as a % of total ME)	28%

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, \$0.59 was used to cover variable costs. One hundred minus this percentage gives the proportion of total costs that are overhead costs (41%).

The debt services ratio shows interest and lease costs as a proportion of gross farm income. It indicates that on average farms repaid \$0.06 of every dollar of gross farm income to their creditors.

The benefit of taking some risks and borrowing money can be seen when farm incomes yield a higher return on equity than on their return on assets. In 2013/14 there were 21 (out of 31) businesses which had a higher return on equity than their return on assets.

The data in Appendix Tables A4 and A5 are in cost per kilogram of milk solids sold and can also be used as risk indicators, given it is measured against the product produced and sold currently and not the capital invested.

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

Figure 8 presents the contribution of different feed sources to the total metabolisable energy (ME) consumed on the farm. This includes feed consumed by dry cows and young stock.

In Tasmania, almost 80% of the diet is forage based. The average proportion of ME sourced from home-grown feed is 72%.

Appendix Table A3 gives further information on purchased feed.

Figure 9 shows the average estimated home grown feed production per milking hectare. Both Figures 8 and 9 were estimated using DEDJTR's Pasture Consumption Calculator. It involves first a calculation of the total energy required on the farm, which is a factor of stock numbers held on the farm, stock weights, distance stock walk to the dairy on average and also milk production. From the total farm

energy requirements over the year, the energy imported to the farm as feed is subtracted. This leaves the estimate for total energy produced on farm, which is then divided into grazed and conserved feed depending on the amount of fodder production recorded.

The amount of home grown feed produced per usable hectare will be dependent on numerous factors, with rainfall and irrigation water, fertiliser application rates and grazing management being central.

The total home grown feed produced in 2013/14 is estimated at 9.0 t DM/ha grazed directly and 0.6 t DM/ha conserved.

Appendix Table A2 gives estimates of individual tonnes of home grown feed produced per milking hectare. Figure 9 accounts only for the consumption of pasture that occurred on the milking area whether by milking, dry or young stock.

Figure 8. Sources of whole farm metabolisable energy

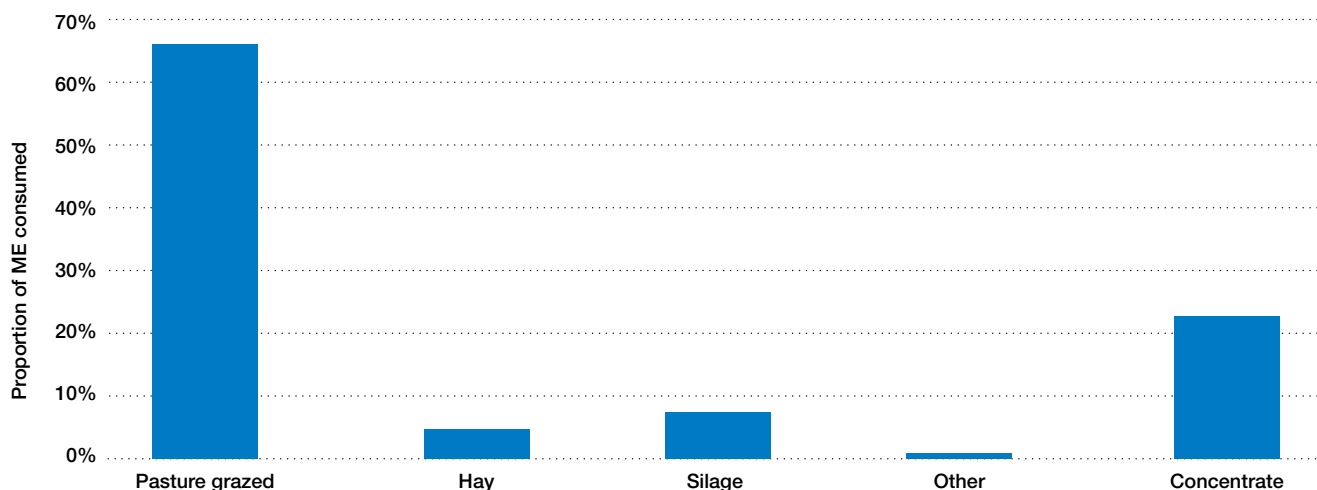
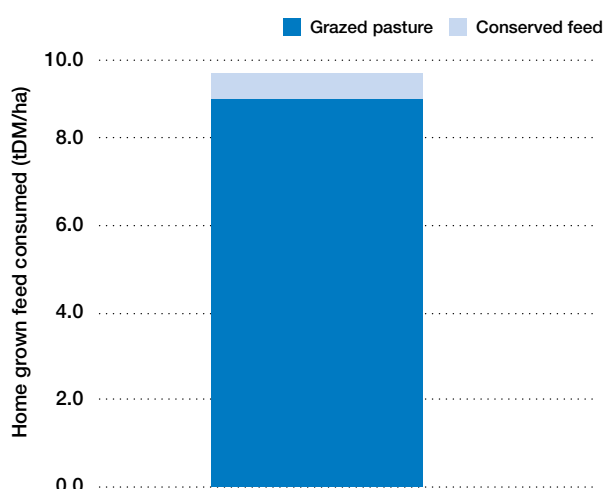


Figure 9. Estimated tonnes of home grown feed consumed per milking hectare

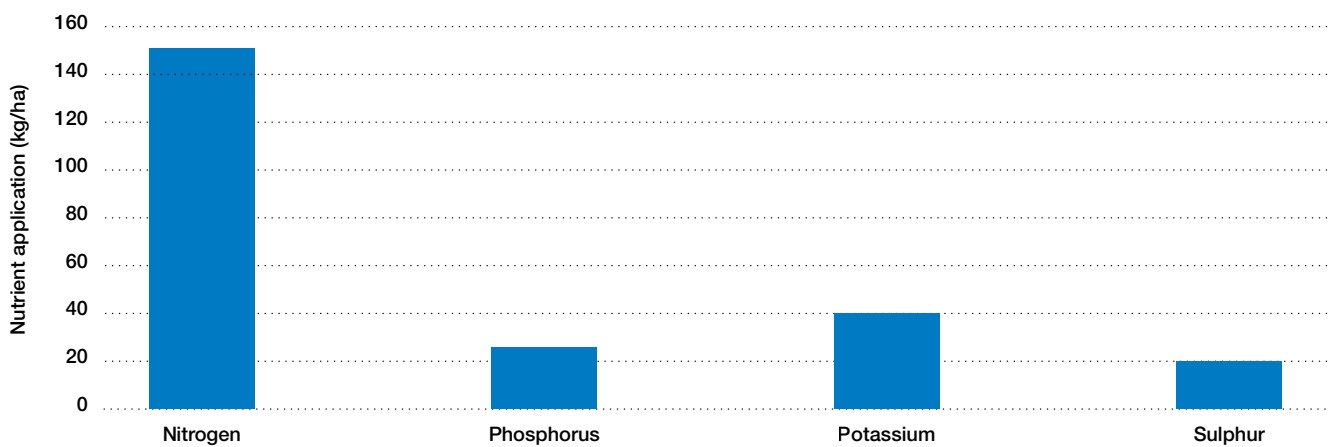


## Fertiliser application

On average farms applied 152 kg of nitrogen per hectare (kg N/ha), with a range from 0 to 395 kg N/ha (Figure 10). Farms in the top 25% (based on RoA) applied a significantly higher amount of nitrogen than average at 234 kg N/ha and slightly higher levels of other nutrients. The nutrient comparisons were 28 kg compared to 27 kg phosphorus per hectare; 38 kg compared to 35 kg potassium per hectare; and 27 kg in contrast to 21 kg sulphur per hectare.

Appendix Table A2 gives further information on fertiliser application.

Figure 10. Nutrient application per hectare



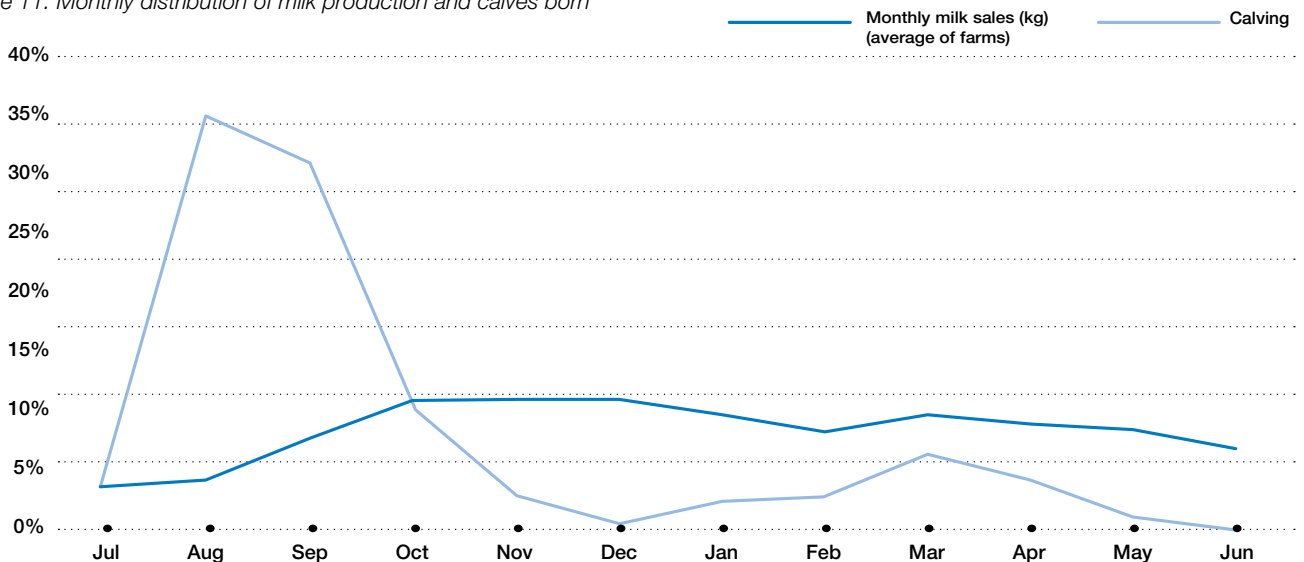
## Milk production

Tasmanian milk production peaks in November with another small peak in March (Figure 11).

## Calving pattern

Typically milk production follows a similar pattern to the calving pattern, with a two to three month delay between calving and peak lactation. This can be seen with the spring peak in Figure 11. In autumn, the milk production peak occurs more in-line with the peak autumn calving numbers, probably due to both good autumn seasonal conditions and some calving taking place during late summer.

Figure 11. Monthly distribution of milk production and calves born





## **IV. Statewide performance**

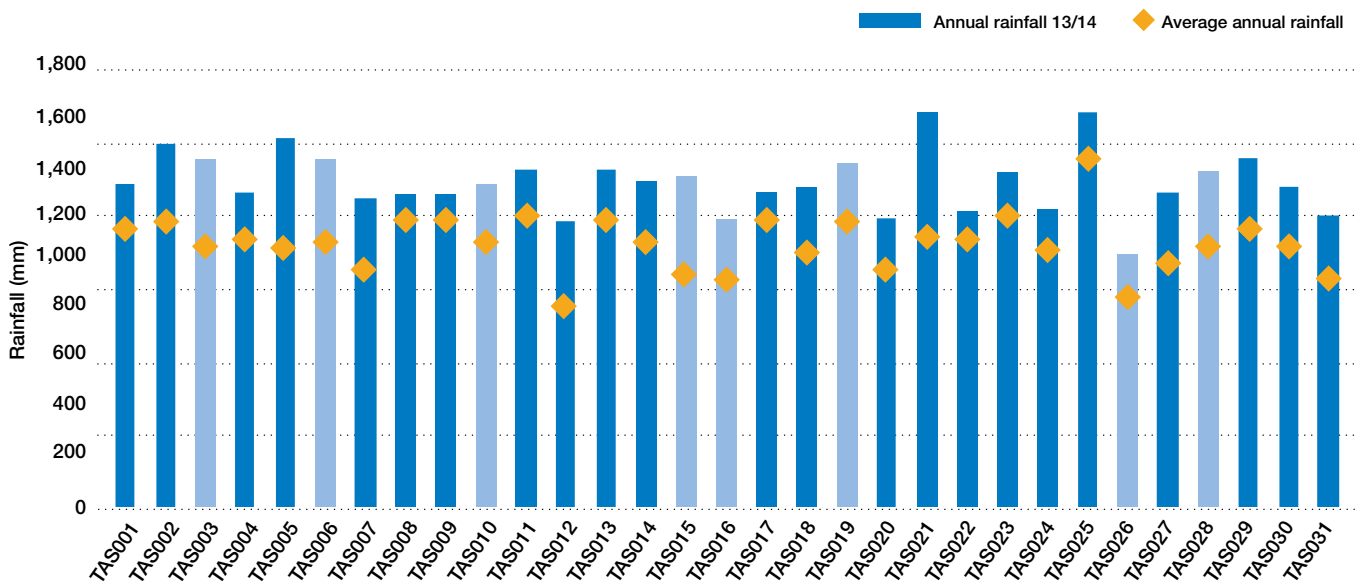
# Statewide performance

This section of the report contains more detailed information about the range of key financial and physical parameters for individual farms collected through the Tasmanian Dairy Farm Monitor Project.

## 2013/14 Seasonal conditions

All the main dairy regions in Tasmania received above average rainfall in 2013/14. Following a mild winter, wet conditions in early spring slowed pasture growth and reduced the amount of fodder conserved but an early autumn break helped milk production and cow condition through autumn.

Figure 12. 2013/14 annual rainfall and long-term average rainfall



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



# Whole farm analysis

Key whole farm physical parameters for the 31 Tasmanian farms are presented in Table 4. The Q1–Q3 range shows the band in which the middle 50% of farms for each parameter reside.

The top 25% of farms (ranked by return on assets) lie within the middle 50% of the Tasmanian dataset for all physical parameters except for kilograms of milk solids sold per full time equivalent of labour.

The top 25% had higher stocking rates of milking cows per usable hectare at 2.3 compared to the state average of 2.1 milking cows per hectare. These farms had also higher milk production per cow at 450 kg MS compared to 425 kg MS/cow for the state.

