



Dairy Farm Monitor Project
Western Australia
annual report 2015–16

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The South West Development Commission is pleased to support Western Dairy's Dairy Farm Monitor Report as part of its wider efforts to support business and industry in the South West. The project plays a critical role in identifying areas for farm performance improvement, as well as providing vital benchmark information for Dairy Australia's DairyBase tool. It is linked to our aims of growing the agricultural sector in order to grow jobs and investment in the region.

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How to read this report

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

This report is presented in the following sections;

- › Summary
- › Farm monitor method
- › Western Australia overview
- › Business confidence survey
- › Greenhouse gas emissions report
- › Historical analysis
- › Appendices

Participants were selected for the project in order to represent a distribution of farm sizes, herd sizes and geographical locations within Western Australia. 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 the data for the 2015–16 year. Data are presented for individual farms, as state 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 the state due to the small sample size and these 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 the performance of the whole farm irrespective of differences in location and production system.

The Q1–Q3 data range for key indicators are also presented to provide an indication of the variation in the data. The Q1 value is the quartile 1 value, that is, the value of which one quarter (25%) of data in that range is less than the average. The Q3 value is the quartile 3 value, that is, the value of which one quarter (25%) of data in that range is greater than the average. Therefore, the middle 50% of data resides between the Q1–Q3 data range.

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) reflecting payment systems and where possible production data are also presented in litres.

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';
$$\frac{[(120-80)/80] \times (100/1)}{[(40/80) \times 100]} = 0.5 \times 100 = 50\%$$
, unless otherwise stated.

The top 25% consists of seven farms located throughout the dairying areas of Western Australia.

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. This year, there are three new participating farms. This is important to bear in mind when comparing data sets between years.

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

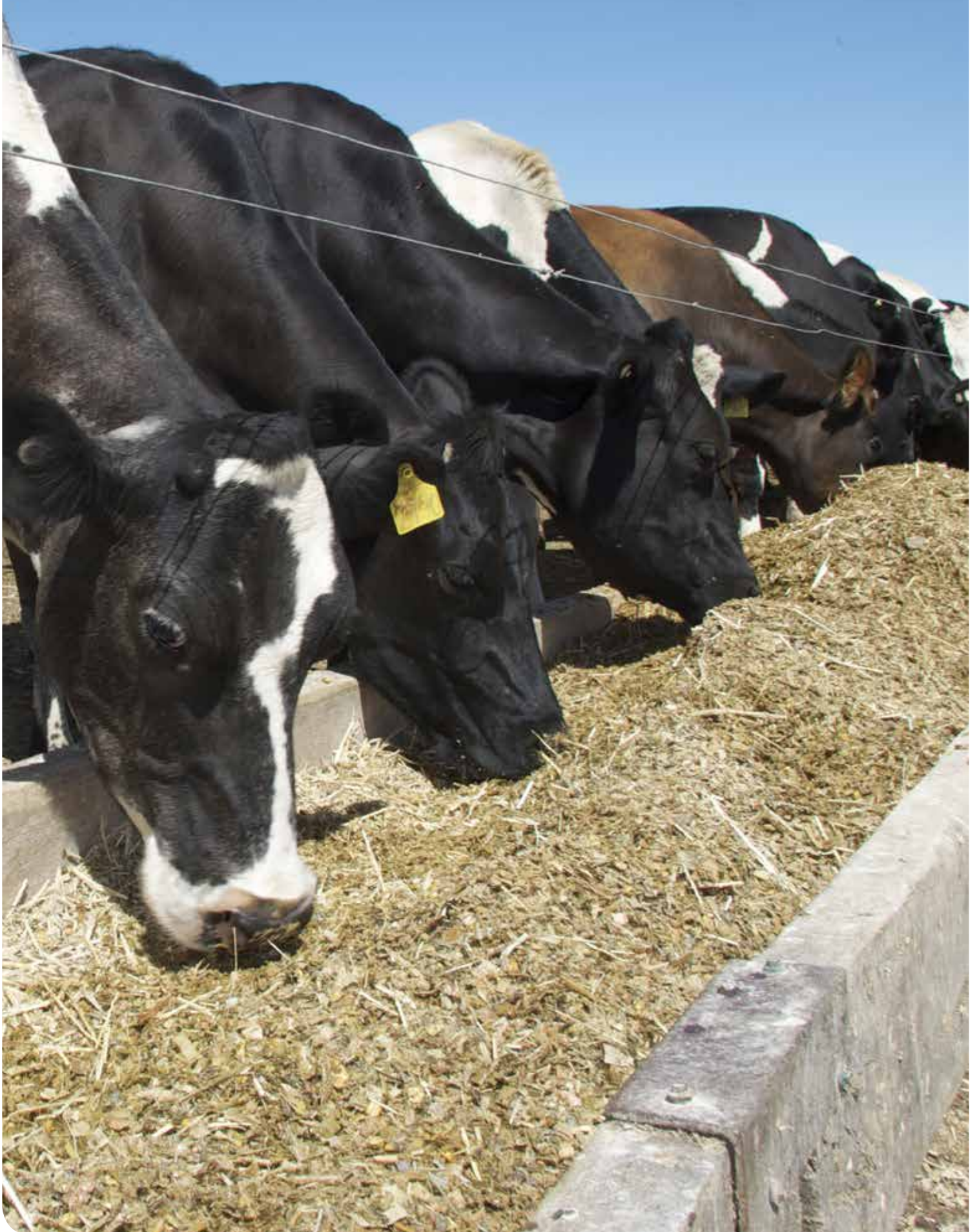
What's new in 2015–16?

The Dairy Farm Monitor Report for 2015–16 includes a number of changes since last year's report. The most significant 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, the value of 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 and the imputed operator's 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.
- › The method of estimating Australia's dairy industry greenhouse gas emissions, the national greenhouse gas inventory (NGGI), was altered to reflect new research outcomes and align with international guidelines. The global warming potential (GWP) of the main three gases was altered, and pre-farm gate emissions sources are now considered.

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

Summary



Summary

In 2015–16 the data from 28 farms in WA resulted in average whole farm earnings before interest and tax (EBIT) of \$617,059, a slight decrease on the previous year's \$641,083.

All participants achieved positive return on assets averaging 6.6% compared with last year's 6.7%. Average milk price of \$7.22/kg MS (52.2 c/l) was a 2% increase from last year's price of \$7.07/kg MS (51.1 c/l), while the average kg milk solids sold also increased from the previous year.

This is the third year of the Dairy Farm Monitor Project (DFMP) in Western Australia (WA) with support and funding from Dairy Australia. The project aims to provide the WA dairy industry with valuable farm level data relating to profitability and production.

Twenty eight farms were involved in the project in 2015–16, consisting of the 25 farms previously involved in 2013–14 and 2014–15 plus three new farms.

The average milk price of \$7.22/kg MS (52.2 c/l) was a 2% increase from last year's price of \$7.07/kg MS (51.1 c/l). The milk price reflected the continued strong competition for milk supply resulting in high milk price contracts plus summer growth milk premiums offered by some processors. High milk price contributed to all participant farms achieving a positive return on assets, averaging 6.6%, similar to the 6.7% average in 2014–15.

All farms generated a positive earnings before interest and tax (EBIT), averaging \$617,059 per farm or \$2.02/kg MS (14.6 c/l), a 7% decrease compared to 2014–15.

Milk production increased on average across farms in response to strong market signals from some milk processors and very favourable seasonal conditions. Average milk solids sold per cow increased by 4% to 557 kg compared to 535 kg last year and average milk solids sold per hectare increased by 11% to 541 kg compared to 486 kg last year.

Despite increased milk production and higher milk prices, participants generally managed to maintain costs of production with a 3% increase in both average variable costs and overhead costs compared to 2014–15.

An increase in purchased feed costs was the main cause of the higher cost of production. Concentrates increased to 37% of whole farm metabolisable energy (ME) fed, compared to 33% last year. At the same time, concentrate costs increased by 6% to an average of \$445/t DM compared to \$422/t DM last year.

The 2015–16 season was a drier year than the long term average. However, while spring was significantly drier and finished earlier than normal, there was unseasonal

rainfall in January followed by good autumn rains with an earlier break to the season than normal. These conditions provided good pasture availability and the average home grown feed on the milking area was 5.8 t DM/ha.

The top 25% of participants in 2015–16 distinguished themselves from the average by improved labour efficiency, higher milk production per cow and per hectare along with lower costs of production. This top performing group achieved an average EBIT of \$3.01/kg MS (21.6 c/l) and return on assets of 11.4% compared to the state average of \$2.02/kg MS (14.6 c/l) and 6.6%, respectively.

Expectations for the 2016–17 season were impacted by processor uncertainty following the unprecedented decision by two milk processors not to renew some producers' supply contracts due for renewal in the second half of 2016. Producers were less confident with their outlook for 2016–17 with only 32% expecting an improvement in farm business returns compared to 52% last year. Approximately 41% of producers were planning to increase milk production in 2016–17, down from 57% last year.

Labour, processor uncertainty and managing seasonal conditions are the main issues of concern over the next year. Succession planning, milk price and land purchase, tenure and availability were the major long term issues facing the WA participant farmers.

Farm monitor method



Farm monitor method

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

The method employed to generate the profitability and 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

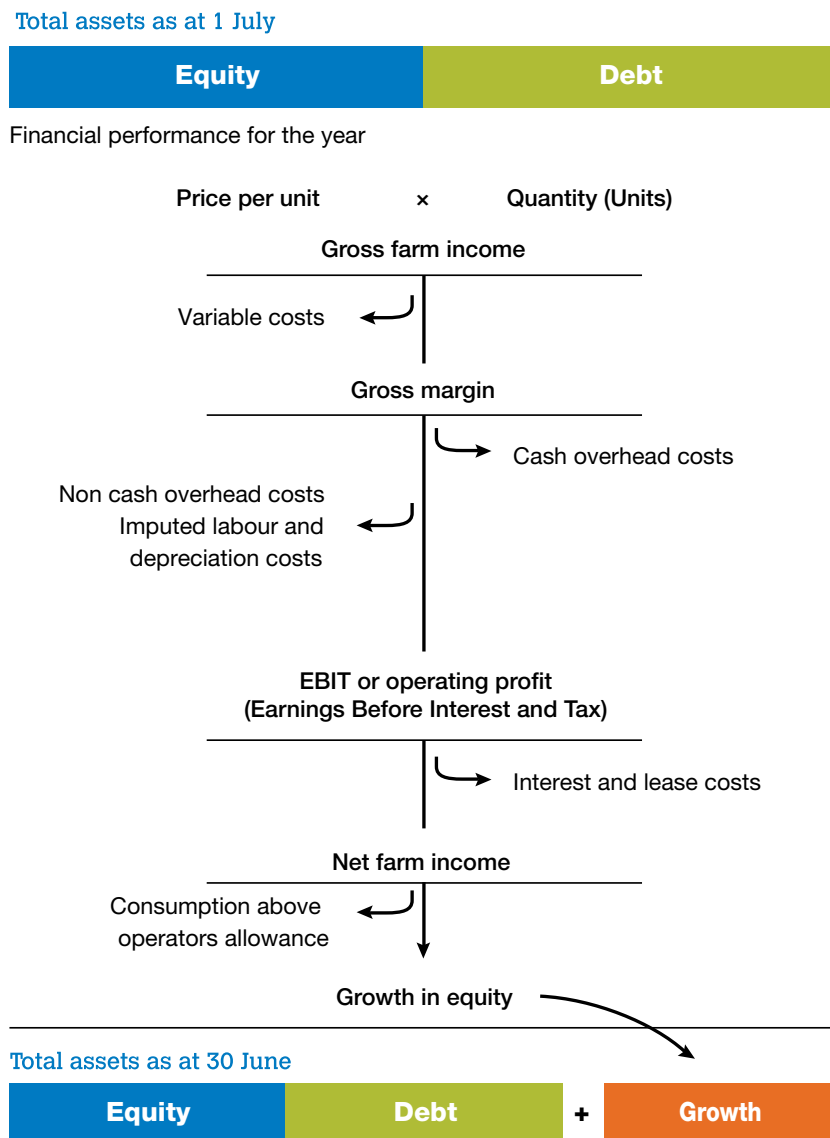
financial benchmarking programs. Standard dollar values for items such as stock and feed on hand and imputed labour rates may also vary. For this reason, the results from different benchmarking programs should be compared with caution.

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



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.

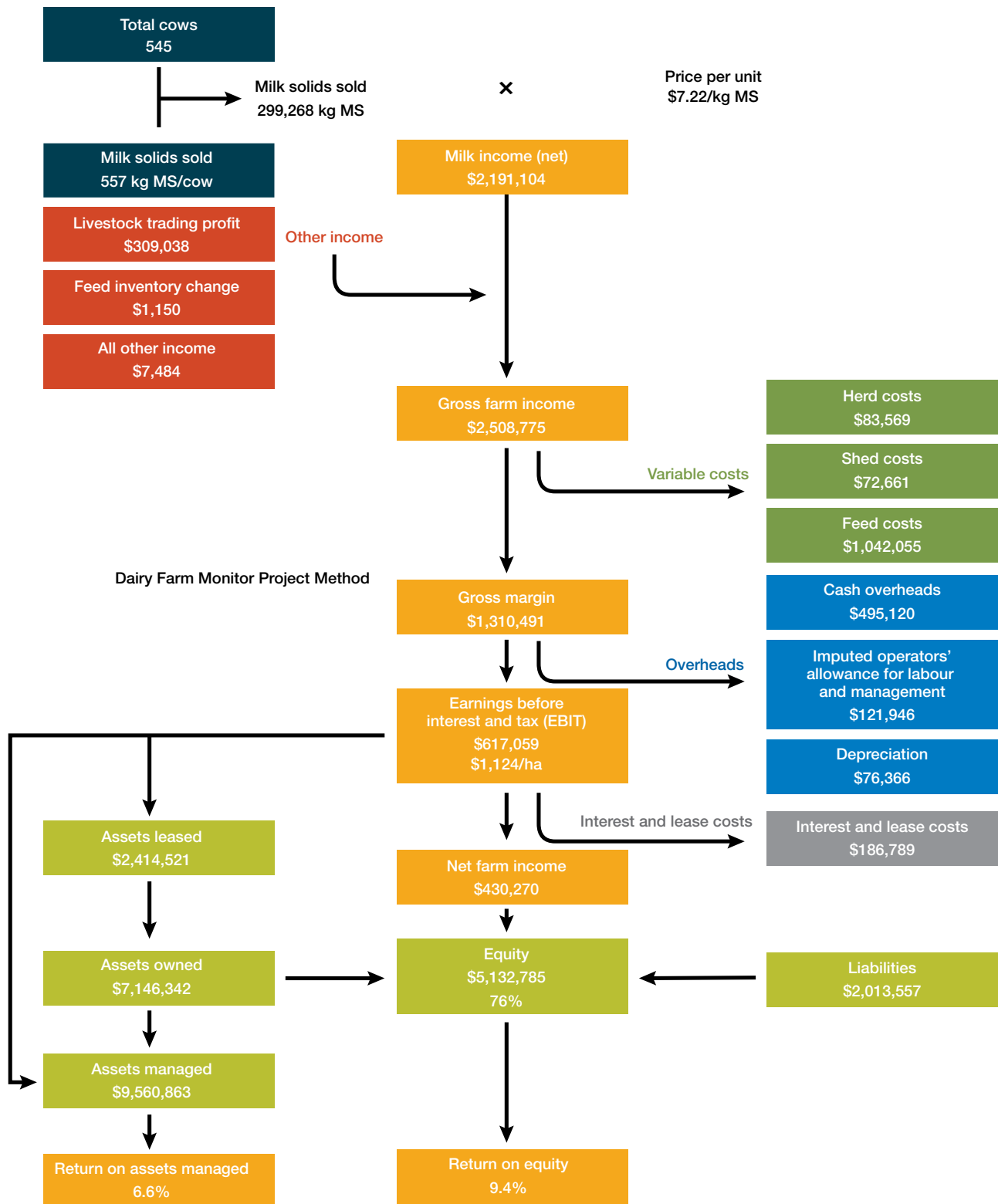
Return on assets indicates the overall earning of the total farm assets, irrespective of capital structure of the business. It is EBIT expressed as a percentage of the total assets under management in the farm business, including the value of leased assets. Return on assets is sometimes referred to as 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 28



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

Western Australian overview



Western Australian overview

Western Australia represented approximately 4.1%, or 387 million litres, of the Australian dairy industry milk production in 2015–16. Milk production in Western Australia increased approximately 6.3% in 2015–16, reflecting continued strong price signals, compared to the 2% decrease in national milk production.

Following a number of years of industry contraction in Western Australia since deregulation in 2000, the number of milking herds has remained stable over the last two years, numbering 162 in 2015–16, reflecting cautious optimism within the industry.

The 6.3% increase in milk production in 2015–16 came after an annual increase of 7.1% in 2014–15. These last two years of increased milk production came after previous annual decreases in milk production since 2000.

The increase in milk production this year was in response to positive price signals and long term demand signals from processors continuing during 2015–16.

The WA dairy industry is located in the higher rainfall (> 900 mm) coastal region of the South West and South Coast of the state.

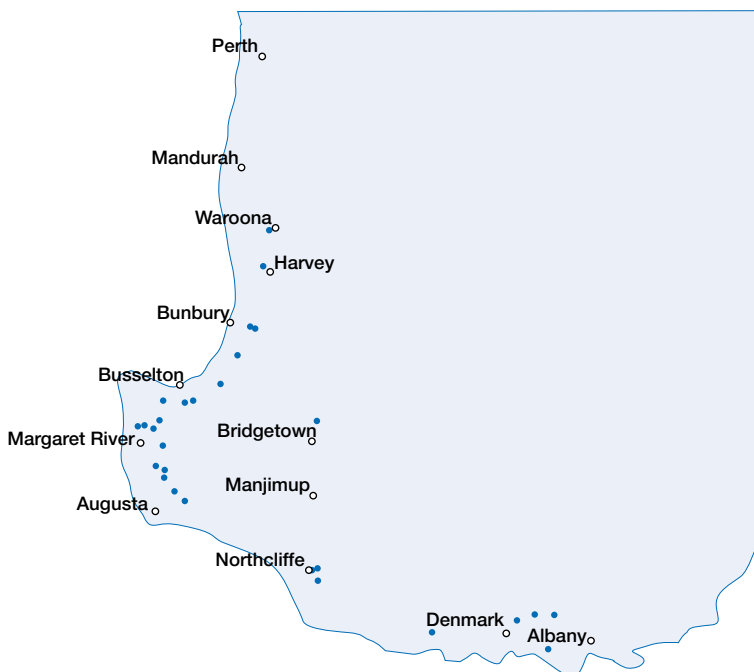
Land values in the South West are generally higher than the South Coast reflecting greater land use competition from industries such as viticulture and for lifestyle blocks.

The WA dairy region has a Mediterranean climate with associated winter rainfall and hot dry summers. Western Australia has a ryegrass pasture-based production system based on rain-fed annuals on dryland farms and irrigated perennial pastures on farms with irrigation. These pasture based systems are supplemented with a range of feeds including concentrates, silage and hay at levels ranging from low input to high input farms.

Eleven of the 28 farms participating have some irrigation.

The approximate location of the 28 participating farms is shown in Figure 3.

Figure 3 Distribution of Western Australia participant farms in 2015–16



2015–16 Seasonal conditions

Drier seasonal conditions prevailed throughout 2015–16, with below average rainfall across all WA dairy regions. An early end to the growing season in spring 2015 was followed by an excellent early start to the growing season in autumn 2016.

Participating farms received an average of 915 mm rainfall in 2015–16, being 9% less than the long term average of 1,007 mm (Figure 4). The rainfall in 2015–16 was 3% higher than the drier year in 2014–15.

Not all participant farms received below long term annual rainfall, with five receiving slightly more than their long term average.

However, the season was characterised by significantly lower rainfall in the first half of the 2015–16 season followed by significantly higher rainfall in the second half of the season (Figure 5). Compared to their long term average annual

rainfall, participant farms received on average 27% less rainfall from July to December 2015 followed by 14% more rainfall from January to June 2016.

The result was a drier and early finish to the season in spring 2015 followed by good rains and a strong early start to the season in autumn 2016 for most farms.

In general the lower spring rainfall reduced silage and hay yields with the growing season finishing earlier than normal.

Pasture production was reduced with lower than average rain falling in October and November across most farms.

Unseasonal summer rains in January 2016 resulted in farms receiving on average 79 mm compared to their 18 mm long term average. For many farms this unseasonal summer rain was followed up with good early autumn rains 20% higher than the long term March and April averages. This provided mild summer conditions.

The 2016 season started with a relatively early break in March to April 2016, providing an excellent start to the growing season. This was followed up with reasonable rains providing good quality pasture heading back into winter.

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

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

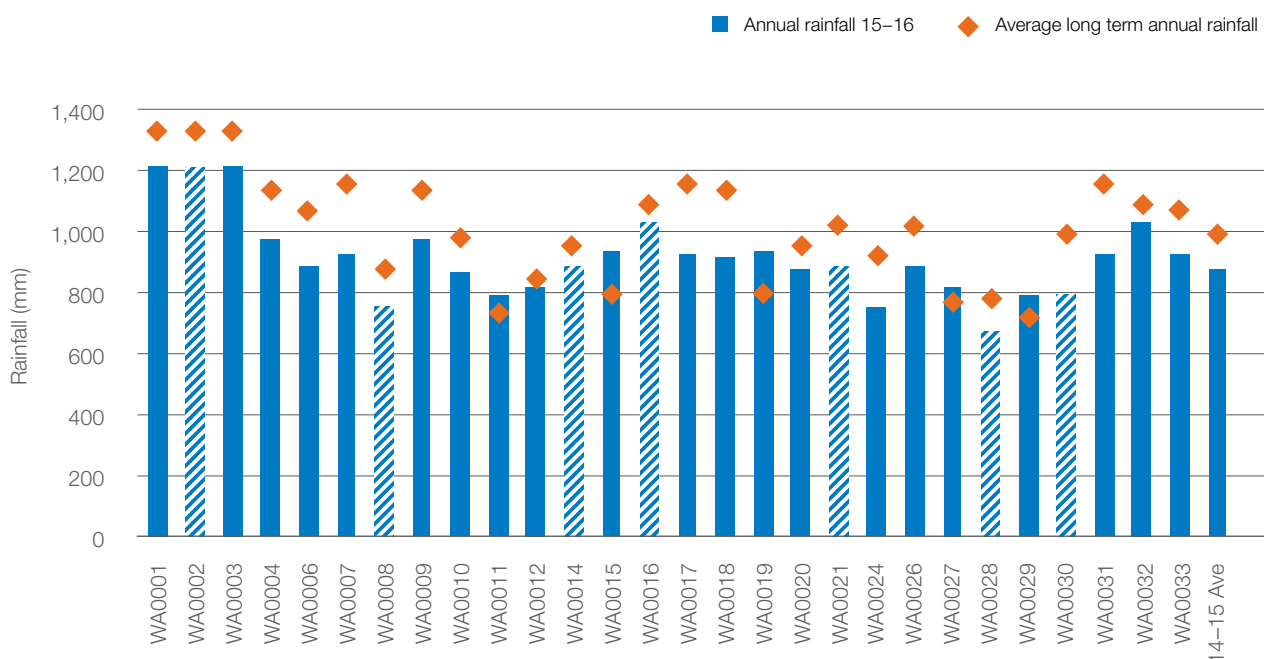
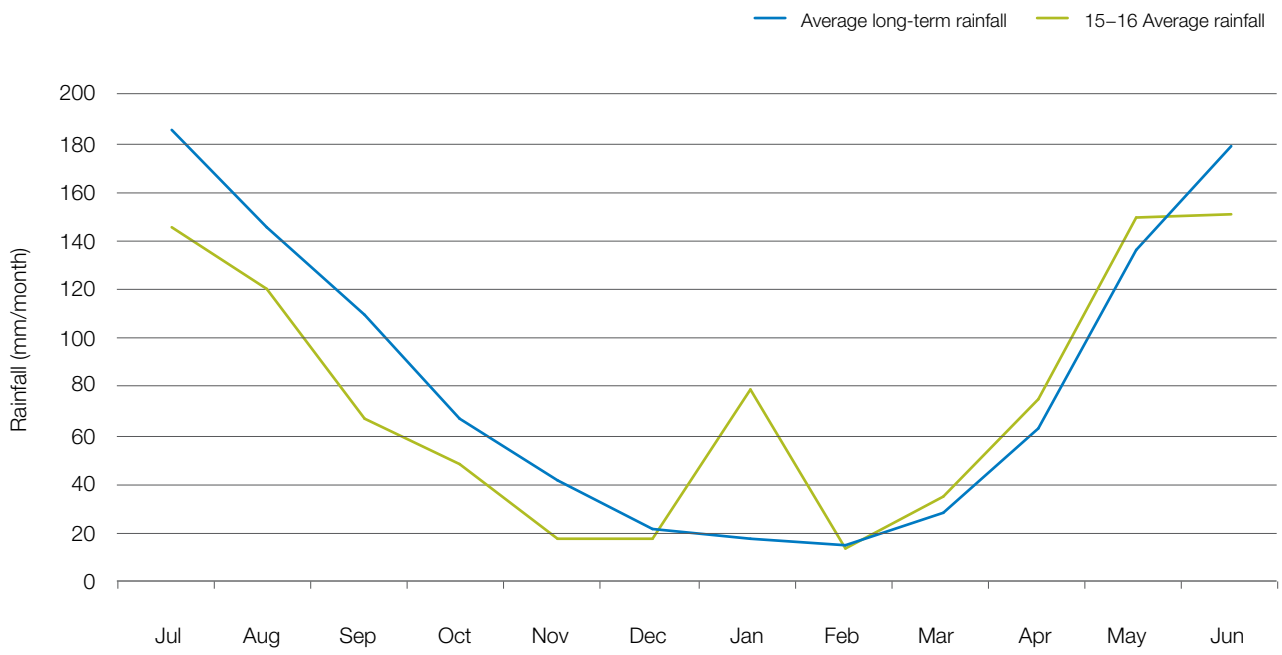


Figure 5 Monthly average rainfall (All farms)



Whole farm analysis

In 2015–16, whilst most physical attributes remained similar to the previous year, an increase to stocking rate and production per cow led to an 11% increase in milk solids sold per hectare with a corresponding 2% increase in milk price received. Despite this there was a 7% decline in EBIT from \$2.17/kg MS in 2014–15 to \$2.02/kg MS this year, mainly accounted for by an increase in the cost of production.

The Western Australia dairy industry increased milk production by 6.3% in 2015–16 from 2014–15.

The 28 participant farms represented 18% of the Western Australia dairy industry in terms of number of farms. However, there is a large range of farm and herd size and dairy systems across the participant farmers, so care is required when interpreting averages.

This increase in milk production was in response to continuing positive price signals as milk price increased by 2% to \$7.22/kg MS (52.2 c/l) from \$7.07/kg MS (51.1 c/l) last year. This followed last year's 6.8% milk price increase as processors continued to compete for supply and a significant summer milk growth incentive offered by one processor.

A 6% increase in the average stocking rate per hectare plus a 4% increase in milk production per cow contributed to the 11% increase in milk production per hectare of participating farms.

Labour efficiency per kg MS remained stable at an average of 49,995 kg MS/FTE.

Table 1 presents a summary of the average physical parameters of the 28 participant farms. Further details can be found in the Appendix Table A2 for individual farms.

While the average herd size (number of cows milked for at least three months) was 545, there was a wide range in herd size from 170 to 1,607 cows with five farms milking more than 1,000 cows.

The physical characteristics of the top 25% of farms (ranked by return on assets) lie within the middle 50% of the West Australian dataset for all physical parameters, except for kilograms of milk solids sold per hectare and labour efficiency.

The top 25% of farms had higher stocking rate of 1.1 milking cows per usable hectare compared to the average of one milking cow per hectare. These farms combined a 10% higher stocking rate with 6% higher milk production per cow at 590 kg MS/cow compared to the average of 557 kg MS/cow. They sold 22% more milk per hectare at 660 kg MS/ha than the average of 541 kg MS/ha.

The top 25% of farms also had a 25% higher labour efficiency, producing 62,315 kg MS/FTE compared to the average of 49,995 kg MS/FTE.

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

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)	545	284–634	504
Annual Rainfall 2015–16	915	817–947	892
Water used (irrigation + rainfall) (mm/ha)	964	888–1,033	936
Total usable area (hectares)	575	282–651	451
Milking cows per usable hectares	1.0	0.8–1.1	1.1
Milk sold (kg MS/cow)	557	496–592	590
Milk sold (kg MS/ha)	541	430–613	660
Home grown feed as % of ME consumed	57%	52%–61%	54%
Labour efficiency (milking cows/FTE)	90	73–103	106
Labour efficiency (kg MS/FTE)	49,995	40,422–56,637	62,315

Gross farm income

Gross farm income includes all farm income from milk sales, change in inventories of stock or feed and cash income from livestock trading.

The average gross farm income was \$8.29/kg MS (60 c/l), similar to \$8.26/kg MS (59.7 c/l) last year.

The average gross farm income includes milk income of \$7.22/kg MS (52.2 c/l), and all other income of \$1.07/kg MS (7.8 c/l) associated with the dairy business operation.

However, there was a large variation in milk income between farms, ranging from \$6.25/kg MS to \$8.10/kg MS (43.7 c/l to 59.9 c/l). This variation in milk income is influenced by a number of factors such as market competition for milk supply, summer growth incentives, milk volume and quality premiums.

While Figure 6 shows how much milk income dominates gross income, other sources are still important to the farm business. Across the participating farms, income from sources other than milk accounted for an average 13% of gross farm income, but ranged from 7% to 17%.

The majority of the income from other sources is derived from higher livestock trading profit on many WA dairy farms compared to other dairy states. This is a combination of many farms choosing to rear extra heifers to replace an aging herd structure plus rearing steer calves to sell into their beef enterprise.

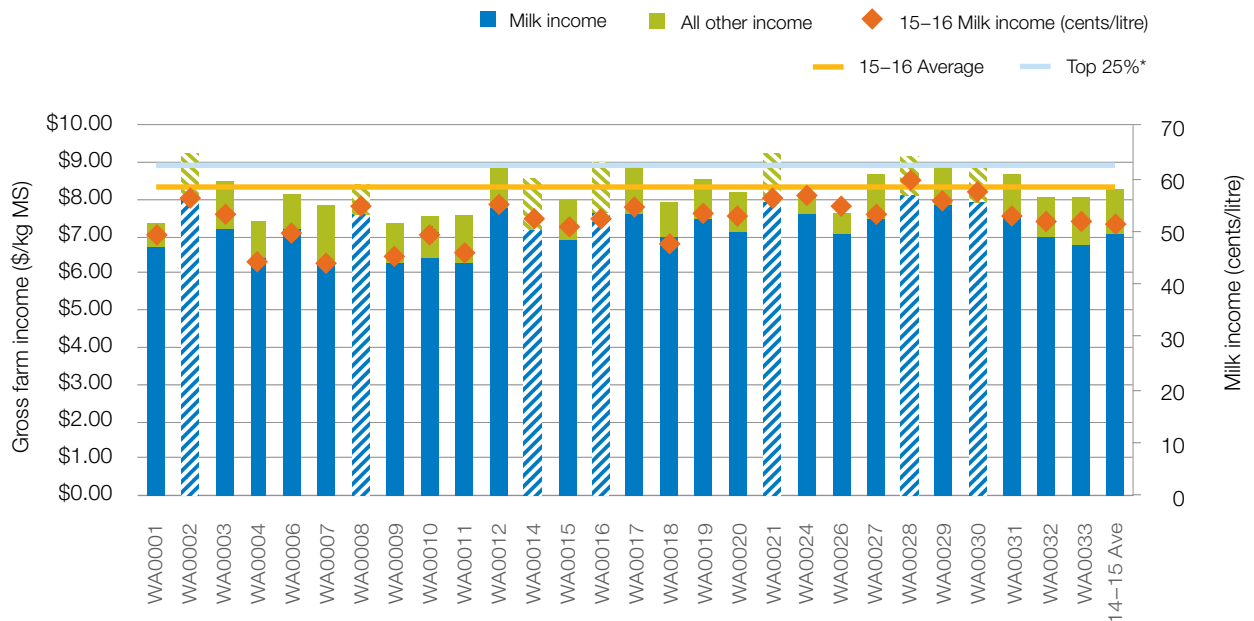
Figure 6 shows the variation in gross farm income between participants, from \$7.35/kg MS to \$9.23/kg MS (51.1 c/l to 67.7 c/l).

The top 25% of farms received a gross farm income of \$8.91/kg MS (63.8 c/l), consisting of \$7.77/kg MS (55.6 c/l) from milk income and \$1.14/ kg MS (8.1 c/l) from all other income.

The top 25% of farms had an 8% higher milk income of \$7.77/kg MS (55.6 c/l) compared to the average of \$7.22/kg MS (52.2 c/l).

While some farms received high gross income, not all of these farms were in the top 25% based on return on assets. This suggests that the top performing farms have other attributes that enable them to achieve a higher EBIT, other than gross farm income.

Figure 6 Average farm financial performance per kilogram of milk solids



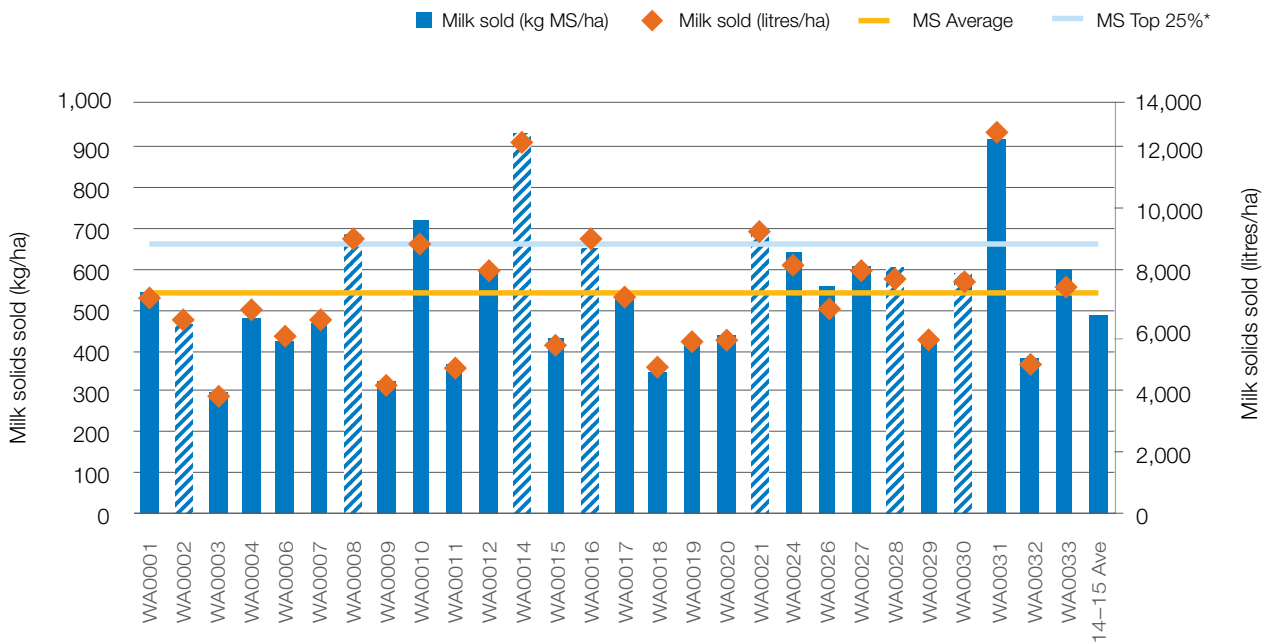
Milk solids sold

Milk solids sold averaged 541 kg MS/ha, an 11% increase on the 486 kg MS/ha in 2014–15. There was a large variation in the amount of milk solids sold per usable hectare with a range of 300 kg MS/ha to 932 kg MS/ha (Figure 7). Part of this variation can be accounted for by farms having runoff areas and out paddocks that were included as part of the total usable area.

The average kilograms of milk solids sold per cow also increased by 4% to 557 kg MS/ha compared to 535 kg MS/cow last year.

The top 25% of farms sold 660 kg MS/ha which was 22% more than the average of 541 kg MS/ha. They sold 590 kg MS/cow which was 6% more than the average of 557 kg MS/cow.

Figure 7 Milk solids sold per hectare



Milk sales versus calving pattern

Figure 8 shows the average milk sales for all participant farms against the monthly distribution of calves born.

Average monthly distribution of milk production in WA reflects the cost of producing milk in a Mediterranean climate (hot dry summers and mild wet winters) together with processors' requirement for a flatter milk supply for the liquid milk market.