Table 4. Farm physical data

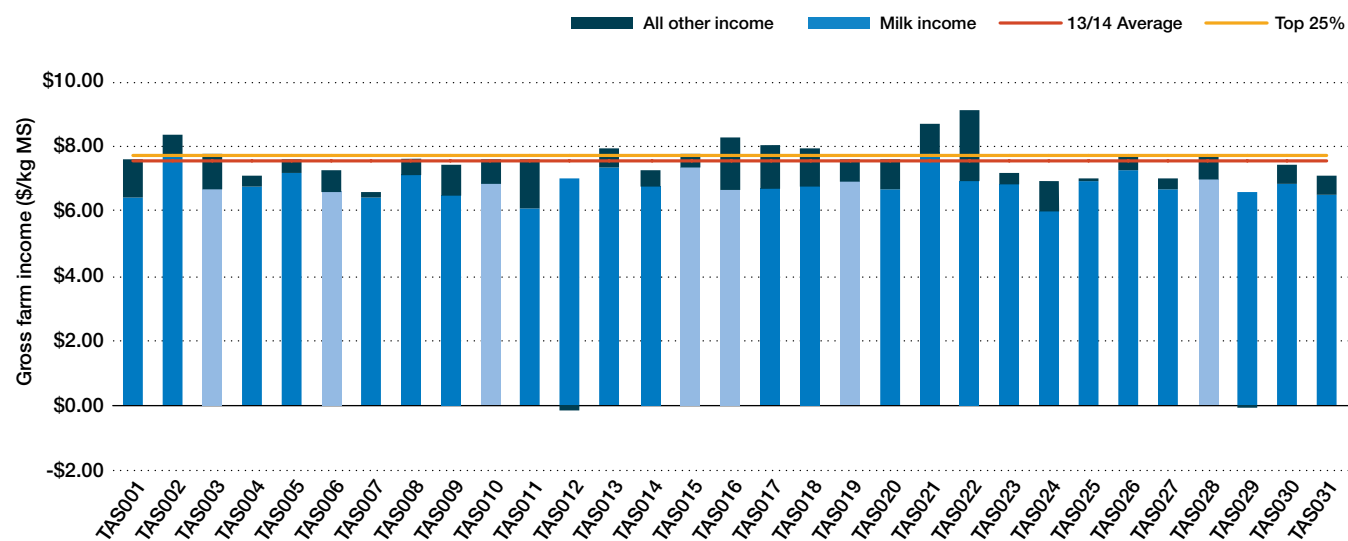
Farm Physical Parameters	State Average	Q1 to Q3 range	Top 25% average
Annual Rainfall 13/14	1,342	1,276–1,408	1,318
Water used (irrigation + rainfall) (mm/ha)	1,475	1351–1549	1,472
Total usable Area (hectares)	260	129–365	278
Milking cows per usable hectare	2.1	1.4–2.8	2.3
Milk solids sold (kg MS /cow)	425	371.8–463	450
Milk solids sold (kg MS /ha)	894	548–1231	1,026
Home grown feed as % of ME consumed	72%	60%–79%	71%
People efficiency (milking cows / FTE)	134	99–151	144
People efficiency (kg MS / FTE)	56,675	44,248–62,144	62,729

## Gross farm income

Gross farm income includes all farm income, whether that is income from milk sales, changes in inventories of stock or feed, or cash income from livestock trading. The average gross farm income of \$7.59/kg MS includes milk income (\$6.87/kg MS), and all other income associated with the

dairy business operation (\$0.72/kg MS). The top 25% earned a gross income of \$7.76/kg MS, this consists of \$6.96/kg MS from milk income and \$0.80/kg MS from all other income.

Figure 13. Gross farm income per kilogram of milk solids

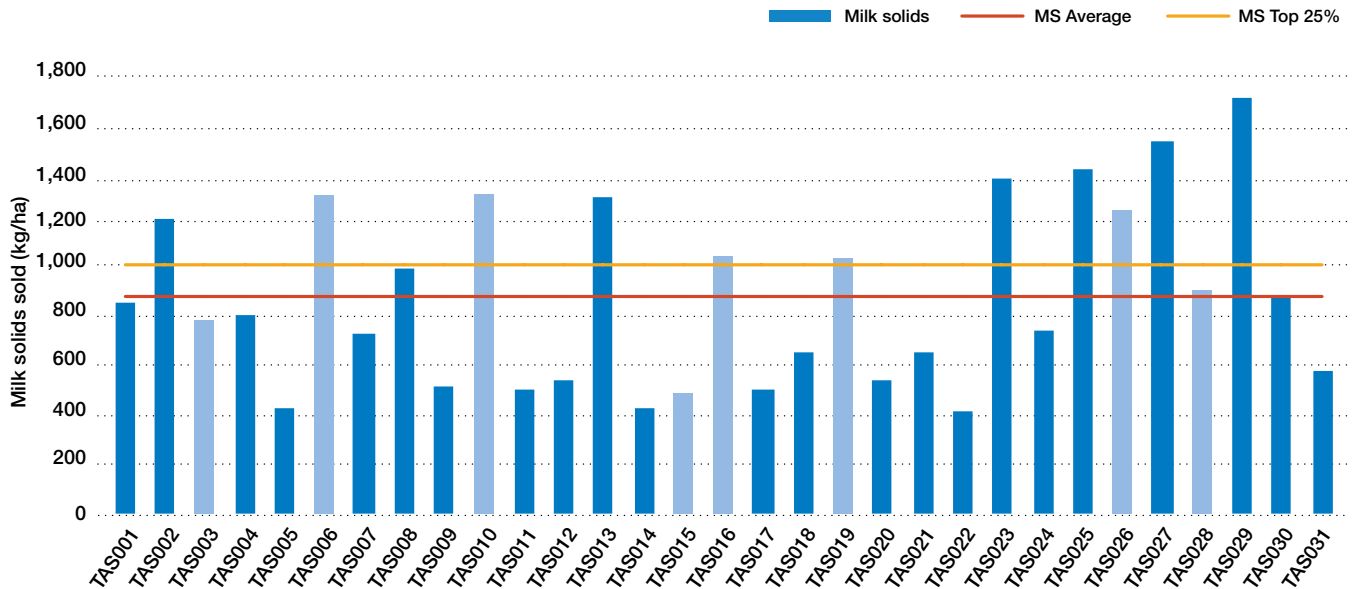


## Milk production

Average milk solids production for 2013/14 was 894 kg MS/ha, as shown in Figure 14. While the top 25% group's average was 1,026 kg MS/ha, not all farms in the top group were higher than the state's average for milk solids

production per hectare with TAS003 and TAS015 producing below the state average suggesting their farms had other attributes that contributed to their top 25% performance.

Figure 14. Milk solids sold per hectare



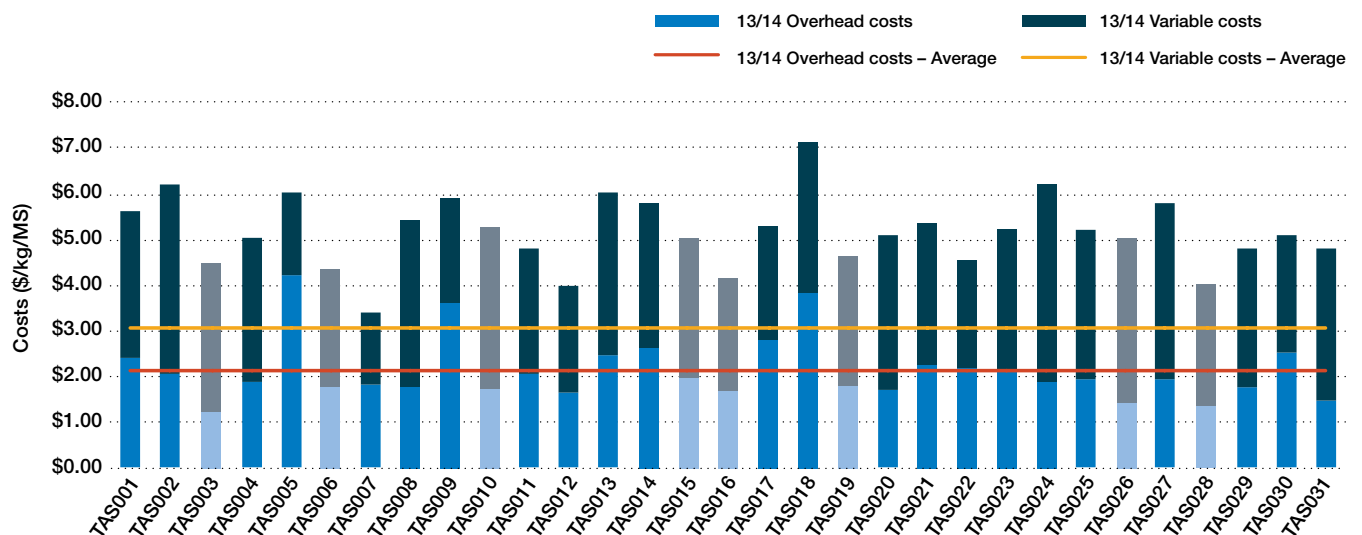
## Variable costs

Variable costs include herd, shed and feed costs. Average variable costs were \$3.02/kg MS (Figure 15). The top 25% had slightly lower variable costs at \$2.99/kg MS.

Home grown feed costs were the second highest variable cost at \$0.91/kg MS (average of \$0.88/kg MS for top 25%). Included in home grown feed costs are irrigation costs (average of \$0.13/kg MS) and fodder conservation (average of \$0.10/kg MS).

Purchased feed costs were the highest variable cost at \$1.61/kg MS which is 31% of total costs. Purchased feed costs of farms in the top 25% were slightly higher at \$1.66/kg MS.

Figure 15. Whole farm variable and overhead costs per kilogram of milk solids



## 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 15 illustrates the range spent on overhead costs, which was from \$1.24/kg MS to \$4.21/kg MS in 2013/14.

A breakdown of the overhead costs in \$/kg MS is provided in Appendix Tables A5 and A7.

## 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 accounting for changes in fodder inventory and livestock trading losses. Considering the changes in 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 5 shows that the average cost of production was \$5.09/kg MS and the top 25% of farms were 12% lower at \$4.53/kg MS.

Table 5. Cost of production (per kilogram of Milk Solids)

Farm Costs	State average	Q1 to Q3 range	Top 25% average
Inventory changes			
Livestock trading loss	\$0.00	\$0.00–\$0.00	\$0.00
Feed inventory change	-\$0.07	-\$0.12–\$0.00	-\$0.09
Changes in inventory	-\$0.07	-\$0.12–\$0.00	-\$0.09
<b>Variable costs (\$/kg MS)</b>			
Herd costs	\$0.28	\$0.23–\$0.31	\$0.26
Shed costs	\$0.23	\$0.15–\$0.28	\$0.20
Purchased feed and agistment	\$1.61	\$1.32–\$2.12	\$1.66
Home grown feed cost	\$0.91	\$0.76–\$1.05	\$0.88
<b>Total variable costs</b>	<b>\$3.02</b>	<b>\$2.57–\$3.36</b>	<b>\$2.99</b>
<b>Overhead costs (\$/kg MS)</b>			
Rates	\$0.05	\$0.04–\$0.05	\$0.04
Registration and insurance	\$0.02	\$0.00–\$0.02	\$0.01
Farm insurance	\$0.09	\$0.05–\$0.12	\$0.04
Repairs and maintenance	\$0.39	\$0.27–\$0.42	\$0.26
Bank charges	\$0.01	\$0.00–\$0.01	\$0.00
Other overheads	\$0.12	\$0.05–\$0.18	\$0.05
Employed people post	\$0.74	\$0.44–\$1.02	\$0.84
Total cash overheads	\$1.41	\$1.08–\$1.58	\$1.24
Depreciation	\$0.21	\$0.02–\$0.69	\$0.13
Imputed people cost	\$0.51	\$0.08–\$0.25	\$0.26
<b>Total overhead costs</b>	<b>\$2.14</b>	<b>\$1.76–\$2.34</b>	<b>\$1.63</b>
<b>Total cost of production</b>	<b>\$5.09</b>	<b>\$4.68–\$5.41</b>	<b>\$4.53</b>

## Break-even price required

The break-even price required for milk is calculated as variable and overhead costs less income other than milk (including livestock trading profit, changes in feed inventory or other income). The difference between the break-even price required and milk income is earnings before interest and tax per kilogram of milk solids (EBIT/kg MS).

Figure 16 shows that the break-even price required varied from \$2.34/kg MS to \$5.89/kg MS, and an average of \$4.44/kg MS.

Milk price received varied from \$6.02/kg MS to \$7.85/kg MS, and had an average of \$6.87/kg MS.

## Earnings before interest and tax

Earnings before interest and tax (EBIT) is gross farm income less variable and overhead costs. Figure 17 shows a wide range of EBIT, from \$0.76 to \$4.63/kg MS. The average EBIT was \$2.44/kg MS and the top 25% farms recorded an average of \$3.14/kg MS.

The figure also shows that having a high EBIT does not translate into high return on assets.