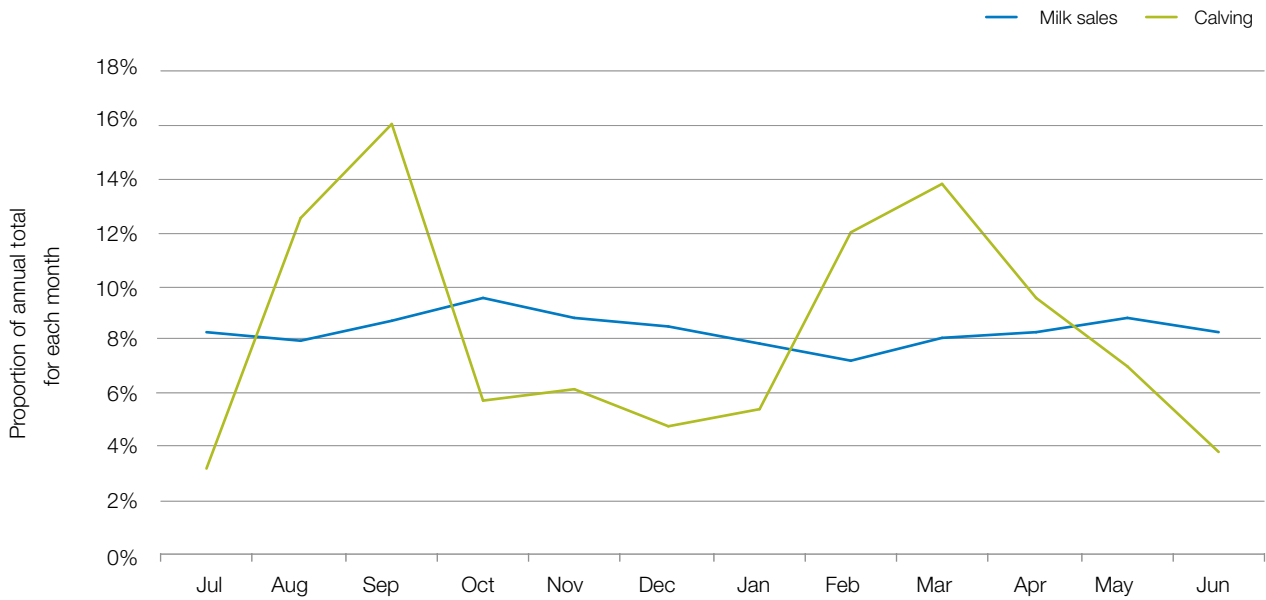
Peak milk production is in spring when pasture growth is greatest and conversely, milk production is lowest in summer when reliance on supplements and irrigation is greatest. This is reflected in a peak to trough ratio of 1.32; with 9.5% of annual milk produced in October compared to 7.2% in February.

Most WA herds have a split calving pattern being spring and autumn. Many factors influence choice of calving pattern on individual farms, including matching feed supply with

animal demand, receiving seasonal milk price, rainfall and irrigation, ease of management and herd fertility management.

The 28 participant farms calved 34% of their cows in August to October and another 36% in February to April. However within this sample, irrigation farms would typically calve up to 66% of their cows in spring and 33% in autumn. Dryland farms would typically calve up to 33% of their cows in spring and 66% in autumn.

Figure 8 Milk sales vs calving pattern



Variable costs

Variable costs are those that change directly according to the amount of output such as herd, shed and feed costs, and are measured in cost per kilogram of milk solids.

The average variable cost of all participant farms increased by 3% from last year to \$3.95/kg MS (28.5 c/l), shown as green bars in Figure 9, compared to last year's \$3.82/kg MS (27.6 c/l). The range was from \$2.71/kg MS to \$4.94/kg MS (19.6 c/l to 35.3 c/l). The top 25% had similar variable costs at \$3.98/kg MS (28.4 c/l).

Feed costs were the major variable cost accounting for 87% of variable costs and 55% of total production costs. The top 25% of farms' feed costs were \$3.49/kg MS (25 c/l), similar to the average for all participants of \$3.45/kg MS (25 c/l).

The average price of purchased feed was \$418/t DM, a 7% increase on the last year's price of \$391/t DM, and ranged from \$325/t DM to \$545/t DM.

The top 25% farms' average price of purchased feed was 3% lower at \$405/t DM.

The top 25% of farms' concentrate price of \$422/t DM was 5% lower than the average for all farms of \$445/t DM.

The percentage breakdown of the variable costs 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. The overhead cost of participant farms is shown as blue bars in Figure 9.

The calculation of overhead costs in the Dairy Farm Monitor project consists of cash and non-cash costs to the dairy business. Examples of cash overheads include rates, insurance and employed labour, and non-cash overheads include depreciation and imputed owner/operator and family labour.

The average overhead cost of all participant farms increased by 3% this year to \$2.33/kg MS (16.8 c/l)

compared to last year's \$2.26/kg MS (16.3 c/l).

Figure 9 further highlights the variation in overhead costs between participant farms with values ranging from \$1.60/kg MS to \$3.29/kg MS (11.7 c/l to 22.8 c/l). The top 25% farms recorded 17% lower overhead costs at \$1.93/kg MS (13.8 c/l) compared to the average of \$2.33/kg MS (16.8 c/l).

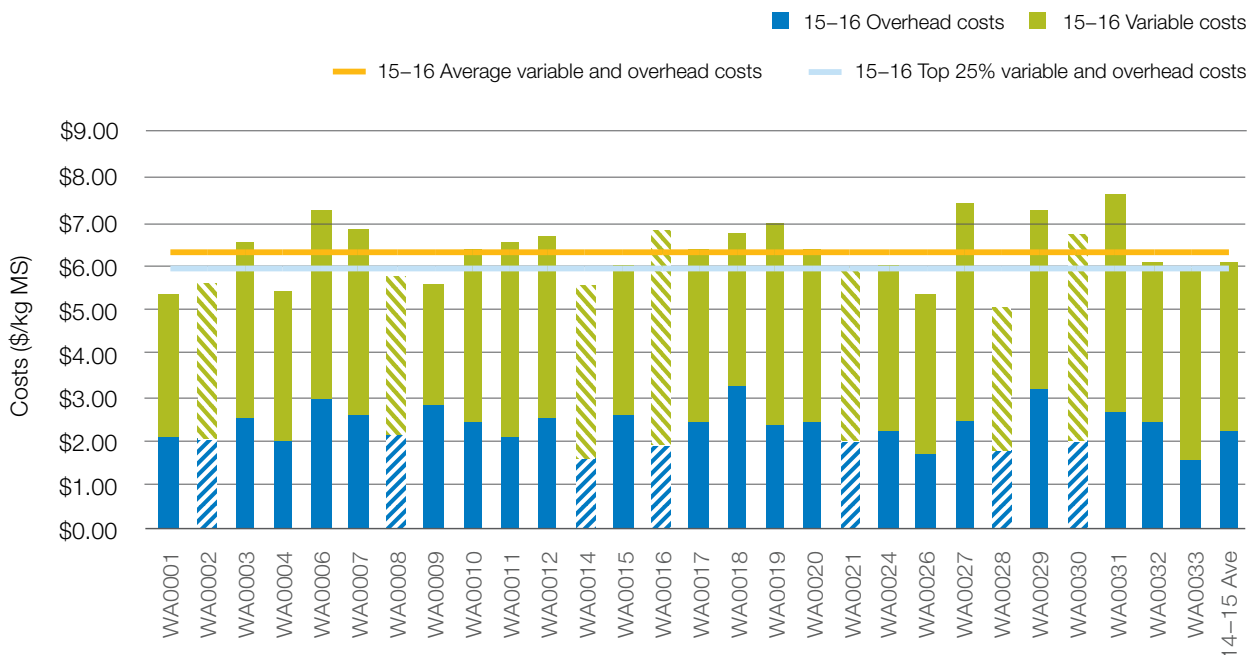
Labour costs, including employed and imputed labour, were the major overhead cost, accounting for 21% of total production costs, similar to last year.

The breakdown of overheads cost as expressed in \$/kg MS and as a percentage of total costs for individual farms can be found in Appendix Tables A5 and A7, respectively.

Repairs and maintenance and depreciation are the other two major overhead cost categories. Spending on repairs and maintenance remained similar to the previous year at 7% of cost of production.

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

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 presents cost of production which includes both variable and overhead costs, as well as changes in fodder and livestock inventories. The average cost of production in

2015–16 was \$6.28/kg MS (45.4 c/l), being 7% more than last year's \$5.86 (42.3 c/l). The top 25% of farms had 6% lower cost of production at \$5.90/kg MS (42.3 c/l).

The top 25% farms had 18% lower total labour costs, both employed and imputed, than the average. Having a low cost of production is a key determinant of being a top 25% producer in 2015–16.

Table 2 Cost of production

Farm Costs	Average		Q1 to Q3 range	Top 25% average	
	\$/kg MS	c/l	\$/kg MS	\$/kg MS	c/l
Variable costs					
Herd costs	\$0.26	1.8	\$0.17–\$0.36	\$0.26	1.9
Shed costs	\$0.24	1.8	\$0.19–\$0.28	\$0.22	1.6
Purchased feed and agistment	\$2.32	16.8	\$2.11–\$2.48	\$2.29	16.4
Home grown feed costs	\$1.13	8.2	\$0.87–\$1.31	\$1.20	8.6
Total variable costs	\$3.95	28.5	\$3.58–\$4.30	\$3.98	28.4
Overhead costs					
Employed labour cost	\$0.79	5.7	\$0.53–\$0.90	\$0.71	5.0
Repairs and maintenance	\$0.46	3.3	\$0.35–\$0.55	\$0.38	2.8
All other cash overheads	\$0.26	1.9	\$0.20–\$0.32	\$0.24	1.7
Total cash overheads	\$1.51	10.9	\$1.30–\$1.61	\$1.34	9.5
Cash cost of production	\$5.46	39.4	\$4.94–\$5.99	\$5.31	38.0
Depreciation	\$0.25	1.8	\$0.16–\$0.35	\$0.19	1.4
Imputed labour costs	\$0.56	4.1	\$0.29–\$0.79	\$0.40	2.9
Non-cash overheads	\$0.82	5.9	\$0.58–\$1.09	\$0.59	4.2
Cost of production without inventory changes	\$6.28	45.3	\$5.70–\$6.75	\$5.90	42.2
Inventory change					
+/- feed inventory change	\$0.01	0.1	\$–0.03–\$0.06	\$0.00	0.0
+/- livestock inventory change less purchases	\$0.00	0.0	\$–0.14–\$0.18	\$0.01	0.1
Cost of production with inventory change	\$6.28	45.4	\$5.79–\$6.80	\$5.90	42.3

Earnings before interest and tax

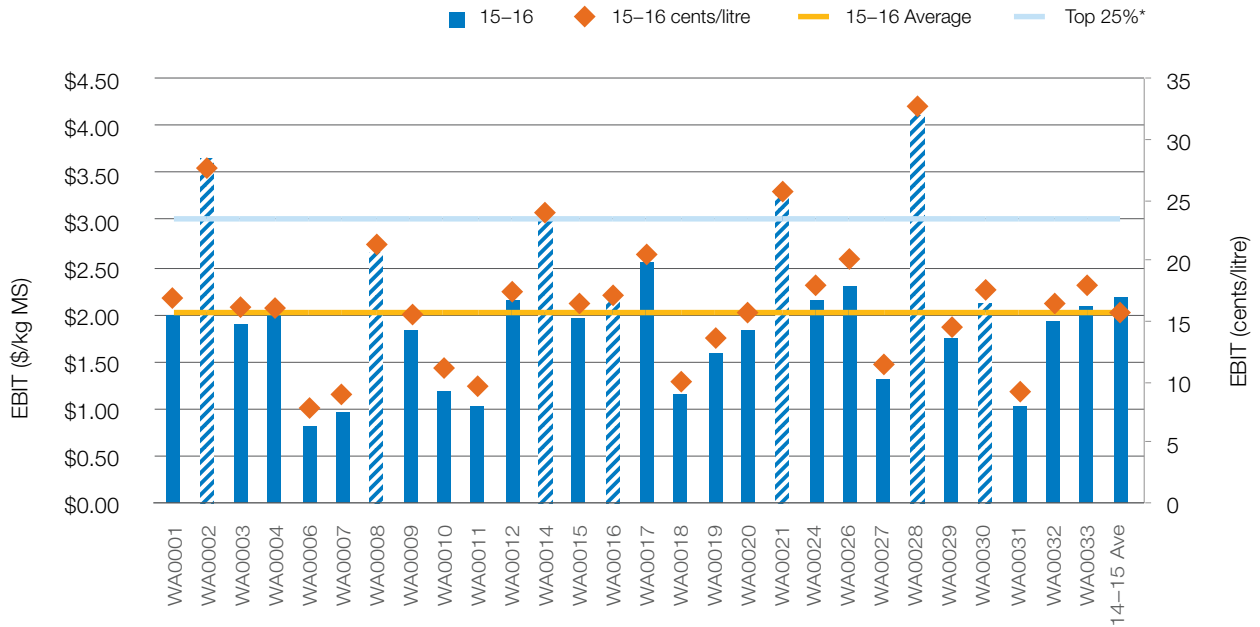
Earnings before interest and tax (EBIT) is the gross farm income less variable and overhead costs. As EBIT excludes interest and lease costs, it is a valuable measure of operating profit.

Figure 10 shows that the average EBIT for 2015–16 was \$2.02/kg MS

(14.6 c/l), which was 7% down on last year's average EBIT of \$2.17/kg MS (15.7 c/l).

The strength of the top 25% performers was highlighted with their EBIT of \$3.01/kg MS (21.6 c/l), meaning they were able to retain 34% of their gross farm income compared to 24% for the average.

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 average RoA for participants was 6.6%, similar to last year's 6.7%, ranging from 2% to 14.7% (Figure 11). A similar proportion of farms (61%) recorded a RoA higher than 5% compared to last year.

The market value of land varied widely across the 28 farms in the group, depending on location and land capability. While the average land value averaged \$14,815/ha across all farms compared to \$14,519/ha for the top 25%, land values ranged from under \$10,000/ha to over \$20,000/ha. As a result, this wide variation of land asset values has a significant impact on return on asset figures.

The variation between farms' RoA reflects the variation between farms' earnings before interest and tax, with differences between those farms with a similar EBIT being explained by the variation in the

valuation of the total assets managed. As previously identified, the market value of land varied widely across the 28 participant farms depending on location and land capability. The average land value of all participants was \$14,815/ha, however, there was more than \$10,000/ha difference between the lowest and highest land values.

All farms in the project this year returned a positive RoA with an average of 6.6% (Figure 12). The top 25% farms recorded an average RoA of 11.4%, being 74% higher than the average of all participant farms.

Figure 11 Distribution of farms by return on assets

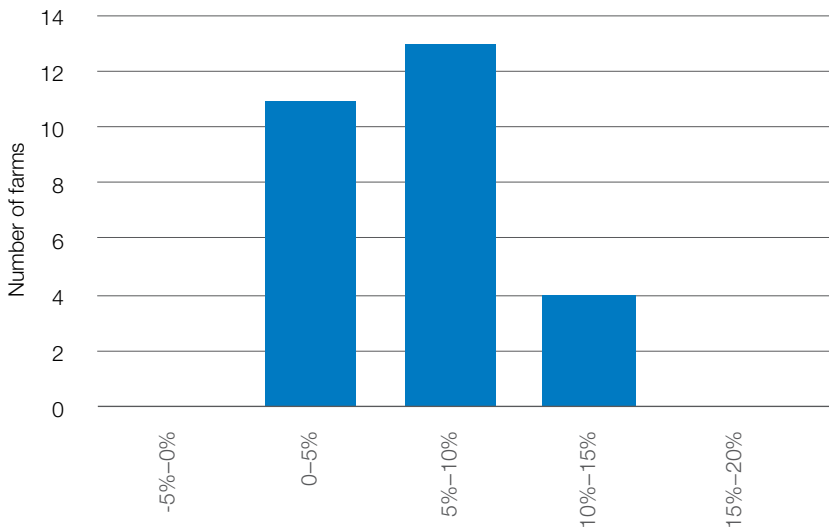
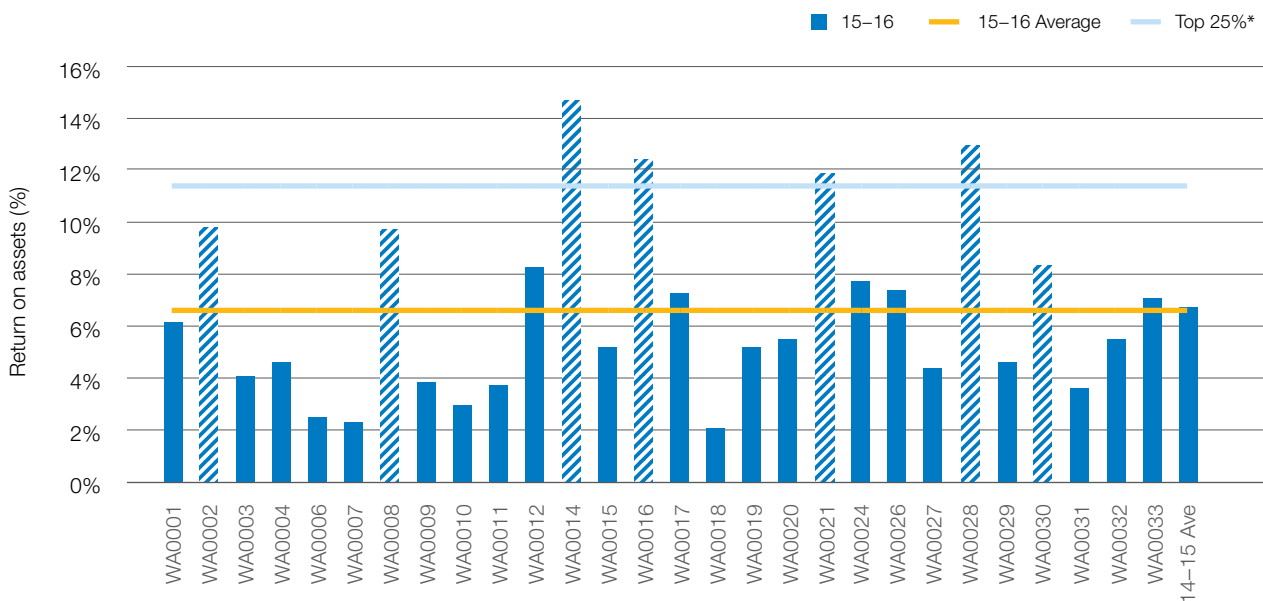


Figure 12 Return on assets



Return on equity 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.

The average return on equity (RoE) for the 28 farms was 9.4% in 2015–16 compared to 9% last year. RoE ranged from –3.6% to 47.5% with a relatively uniform distribution (Figure 13).

Further discussion of RoA and RoE is presented in the risk section below.

All but two farms recorded a positive RoE with individual farm variation shown in Figure 14.

In Figure 14, the axis has been modified to allow for better presentation of RoE received by all WA farms in the project. Farm WA0026 has a RoE of 47.5% in

2015–16 which, if shown in its entirety, would not allow for adequate presentation of the other farms' RoE.

The average RoE of the top 25% of farms was 14.7%, being 56% higher than the average of 9.4%.

Appendix Table A1 presents the RoA and RoE of all the participant farms.

Figure 13 Distribution of farms by return on equity

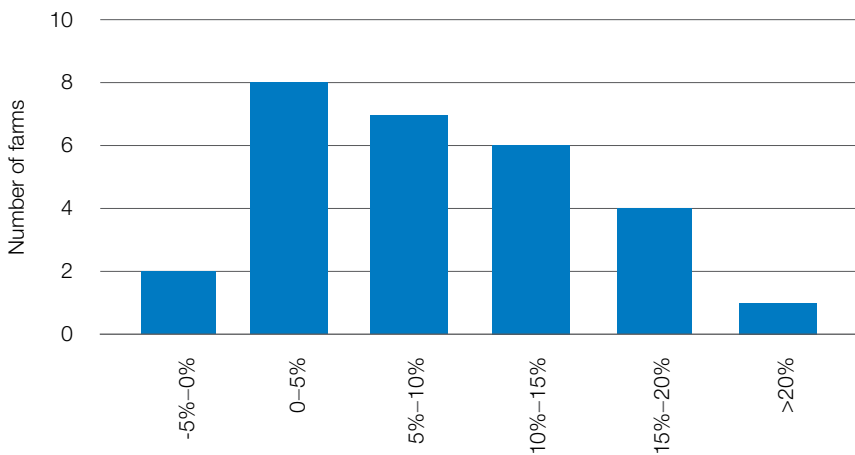
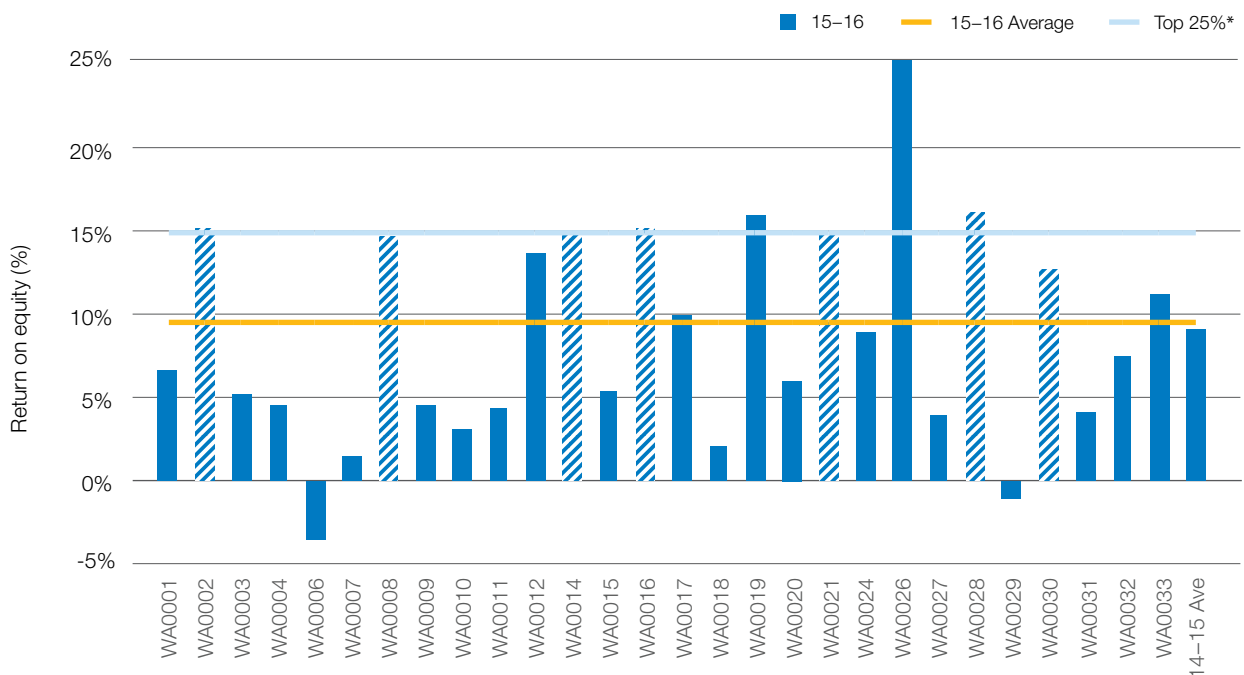


Figure 14 Return on equity



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. These indicators 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 dairy farmers 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 equity %), the greater the exposure to the risk of a shock in those areas of the business.

All farms in the project rely on imported feed for at least 29% of the herd’s feed requirement. With an average of 43% of feed imported, WA participant dairy farms are exposed to fluctuations in prices and supply in the feed market (Table 3). The percentage of imported feed ranged from 29% to 58% between farms reflecting the range in production systems within the WA dairy industry. Feed costs were the major variable cost accounting for 55% of total cost of production.

Equity levels averaged 76% compared to 83% for the top 25% farms.

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, \$0.63 was used to cover variable costs. One hundred minus this percentage 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. This year’s ratio of 6% indicates that on average, farms repaid \$0.06 of every dollar of gross farm income to their creditors. The debt service ratio was 14% less than last year’s 7%, although debt per cow increased by 12%.

The benefit of taking risks and borrowing money can be seen when farm incomes yield a higher return on equity than on their return on assets. In 2015–16, 21 of the 28 of participant farms (75%) received a return on equity greater than their return on assets, compared to 69% of participant farms in 2014–15.

Appendix Tables A4 and A5 show the variable and overhead costs incurred by individual farms expressed in \$/kg MS sold. This data set is best used as risk indicators, given it is measured against the product produced and sold currently and not the capital invested.

Table 3 Risk indicators – statewide

	2013–14	2014–15	2015–16
Cost structure (proportion of total costs that are variable costs)	62%	63%	63%
Debt servicing ratio (percentage of income as finance costs)	8%	7%	6%
Debt per cow	\$2,972	\$2,798	\$3,138
Equity percentage (ownership of total assets managed)	76%	78%	76%
Percentage of feed imported (as a % of total ME)	38%	37%	43%

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

Physical measures

Participant farms sourced 43% of their metabolisable energy (ME) from directly grazed pasture and overall 57% of their metabolisable energy came from home grown feed. Concentrates provided 37% 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 the Appendix B.

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

Figure 15 shows the relative contribution of each feed type to the ME consumption on farm.

Among the participant farms, 68% of the diet ME is forage based, with grazed pasture the major component of the cows' diet at 40%, down from 45% last year.

Concentrates supply the greatest proportion of ME of all the supplements fed, accounting for

37% of the diet. This was an increase on last year's 33% reflecting the shorter growing season.

The remainder of the diet ME was supplied by silage (16%) and hay (7%).

Appendix Table A3 provides further information on purchased feed.

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

Home grown feed can be grazed pasture (shown by the bottom blue bars in Figure 16) and conserved pasture (shown by the top green bars).

In 2015–16 in some instances it was difficult to track the allocation of different feeds to different classes of stock across the whole farm. For this reason where the feed consumption parameters are reported for milking area there may still be some farms where this parameter may not be as accurate

as the feed consumption parameter reported for the entire usable area of the farm.

The average total pasture harvested (grazed and conserved) from the milking area was 5.8 t DM/ha.

The amount of pasture consumed as grazed feed on the milking area this year averaged 4.1 t DM/ha.

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

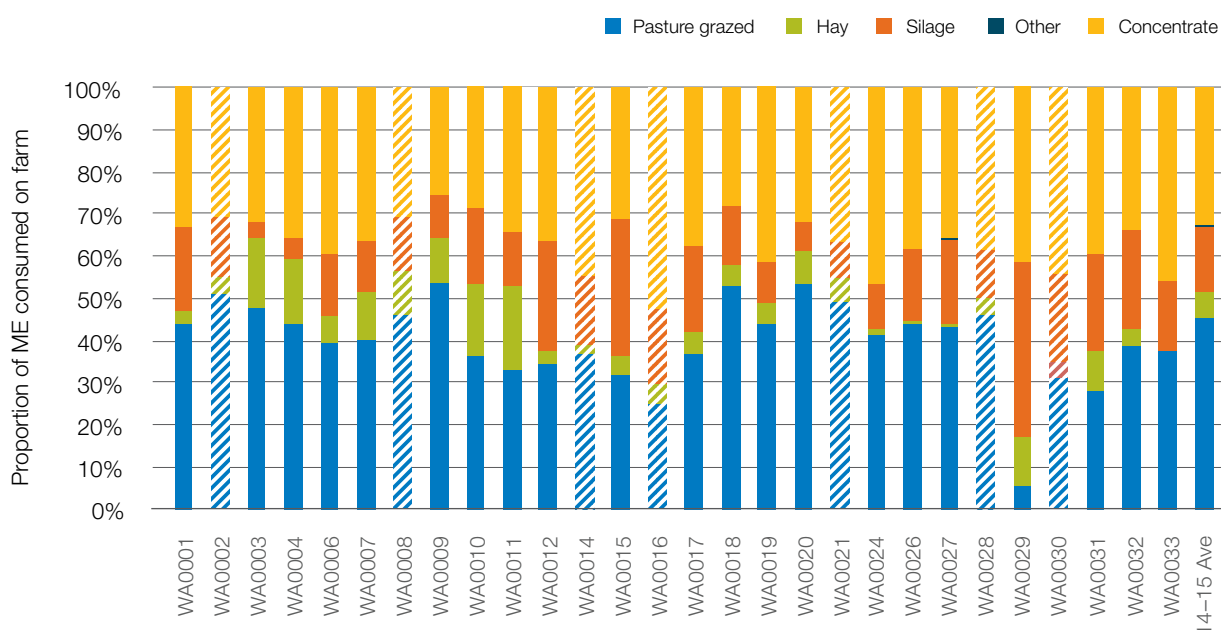
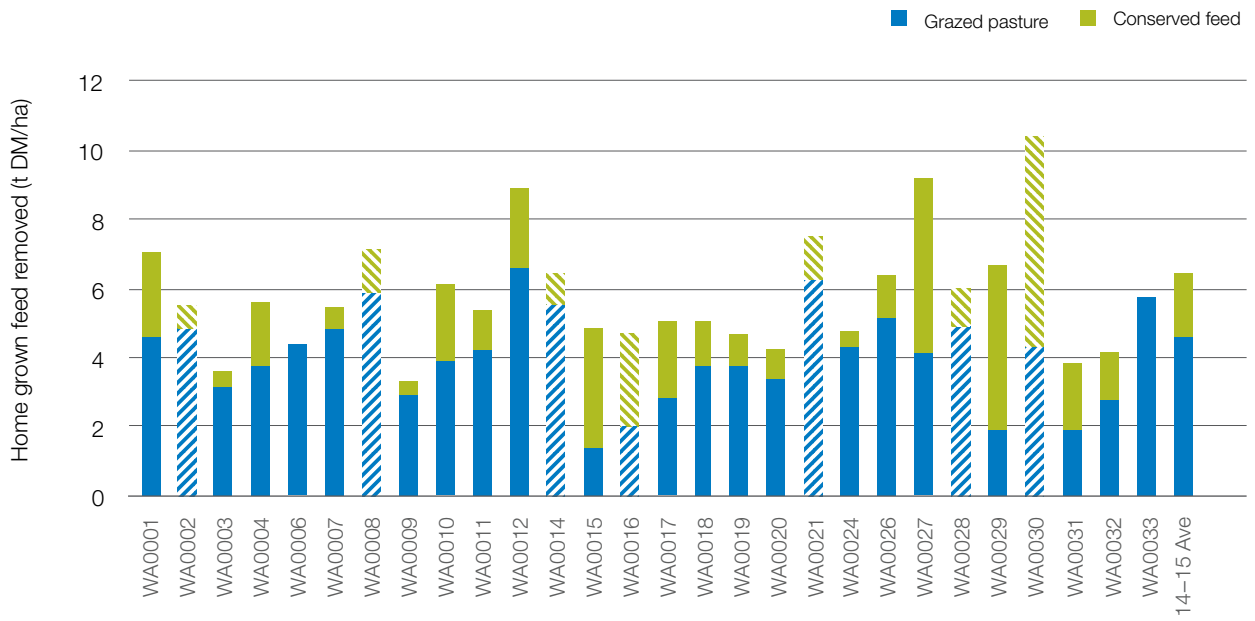


Figure 16 Estimated tonnes of home grown feed consumed per milking hectare



Fertiliser application

Western Australian farms used a wide range of fertilisers and fertiliser application rates, both between farms and with the mix of key macronutrients on individual farms.

Application of nutrients between 2014–15 and 2015–16 did not vary greatly on participant farms for phosphorous, potassium and sulphur while nitrogen use did increase by 9% in 2015–16.

The total nutrient use was 182 kg/ha, compared to 170 kg/ha

last year, comprising of 97 kg/ha nitrogen, 16 kg/ha phosphorus, 41 kg/ha potassium and 28 kg/ha sulphur (Table 4).

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

Nitrogen application varied from 24 kg N/ha up to 176 kg N/ha, with the group average at 97 kg N/ha (Figure 17).

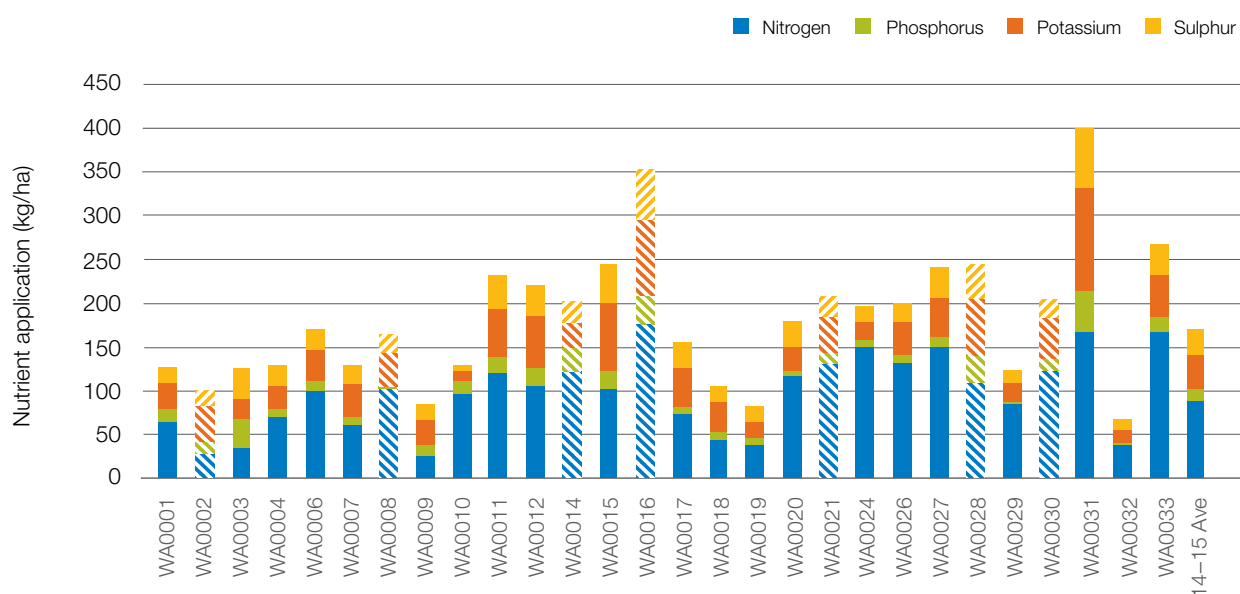
The top 25% farms applied 16% more nitrogen than average, 23% more phosphorus than average, 20% more potassium than average and similar rates of sulphur.

The values for Figure 17 can be found in Appendix Table A2.