Figure 16. Break-even price required per kilogram of milk solids sold

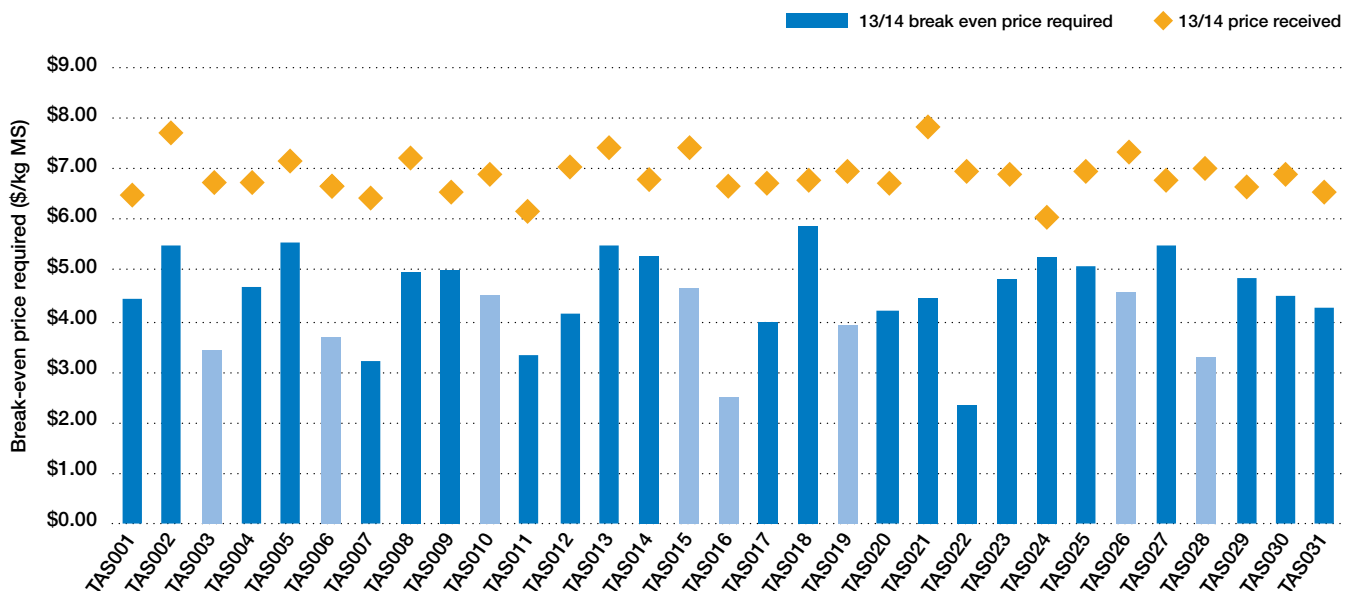
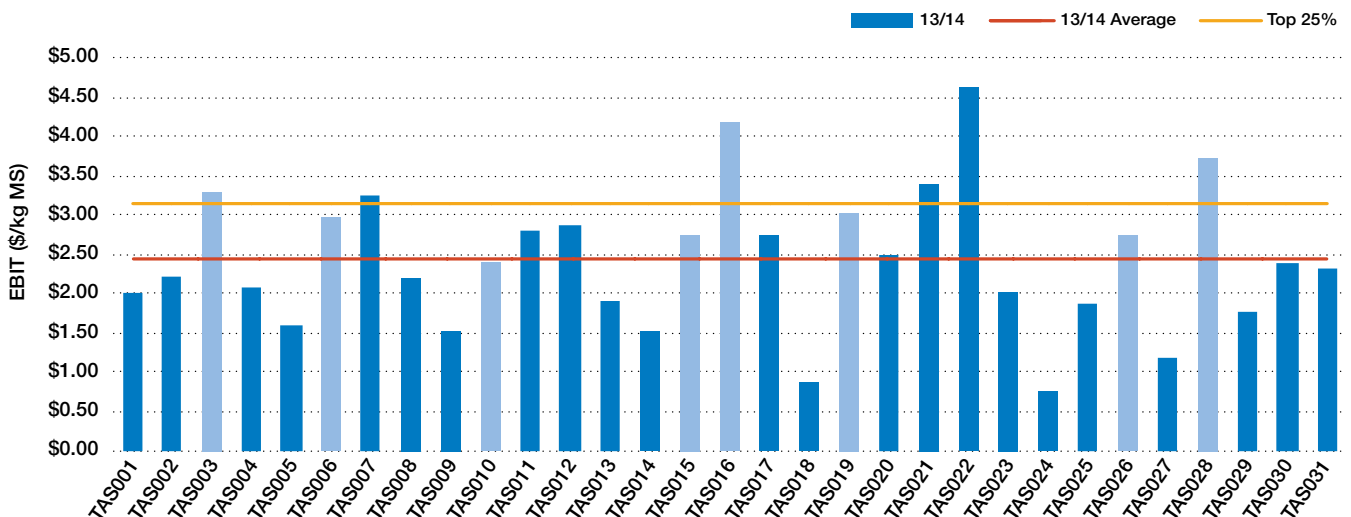


Figure 17. Whole farm earnings before interest and tax per kilogram of milk solids





## Return on assets and equity

Return on assets is the earnings before interest and tax expressed as a percentage of total assets. It is an indicator of the overall earning power of total assets, irrespective of capital structure. Return on equity (ROE) is the net farm income expressed as a percentage of owner's equity. It is a measure of the owner's rate of return on investment. These two indicators were calculated excluding capital appreciation.

The return on assets of the top 25% in Tasmania was 14.7% and the average for all farms is 9.6% (Figure 18). The range for return on assets was between 2.7% to 17.4%.

The average return on equity of all sample farms was 12.9% (Figure 19). There is a wide range of return on equity with 0.7% as the lowest to as high as 49.6%.

The top 25% performers achieved an average ROE of 23.2%.

For return on equity including capital appreciation refer to Appendix Table A1.

Figure 18. Return on Assets

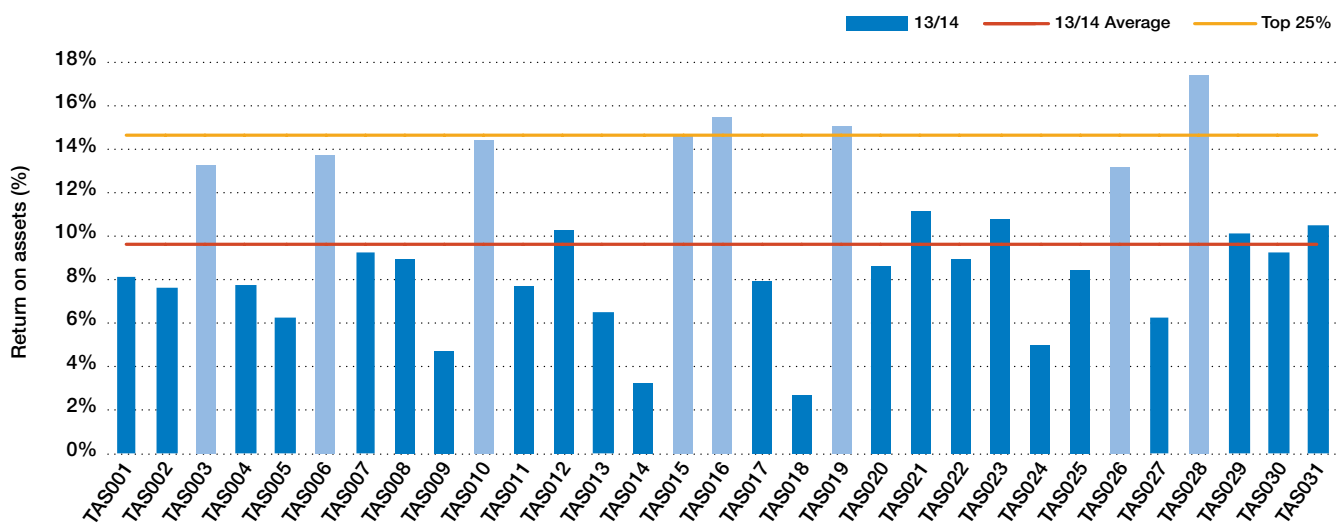
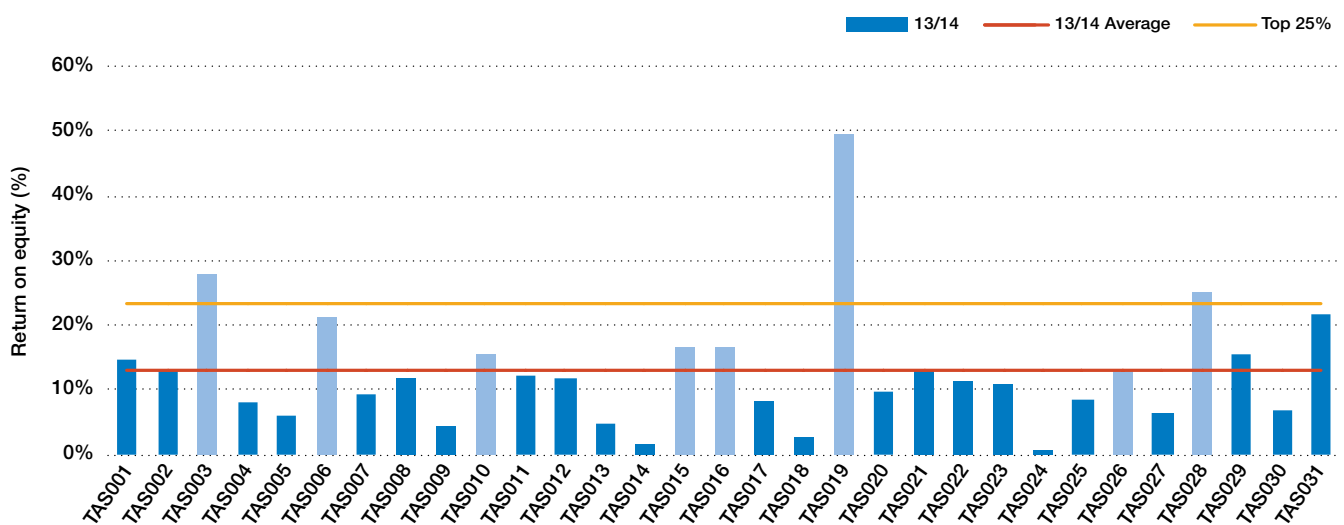


Figure 19. Return on Equity



# Feed consumption and fertiliser

Feed data was collected on a whole farm basis rather than determining which feeds went to each class of stock as this would have made the data collection process too difficult on many farms.

The relative contribution of each feed type to the metabolisable energy (ME) consumption on each farm is shown in Figure 20. The importance of grazed pasture to Tasmanian dairy farmers is evident with it making-up an average of 66% of the whole farm ME consumed. Twenty-seven of the 31 farms have more than half of the diet sourced directly from grazed pasture. The amount of energy derived from concentrates ranged from 0% to 43%. Silage was the third most important energy source at 7% ranging from 0% to 21% of energy in the diet. Hay formed a relatively small portion of the diet, only providing on average 4% of the energy consumed on farm, with a range between 0% to 12%.

Figure 21 shows the estimated home grown feed consumed per milking hectare for farms in Tasmania. The average total pasture harvest was 9.6 t DM/ha with a range from 4.3 to 16.2 t DM/ha.

The top 25% had an average total pasture harvest of 10.1 t DM/ha. Grazed pasture consumption is estimated by using a back calculation method. It should be noted that there can be a number of sources of error in the method used to calculate home pasture consumption. The errors include incorrect estimation of liveweight, amounts of fodder and concentrates fed, energy content of fodder and concentrate, energy content of pasture, wastage of feed and associative effects of feeds.

Comparing pasture consumption estimated using the back calculation method between farms can lead to incorrect conclusions due to errors in each farm's estimate. 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 the glossary of terms.

Figure 20. Sources of whole farm metabolisable energy

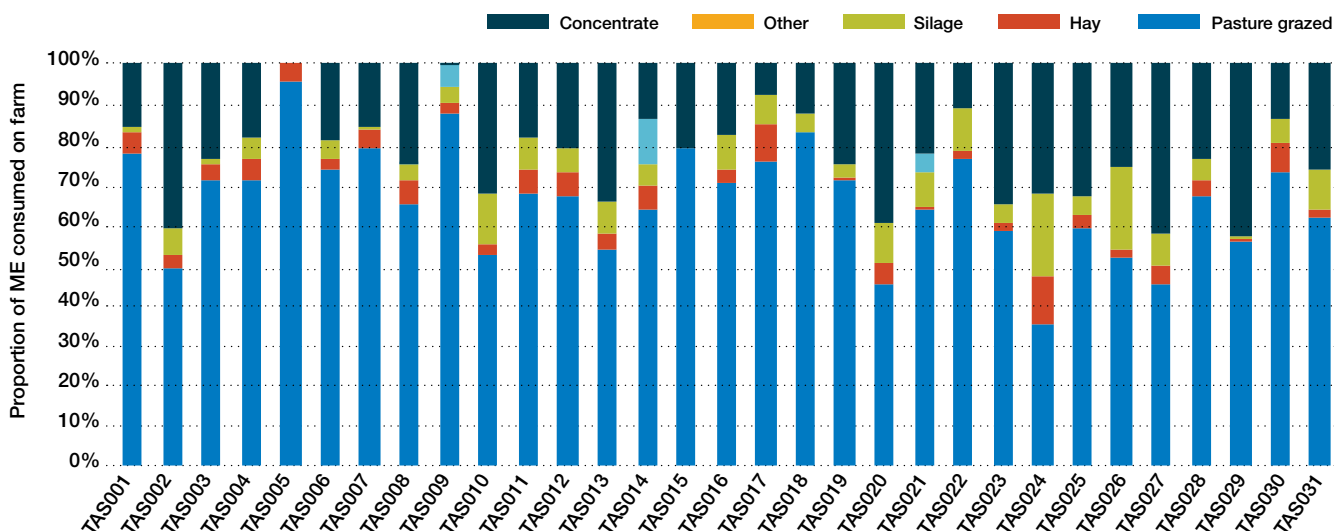
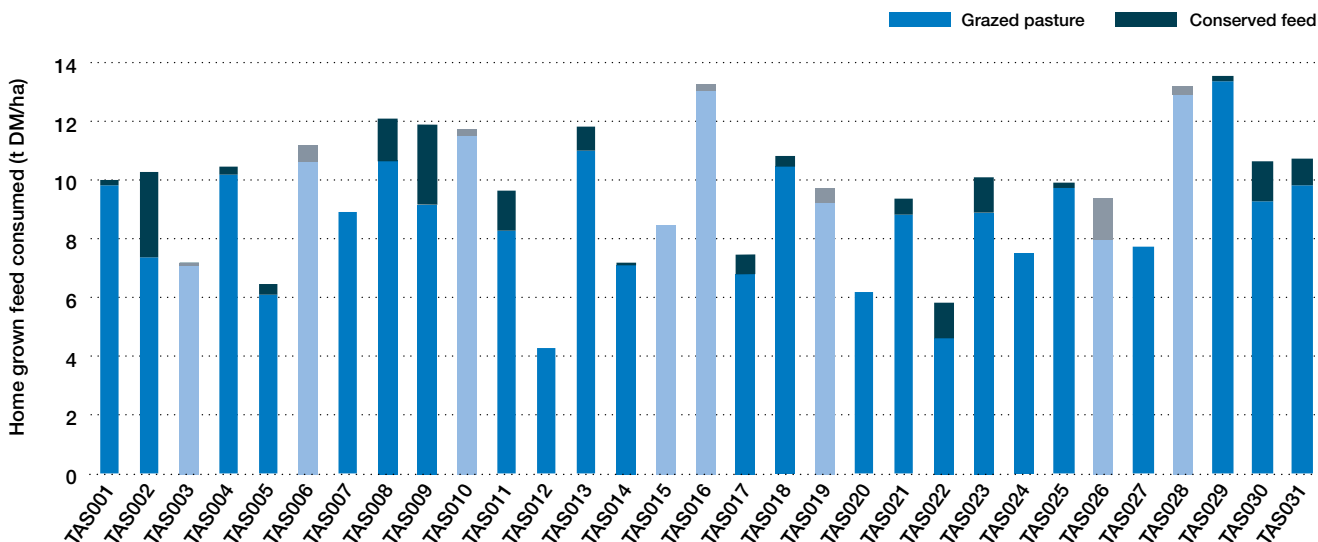


Figure 21. Estimated tonnes of home grown feed consumed per milking hectare



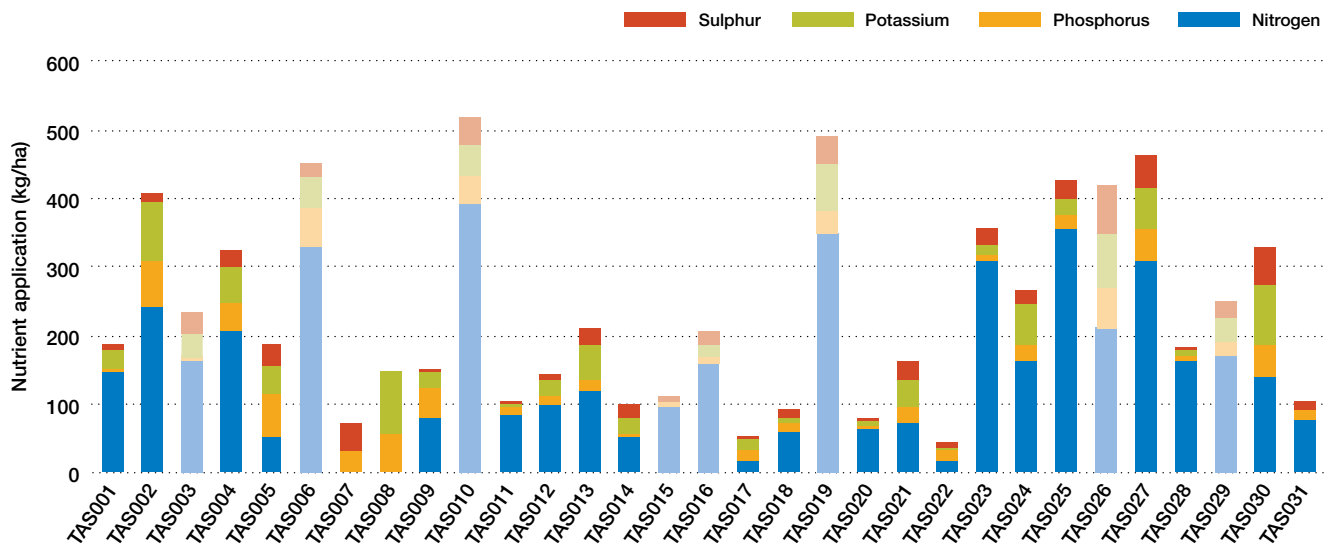
## Fertiliser application

There was a large range in the amount of nutrients applied, from 46 kg/ha to 517 kg/ha (Figure 22). While most farms applied nitrogen, two of the 31 farms did not. The average amount of nitrogen applied was 152 kg/ha.