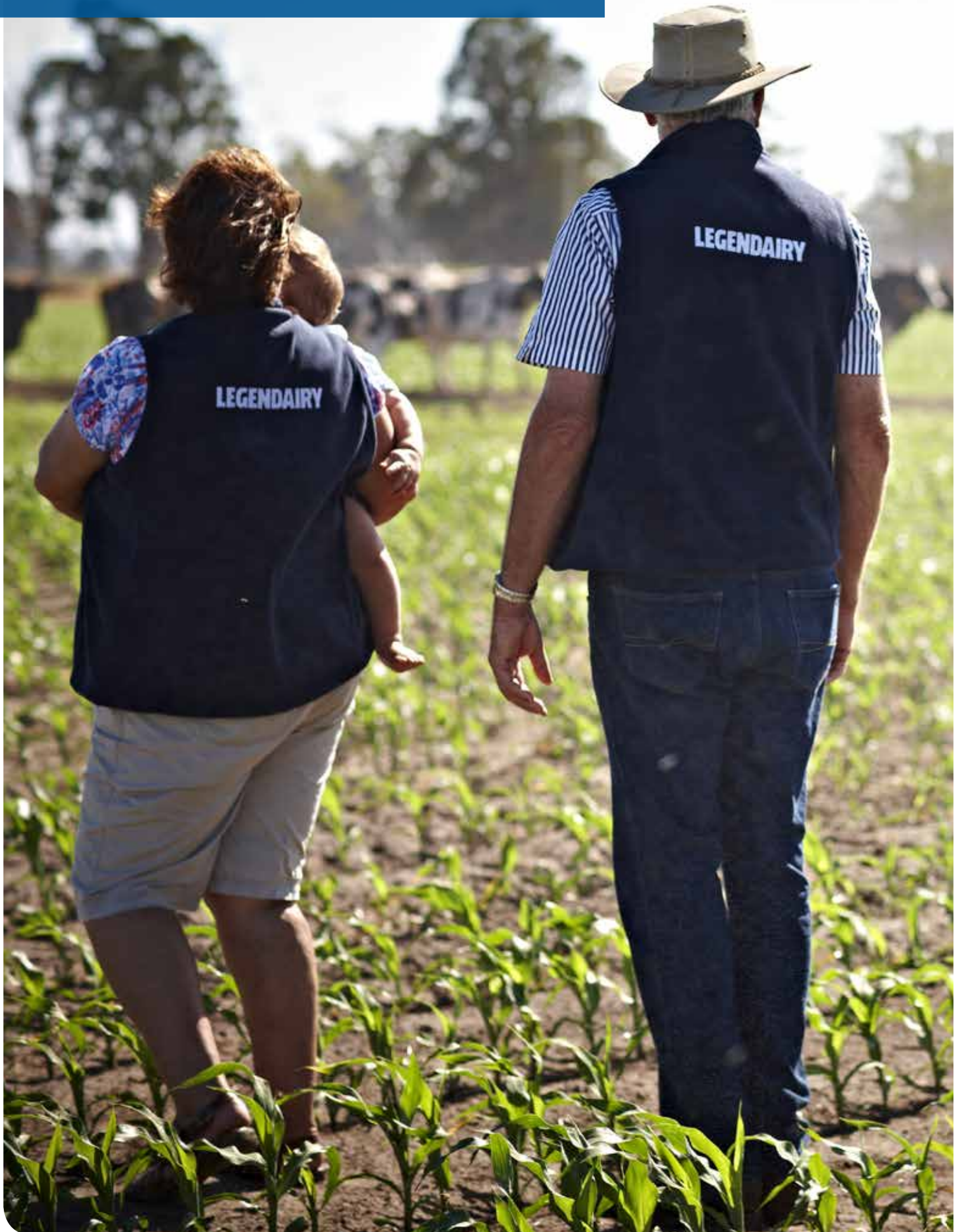
Table 4 Fertiliser use

	2013–14	2014–15	2015–16
Nitrogen kg/ha	86	89	97
Phosphorus kg/ha	12	14	16
Potassium kg/ha	34	38	41
Sulphur kg/ha	25	29	28

Figure 17 Fertiliser application (kg/ha)



Business confidence survey



Expectations and issues

Responses to this business confidence survey were made from July to October 2016 with regard to the 2016–17 financial year and the next five years to 2021–22. This period coincided with the announcement in June 2016 by two Western Australian milk processors not to renew some producer contracts, a first for the Western Australian dairy industry, to manage their oversupply of milk due to loss of markets.

Expectation for business returns

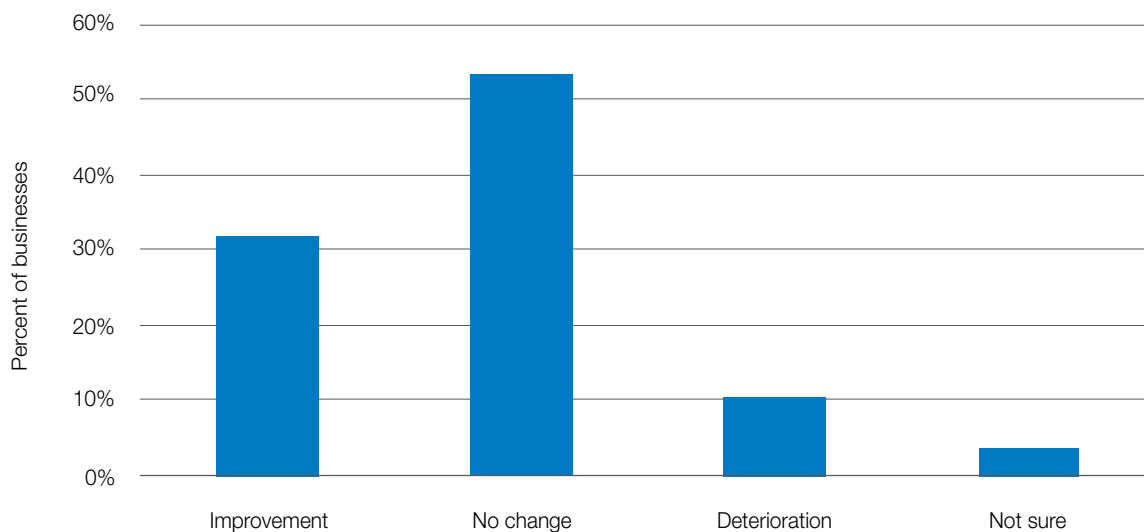
Following strong market signals over the last two years and a good 2015–16 production season, the uncertainty of future milk supply contracts announced in May 2016 seriously impacted on industry confidence at the time of completion of the business confidence survey. As such, expectations for the coming season were more cautious than last year going forward with 32% of farmers predicting an improvement in farm business returns compared to 52% last year (Figure 18). The majority of producers predicted no

change in their business returns, 54% compared to 31% last year. Only 11% of farmers predicted a decrease in their business returns while a further 4% were not sure what would happen to their business returns in 2016–17.

This overall reduction on business confidence compared to last year reflects the impact of uncertainty of future milk supply contracts.

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

Figure 18 Expectation of business returns

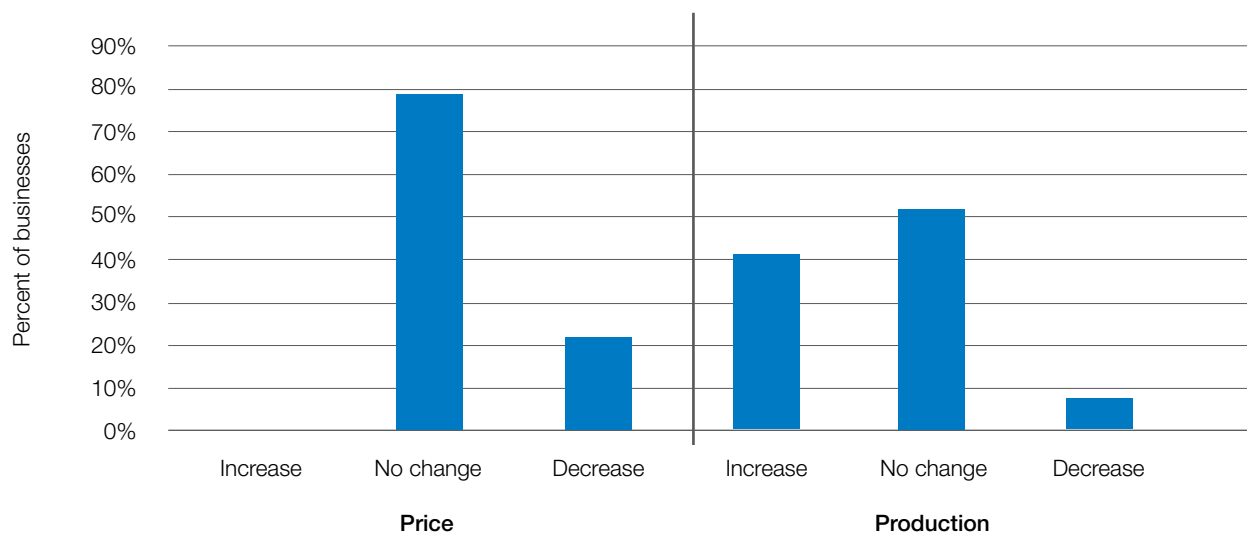


Price and production expectations – Milk

With the uncertainty around future milk supply contracts, no participating farmers expected their milk price to increase in 2016–17, compared to 22% who did last year. Most (79%) expected their milk price to remain stable in 2016–17 and 21% expected a decrease in milk price (Figure 19).

With milk price not expected to change in 2016–17, over half (52%) of participants planned no change to their milk production. Those planning to increase milk production was down from 57% last year to 41% this year while two farms expected to decrease production.

Figure 19 Prices and production expectations – Milk

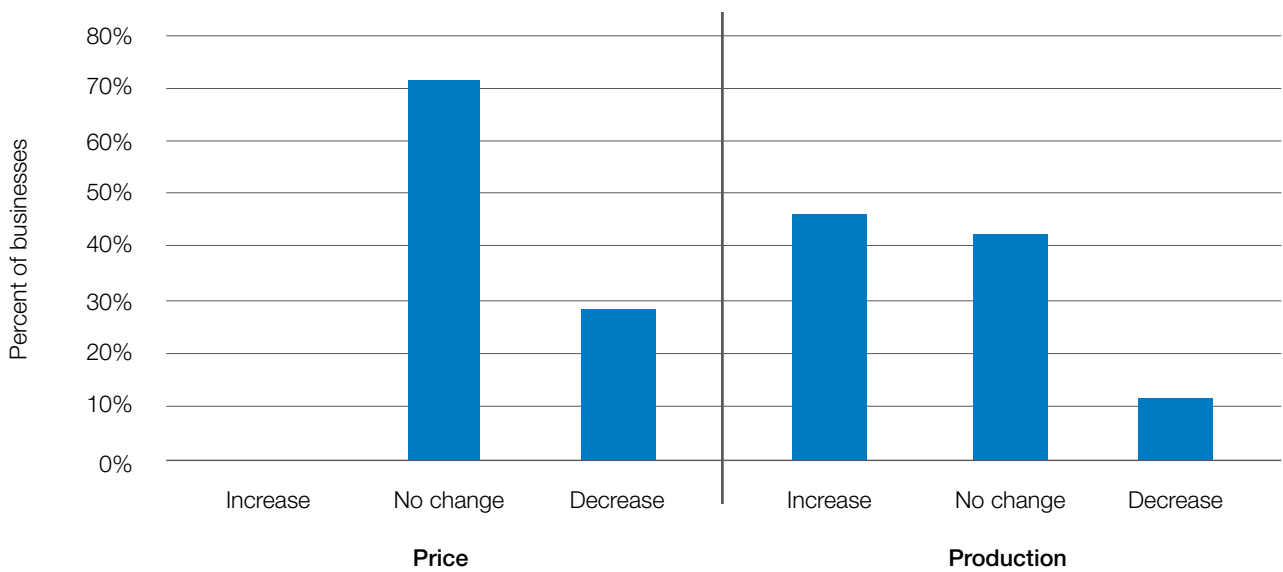


Price and production expectations – Fodder

Over 70% of participating farmers expected no change in fodder prices in 2016–17 while 29% expected fodder price to decrease (Figure 20).

Most farmers (46%) indicated that they expected an increase in their fodder production in 2016–17, with a similar number (42%) expecting no change in their fodder production (Figure 20).

Figure 20 Prices and production expectations – Fodder



Cost expectations

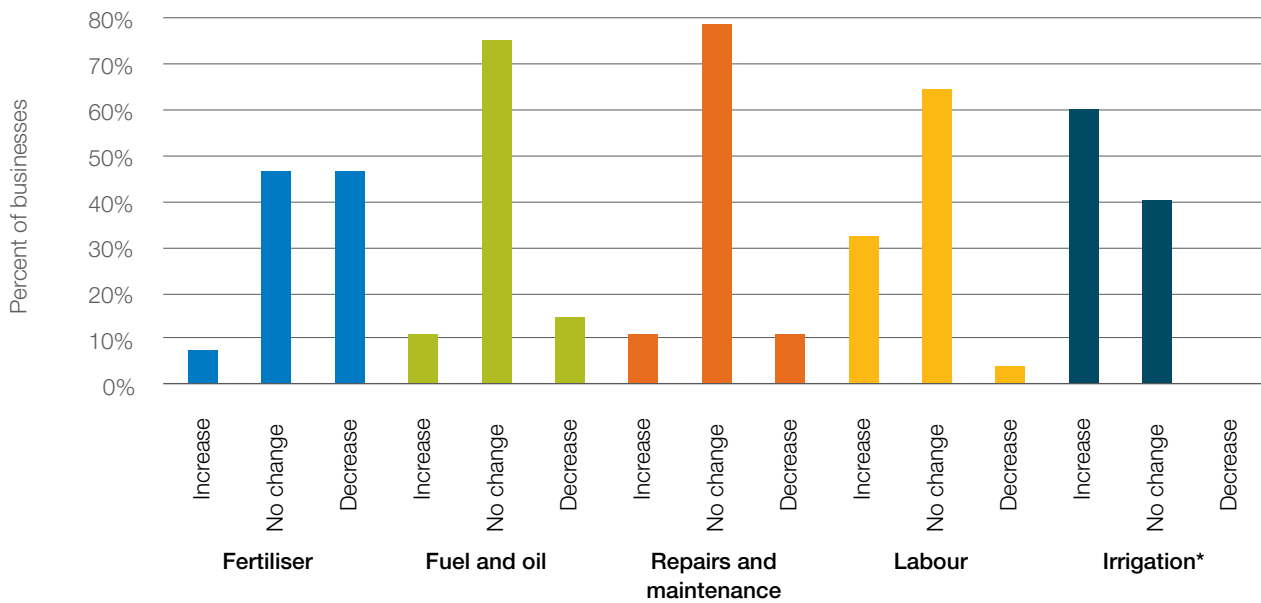
The majority of farmers expected input costs to remain unchanged in all categories (Figure 21). Over 70% of the participant farmers were not expecting changes to repairs and maintenance costs and fuel and oil costs.

Fertiliser costs were the only cost expected to decrease by a high number of responses (46%).

Among the irrigators, 60% predicted an increase in irrigation costs to their business, which is resulting in some irrigators choosing to reduce irrigation over the summer months.

The cost of labour continues to be an issue for some farms with 32% expecting an increase in 2016–17.

Figure 21 Cost expectations



**only includes responses from 10 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. A total of 38 responses were recorded from 26 farms with two participating farmers not making any comments.

Labour (16%); processor uncertainty (16%); managing seasonal conditions (11%); milk price (8%); succession planning (8%) were the major concerns facing participants for 2016–17.

As expected “processor uncertainty” was a topical issue that did not appear in the previous year.

Debt management, economies of scale, input costs and pasture management remained important challenges for the coming year.

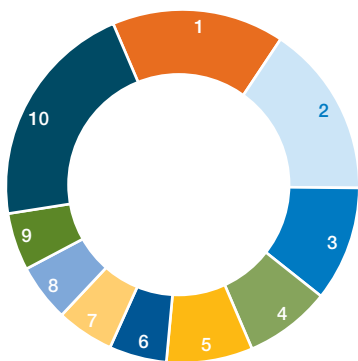


Figure 22 Major issues facing the dairy industry – the next 12 months

- 1 Labour **16%**
- 2 Processor uncertainty **16%**
- 3 Seasonal conditions **11%**
- 4 Milk price **8%**
- 5 Succession planning **8%**
- 6 Debt management **5%**
- 7 Economies of scale **5%**
- 8 Input costs **5%**
- 9 Pasture management **5%**
- 10 Other **21%**
 - Agistment arrangement
 - Business consolidation
 - Herd management
 - Home infrastructure
 - Milk production
 - Profitability
 - Relocation
 - Water

Major issues facing the dairy industry – the next five years

Participants identified six key issues for their business over the next five years to 2021–22 (Figure 23). A total of 51 responses were recorded from 26 farms with two participants not making any comments.

Succession planning (24%) was again identified as the main issue in the next five years, reflecting the increasing average age of Western Australian dairy farmers. This was followed by milk price (16%) and land purchase, tenure and availability (12%).

The other major concerns for participants were dairy infrastructure, economic conditions and processor uncertainty.

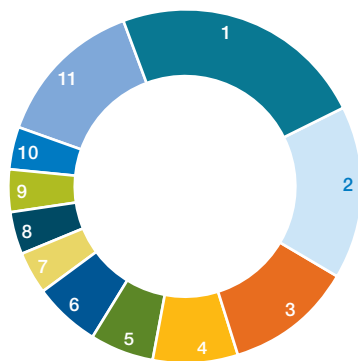


Figure 23 Major issues facing the dairy industry – the next 5 years

- 1 Succession planning **24%**
- 2 Milk price **16%**
- 3 Land purchase, tenure and availability **12%**
- 4 Dairy infrastructure **8%**
- 5 Economic conditions **6%**
- 6 Processor uncertainty **6%**
- 7 Fodder production and management **4%**
- 8 Growth and viability **4%**
- 9 Relocation **4%**
- 10 Water **4%**
- 11 Other **14%**
 - Agistment
 - Debt management
 - General dairy industry in WA
 - Labour
 - Other farm enterprise
 - Production efficiency

Greenhouse gas emissions



2015–16 Greenhouse Gas Emissions

The average level of emission from participating farms was 13.9 t CO₂-e/t MS in 2015–16, similar to last year's 14 t CO₂-e/t MS. This year, there were changes in the method of estimating greenhouse gas emissions which increased total emissions and therefore emissions intensity.

Carbon dioxide equivalents (CO₂-e) are used to standardise the greenhouse potentials from different gases. The Global Warming Potential (GWP) is the index used to convert relevant non-carbon dioxide gases to a carbon dioxide equivalent. This is calculated by multiplying the quantity of each gas by its GWP. All of the data in this section is in CO₂-e tonnes and expressed per tonne of milk solids produced (CO₂-e/t MS).

In 2016 the method of estimating Australia's dairy industry greenhouse gas emissions (NGGI) altered to reflect new research outcomes and align with international guidelines. The GWP for the three gases that are discussed in this report have altered to 1: 25: 298 (CO₂: CH₄: N₂O). This means that one CO₂-e tonne equates to 40 kg of methane (CH₄) and 3.4 kg of nitrous oxide (N₂O). Other changes have included a decrease in the proportion of waste (dung and urine) deposited onto pastures while the milking herd graze, resulting in an increase in waste CH₄ and N₂O emissions along with some changes to the emission factors for N₂O emissions from nitrogen fertiliser and animal waste.

In addition, the estimation of greenhouse gas emissions now include a pre-farm gate emission source. This is the greenhouse gases emitted with the manufacturing of fertilisers and the production of purchased fodder, grain and concentrates. The result of these changes with the NGGI method and inclusion of pre-farm gate emissions will be an increase in emissions intensity of around 22%. This percentage increase will vary between farms in the state.

The distribution of different emissions for 2015–16 is shown in

Figure 24. Greenhouse gas emissions per tonne of milk solids produced ranged from 12.0 CO₂-e/t MS to 16.8 t CO₂-e/t MS with an average emission level of 13.9 t CO₂-e/t MS. The percentage breakdown for emissions in 2015–16 was 65.7% for CH₄, 22.7% for CO₂, and 11.6% for N₂O emissions.

Methane was identified as the main greenhouse gas emitted from dairy farms, accounting for 65.7%, or 9.1 t CO₂-e/t MS, of all greenhouse emissions. There are two main sources of CH₄ emissions on farm: ruminant digestion and anaerobic digestion in effluent management systems. Methane produced from ruminant digestion is known as enteric CH₄ and was the major source of emissions from all farms in this report, with an average of 57.7% of total emissions. Methane from effluent ponds accounted for 8.1% of total emissions on average across the state in 2015–16.

The most efficient strategy to reduce enteric CH₄ production is manipulating the diet by increasing the feed quality through improved pastures or supplementation with particular concentrates. Adding fat supplements such as whole cotton seed, canola meal or linseed oil into the diet can also reduce CH₄ emissions. This is a simple and effective method, however, it is recommended that fats should not constitute more than 6–7% of the dietary dry matter intake.

The second main greenhouse gas emission was CO₂ being produced primarily from fossil fuel consumption as either electricity or petrochemicals. The NGGI calculates carbon emissions from both pre-farm gates and on-farm sources. Carbon dioxide accounted

for 22.7% of total emissions (3.1 t CO₂-e/t MS); 15.5% from pre-farm gates sources and 7.2% from on-farm energy sources.

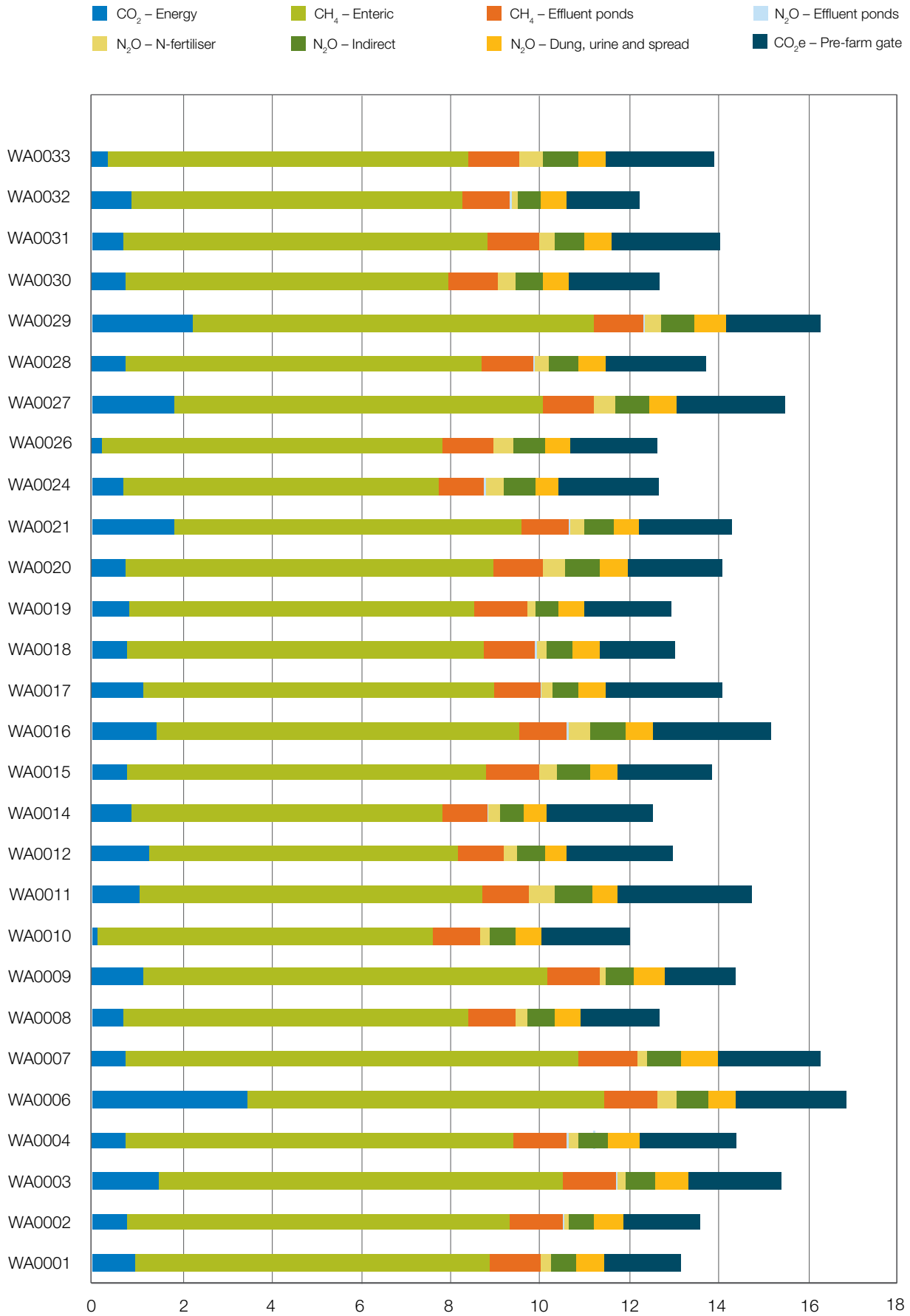
Output levels were highly dependent on the source of electricity used with farms using brown coal generated electricity and electricity sourced from renewable sources (e.g. solar). There are a number of technologies available to improve energy efficiency in the dairy while reducing electricity costs.

The third main greenhouse gas emission was nitrous oxide, accounting for 11.6% of total emissions or 1.6 t CO₂-e/t MS. Nitrous oxide emissions on dairy farms are primarily derived from direct emissions, including nitrogen fertiliser application, effluent management systems and animal excreta (dung and urine), as well as indirect emissions such as from ammonia and nitrate loss in soils.

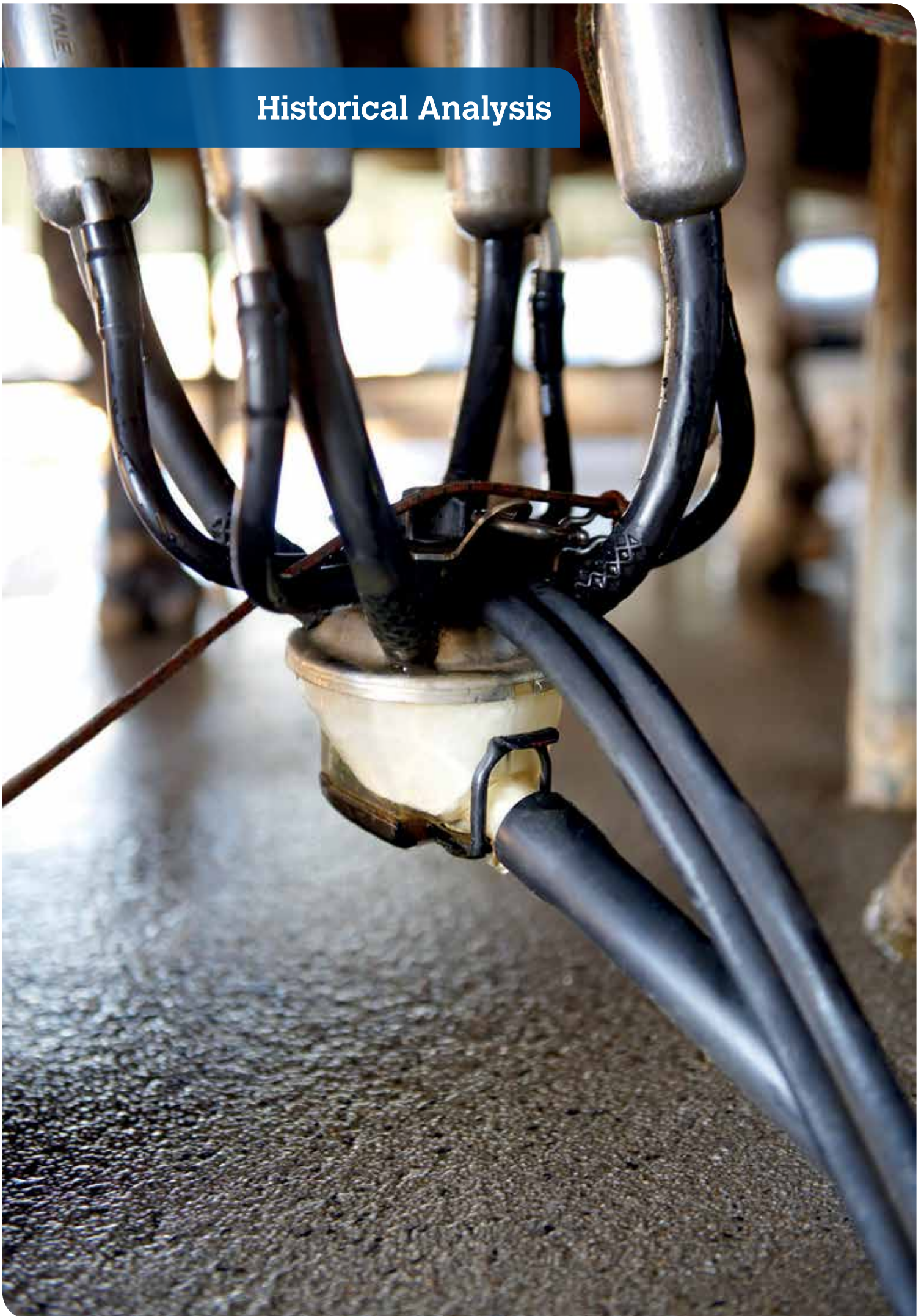
Nitrous oxide emissions from fertiliser accounted for 2.3% of total emissions, effluent ponds accounted for 0.1% and excreta accounted for 4.4%. Nitrous oxide from indirect emissions was 4.7%. Nitrous oxide emissions are highest in warm, waterlogged soils with readily available nitrogen. Over application of nitrogen, high stocking intensity and flood irrigation are all potential causes of increased nitrogen loss as N₂O. Strategic fertiliser management practices can reduce N₂O emissions and improve nitrogen efficiency.

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

Figure 24 Greenhouse gas emissions per tonne of milk solids produced



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 of this year's 28 participating farms, only 25 farms have participated since 2013–14 with three new farms participating in 2015–16.

The average EBIT and net farm income increased for all farms from 2013–14 to 2014–15 before beginning a slight downward trend in 2015–16 (Figure 25).

The previous year's 50% increase in EBIT in 2014–15 was primarily due to a 5% higher average milk price received of \$7.14/kg MS compared to \$6.79/kg MS in 2013–14 (both values adjusted for inflation) coupled with good seasonal conditions.

EBIT and net farm income declined slightly in 2015–16 despite a 1% increase in average milk price from \$7.14/kg MS in 2014–15 (adjusted for inflation) to \$7.22/kg MS this year.

This reflected a number of factors including an increase in purchased feed as source of ME consumed to 43% from 37% in 2014–15 plus a 3% increase in both variable and operating costs in 2015–16. In addition there was an 11% decrease

in 'all other income' including livestock trading profit and feed inventory changes in 2015–16 compared to 2014–15.

Return on assets (RoA) at 6.6% in 2015–16 has remained relatively stable over the last two years after increasing significantly from 4.6% RoA in 2013–14 (Figure 26).

In the past three years, all participating farms have achieved a positive RoA. In both 2014–15 and 2015–16 more than 60% of farms achieved a RoA greater than 5% compared to only 37% of farms in 2013–14.

The average return on equity (RoE) increased significantly from 5.2% in 2013–14 to 9% in 2014–15 and remained stable at 9.4% in 2015–16.

Figure 25 Historical EBIT and net farm income

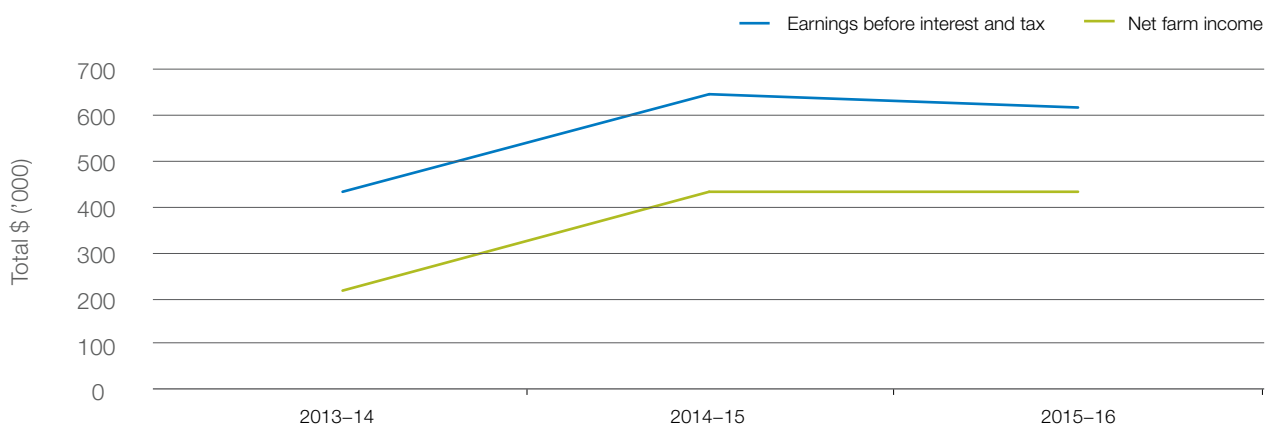
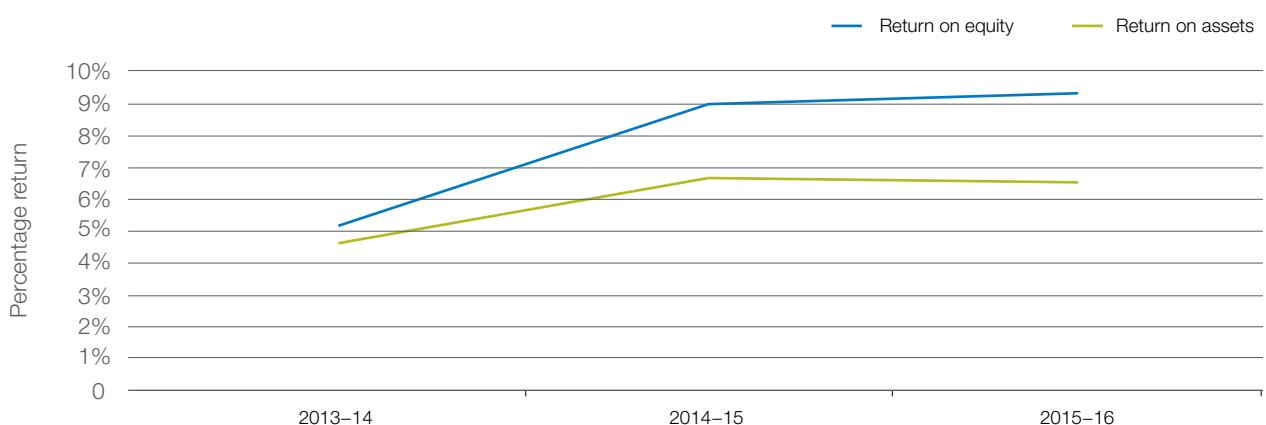
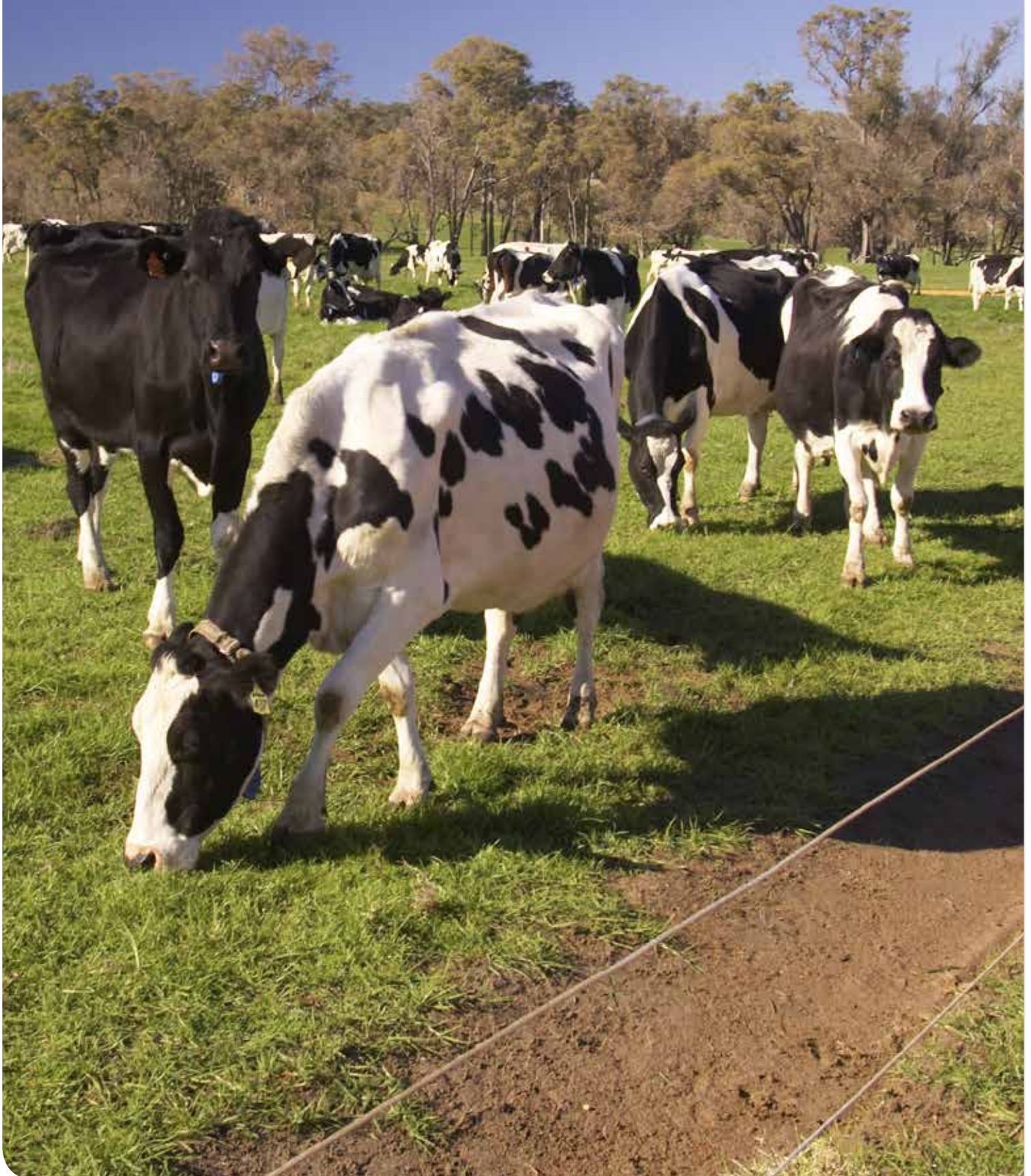