There are no clear trends between those farms that applied the greatest amount of fertiliser and those that had the greatest amount of home grown feed.

This could be due to a range of factors including soil type, soil fertility, irrigation scheduling, grazing management, and timing of rain events.

Figure 22. Fertiliser application (kg/ha)





## **V. Business confidence survey**



# Expectations and issues

The business confidence survey was conducted between June and December 2014 with regard to the 2014/15 season.

## Expectations for business returns

Following a positive 2013/14 year, expectations for the coming season were variable with a third of farmers predicting an improvement in farm business returns and an equal proportion predicting deterioration (Figure 23).

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

## Price and production expectations of milk

The majority of farmers across the state were expecting their milk price to decrease for the 2014/15 year (Figure 24). More than 80% of Tasmanian farmers indicated they expect to increase milk production in 2014/15.

Figure 23. Expected change to farm business returns in 2014/15

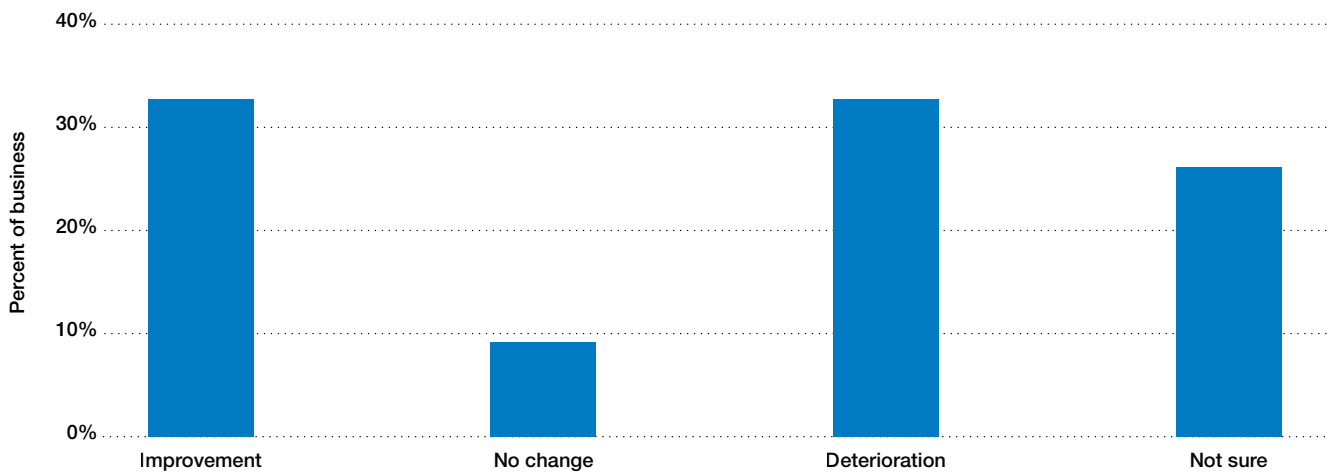
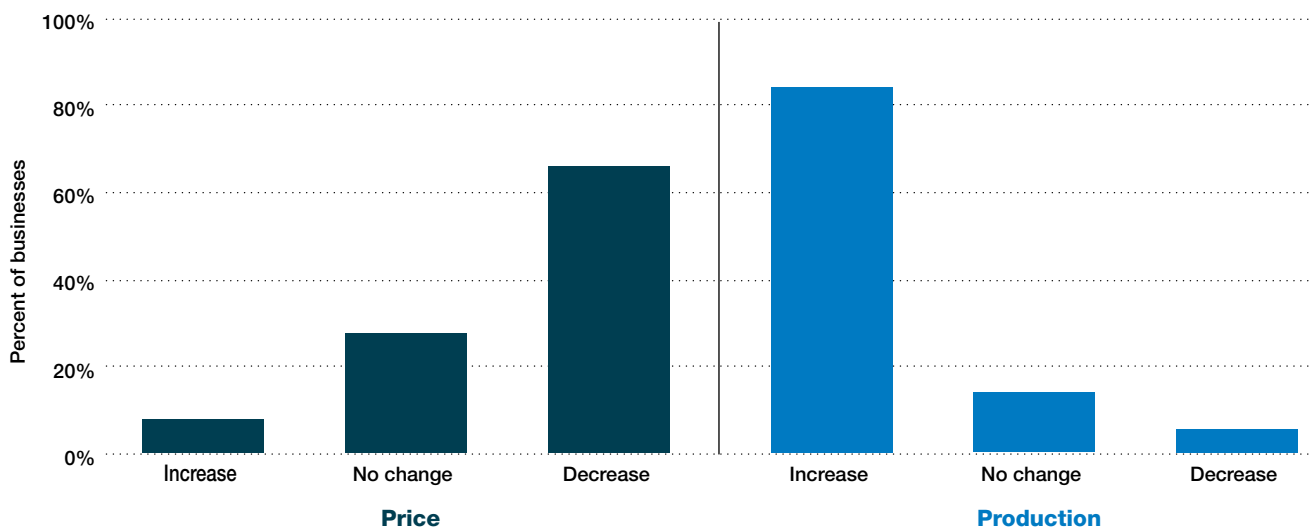


Figure 24. Producer expectations of price and production of milk in 2014/15



## Price and production expectations of fodder

The majority of participating farmers expect their fodder prices to remain unchanged next year (Figure 25).

More than 40% of respondents indicated that they expect fodder production to increase in the coming year, while the same proportion expect no change in how much feed is conserved on farm.

## Cost expectations

Most farmers expect input costs to remain unchanged or increase in all expense categories (Figure 26). Over 60% of the farmers across the state are not expecting changes to repairs and maintenance costs, irrigation costs or fuel and oil costs for their farm in 2014/15.

Figure 25. Producer expectations of prices and production of fodder in 2014/15

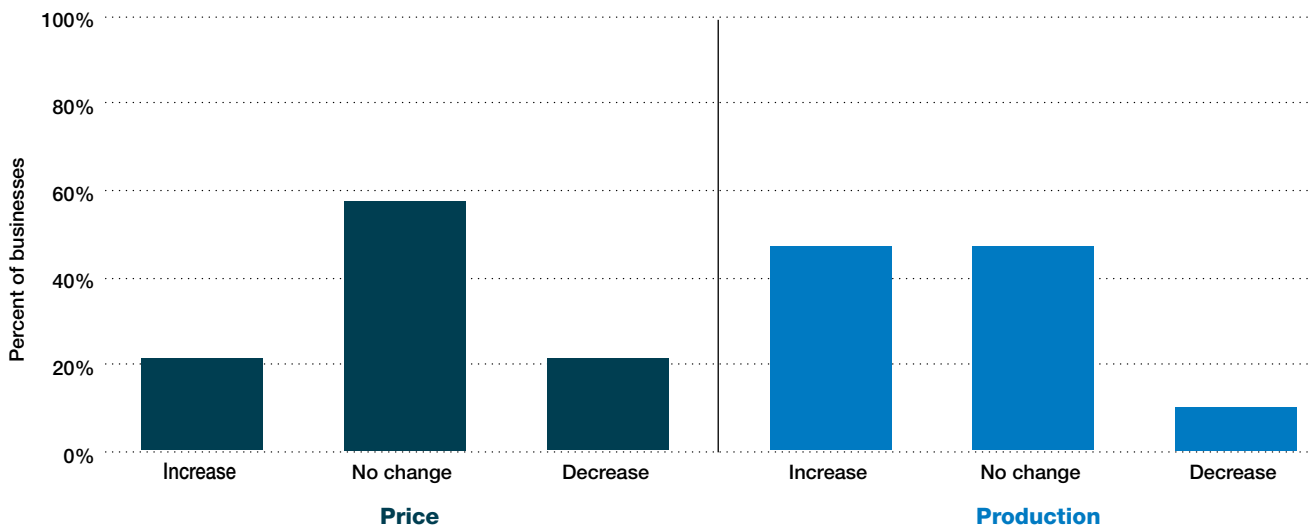
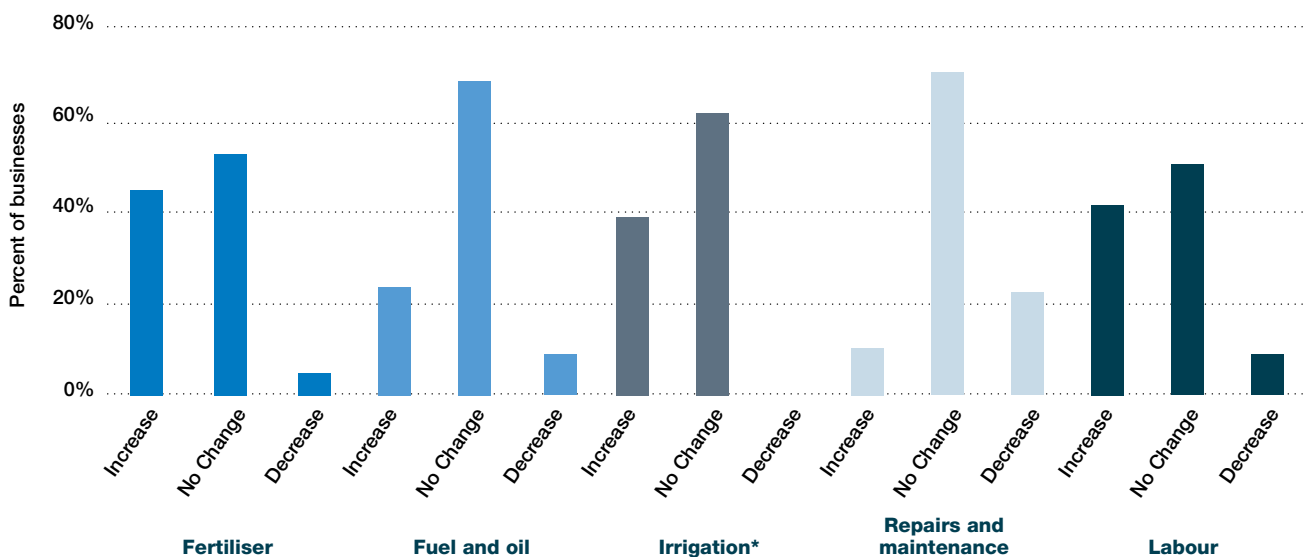


Figure 26. Producer expectations of costs for the dairy industry in 2014/15



## Major issues in the dairy industry over the next 12 months

A summary of the key issues identified by participant businesses over the coming 12 months are identified in Figure 27.

Labour was the major concern facing participating farms going in to 2014/15 with 30% of responses. Of those who reported that labour was their major concern, the ability to source staff was the reasoning behind this.

Milk price was the second most common issue with 20% of the responses. Climate and weather variability rounded-out the top three concerns with 10% of responses.

## Major issues in the dairy industry over the next 5 years

The key issues identified by individual participants for their business over the next five years are identified in Figure 28.

Volatility in prices was identified as the biggest issue for dairy farmers, with milk price being the highest concern with 29% of responses and input prices the third major concern (18% of responses).

Farmers are also concerned about farm succession – this was the second major concern with 20% of responses. Farmers commented about wanting to take more time off-farm and have someone else take on the management, and the need to develop a succession plan in order for this to occur.

Figure 27. Major issues for individual businesses, 12 month outlook

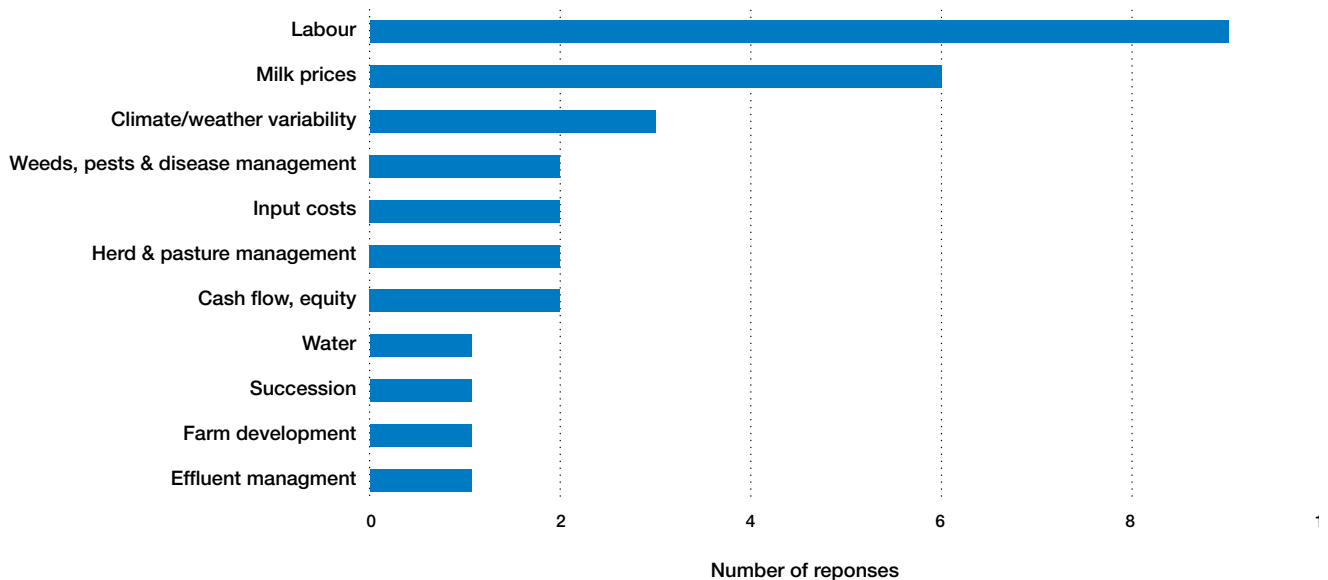
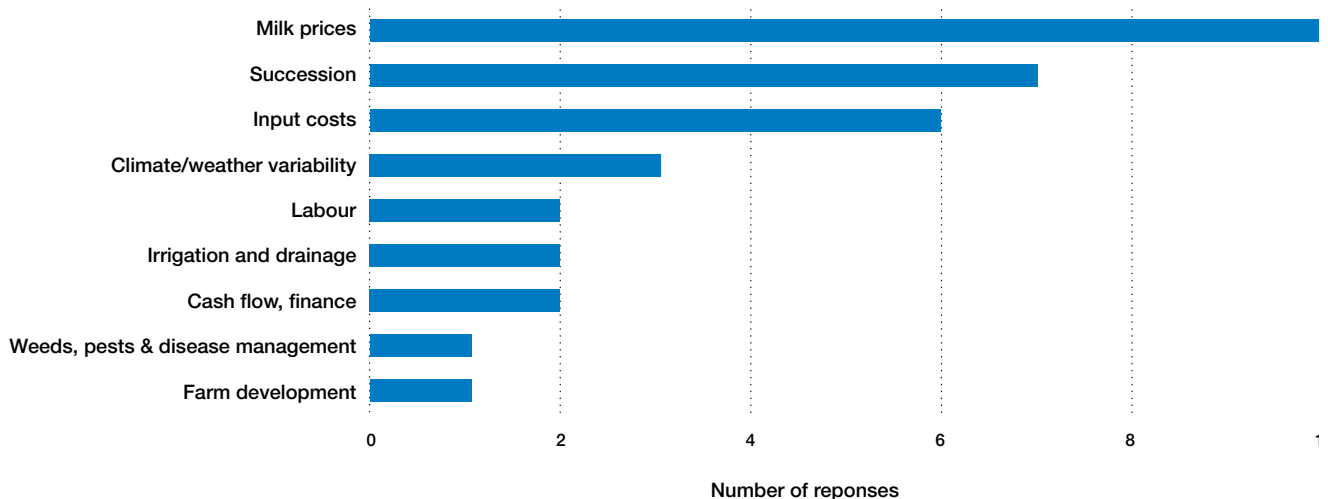


Figure 28. Major issues for individual businesses, 5 year outlook





## VI. Greenhouse



# 2013/14 Greenhouse gas emissions

The analysis of greenhouse gas emissions from participating farms is based on the Australian National Greenhouse Gas Inventory method. This model was developed to predict the magnitude and source of greenhouse gases emitted from a dairy farm. The initial analysis template was sourced from Melbourne University's greenhouse in agriculture website ([www.greenhouse.unimelb.edu.au](http://www.greenhouse.unimelb.edu.au)), which provides decision support frameworks for greenhouse accounting on Australian dairy, sheep, beef and grain farms. While comprehensive, this analysis should not be assumed exact, but used as indicative only.

Carbon dioxide equivalents (CO<sub>2</sub>-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 the gas by its Global Warming Potential (GWP). All of the data in this section is in CO<sub>2</sub>-e tonnes.

The GWP for the three gases that are noted in this report are; 1 : 21 : 310 (CO<sub>2</sub> : CH<sub>4</sub> : N<sub>2</sub>O). This means that one CO<sub>2</sub>-e tonne equates to 47.6 kg of methane (CH<sub>4</sub>) and 3.2 kg of nitrous oxide (N<sub>2</sub>O).

The distribution of different emissions for 2013/14 is shown in Figure 29. Greenhouse gas emissions per tonne of milk solids produced ranged from 9.6 t CO<sub>2</sub>-e/t MS to 23.3 t CO<sub>2</sub>-e/t MS and the average level of emission was 13 t CO<sub>2</sub>-e/t MS.

Methane (CH<sub>4</sub>) was identified as the main greenhouse gas emitted from dairy farms, accounting for 67% of all greenhouse emissions. There are two main sources on farm: ruminant digestion and anaerobic digestion in effluent management systems. Methane produced from ruminant digestion is known as enteric methane and was the major source of emissions from all farms in this report, with an average of 62% of total emissions. Methane from effluent ponds accounted for 5% of total emissions.

The most efficient strategy to reduce enteric methane production is manipulating the diet by increasing the diet quality through improved pastures and adding concentrates. Adding fat supplements such as whole cotton seed and linseed oil into the diet can also reduce methane emissions. This is simple and effective method however it is recommended that fats should not be more than 6–7% of the dietary dry matter.

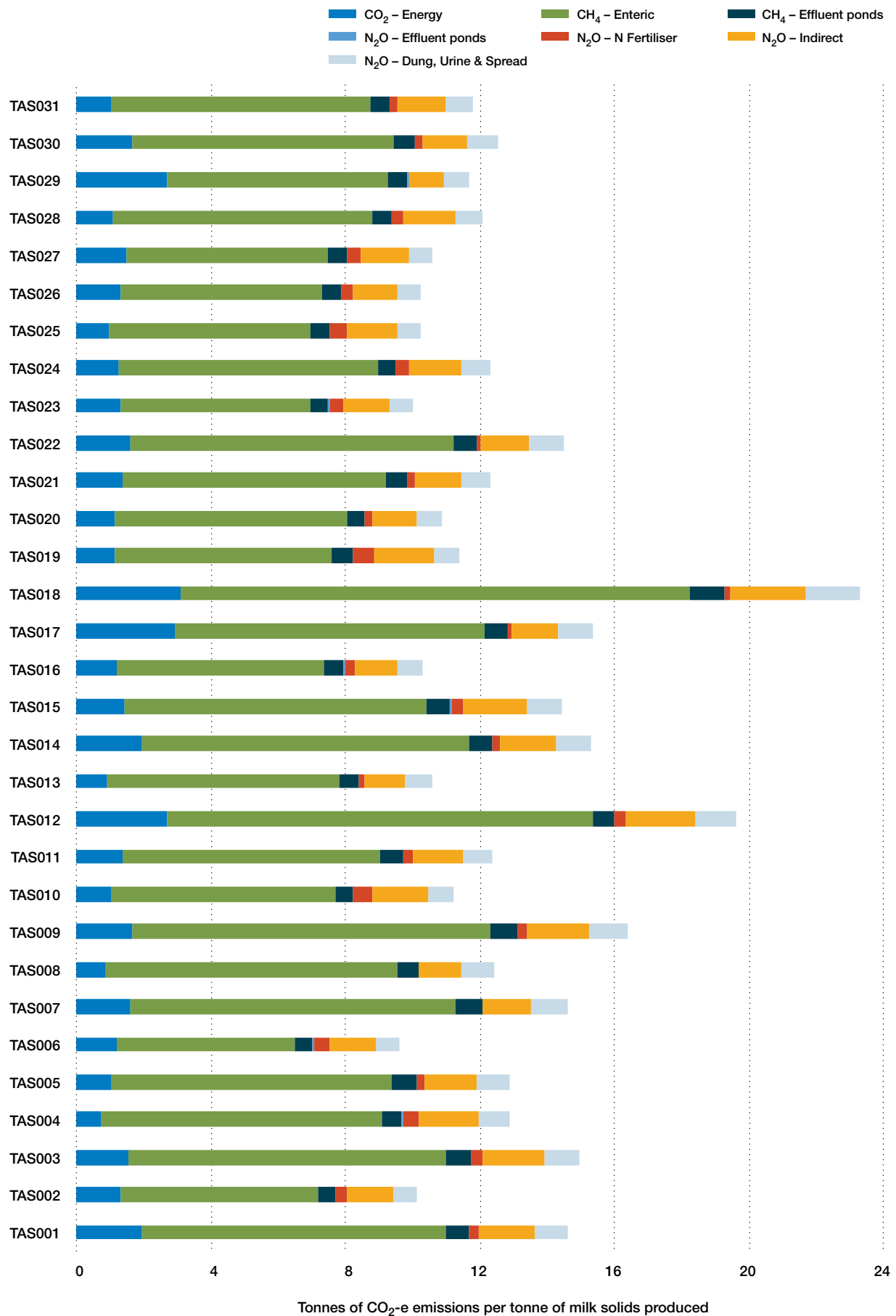
The second main greenhouse gas emission is nitrous oxide (N<sub>2</sub>O) accounting for 21% of total emissions or 2.7 t CO<sub>2</sub>-e /t MS. N<sub>2</sub>O emissions in dairy farms are sourced primarily from direct emissions; including nitrogen fertiliser application, effluent management systems, and animal excreta (dung and urine), as well as indirect emissions such as that from ammonia and nitrate loss in soils.

Nitrous oxide emissions from fertiliser accounted for 2% of total emissions, effluent ponds accounted for 0.1% and excreta accounted for 7%. N<sub>2</sub>O from indirect emissions were 12%. N<sub>2</sub>O emissions are greatest in warm, waterlogged soils with readily available nitrogen. Over application of nitrogen, high stocking intensity and wet soils are all potential causes of increased nitrogen loss as N<sub>2</sub>O. Strategic fertiliser management practices can reduce N<sub>2</sub>O emissions and improve nitrogen efficiency.

The third main greenhouse gas emission is carbon dioxide (CO<sub>2</sub>), which is produced primarily from fossil fuel consumption as either electricity or petrochemicals. CO<sub>2</sub> accounted for 12% of total emissions or 1.5 t CO<sub>2</sub>-e /t MS. There are a number of technologies available to improve energy efficiency in the dairy while reducing electricity costs.

We are currently seeing the importance of understanding and monitoring greenhouse gas emissions, and this will potentially become even more essential in the near future. To find detailed information on the Australian National Greenhouse Gas Inventory, sources and strategies for reducing greenhouse gases on dairy farms visit The Department of Environment's website at [www.climatechange.gov.au](http://www.climatechange.gov.au).

Figure 29. 2013/14 greenhouse gas emissions per tonne of milk solids sold (CO<sub>2</sub> equivalent)





# Appendices

# 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 & Tax	Return on assets (excl. capital apprec.)	Interest & 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	%	%
TAS001	\$6.47	\$1.17	\$7.64	\$3.21	\$2.43	57%	\$2.01	8.2%	\$0.43	5.6%	\$1.58	14.6%	15.4%
TAS002	\$7.72	\$0.70	\$8.42	\$4.10	\$2.09	66%	\$2.23	7.7%	\$0.58	6.9%	\$1.65	12.9%	12.8%
TAS003	\$6.73	\$1.07	\$7.79	\$3.25	\$1.24	72%	\$3.30	13.3%	\$1.08	13.9%	\$2.22	27.9%	27.9%
TAS004	\$6.78	\$0.32	\$7.10	\$3.15	\$1.88	63%	\$2.07	7.8%	\$0.87	12.3%	\$1.20	8.1%	8.1%
TAS005	\$7.18	\$0.48	\$7.67	\$1.84	\$4.21	30%	\$1.61	6.2%	\$0.00	0.0%	\$1.61	6.2%	6.2%
TAS006	\$6.66	\$0.66	\$7.32	\$2.56	\$1.79	59%	\$2.97	13.8%	\$0.55	7.5%	\$2.42	21.3%	23.0%
TAS007	\$6.45	\$0.17	\$6.63	\$1.55	\$1.83	46%	\$3.24	9.3%	\$0.20	3.1%	\$3.04	9.4%	7.1%
TAS008	\$7.17	\$0.45	\$7.62	\$3.64	\$1.78	67%	\$2.21	8.9%	\$0.22	2.8%	\$1.99	11.8%	12.0%
TAS009	\$6.53	\$0.90	\$7.44	\$2.29	\$3.62	39%	\$1.53	4.7%	\$0.23	3.2%	\$1.29	4.4%	4.4%
TAS010	\$6.92	\$0.76	\$7.68	\$3.53	\$1.75	67%	\$2.40	14.4%	\$0.09	1.2%	\$2.31	15.5%	16.0%
TAS011	\$6.15	\$1.46	\$7.61	\$2.73	\$2.08	57%	\$2.81	7.7%	\$1.34	17.6%	\$1.47	12.3%	13.2%
TAS012	\$7.02	-\$0.15	\$6.87	\$2.33	\$1.66	58%	\$2.87	10.3%	\$0.00	0.0%	\$2.87	12.0%	11.8%
TAS013	\$7.42	\$0.55	\$7.97	\$3.55	\$2.49	59%	\$1.93	6.5%	\$1.27	15.9%	\$0.66	4.7%	30.4%
TAS014	\$6.81	\$0.51	\$7.33	\$3.17	\$2.63	55%	\$1.53	3.3%	\$1.00	13.7%	\$0.52	1.6%	1.6%
TAS015	\$7.40	\$0.38	\$7.79	\$3.05	\$1.99	61%	\$2.75	14.7%	\$0.27	3.5%	\$2.48	16.7%	16.1%
TAS016	\$6.69	\$1.64	\$8.34	\$2.47	\$1.68	59%	\$4.18	15.5%	\$0.06	0.8%	\$4.12	16.6%	16.8%
TAS017	\$6.73	\$1.31	\$8.04	\$2.48	\$2.81	47%	\$2.74	7.9%	\$0.44	5.5%	\$2.30	8.3%	8.3%
TAS018	\$6.76	\$1.23	\$7.99	\$3.28	\$3.84	46%	\$0.87	2.7%	\$0.00	0.0%	\$0.87	2.7%	2.3%
TAS019	\$6.95	\$0.71	\$7.66	\$2.83	\$1.80	61%	\$3.03	15.1%	\$0.58	7.6%	\$2.45	49.6%	55.5%
TAS020	\$6.72	\$0.89	\$7.61	\$3.40	\$1.72	66%	\$2.49	8.6%	\$0.54	7.1%	\$1.95	9.5%	9.8%
TAS021	\$7.85	\$0.91	\$8.76	\$3.10	\$2.26	58%	\$3.40	11.2%	\$0.42	4.8%	\$2.98	13.1%	13.2%
TAS022	\$6.96	\$2.21	\$9.17	\$2.35	\$2.19	52%	\$4.63	8.9%	\$0.48	5.2%	\$4.15	11.4%	17.4%
TAS023	\$6.86	\$0.39	\$7.26	\$3.10	\$2.12	59%	\$2.03	10.8%	\$0.13	1.7%	\$1.90	10.9%	9.9%
TAS024	\$6.02	\$0.95	\$6.97	\$4.33	\$1.89	70%	\$0.76	5.0%	\$0.74	10.6%	\$0.02	0.7%	-152.1%
TAS025	\$6.96	\$0.13	\$7.09	\$3.27	\$1.94	63%	\$1.87	8.5%	\$0.00	0.0%	\$1.87	8.5%	-3.5%
TAS026	\$7.31	\$0.46	\$7.77	\$3.60	\$1.42	72%	\$2.75	13.2%	\$0.69	8.8%	\$2.06	13.0%	19.5%
TAS027	\$6.72	\$0.30	\$7.02	\$3.88	\$1.94	67%	\$1.20	6.3%	\$0.00	0.0%	\$1.20	6.3%	0.8%
TAS028	\$7.02	\$0.75	\$7.76	\$2.66	\$1.37	66%	\$3.73	17.4%	\$0.26	3.4%	\$3.47	25.1%	25.1%
TAS029	\$6.63	-\$0.09	\$6.54	\$2.98	\$1.80	62%	\$1.76	10.1%	\$0.55	8.4%	\$1.21	15.7%	14.5%
TAS030	\$6.92	\$0.58	\$7.49	\$2.57	\$2.52	51%	\$2.40	9.3%	\$0.78	10.4%	\$1.62	6.8%	6.8%
TAS031	\$6.57	\$0.53	\$7.09	\$3.32	\$1.46	69%	\$2.31	10.5%	\$0.85	12.0%	\$1.46	21.7%	-18.8%
Average	\$6.87	\$0.72	\$7.59	\$3.02	\$2.14	59%	\$2.44	9.6%	\$0.47	6.2%	\$1.97	12.9%	7.5%
Top 25%*	\$6.96	\$0.80	\$7.76	\$2.99	\$1.63	65%	\$3.14	14.7%	\$0.45	5.8%	\$2.69	23.2%	25.0%