Figure 26 Historical return on assets and return on equity



Appendices



Appendix A: Western Australia 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	%	%
WA0001	\$6.69	\$0.67	\$7.35	\$3.25	\$2.10	61%	\$2.00	6.1%	\$0.72	9.9%	\$1.28	6.6%	6.5%
WA0002	\$8.07	\$1.16	\$9.23	\$3.52	\$2.04	63%	\$3.66	9.8%	\$0.64	6.9%	\$3.02	15.0%	15.0%
WA0003	\$7.15	\$1.27	\$8.43	\$4.01	\$2.54	61%	\$1.88	4.0%	\$0.80	9.5%	\$1.08	5.1%	5.2%
WA0004	\$6.44	\$0.97	\$7.41	\$3.35	\$2.05	62%	\$2.01	4.6%	\$0.58	7.8%	\$1.43	4.5%	4.0%
WA0006	\$7.20	\$0.88	\$8.08	\$4.29	\$2.98	59%	\$0.80	2.5%	\$1.25	15.5%	-\$0.45	-3.6%	-3.6%
WA0007	\$6.25	\$1.55	\$7.81	\$4.21	\$2.64	61%	\$0.96	2.3%	\$0.68	8.7%	\$0.29	1.3%	1.2%
WA0008	\$7.59	\$0.81	\$8.39	\$3.60	\$2.14	63%	\$2.65	9.7%	\$0.17	2.0%	\$2.48	14.5%	14.8%
WA0009	\$6.26	\$1.11	\$7.36	\$2.71	\$2.80	49%	\$1.85	3.8%	\$0.19	2.6%	\$1.65	4.4%	4.5%
WA0010	\$6.39	\$1.16	\$7.55	\$3.90	\$2.47	61%	\$1.18	3.0%	\$0.31	4.1%	\$0.87	3.0%	3.0%
WA0011	\$6.25	\$1.26	\$7.51	\$4.39	\$2.08	68%	\$1.03	3.8%	\$0.60	8.0%	\$0.43	4.3%	4.3%
WA0012	\$7.73	\$1.10	\$8.83	\$4.17	\$2.52	62%	\$2.14	8.2%	\$0.52	5.9%	\$1.62	13.6%	12.0%
WA0014	\$7.17	\$1.37	\$8.54	\$3.94	\$1.60	71%	\$3.00	14.7%	\$0.00	0.0%	\$3.00	14.7%	13.9%
WA0015	\$6.91	\$1.04	\$7.95	\$3.39	\$2.61	56%	\$1.95	5.1%	\$0.14	1.8%	\$1.81	5.2%	5.3%
WA0016	\$7.62	\$1.36	\$8.98	\$4.87	\$1.91	72%	\$2.20	12.4%	\$0.59	6.6%	\$1.61	15.0%	15.6%
WA0017	\$7.60	\$1.28	\$8.88	\$3.84	\$2.50	61%	\$2.55	7.3%	\$0.35	4.0%	\$2.20	9.8%	7.6%
WA0018	\$6.95	\$0.94	\$7.89	\$3.46	\$3.29	51%	\$1.14	2.0%	\$0.36	4.6%	\$0.78	2.0%	2.0%
WA0019	\$7.49	\$1.05	\$8.54	\$4.55	\$2.41	65%	\$1.58	5.2%	\$0.35	4.1%	\$1.23	15.9%	10.7%
WA0020	\$7.12	\$1.08	\$8.20	\$3.92	\$2.43	62%	\$1.84	5.5%	\$0.76	9.2%	\$1.09	5.8%	5.9%
WA0021	\$7.93	\$1.30	\$9.23	\$3.94	\$2.00	66%	\$3.29	11.9%	\$0.28	3.0%	\$3.01	14.8%	15.7%
WA0024	\$7.61	\$0.51	\$8.11	\$3.73	\$2.23	63%	\$2.16	7.8%	\$0.17	2.1%	\$1.98	8.8%	9.1%
WA0026	\$7.05	\$0.59	\$7.64	\$3.63	\$1.70	68%	\$2.31	7.4%	\$0.61	7.9%	\$1.71	47.5%	62.2%
WA0027	\$7.44	\$1.23	\$8.68	\$4.94	\$2.45	67%	\$1.29	4.4%	\$0.66	7.6%	\$0.64	3.8%	3.8%
WA0028	\$8.10	\$1.05	\$9.15	\$3.25	\$1.79	65%	\$4.11	12.9%	\$0.42	4.6%	\$3.69	16.0%	16.0%
WA0029	\$7.85	\$1.11	\$8.96	\$4.03	\$3.20	56%	\$1.73	4.6%	\$1.86	20.8%	-\$0.13	-1.1%	-7.3%
WA0030	\$7.90	\$0.91	\$8.82	\$4.70	\$2.00	70%	\$2.12	8.3%	\$0.33	3.8%	\$1.79	12.6%	11.9%
WA0031	\$7.58	\$1.06	\$8.64	\$4.93	\$2.69	65%	\$1.02	3.6%	\$0.35	4.0%	\$0.67	4.1%	3.6%
WA0032	\$7.00	\$1.02	\$8.02	\$3.66	\$2.44	60%	\$1.93	5.5%	\$0.88	11.0%	\$1.04	7.4%	7.5%
WA0033	\$6.78	\$1.22	\$8.01	\$4.31	\$1.61	73%	\$2.08	7.1%	\$0.34	4.2%	\$1.75	11.0%	11.7%
Average	\$7.22	\$1.07	\$8.29	\$3.95	\$2.33	63%	\$2.02	6.6%	\$0.53	6.4%	\$1.48	9.4%	9.4%
Top 25%*	\$7.77	\$1.14	\$8.91	\$3.98	\$1.93	67%	\$3.01	11.4%	\$0.35	3.9%	\$2.66	14.7%	14.7%

* The top 25% are bold and italicised

Table A2 Physical information

Farm number	Water used	Milking cows per usable area	Milk sold	Milk sold	Fat	Protein
	mm/ha	hd/ha	kg MS/cow	kg MS/ha	%	%
WA0001	1,213	1.0	522	546	4.2%	3.2%
WA0002	1,213	0.9	490	463	3.8%	3.2%
WA0003	1,252	0.7	460	300	4.1%	3.4%
WA0004	979	0.9	537	483	3.7%	3.2%
WA0006	976	0.9	493	427	3.7%	3.2%
WA0007	925	1.1	440	467	3.8%	3.2%
WA0008	889	1.0	673	685	3.9%	3.3%
WA0009	979	0.6	495	321	4.0%	3.3%
WA0010	1,078	1.3	561	718	4.3%	3.4%
WA0011	788	0.6	603	370	4.1%	3.2%
WA0012	817	0.8	720	602	3.9%	3.2%
WA0014	888	1.4	678	932	4.0%	3.3%
WA0015	936	1.0	449	430	4.1%	3.2%
WA0016	1,033	1.0	623	649	3.8%	3.1%
WA0017	925	0.8	674	540	4.1%	3.1%
WA0018	914	0.6	557	346	3.9%	3.0%
WA0019	936	0.9	497	430	4.0%	3.1%
WA0020	1,053	0.8	557	436	4.0%	3.4%
WA0021	993	1.2	589	699	3.9%	3.2%
WA0024	874	1.0	652	640	4.2%	3.3%
WA0026	917	1.1	497	558	4.3%	3.5%
WA0027	948	1.1	532	604	3.8%	3.3%
WA0028	673	1.2	507	603	4.2%	3.2%
WA0029	876	0.8	556	430	3.7%	3.4%
WA0030	862	1.0	574	589	4.0%	3.4%
WA0031	925	1.6	589	914	4.0%	3.0%
WA0032	1,033	0.7	581	381	4.1%	3.3%
WA0033	1,096	1.2	484	597	4.1%	3.5%
Average	964	1.0	557	541	4.0%	3.3%
Top 25%*	936	1.1	590	660	3.9%	3.2%

* 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
WA0001	4.6	2.5	64%	63.1	16.4	27.7	19.9	137.9	71,931
<i>WA0002</i>	<i>4.9</i>	<i>0.7</i>	<i>61%</i>	<i>27.6</i>	<i>14.0</i>	<i>40.6</i>	<i>18.1</i>	<i>111.3</i>	<i>54,531</i>
WA0003	3.2	0.5	64%	35.7	30.8	24.3	34.7	73.2	33,696
WA0004	3.8	1.8	58%	69.3	8.5	26.2	23.6	98.4	52,813
WA0006	4.4	0.0	54%	98.9	13.5	34.7	21.8	82.1	40,509
WA0007	4.9	0.6	57%	59.9	10.1	38.0	21.1	84.3	37,074
<i>WA0008</i>	<i>5.9</i>	<i>1.2</i>	<i>60%</i>	<i>101.4</i>	<i>3.2</i>	<i>38.3</i>	<i>21.2</i>	<i>82.8</i>	<i>55,716</i>
WA0009	2.9	0.4	71%	24.2	12.8	31.0	17.9	80.2	39,740
WA0010	3.9	2.2	54%	95.2	16.3	11.1	7.4	76.6	42,950
WA0011	4.2	1.2	57%	121.1	15.3	57.2	38.6	60.7	36,607
WA0012	6.6	2.3	52%	106.6	18.4	59.6	34.9	66.6	47,984
<i>WA0014</i>	<i>5.6</i>	<i>0.9</i>	<i>42%</i>	<i>121.9</i>	<i>26.9</i>	<i>29.0</i>	<i>24.5</i>	<i>133.4</i>	<i>90,482</i>
WA0015	1.4	3.4	62%	101.6	20.5	78.5	44.5	101.9	45,804
<i>WA0016</i>	<i>2.0</i>	<i>2.7</i>	<i>48%</i>	<i>175.8</i>	<i>32.9</i>	<i>86.5</i>	<i>58.0</i>	<i>87.6</i>	<i>54,516</i>
WA0017	2.9	2.3	52%	73.8	9.1	42.1	31.1	66.8	44,994
WA0018	3.7	1.4	66%	43.9	9.3	34.4	19.0	64.2	35,776
WA0019	3.8	0.9	53%	38.1	8.2	18.5	16.7	82.2	40,885
WA0020	3.4	0.8	63%	118.1	5.9	26.3	28.6	72.1	40,158
<i>WA0021</i>	<i>6.3</i>	<i>1.2</i>	<i>60%</i>	<i>130.4</i>	<i>13.0</i>	<i>41.4</i>	<i>23.2</i>	<i>100.9</i>	<i>59,400</i>
WA0024	4.3	0.5	50%	149.4	9.0	19.9	19.4	100.5	65,515
WA0026	5.1	1.2	55%	130.6	10.5	38.2	21.6	107.5	53,413
WA0027	4.2	5.0	61%	148.5	14.1	42.1	37.2	90.6	48,179
<i>WA0028</i>	<i>4.9</i>	<i>1.1</i>	<i>58%</i>	<i>108.5</i>	<i>31.4</i>	<i>64.9</i>	<i>39.5</i>	<i>120.8</i>	<i>61,244</i>
WA0029	1.9	4.8	54%	84.3	4.3	18.9	14.3	63.4	35,234
<i>WA0030</i>	<i>4.3</i>	<i>6.1</i>	<i>49%</i>	<i>123.0</i>	<i>13.2</i>	<i>46.9</i>	<i>21.4</i>	<i>105.1</i>	<i>60,314</i>
WA0031	2.0	1.8	49%	166.7	48.9	115.8	67.8	69.4	40,845
WA0032	2.7	1.4	62%	36.0	5.4	15.1	10.1	77.3	44,879
WA0033	5.7	0.0	53%	168.2	17.5	47.9	34.7	133.6	64,658
Average	4.1	1.7	57%	97.2	15.7	41.2	27.5	90.4	49,995
Top 25%*	4.8	2.0	54%	112.7	19.2	49.6	29.4	106.0	62,315

* 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
WA0001	2.2	\$397		\$400		\$397	13.1	3.1	36%
WA0002	2.2	\$416		\$321		\$406	12.2	3.4	39%
WA0003	2.1	\$533		\$259		\$514	12.8	4.1	36%
WA0004	2.8	\$450		\$215		\$409	11.7	3.6	42%
WA0006	3.1	\$429		\$315		\$407	12.5	3.3	46%
WA0007	2.7	\$403		\$252		\$392	12.5	3.2	43%
WA0008	3.1	\$495	\$279	\$264		\$447	12.2	3.7	40%
WA0009	1.8	\$360		\$313		\$356	12.3	3.0	29%
WA0010	3.4	\$515		\$165		\$357	11.9	3.2	46%
WA0011	3.4	\$377		\$288		\$355	11.3	3.3	43%
WA0012	3.6	\$435	\$274	\$216		\$412	12.0	3.5	48%
WA0014	4.7	\$357	\$250	\$167		\$325	12.5	2.7	58%
WA0015	1.8	\$452				\$452	13.2	3.5	38%
WA0016	3.5	\$395				\$395	12.9	3.1	52%
WA0017	4.9	\$412	\$200	\$156		\$335	11.4	3.0	48%
WA0018	2.3	\$530		\$366		\$502	12.5	4.1	34%
WA0019	2.6	\$491		\$90		\$445	12.4	3.6	47%
WA0020	2.5	\$483	\$193			\$434	12.4	3.6	37%
WA0021	3.0	\$452		\$344		\$439	12.5	3.6	40%
WA0024	3.7	\$388	\$208	\$344		\$378	13.3	2.9	50%
WA0026	2.2	\$448				\$448	12.8	3.5	45%
WA0027	2.6	\$413		\$200	\$203	\$405	12.4	3.3	39%
WA0028	2.5	\$375		\$278		\$362	12.4	3.0	42%
WA0029	3.1	\$400				\$400	12.4	3.3	46%
WA0030	2.9	\$461				\$461	12.8	3.6	51%
WA0031	3.6	\$610		\$330		\$545	13.1	4.2	51%
WA0032	2.7	\$533		\$237		\$493	12.5	4.0	38%
WA0033	2.7	\$448		\$282		\$446	12.8	3.5	47%
Average	2.9	\$445	\$234	\$264	\$203	\$418	12.5	3.4	43%
Top 25%*	3.1	\$422				\$405	12.5	3.3	46%

* 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
WA0001	\$0.20	\$0.10	\$0.01	\$0.16	\$0.04	\$0.50	\$0.45	\$0.00	\$0.06
WA0002	\$0.27	\$0.08	\$0.00	\$0.12	\$0.19	\$0.67	\$0.58	\$0.00	\$0.04
WA0003	\$0.03	\$0.05	\$0.01	\$0.16	\$0.07	\$0.32	\$0.72	\$0.00	\$0.05
WA0004	\$0.05	\$0.05	\$0.00	\$0.11	\$0.08	\$0.28	\$0.40	\$0.00	\$0.02
WA0006	\$0.18	\$0.17	\$0.01	\$0.17	\$0.15	\$0.67	\$0.56	\$0.28	\$0.02
WA0007	\$0.01	\$0.30	\$0.02	\$0.12	\$0.16	\$0.60	\$0.40	\$0.00	\$0.16
WA0008	\$0.12	\$0.12	\$0.00	\$0.09	\$0.10	\$0.42	\$0.36	\$0.14	\$0.32
WA0009	\$0.05	\$0.10	\$0.02	\$0.12	\$0.14	\$0.43	\$0.40	\$0.00	\$0.20
WA0010	\$0.10	\$0.09	\$0.00	\$0.09	\$0.16	\$0.44	\$0.40	\$0.41	\$0.12
WA0011	\$0.09	\$0.15	\$0.00	\$0.11	\$0.09	\$0.43	\$0.92	\$0.00	\$0.25
WA0012	\$0.14	\$0.24	\$0.01	\$0.11	\$0.13	\$0.63	\$0.53	\$0.00	\$0.15
WA0014	\$0.03	\$0.08	\$0.00	\$0.12	\$0.08	\$0.31	\$0.80	\$0.00	\$0.24
WA0015	\$0.07	\$0.05	\$0.00	\$0.14	\$0.16	\$0.41	\$0.79	\$0.00	\$0.05
WA0016	\$0.17	\$0.16	\$0.04	\$0.15	\$0.19	\$0.71	\$0.80	\$0.00	\$0.26
WA0017	\$0.19	\$0.14	\$0.00	\$0.14	\$0.06	\$0.53	\$0.49	\$0.00	\$0.10
WA0018	\$0.09	\$0.10	\$0.00	\$0.14	\$0.08	\$0.42	\$0.54	\$0.00	\$0.03
WA0019	\$0.25	\$0.11	\$0.02	\$0.13	\$0.09	\$0.60	\$0.48	\$0.00	\$0.22
WA0020	\$0.06	\$0.09	\$0.01	\$0.10	\$0.11	\$0.38	\$0.63	\$0.29	\$0.18
WA0021	\$0.17	\$0.08	\$0.05	\$0.09	\$0.09	\$0.48	\$0.59	\$0.18	\$0.12
WA0024	\$0.13	\$0.07	\$0.00	\$0.14	\$0.09	\$0.44	\$0.50	\$0.18	\$0.29
WA0026	\$0.03	\$0.13	\$0.00	\$0.07	\$0.04	\$0.27	\$0.58	\$0.04	\$0.45
WA0027	\$0.14	\$0.29	\$0.01	\$0.12	\$0.19	\$0.75	\$0.84	\$0.15	\$0.23
WA0028	\$0.11	\$0.14	\$0.00	\$0.08	\$0.10	\$0.43	\$0.56	\$0.00	\$0.02
WA0029	\$0.15	\$0.25	\$0.00	\$0.26	\$0.20	\$0.86	\$0.39	\$0.09	\$0.04
WA0030	\$0.06	\$0.17	\$0.00	\$0.10	\$0.07	\$0.40	\$0.60	\$0.10	\$0.55
WA0031	\$0.11	\$0.28	\$0.00	\$0.10	\$0.10	\$0.60	\$0.74	\$0.00	\$0.01
WA0032	\$0.05	\$0.11	\$0.00	\$0.18	\$0.31	\$0.65	\$0.34	\$0.00	\$0.09
WA0033	\$0.07	\$0.14	\$0.00	\$0.08	\$0.05	\$0.35	\$0.70	\$0.24	\$0.19
Average	\$0.11	\$0.14	\$0.01	\$0.12	\$0.12	\$0.50	\$0.57	\$0.08	\$0.16
Top 25%*	\$0.13	\$0.12	\$0.01	\$0.11	\$0.12	\$0.49	\$0.61	\$0.06	\$0.22