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	%	%
TAS001	173	147	1,509	380	2.2	395	868	4.6%	3.5%
TAS002	248	180	1,647	460	1.9	655	1215	3.7%	3.4%
TAS003	468	430	1,414	1,100	2.4	339	797	4.3%	3.4%
TAS004	128	80	1,342	245	1.9	426	812	4.6%	3.5%
TAS005	120	120	1,488	157	1.3	333	435	4.7%	3.6%
TAS006	86	86	1,594	246	2.9	458	1311	4.8%	3.6%
TAS007	176	155	1,345	451	2.6	289	740	4.4%	3.3%
TAS008	430	300	1,643	900	2.1	483	1011	3.9%	3.4%
TAS009	92	77	1,467	144	1.6	338	528	4.3%	3.3%
TAS010	218	124	1,779	478	2.2	601	1317	4.1%	3.5%
TAS011	315	156	1,498	443	1.4	361	508	4.6%	3.6%
TAS012	330	282	1,206	450	1.4	402	549	4.6%	3.5%
TAS013	239	190	1,365	596	2.5	525	1309	4.1%	3.5%
TAS014	431	191	1,455	502	1.2	377	439	4.0%	3.3%
TAS015	411	227	1,357	424	1.0	481	496	4.9%	3.6%
TAS016	266	186	1,477	702	2.6	402	1062	5.3%	3.9%
TAS017	178	134	1,363	235	1.3	390	515	4.4%	3.4%
TAS018	89	89	1,589	269	3.0	218	661	4.4%	3.3%
TAS019	115	115	1,401	330	2.9	366	1052	4.6%	3.6%
TAS020	435	150	1,170	430	1.0	554	547	4.1%	3.5%
TAS021	427	260	1,756	663	1.6	432	670	4.3%	3.2%
TAS022	106	97	1,309	125	1.2	356	419	4.5%	3.4%
TAS023	300	300	1,787	930	3.1	445	1380	4.7%	3.7%
TAS024	325	145	1,477	580	1.8	426	761	5.2%	3.8%
TAS025	240	240	1,968	790	3.3	430	1416	4.7%	3.7%
TAS026	259	259	1,258	755	2.9	428	1249	4.8%	3.6%
TAS027	200	200	1,471	710	3.6	433	1537	4.5%	3.5%
TAS028	400	200	1,495	700	1.8	526	921	4.3%	3.5%
TAS029	60	48	1,436	220	3.7	467	1714	4.0%	3.4%
TAS030	130	115	1,339	307	2.4	379	896	4.5%	3.4%
TAS031	657	236	1,308	850	1.3	458	592	5.2%	3.9%
Average	260	178	1,475	502	2.1	425	894	4.5%	3.5%
<b>Top 25%*</b>	<b>278</b>	<b>203</b>	<b>1,472</b>	<b>592</b>	<b>2.3</b>	<b>450</b>	<b>1026</b>	<b>4.6%</b>	<b>3.6%</b>



Table A2. Physical Information (cont.)

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
TAS001	9.8	0.3	79%	147.3	5.8	27.4	5.5	112	44,358
TAS002	7.4	2.9	57%	242.6	66.8	87.2	12.8	89	58,518
TAS003	7.1	0.0	72%	163.5	7.2	30.5	33.8	183	62,135
TAS004	10.2	0.3	77%	206.4	42.9	57.2	19.1	127	53,830
TAS005	6.1	0.4	96%	52.1	64.5	40.0	29.9	66	21,952
TAS006	10.6	0.6	77%	330.6	57.3	45.8	17.7	100	46,023
TAS007	9.0	0.0	80%	0.0	32.0	0.0	40.0	186	53,665
TAS008	10.7	1.4	69%	0.0	57.0	89.5	0.0	149	72,010
TAS009	9.2	2.7	94%	82.1	43.3	23.5	3.1	86	28,954
TAS010	11.5	0.2	59%	394.7	38.9	50.7	32.2	93	55,850
TAS011	8.3	1.4	76%	84.0	13.6	0.8	4.7	117	42,224
TAS012	4.3	0.0	73%	98.4	13.5	24.7	8.5	125	50,303
TAS013	11.0	0.8	60%	118.9	16.9	52.9	20.9	69	36,401
TAS014	7.1	0.1	74%	51.2	7.1	21.7	19.1	104	39,329
TAS015	8.5	0.0	79%	97.4	6.2	0.0	7.8	117	56,189
TAS016	13.1	0.2	75%	160.9	10.9	20.9	13.5	154	61,675
TAS017	6.8	0.6	92%	18.5	13.2	18.5	3.9	130	50,697
TAS018	10.5	0.4	85%	61.4	11.5	8.3	11.2	97	21,265
TAS019	9.3	0.5	74%	350.0	35.4	70.8	35.4	134	49,071
TAS020	6.2	0.0	60%	65.9	1.9	8.4	3.8	94	52,360
TAS021	8.8	0.6	71%	73.1	23.6	36.9	29.4	114	49,068
TAS022	4.6	1.2	88%	17.3	14.4	6.9	7.8	139	49,550
TAS023	8.9	1.2	63%	308.2	9.0	15.8	22.3	179	79,853
TAS024	7.5	0.0	57%	162.1	23.1	60.6	18.2	95	40,577
TAS025	9.7	0.2	60%	355.0	21.0	25.2	27.5	169	72,683
TAS026	8.0	1.5	60%	211.7	57.8	79.3	72.3	247	105,764
TAS027	7.8	0.0	45%	311.0	45.3	61.1	44.9	211	91,293
TAS028	13.0	0.3	71%	161.4	9.0	7.5	5.0	124	65,123
TAS029	13.3	0.2	56%	171.7	20.0	35.0	25.0	299	139,899
TAS030	9.3	1.4	83%	141.2	46.0	86.4	54.4	116	44,138
TAS031	9.8	0.9	65%	77.1	13.7	2.8	11.6	136	62,154
Average	8.96	0.6	72%	152.1	26.7	35.4	20.7	134	56,675
<b>Top 25%*</b>	<b>10.13</b>	<b>0.4</b>	<b>71%</b>	<b>233.8</b>	<b>27.8</b>	<b>38.2</b>	<b>27.2</b>	<b>144</b>	<b>62,729</b>

\*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
TAS001	1.3	\$400		\$235		\$344	10.7	3.5	21%
TAS002	3.5	\$501	\$274	\$154		\$479	11.8	4.1	43%
TAS003	1.4	\$387	\$456	\$235		\$369	12.0	3.2	28%
TAS004	1.3	\$494		\$245		\$424	11.6	3.8	23%
TAS005	0.0					\$0	10.0	0.0	4%
TAS006	1.0	\$476		\$77		\$406	11.8	3.5	23%
TAS007	0.7	\$323	\$533	\$75		\$266	10.9	2.5	20%
TAS008	2.2	\$533		\$252	\$2,543	\$472	11.9	4.1	31%
TAS009	0.0	\$474				\$474	12.5	3.8	6%
TAS010	2.3	\$417		\$208		\$402	12.2	3.4	41%
TAS011	1.1	\$409		\$184		\$350	11.7	3.1	24%
TAS012	1.1	\$396				\$396	12.5	3.2	27%
TAS013	2.5	\$443	\$171	\$167		\$420	12.2	3.5	40%
TAS014	1.6	\$422		\$76	\$189	\$304	12.3	2.6	26%
TAS015	1.2	\$625				\$625	12.8	4.9	21%
TAS016	1.3	\$343	\$160			\$280	11.5	2.5	25%
TAS017	0.4	\$422				\$422	12.5	3.4	8%
TAS018	0.6	\$480	\$533			\$491	12.2	4.2	15%
TAS019	1.1	\$473		\$280		\$464	12.4	3.8	26%
TAS020	2.5	\$486				\$486	12.2	4.0	40%
TAS021	1.4	\$419			\$242	\$388	12.6	3.1	29%
TAS022	0.7	\$393				\$393	12.5	3.2	12%
TAS023	1.6	\$385		\$159		\$371	12.3	3.1	37%
TAS024	2.5	\$442	\$356	\$176		\$358	11.3	3.3	43%
TAS025	1.8	\$389	\$233	\$87		\$354	12.0	3.0	40%
TAS026	1.9	\$439	\$302	\$78		\$373	11.9	3.2	40%
TAS027	2.6	\$387	\$308	\$201		\$350	11.7	3.2	55%
TAS028	1.5	\$421				\$421	12.5	3.4	29%
TAS029	2.2	\$397		\$116		\$392	11.8	3.4	44%
TAS030	0.9	\$489		\$176		\$399	11.7	3.6	17%
TAS031	1.6	\$446	\$202	\$97		\$398	12.0	3.5	35%
Average	1.5	\$437	\$321	\$164	\$991	\$389	11.9	3.3	28%
Top 25%*	1.5	\$448	\$115	\$110	\$0	\$418	12.1	3.5	29%

Table A4. Variable costs

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd & 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
TAS001	\$0.10	\$0.13	\$0.00	\$0.15	\$0.20	\$0.58	\$0.53	\$0.25	\$0.03
TAS002	\$0.10	\$0.13	\$0.01	\$0.10	\$0.06	\$0.39	\$0.64	\$0.11	\$0.11
TAS003	\$0.13	\$0.12	\$0.05	\$0.13	\$0.07	\$0.50	\$0.42	\$0.08	\$0.03
TAS004	\$0.11	\$0.25	\$0.05	\$0.05	\$0.13	\$0.58	\$0.64	\$0.12	\$0.18
TAS005	\$0.15	\$0.29	\$0.09	\$0.18	\$0.17	\$0.88	\$0.74	\$0.00	\$0.00
TAS006	\$0.08	\$0.10	\$0.04	\$0.10	\$0.07	\$0.38	\$0.47	\$0.06	\$0.06
TAS007	\$0.06	\$0.06	\$0.01	\$0.12	\$0.04	\$0.28	\$0.16	\$0.03	\$0.06
TAS008	\$0.05	\$0.15	\$0.02	\$0.07	\$0.08	\$0.37	\$0.37	\$0.25	\$0.16
TAS009	\$0.06	\$0.19	\$0.03	\$0.12	\$0.08	\$0.48	\$0.31	\$0.45	\$0.14
TAS010	\$0.06	\$0.10	\$0.10	\$0.07	\$0.03	\$0.36	\$0.68	\$0.15	\$0.30
TAS011	\$0.08	\$0.13	\$0.10	\$0.13	\$0.11	\$0.55	\$0.32	\$0.05	\$0.08
TAS012	\$0.05	\$0.05	\$0.00	\$0.23	\$0.27	\$0.60	\$0.50	\$0.00	\$0.00
TAS013	\$0.05	\$0.19	\$0.20	\$0.07	\$0.04	\$0.55	\$0.25	\$0.11	\$0.19
TAS014	\$0.09	\$0.41	\$0.01	\$0.20	\$0.09	\$0.81	\$0.46	\$0.07	\$0.20
TAS015	\$0.11	\$0.12	\$0.02	\$0.11	\$0.10	\$0.46	\$0.73	\$0.05	\$0.00
TAS016	\$0.07	\$0.15	\$0.07	\$0.09	\$0.10	\$0.47	\$0.29	\$0.12	\$0.02
TAS017	\$0.11	\$0.16	\$0.04	\$0.19	\$0.08	\$0.58	\$0.32	\$0.21	\$0.07
TAS018	\$0.07	\$0.11	\$0.06	\$0.20	\$0.09	\$0.53	\$0.45	\$0.38	\$0.07
TAS019	\$0.05	\$0.17	\$0.00	\$0.13	\$0.08	\$0.42	\$0.66	\$0.00	\$0.06
TAS020	\$0.06	\$0.14	\$0.06	\$0.08	\$0.06	\$0.40	\$0.47	\$0.11	\$0.04
TAS021	\$0.20	\$0.13	\$0.09	\$0.13	\$0.07	\$0.61	\$0.39	\$0.13	\$0.03
TAS022	\$0.00	\$0.08	\$0.01	\$0.19	\$0.05	\$0.33	\$0.42	\$0.23	\$0.27
TAS023	\$0.10	\$0.16	\$0.01	\$0.11	\$0.04	\$0.42	\$0.40	\$0.21	\$0.12
TAS024	\$0.09	\$0.29	\$0.01	\$0.10	\$0.31	\$0.80	\$0.55	\$0.09	\$0.20
TAS025	\$0.11	\$0.19	\$0.01	\$0.08	\$0.05	\$0.44	\$0.49	\$0.19	\$0.02
TAS026	\$0.10	\$0.14	\$0.04	\$0.10	\$0.03	\$0.41	\$0.58	\$0.06	\$0.13
TAS027	\$0.13	\$0.23	\$0.01	\$0.13	\$0.08	\$0.59	\$0.48	\$0.09	\$0.00
TAS028	\$0.07	\$0.16	\$0.03	\$0.08	\$0.32	\$0.67	\$0.24	\$0.12	\$0.20
TAS029	\$0.03	\$0.05	\$0.00	\$0.23	\$0.15	\$0.47	\$0.20	\$0.00	\$0.00
TAS030	\$0.04	\$0.05	\$0.00	\$0.14	\$0.05	\$0.27	\$0.58	\$0.14	\$0.15
TAS031	\$0.10	\$0.15	\$0.01	\$0.20	\$0.07	\$0.54	\$0.59	\$0.12	\$0.21
Average	\$0.084	\$0.154	\$0.038	\$0.129	\$0.102	\$0.507	\$0.463	\$0.128	\$0.101
<b>Top 25%*</b>	<b>\$0.082</b>	<b>\$0.131</b>	<b>\$0.045</b>	<b>\$0.101</b>	<b>\$0.100</b>	<b>\$0.458</b>	<b>\$0.509</b>	<b>\$0.080</b>	<b>\$0.101</b>

Table A4. Variable costs (cont.)

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
TAS001	\$0.17	\$0.01	\$0.02	\$0.47	\$0.89	\$0.24	\$2.62	\$3.21
TAS002	\$0.15	\$0.05	\$0.04	\$0.09	\$2.48	\$0.03	\$3.71	\$4.10
TAS003	\$0.08	\$0.17	\$0.04	\$0.28	\$1.41	\$0.23	\$2.76	\$3.25
TAS004	\$0.10	\$0.03	\$0.00	\$0.30	\$1.10	\$0.10	\$2.57	\$3.15
TAS005	\$0.19	\$0.03	\$0.00	\$0.00	\$0.00	\$0.00	\$0.96	\$1.84
TAS006	\$0.08	\$0.14	\$0.01	\$0.12	\$0.87	\$0.38	\$2.19	\$2.56
TAS007	\$0.09	\$0.02	\$0.03	\$0.11	\$0.65	\$0.13	\$1.27	\$1.55
TAS008	\$0.06	\$0.13	\$0.05	\$0.31	\$1.91	\$0.02	\$3.27	\$3.64
TAS009	\$0.20	\$0.71	\$0.00	\$0.00	\$0.01	\$0.00	\$1.81	\$2.29
TAS010	\$0.13	\$0.05	\$0.00	\$0.36	\$1.50	\$0.00	\$3.16	\$3.53
TAS011	\$0.17	\$0.13	\$0.06	\$0.20	\$0.90	\$0.26	\$2.18	\$2.73
TAS012	\$0.10	\$0.00	\$0.00	\$0.00	\$1.13	\$0.00	\$1.73	\$2.33
TAS013	\$0.09	\$0.14	\$0.14	\$0.15	\$1.90	\$0.04	\$3.00	\$3.55
TAS014	\$0.16	\$0.14	\$0.05	\$0.01	\$1.26	\$0.00	\$2.36	\$3.17
TAS015	\$0.11	\$0.14	\$0.02	\$0.00	\$1.54	\$0.00	\$2.59	\$3.05
TAS016	\$0.09	\$0.00	\$0.00	\$0.30	\$0.73	\$0.44	\$2.00	\$2.47
TAS017	\$0.51	\$0.21	\$0.00	\$0.00	\$0.41	\$0.17	\$1.90	\$2.48
TAS018	\$0.17	\$0.10	\$0.16	\$0.29	\$1.13	\$0.00	\$2.75	\$3.28
TAS019	\$0.03	\$0.15	\$0.00	\$0.04	\$1.31	\$0.16	\$2.41	\$2.83
TAS020	\$0.12	\$0.02	\$0.00	\$0.00	\$2.25	\$0.00	\$3.00	\$3.40
TAS021	\$0.17	\$0.02	\$0.44	\$0.00	\$1.30	\$0.00	\$2.49	\$3.10
TAS022	\$0.02	\$0.14	\$0.00	\$0.00	\$0.78	\$0.16	\$2.02	\$2.35
TAS023	\$0.04	\$0.03	\$0.02	\$0.08	\$1.32	\$0.47	\$2.68	\$3.10
TAS024	\$0.14	\$0.05	\$0.41	\$0.38	\$1.72	\$0.00	\$3.53	\$4.33
TAS025	\$0.03	\$0.03	\$0.03	\$0.19	\$1.32	\$0.54	\$2.83	\$3.27
TAS026	\$0.04	\$0.05	\$0.00	\$0.66	\$1.22	\$0.44	\$3.19	\$3.60
TAS027	\$0.04	\$0.02	\$0.02	\$0.53	\$1.64	\$0.47	\$3.29	\$3.88
TAS028	\$0.10	\$0.12	\$0.00	\$0.00	\$1.22	\$0.00	\$1.99	\$2.66
TAS029	\$0.05	\$0.08	\$0.00	\$0.01	\$1.87	\$0.29	\$2.51	\$2.98
TAS030	\$0.12	\$0.00	\$0.09	\$0.19	\$0.80	\$0.23	\$2.30	\$2.57
TAS031	\$0.07	\$0.07	\$0.02	\$0.29	\$1.29	\$0.13	\$2.79	\$3.32
Average	\$0.12	\$0.10	\$0.05	\$0.17	\$1.22	\$0.16	\$2.51	\$3.02
Top 25%*	<b>\$0.08</b>	<b>\$0.10</b>	<b>\$0.01</b>	<b>\$0.22</b>	<b>\$1.23</b>	<b>\$0.21</b>	<b>\$2.54</b>	<b>\$2.99</b>

Table A5. Overhead costs

Farm number	Rates	Registration & insurance	Farm insurance	Repairs & maintenance	Bank charges	Other overheads	Employed Labour	Total cash overheads	Depreciation	Imputed owner / operator & 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
TAS001	\$0.04	\$0.07	\$0.08	\$0.59	\$0.03	\$0.26	\$0.68	\$1.77	\$0.12	\$0.53	\$2.43
TAS002	\$0.04	\$0.03	\$0.08	\$0.35	\$0.01	\$0.36	\$0.48	\$1.35	\$0.20	\$0.54	\$2.09
TAS003	\$0.04	\$0.01	\$0.01	\$0.27	\$0.01	\$0.04	\$0.46	\$0.85	\$0.06	\$0.34	\$1.24
TAS004	\$0.05	\$0.02	\$0.07	\$0.31	\$0.02	\$0.12	\$0.25	\$0.83	\$0.12	\$0.92	\$1.88
TAS005	\$0.06	\$0.08	\$0.08	\$0.31	\$0.07	\$0.34	\$0.00	\$0.94	\$0.54	\$2.73	\$4.21
TAS006	\$0.04	\$0.03	\$0.05	\$0.31	\$0.00	\$0.05	\$0.43	\$0.90	\$0.23	\$0.65	\$1.79
TAS007	\$0.08	\$0.03	\$0.06	\$0.33	\$0.01	\$0.08	\$0.05	\$0.65	\$0.12	\$1.07	\$1.83
TAS008	\$0.04	\$0.02	\$0.09	\$0.40	\$0.00	\$0.09	\$0.67	\$1.30	\$0.12	\$0.36	\$1.78
TAS009	\$0.17	\$0.04	\$0.18	\$0.44	\$0.01	\$0.29	\$0.07	\$1.19	\$0.38	\$2.06	\$3.62
TAS010	\$0.04	\$0.02	\$0.06	\$0.27	\$0.00	\$0.04	\$0.87	\$1.29	\$0.08	\$0.37	\$1.75
TAS011	\$0.04	\$0.02	\$0.13	\$0.30	\$0.02	\$0.10	\$0.51	\$1.10	\$0.07	\$0.90	\$2.08
TAS012	\$0.09	\$0.02	\$0.16	\$0.22	\$0.00	\$0.20	\$0.60	\$1.29	\$0.18	\$0.20	\$1.66
TAS013	\$0.05	\$0.02	\$0.07	\$0.39	\$0.01	\$0.05	\$0.92	\$1.52	\$0.25	\$0.73	\$2.49
TAS014	\$0.06	\$0.00	\$0.18	\$0.91	\$0.01	\$0.05	\$1.38	\$2.60	\$0.00	\$0.03	\$2.63
TAS015	\$0.04	\$0.01	\$0.06	\$0.41	\$0.01	\$0.12	\$0.79	\$1.43	\$0.07	\$0.49	\$1.99
TAS016	\$0.06	\$0.00	\$0.02	\$0.21	\$0.00	\$0.07	\$1.21	\$1.58	\$0.11	\$0.00	\$1.68
TAS017	\$0.09	\$0.04	\$0.26	\$0.68	\$0.01	\$0.16	\$0.89	\$2.14	\$0.68	\$0.00	\$2.81
TAS018	\$0.03	\$0.00	\$0.17	\$1.08	\$0.01	\$0.23	\$1.66	\$3.18	\$0.37	\$0.29	\$3.84
TAS019	\$0.03	\$0.00	\$0.02	\$0.08	\$0.00	\$0.00	\$1.44	\$1.58	\$0.22	\$0.00	\$1.80
TAS020	\$0.04	\$0.01	\$0.04	\$0.21	\$0.02	\$0.03	\$1.13	\$1.47	\$0.24	\$0.00	\$1.72
TAS021	\$0.04	\$0.01	\$0.06	\$0.40	\$0.00	\$0.05	\$0.90	\$1.46	\$0.45	\$0.35	\$2.26
TAS022	\$0.09	\$0.00	\$0.11	\$0.37	\$0.03	\$0.32	\$0.00	\$0.91	\$0.13	\$1.15	\$2.19
TAS023	\$0.02	\$0.00	\$0.04	\$0.62	\$0.00	\$0.06	\$1.34	\$2.08	\$0.05	\$0.00	\$2.12
TAS024	\$0.05	\$0.01	\$0.17	\$0.16	\$0.00	\$0.06	\$0.78	\$1.23	\$0.08	\$0.58	\$1.89
TAS025	\$0.03	\$0.00	\$0.04	\$0.41	\$0.00	\$0.03	\$1.37	\$1.89	\$0.06	\$0.00	\$1.94
TAS026	\$0.05	\$0.00	\$0.04	\$0.20	\$0.00	\$0.06	\$0.90	\$1.25	\$0.17	\$0.00	\$1.42
TAS027	\$0.03	\$0.00	\$0.04	\$0.48	\$0.00	\$0.03	\$1.28	\$1.86	\$0.08	\$0.00	\$1.94
TAS028	\$0.02	\$0.01	\$0.05	\$0.30	\$0.00	\$0.05	\$0.62	\$1.05	\$0.07	\$0.25	\$1.37
TAS029	\$0.04	\$0.01	\$0.07	\$0.26	\$0.01	\$0.06	\$0.08	\$0.54	\$0.93	\$0.33	\$1.80
TAS030	\$0.04	\$0.00	\$0.17	\$0.53	\$0.00	\$0.22	\$0.40	\$1.36	\$0.30	\$0.87	\$2.52
TAS031	\$0.02	\$0.00	\$0.08	\$0.27	\$0.01	\$0.06	\$0.70	\$1.14	\$0.12	\$0.20	\$1.46
Average	\$0.05	\$0.02	\$0.09	\$0.39	\$0.01	\$0.12	\$0.74	\$1.41	\$0.21	\$0.51	\$2.14
Top 25%*	<b>\$0.04</b>	<b>\$0.01</b>	<b>\$0.04</b>	<b>\$0.26</b>	<b>\$0.00</b>	<b>\$0.05</b>	<b>\$0.84</b>	<b>\$1.24</b>	<b>\$0.13</b>	<b>\$0.26</b>	<b>\$1.63</b>



Table A6. Variable costs

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd & 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
TAS001	1.8%	2.4%	0.0%	2.6%	3.6%	10.3%	9.5%	4.5%	0.6%
TAS002	1.6%	2.1%	0.1%	1.6%	1.0%	6.4%	10.4%	1.8%	1.8%
TAS003	2.9%	2.6%	1.2%	2.8%	1.6%	11.0%	9.5%	1.8%	0.8%
TAS004	2.2%	4.9%	1.0%	1.0%	2.5%	11.6%	12.7%	2.3%	3.6%
TAS005	2.5%	4.8%	1.4%	3.0%	2.8%	14.5%	12.3%	0.0%	0.0%
TAS006	1.8%	2.2%	1.0%	2.3%	1.5%	8.7%	10.7%	1.3%	1.3%
TAS007	1.8%	1.9%	0.2%	3.4%	1.1%	8.3%	4.7%	0.7%	1.8%
TAS008	1.0%	2.8%	0.3%	1.3%	1.5%	6.9%	6.9%	4.6%	3.0%
TAS009	1.0%	3.2%	0.5%	2.1%	1.3%	8.1%	5.2%	7.6%	2.3%
TAS010	1.1%	1.9%	1.9%	1.4%	0.6%	6.9%	12.9%	2.9%	5.6%
TAS011	1.8%	2.6%	2.0%	2.7%	2.3%	11.4%	6.7%	0.0%	1.6%
TAS012	1.2%	1.2%	0.0%	5.7%	6.9%	15.0%	12.6%	0.0%	0.0%
TAS013	0.8%	3.1%	3.3%	1.1%	0.7%	9.1%	4.1%	1.8%	3.1%
TAS014	1.6%	7.0%	0.1%	3.5%	1.6%	14.0%	8.0%	1.2%	3.4%
TAS015	2.2%	2.5%	0.4%	2.2%	1.9%	9.1%	14.4%	1.0%	0.0%
TAS016	1.6%	3.5%	1.6%	2.1%	2.3%	11.2%	6.9%	2.9%	0.5%
TAS017	2.1%	3.0%	0.8%	3.6%	1.5%	11.0%	6.0%	3.6%	1.3%
TAS018	1.0%	1.5%	0.8%	2.9%	1.2%	7.4%	6.3%	5.3%	0.9%
TAS019	1.0%	3.6%	0.0%	2.7%	1.7%	9.1%	14.3%	0.0%	1.3%
TAS020	1.1%	2.8%	1.1%	1.6%	1.2%	7.8%	9.2%	2.1%	0.7%
TAS021	3.7%	2.4%	1.7%	2.3%	1.3%	11.5%	7.3%	2.4%	0.7%
TAS022	0.0%	1.7%	0.2%	4.2%	1.1%	7.2%	9.2%	5.0%	6.0%
TAS023	1.9%	3.1%	0.1%	2.2%	0.7%	8.1%	7.7%	4.0%	2.2%
TAS024	1.4%	4.6%	0.2%	1.6%	5.0%	12.8%	8.9%	1.4%	3.2%
TAS025	2.0%	3.6%	0.2%	1.6%	1.0%	8.5%	9.5%	3.6%	0.5%
TAS026	2.0%	2.7%	0.8%	1.9%	0.7%	8.1%	11.6%	1.2%	2.6%
TAS027	2.3%	4.0%	0.2%	2.1%	1.4%	10.1%	8.3%	1.6%	0.0%
TAS028	1.7%	4.0%	0.9%	2.1%	8.0%	16.6%	6.0%	2.9%	5.0%
TAS029	0.7%	1.1%	0.0%	4.8%	3.2%	9.8%	4.1%	0.0%	0.0%
TAS030	0.8%	0.9%	0.0%	2.7%	0.9%	5.3%	11.4%	2.8%	2.9%
TAS031	2.1%	3.1%	0.3%	4.2%	1.5%	11.2%	12.2%	2.6%	4.5%
Average	1.63%	2.93%	0.73%	2.56%	2.05%	9.90%	9.01%	2.36%	1.98%
<b>Top 25%*</b>	<b>1.77%</b>	<b>2.87%</b>	<b>0.97%</b>	<b>2.19%</b>	<b>2.29%</b>	<b>10.09%</b>	<b>10.79%</b>	<b>1.75%</b>	<b>2.15%</b>

Table A6. Variable costs (cont.)

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
TAS001	3.1%	0.2%	0.4%	8.3%	15.8%	4.2%	46.6%	56.9%
TAS002	2.4%	0.8%	0.6%	1.5%	40.0%	0.6%	59.9%	66.3%
TAS003	1.9%	3.8%	1.0%	6.2%	31.4%	5.0%	61.4%	72.4%
TAS004	2.0%	0.6%	0.0%	5.9%	21.8%	2.1%	51.0%	62.7%
TAS005	3.1%	0.5%	0.0%	0.0%	0.0%	0.0%	15.9%	30.4%
TAS006	1.8%	3.3%	0.3%	2.7%	20.1%	8.7%	50.3%	58.9%
TAS007	2.5%	0.5%	1.0%	3.1%	19.3%	3.7%	37.5%	45.8%
TAS008	1.2%	2.5%	0.9%	5.7%	35.2%	0.4%	60.3%	67.2%
TAS009	3.4%	12.0%	0.0%	0.0%	0.2%	0.0%	30.6%	38.7%
TAS010	2.5%	0.9%	0.0%	6.7%	28.5%	0.0%	59.9%	66.8%
TAS011	3.6%	2.7%	1.2%	4.2%	18.8%	5.5%	45.3%	56.7%
TAS012	2.4%	0.0%	0.0%	0.0%	28.3%	0.0%	43.3%	58.4%
TAS013	1.5%	2.3%	2.4%	2.4%	31.4%	0.6%	49.7%	58.8%
TAS014	2.8%	2.4%	0.9%	0.2%	21.7%	0.0%	40.6%	54.6%
TAS015	2.1%	2.8%	0.4%	0.0%	30.6%	0.0%	51.4%	60.5%
TAS016	2.2%	0.1%	0.0%	7.2%	17.6%	10.7%	48.2%	59.4%
TAS017	9.5%	4.0%	0.0%	0.0%	7.8%	3.2%	35.9%	46.9%
TAS018	2.4%	1.4%	2.2%	4.1%	15.9%	0.0%	38.7%	46.1%
TAS019	0.7%	3.3%	0.0%	0.8%	28.2%	3.4%	52.1%	61.2%
TAS020	2.4%	0.4%	0.0%	0.0%	43.9%	0.0%	58.7%	66.5%
TAS021	3.2%	0.3%	8.2%	0.0%	24.2%	0.0%	46.4%	57.9%
TAS022	0.5%	3.2%	0.0%	0.0%	17.2%	3.5%	44.6%	51.8%
TAS023	0.7%	0.7%	0.3%	1.5%	25.2%	9.0%	51.3%	59.4%
TAS024	2.2%	0.7%	6.5%	6.0%	27.7%	0.0%	56.8%	69.6%
TAS025	0.5%	0.5%	0.5%	3.6%	25.3%	10.3%	54.3%	62.8%
TAS026	0.9%	1.0%	0.0%	13.2%	24.3%	8.8%	63.6%	71.7%
TAS027	0.7%	0.4%	0.3%	9.1%	28.2%	8.1%	56.6%	66.6%
TAS028	2.4%	3.0%	0.0%	0.0%	30.2%	0.0%	49.4%	66.0%
TAS029	1.1%	1.7%	0.0%	0.2%	39.2%	6.2%	52.6%	62.3%
TAS030	2.3%	0.0%	1.7%	3.6%	15.8%	4.6%	45.2%	50.5%
TAS031	1.5%	1.4%	0.4%	6.2%	26.9%	2.7%	58.2%	69.5%
Average	2.2%	1.9%	0.9%	3.3%	23.9%	3.3%	48.9%	58.8%
Top 25%*	1.8%	2.3%	0.2%	4.6%	26.4%	4.6%	54.5%	64.6%

Table A7. Overhead costs

Farm number	Rates	Registration & insurance	Farm insurance	Repairs & maintenance	Bank charges	Other overheads	Employed Labour	Total cash overheads	Depreciation	Imputed owner / operator & 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
TAS001	0.8%	1.3%	1.5%	10.6%	0.5%	4.7%	12.1%	31.5%	2.1%	9.5%	43.1%
TAS002	0.6%	0.5%	1.2%	5.6%	0.2%	5.8%	7.8%	21.8%	3.2%	8.7%	33.7%
TAS003	1.0%	0.3%	0.1%	6.0%	0.2%	1.0%	10.3%	18.9%	1.3%	7.5%	27.6%
TAS004	0.9%	0.3%	1.5%	6.1%	0.5%	2.3%	5.0%	16.6%	2.4%	18.3%	37.3%
TAS005	0.9%	1.3%	1.3%	5.2%	1.1%	5.6%	0.0%	15.5%	8.9%	45.1%	69.6%
TAS006	0.9%	0.7%	1.1%	7.1%	0.1%	1.1%	9.8%	20.8%	5.3%	15.0%	41.1%
TAS007	2.3%	0.9%	1.7%	9.8%	0.3%	2.5%	1.5%	19.1%	3.5%	31.6%	54.2%
TAS008	0.7%	0.4%	1.7%	7.4%	0.1%	1.6%	12.3%	24.0%	2.1%	6.7%	32.8%
TAS009	2.9%	0.6%	3.0%	7.4%	0.2%	4.8%	1.1%	20.1%	6.4%	34.8%	61.3%
TAS010	0.7%	0.3%	1.1%	5.1%	0.0%	0.8%	16.6%	24.5%	1.6%	7.0%	33.2%
TAS011	0.8%	0.4%	2.7%	6.2%	0.4%	2.1%	10.5%	23.0%	1.6%	18.7%	43.3%
TAS012	2.3%	0.5%	4.0%	5.5%	0.0%	4.9%	15.1%	32.2%	4.4%	5.0%	41.6%
TAS013	0.9%	0.3%	1.2%	6.5%	0.1%	0.9%	15.3%	25.1%	4.1%	12.0%	41.2%
TAS014	1.1%	0.0%	3.1%	15.6%	0.2%	0.9%	23.8%	44.8%	0.0%	0.6%	45.4%
TAS015	0.7%	0.1%	1.3%	8.1%	0.1%	2.3%	15.7%	28.3%	1.4%	9.8%	39.5%
TAS016	1.4%	0.1%	0.6%	5.1%	0.0%	1.6%	29.2%	38.0%	2.6%	0.0%	40.6%
TAS017	1.7%	0.8%	5.0%	12.9%	0.2%	3.0%	16.8%	40.4%	12.8%	0.0%	53.1%
TAS018	0.4%	0.0%	2.4%	15.2%	0.1%	3.3%	23.3%	44.6%	5.2%	4.0%	53.9%
TAS019	0.7%	0.0%	0.5%	1.7%	0.0%	0.0%	31.2%	34.1%	4.7%	0.0%	38.8%
TAS020	0.7%	0.2%	0.9%	4.1%	0.3%	0.6%	22.0%	28.8%	4.8%	0.0%	33.5%
TAS021	0.7%	0.2%	1.2%	7.5%	0.0%	0.9%	16.7%	27.2%	8.4%	6.5%	42.1%
TAS022	1.9%	0.0%	2.3%	8.2%	0.7%	7.0%	0.0%	20.1%	2.8%	25.4%	48.2%
TAS023	0.4%	0.0%	0.7%	11.9%	0.0%	1.1%	25.7%	39.7%	0.9%	0.0%	40.6%
TAS024	0.8%	0.1%	2.7%	2.6%	0.1%	1.0%	12.6%	19.8%	1.2%	9.3%	30.4%
TAS025	0.6%	0.0%	0.8%	7.8%	0.0%	0.6%	26.2%	36.1%	1.1%	0.0%	37.2%
TAS026	1.0%	0.0%	0.8%	4.0%	0.1%	1.2%	17.9%	24.9%	3.4%	0.0%	28.3%
TAS027	0.5%	0.0%	0.7%	8.3%	0.0%	0.5%	21.9%	32.0%	1.4%	0.0%	33.4%
TAS028	0.5%	0.2%	1.3%	7.4%	0.0%	1.2%	15.3%	26.0%	1.8%	6.3%	34.0%
TAS029	0.8%	0.2%	1.6%	5.5%	0.3%	1.3%	1.6%	11.2%	19.4%	7.0%	37.7%
TAS030	0.8%	0.0%	3.3%	10.4%	0.0%	4.3%	7.9%	26.6%	5.8%	17.0%	49.5%
TAS031	0.4%	0.0%	1.7%	5.7%	0.2%	1.2%	14.6%	23.8%	2.6%	4.2%	30.5%
Average	0.99%	0.31%	1.71%	7.43%	0.19%	2.27%	14.18%	27.08%	4.10%	10.00%	41.19%
<b>Top 25%*</b>	<b>0.86%</b>	<b>0.21%</b>	<b>0.85%</b>	<b>5.57%</b>	<b>0.07%</b>	<b>1.15%</b>	<b>18.23%</b>	<b>26.94%</b>	<b>2.74%</b>	<b>5.70%</b>	<b>35.38%</b>

Table A8. Capital structure

	Farm Assets				Other farm assets (per usable hectare)				
	Land value	Land value	Permanent water value	Permanent water value	Plant and equipment	Livestock	Hay and grain	Other assets	Total assets
	\$/ha	\$/cow	\$/ha	\$/cow	\$/ha	\$/ha	\$/ha	\$/ha	\$/ha
Average	\$14,353	\$7,386	\$1,709	\$159	\$1,778	\$2,842	\$120	\$192	\$20,451
<b>Top 25%</b>	<b>\$14,661</b>	<b>\$6,143</b>	<b>\$5,310</b>	<b>\$214</b>	<b>\$1,305</b>	<b>\$3,246</b>	<b>\$158</b>	<b>\$0</b>	<b>\$19,023</b>

	Liabilities		Equity	
	Liabilities per usable hectare	Liabilities per milking cow	Equity per usable hectare	Average equity
	\$/ha	\$/cow	\$/ha	%
Average	\$5,229	\$2,660	\$15,222	75%
<b>Top 25%</b>	<b>\$5,013</b>	<b>\$2,164</b>	<b>\$14,010</b>	<b>76%</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, rents from cottages, rebates and grants.

## 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 land and buildings, plant and machinery, fixtures and fittings, trading stock, investments, debtors, and cash.

## Break-even price required

Cost of production minus income only sourced from the main enterprise output. Allows for direct comparison with price received of main output.

## Cash overheads

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

## Cost of production

Variable costs plus overhead costs. Usually expressed in terms of the main enterprise output ie kilograms of milk solids.

## 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 not cash, but reduces the book value of the asset and is therefore a cost.

## Earnings before interest & 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, workcover etc.

## 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

Total interest plus total lease costs paid.

## Full time equivalent (FTE)

Standardised people unit. Equal to 24,00 hours a year. Calculated as 50 hours a week, 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 income minus total variable costs.

## Herd costs

Cost of 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 cost of owner/operator, family and sharefarmer time in the business, taken as the greater of \$400 per cow less employed labour or \$25 per hour.

## Liability

Money owed to someone else, eg family or an institute such as a bank.

## 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.



**Milking area**

Total usable area minus outblocks or run-off areas.

**Net farm income**

*Previously reported as business profit*

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

**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, rents from cottage, rebates and grants.

**Overhead costs**

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

**Labour cost**

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

**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.

**Livestock trading profit**

An estimate of the annual contribution to gross 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.

**Return on assets (RoA)**

Earnings before interest and tax divided by the value of total assets under management.

**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, rubber ware, vacuum pump oil etc.

**Total income**

See gross farm income.

**Total usable area**

Total hectares managed minus that 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;  $(\text{total megalitres of water used} / \text{total usable area}) \times 100$ .

**Variable costs**

All costs that vary with the size of production in the enterprise eg herd, shed and feed costs.

# List of abbreviations

<b>CH<sub>4</sub></b>	Methane gas.	<b>ME</b>	Metabolisable energy (MJ/kg).
<b>CO<sub>2</sub></b>	Carbon dioxide gas.	<b>MJ</b>	Megajoules of energy.
<b>CO<sub>2</sub>-e</b>	Carbon dioxide equivalent.	<b>mm</b>	Millimetres. 1 mm is equivalent to 4 points or 1/25th of an inch of rainfall.
<b>CoP</b>	Cost of production.	<b>MS</b>	Milk solids (proteins and fats).
<b>DFMP</b>	Dairy Farm Monitor Project.	<b>N<sub>2</sub>O</b>	Nitrous oxide gas.
<b>DM</b>	Dry matter of feed stuffs.	<b>Q1</b>	First quartile, i.e. the value of which one quarter, or 25%, of data in that range is less than.
<b>DEDJTR</b>	Department of Economic Development, Jobs Transport and Resources (previously known as DEPI)	<b>Q3</b>	Third quartile, i.e. the value of which one quarter, or 25%, of data in that range is greater than.
<b>EBIT</b>	Earnings before interest and tax.	<b>RoA</b>	Return on assets.
<b>FTE</b>	Full time equivalent.	<b>RoE</b>	Return on equity.
<b>GWP</b>	Global Warming Potential.	<b>t</b>	Tonne = 1,000 kg.
<b>ha</b>	Hectares.	<b>TIA</b>	Tasmanian Institute of Agriculture
<b>HRWS</b>	High Reliability Water Shares.		
<b>kg</b>	Kilograms.		
<b>LRWS</b>	Low Reliability Water Shares.		





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