* 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
WA0001	\$0.17	\$0.19	\$0.08	\$0.21	\$1.58	\$0.00	\$2.75	\$3.25
<i>WA0002</i>	<i>\$0.10</i>	<i>\$0.11</i>	<i>\$0.00</i>	<i>\$0.15</i>	<i>\$1.88</i>	<i>\$0.00</i>	<i>\$2.86</i>	<i>\$3.52</i>
WA0003	\$0.32	\$0.08	\$0.14	\$0.08	\$2.29	\$0.00	\$3.68	\$4.01
WA0004	\$0.06	\$0.12	\$0.07	\$0.25	\$2.10	\$0.05	\$3.07	\$3.35
WA0006	\$0.14	\$0.07	\$0.00	\$0.38	\$2.18	\$0.00	\$3.62	\$4.29
WA0007	\$0.09	\$0.26	\$0.17	\$0.12	\$2.40	\$0.00	\$3.60	\$4.21
<i>WA0008</i>	<i>\$0.05</i>	<i>\$0.19</i>	<i>\$0.00</i>	<i>\$0.28</i>	<i>\$1.81</i>	<i>\$0.04</i>	<i>\$3.18</i>	<i>\$3.60</i>
WA0009	\$0.07	\$0.12	\$0.00	\$0.09	\$1.40	\$0.00	\$2.28	\$2.71
WA0010	\$0.08	\$0.12	\$0.11	\$0.47	\$1.72	\$0.03	\$3.47	\$3.90
WA0011	\$0.15	\$0.32	\$0.00	\$0.40	\$1.92	\$0.00	\$3.97	\$4.39
WA0012	\$0.24	\$0.21	\$0.00	\$0.41	\$2.01	\$0.00	\$3.53	\$4.17
<i>WA0014</i>	<i>\$0.14</i>	<i>\$0.12</i>	<i>\$0.03</i>	<i>\$0.49</i>	<i>\$1.81</i>	<i>\$0.00</i>	<i>\$3.63</i>	<i>\$3.94</i>
WA0015	\$0.16	\$0.07	\$0.00	\$0.00	\$1.91	\$0.00	\$2.97	\$3.39
<i>WA0016</i>	<i>\$0.19</i>	<i>\$0.19</i>	<i>\$0.41</i>	<i>\$0.00</i>	<i>\$2.29</i>	<i>\$0.03</i>	<i>\$4.17</i>	<i>\$4.87</i>
WA0017	\$0.08	\$0.20	\$0.00	\$0.43	\$2.01	\$0.00	\$3.30	\$3.84
WA0018	\$0.10	\$0.19	\$0.11	\$0.27	\$1.80	\$0.00	\$3.04	\$3.46
WA0019	\$0.18	\$0.22	\$0.00	\$0.09	\$2.27	\$0.47	\$3.95	\$4.55
WA0020	\$0.18	\$0.23	\$0.02	\$0.15	\$1.86	\$0.00	\$3.54	\$3.92
<i>WA0021</i>	<i>\$0.06</i>	<i>\$0.09</i>	<i>\$0.10</i>	<i>\$0.27</i>	<i>\$2.05</i>	<i>\$0.01</i>	<i>\$3.46</i>	<i>\$3.94</i>
WA0024	\$0.04	\$0.14	\$0.00	\$0.16	\$1.97	\$0.02	\$3.29	\$3.73
WA0026	\$0.07	\$0.22	\$0.00	\$0.00	\$2.00	\$0.00	\$3.36	\$3.63
WA0027	\$0.09	\$0.62	\$0.01	\$0.02	\$2.23	\$0.01	\$4.19	\$4.94
<i>WA0028</i>	<i>\$0.08</i>	<i>\$0.10</i>	<i>\$0.00</i>	<i>\$0.22</i>	<i>\$1.80</i>	<i>\$0.03</i>	<i>\$2.82</i>	<i>\$3.25</i>
WA0029	\$0.12	\$0.31	\$0.00	\$0.00	\$2.22	\$0.00	\$3.17	\$4.03
<i>WA0030</i>	<i>\$0.15</i>	<i>\$0.58</i>	<i>\$0.00</i>	<i>\$0.00</i>	<i>\$2.31</i>	<i>\$0.01</i>	<i>\$4.30</i>	<i>\$4.70</i>
WA0031	\$0.06	\$0.18	\$0.00	\$0.48	\$2.86	\$0.00	\$4.33	\$4.93
WA0032	\$0.12	\$0.07	\$0.06	\$0.15	\$2.18	\$0.00	\$3.00	\$3.66
WA0033	\$0.02	\$0.31	\$0.01	\$0.02	\$2.46	\$0.00	\$3.96	\$4.31
Average	\$0.12	\$0.20	\$0.05	\$0.20	\$2.05	\$0.03	\$3.45	\$3.95
Top 25%*	\$0.11	\$0.20	\$0.08	\$0.20	\$1.99	\$0.02	\$3.49	\$3.98

* 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
WA0001	\$0.01	\$0.03	\$0.10	\$0.40	\$0.00	\$0.10	\$0.28	\$0.93	\$0.54	\$0.63	\$2.10
<i>WA0002</i>	<i>\$0.03</i>	<i>\$0.01</i>	<i>\$0.10</i>	<i>\$0.37</i>	<i>\$0.00</i>	<i>\$0.17</i>	<i>\$0.81</i>	<i>\$1.50</i>	<i>\$0.27</i>	<i>\$0.28</i>	<i>\$2.04</i>
WA0003	\$0.07	\$0.01	\$0.01	\$0.52	\$0.01	\$0.09	\$0.82	\$1.53	\$0.24	\$0.77	\$2.54
WA0004	\$0.07	\$0.02	\$0.05	\$0.34	\$0.01	\$0.08	\$0.84	\$1.40	\$0.29	\$0.36	\$2.05
WA0006	\$0.03	\$0.02	\$0.04	\$0.49	\$0.02	\$0.13	\$1.62	\$2.35	\$0.27	\$0.36	\$2.98
WA0007	\$0.03	\$0.12	\$0.13	\$0.36	\$0.00	\$0.05	\$0.73	\$1.41	\$0.52	\$0.71	\$2.64
<i>WA0008</i>	<i>\$0.05</i>	<i>\$0.01</i>	<i>\$0.08</i>	<i>\$0.54</i>	<i>\$0.01</i>	<i>\$0.11</i>	<i>\$0.28</i>	<i>\$1.08</i>	<i>\$0.16</i>	<i>\$0.90</i>	<i>\$2.14</i>
WA0009	\$0.12	\$0.01	\$0.17	\$0.66	\$0.00	\$0.07	\$0.71	\$1.74	\$0.37	\$0.69	\$2.80
WA0010	\$0.09	\$0.00	\$0.06	\$0.45	\$0.00	\$0.05	\$0.61	\$1.27	\$0.19	\$1.01	\$2.47
WA0011	\$0.01	\$0.02	\$0.07	\$0.30	\$0.02	\$0.11	\$0.97	\$1.49	\$0.06	\$0.54	\$2.08
WA0012	\$0.03	\$0.05	\$0.03	\$0.57	\$0.01	\$0.03	\$1.31	\$2.03	\$0.31	\$0.18	\$2.52
<i>WA0014</i>	<i>\$0.02</i>	<i>\$0.06</i>	<i>\$0.08</i>	<i>\$0.28</i>	<i>\$0.00</i>	<i>\$0.08</i>	<i>\$0.45</i>	<i>\$0.96</i>	<i>\$0.35</i>	<i>\$0.29</i>	<i>\$1.60</i>
WA0015	\$0.04	\$0.03	\$0.12	\$0.41	\$0.00	\$0.07	\$0.97	\$1.62	\$0.38	\$0.61	\$2.61
<i>WA0016</i>	<i>\$0.02</i>	<i>\$0.02</i>	<i>\$0.08</i>	<i>\$0.26</i>	<i>\$0.00</i>	<i>\$0.00</i>	<i>\$1.51</i>	<i>\$1.88</i>	<i>\$0.02</i>	<i>\$0.00</i>	<i>\$1.91</i>
WA0017	\$0.06	\$0.05	\$0.06	\$0.55	\$0.01	\$0.14	\$0.43	\$1.30	\$0.11	\$1.08	\$2.50
WA0018	\$0.04	\$0.08	\$0.10	\$0.75	\$0.01	\$0.13	\$0.49	\$1.60	\$0.38	\$1.31	\$3.29
WA0019	\$0.03	\$0.01	\$0.12	\$0.48	\$0.01	\$0.12	\$0.64	\$1.40	\$0.25	\$0.75	\$2.41
WA0020	\$0.11	\$0.02	\$0.14	\$0.52	\$0.00	\$0.13	\$0.59	\$1.51	\$0.08	\$0.84	\$2.43
<i>WA0021</i>	<i>\$0.04</i>	<i>\$0.04</i>	<i>\$0.06</i>	<i>\$0.32</i>	<i>\$0.01</i>	<i>\$0.27</i>	<i>\$0.54</i>	<i>\$1.27</i>	<i>\$0.15</i>	<i>\$0.58</i>	<i>\$2.00</i>
WA0024	\$0.06	\$0.02	\$0.10	\$0.64	\$0.01	\$0.11	\$0.47	\$1.42	\$0.28	\$0.53	\$2.23
WA0026	\$0.01	\$0.01	\$0.02	\$0.30	\$0.03	\$0.07	\$0.87	\$1.32	\$0.17	\$0.21	\$1.70
WA0027	\$0.02	\$0.03	\$0.06	\$0.64	\$0.00	\$0.13	\$1.24	\$2.11	\$0.15	\$0.19	\$2.45
<i>WA0028</i>	<i>\$0.05</i>	<i>\$0.01</i>	<i>\$0.07</i>	<i>\$0.34</i>	<i>\$0.02</i>	<i>\$0.02</i>	<i>\$0.76</i>	<i>\$1.26</i>	<i>\$0.21</i>	<i>\$0.32</i>	<i>\$1.79</i>
WA0029	\$0.01	\$0.01	\$0.14	\$0.46	\$0.00	\$0.26	\$1.68	\$2.56	\$0.44	\$0.19	\$3.20
<i>WA0030</i>	<i>\$0.05</i>	<i>\$0.01</i>	<i>\$0.05</i>	<i>\$0.58</i>	<i>\$0.00</i>	<i>\$0.09</i>	<i>\$0.63</i>	<i>\$1.41</i>	<i>\$0.16</i>	<i>\$0.43</i>	<i>\$2.00</i>
WA0031	\$0.04	\$0.02	\$0.08	\$0.54	\$0.01	\$0.13	\$0.65	\$1.46	\$0.20	\$1.04	\$2.69
WA0032	\$0.03	\$0.03	\$0.15	\$0.43	\$0.01	\$0.08	\$0.42	\$1.13	\$0.35	\$0.95	\$2.44
WA0033	\$0.01	\$0.01	\$0.02	\$0.35	\$0.04	\$0.12	\$0.83	\$1.38	\$0.20	\$0.04	\$1.61
Average	\$0.04	\$0.03	\$0.08	\$0.46	\$0.01	\$0.10	\$0.79	\$1.51	\$0.25	\$0.56	\$2.33
Top 25%*	\$0.04	\$0.02	\$0.07	\$0.38	\$0.01	\$0.10	\$0.71	\$1.34	\$0.19	\$0.40	\$1.93

* 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
WA0001	3.7%	1.8%	0.1%	3.0%	0.7%	9.4%	8.4%	0.0%	1.1%
WA0002	4.9%	1.5%	0.0%	2.1%	3.4%	12.0%	10.5%	0.0%	0.7%
WA0003	0.5%	0.8%	0.1%	2.5%	1.0%	4.9%	11.0%	0.0%	0.7%
WA0004	0.9%	0.9%	0.0%	1.9%	1.5%	5.3%	7.4%	0.0%	0.4%
WA0006	2.5%	2.3%	0.1%	2.3%	2.0%	9.2%	7.7%	3.8%	0.2%
WA0007	0.2%	4.4%	0.3%	1.7%	2.3%	8.8%	5.9%	0.0%	2.3%
WA0008	2.0%	2.1%	0.0%	1.5%	1.7%	7.3%	6.2%	1.0%	5.5%
WA0009	0.8%	1.8%	0.4%	2.2%	2.5%	7.8%	7.2%	0.0%	3.6%
WA0010	1.6%	1.3%	0.0%	1.4%	2.6%	6.9%	6.3%	4.8%	1.8%
WA0011	1.3%	2.3%	0.0%	1.7%	1.3%	6.6%	14.2%	0.0%	3.9%
WA0012	2.2%	3.6%	0.1%	1.6%	2.0%	9.5%	7.9%	0.0%	2.2%
WA0014	0.5%	1.4%	0.0%	2.1%	1.5%	5.5%	14.4%	0.0%	4.3%
WA0015	1.1%	0.8%	0.0%	2.3%	2.7%	6.9%	13.2%	0.0%	0.8%
WA0016	2.5%	2.3%	0.7%	2.2%	2.8%	10.5%	11.8%	0.0%	3.8%
WA0017	3.0%	2.2%	0.0%	2.2%	1.0%	8.4%	7.7%	0.0%	1.6%
WA0018	1.4%	1.5%	0.0%	2.1%	1.2%	6.2%	7.9%	0.0%	0.4%
WA0019	3.6%	1.5%	0.3%	1.9%	1.3%	8.7%	7.0%	0.0%	3.2%
WA0020	1.0%	1.4%	0.1%	1.6%	1.8%	6.0%	9.8%	4.6%	2.9%
WA0021	2.8%	1.3%	0.9%	1.4%	1.6%	8.0%	9.9%	3.1%	2.0%
WA0024	2.2%	1.2%	0.0%	2.4%	1.5%	7.3%	8.4%	3.0%	4.8%
WA0026	0.6%	2.5%	0.0%	1.3%	0.8%	5.1%	10.9%	0.8%	8.5%
WA0027	1.9%	3.9%	0.2%	1.6%	2.5%	10.1%	11.4%	2.0%	3.1%
WA0028	2.1%	2.9%	0.0%	1.7%	1.9%	8.6%	11.2%	0.0%	0.5%
WA0029	2.1%	3.5%	0.0%	3.6%	2.8%	11.9%	5.5%	1.3%	0.6%
WA0030	0.9%	2.5%	0.0%	1.5%	1.1%	5.9%	8.9%	1.5%	8.3%
WA0031	1.5%	3.7%	0.0%	1.3%	1.3%	7.8%	9.7%	0.0%	0.1%
WA0032	0.8%	1.8%	0.0%	3.0%	5.1%	10.7%	5.6%	0.0%	1.4%
WA0033	1.3%	2.4%	0.0%	1.3%	0.9%	5.9%	11.9%	4.1%	3.3%
Average	1.8%	2.1%	0.1%	2.0%	1.9%	7.9%	9.2%	1.1%	2.6%
Top 25%*	2.2%	2.0%	0.2%	1.8%	2.0%	8.3%	10.4%	0.8%	3.6%

* 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
WA0001	3.2%	3.6%	1.5%	4.0%	29.6%	0.0%	51.4%	60.8%
WA0002	1.8%	1.9%	0.0%	2.7%	33.8%	0.0%	51.3%	63.3%
WA0003	4.9%	1.3%	2.1%	1.2%	35.0%	0.0%	56.3%	61.2%
WA0004	1.0%	2.2%	1.3%	4.6%	38.9%	0.9%	56.8%	62.1%
WA0006	1.9%	0.9%	0.0%	5.2%	30.0%	0.0%	49.8%	59.0%
WA0007	1.3%	3.8%	2.5%	1.7%	35.1%	0.0%	52.7%	61.5%
WA0008	0.8%	3.3%	0.0%	4.8%	31.6%	0.7%	55.3%	62.7%
WA0009	1.2%	2.2%	0.0%	1.6%	25.4%	0.0%	41.4%	49.2%
WA0010	1.3%	1.9%	1.8%	7.3%	27.0%	0.5%	54.4%	61.3%
WA0011	2.3%	4.9%	0.1%	6.2%	29.6%	0.0%	61.3%	67.9%
WA0012	3.5%	3.1%	0.0%	6.1%	30.0%	0.0%	52.8%	62.3%
WA0014	2.6%	2.1%	0.6%	8.8%	32.7%	0.0%	65.6%	71.1%
WA0015	2.6%	1.2%	0.0%	0.0%	31.8%	0.0%	49.6%	56.5%
WA0016	2.8%	2.8%	6.1%	0.0%	33.8%	0.5%	61.4%	71.9%
WA0017	1.2%	3.1%	0.0%	6.7%	31.8%	0.0%	52.2%	60.6%
WA0018	1.4%	2.8%	1.6%	4.0%	26.7%	0.0%	45.0%	51.2%
WA0019	2.6%	3.2%	0.0%	1.3%	32.7%	6.8%	56.7%	65.4%
WA0020	2.9%	3.6%	0.4%	2.3%	29.3%	0.0%	55.7%	61.7%
WA0021	1.0%	1.6%	1.6%	4.5%	34.5%	0.2%	58.3%	66.3%
WA0024	0.7%	2.4%	0.0%	2.6%	33.1%	0.3%	55.3%	62.6%
WA0026	1.3%	4.0%	0.0%	0.1%	37.5%	0.0%	63.0%	68.1%
WA0027	1.2%	8.4%	0.2%	0.2%	30.2%	0.1%	56.8%	66.9%
WA0028	1.6%	2.0%	0.1%	4.4%	35.6%	0.6%	55.9%	64.5%
WA0029	1.6%	4.3%	0.0%	0.0%	30.7%	0.0%	43.8%	55.8%
WA0030	2.2%	8.7%	0.0%	0.0%	34.5%	0.2%	64.3%	70.2%
WA0031	0.8%	2.4%	0.0%	6.3%	37.6%	0.0%	56.8%	64.7%
WA0032	1.9%	1.2%	1.0%	2.5%	35.7%	0.0%	49.3%	60.0%
WA0033	0.4%	5.2%	0.2%	0.3%	41.6%	0.0%	66.9%	72.8%
Average	1.9%	3.1%	0.7%	3.2%	32.7%	0.4%	55.0%	62.9%
Top 25%*	1.8%	3.2%	1.2%	3.6%	33.8%	0.3%	58.9%	67.1%

* 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
WA0001	0.3%	0.5%	1.9%	7.5%	0.1%	1.9%	5.2%	17.4%	10.0%	11.8%	39.2%
WA0002	0.6%	0.2%	1.8%	6.6%	0.1%	3.0%	14.5%	26.9%	4.8%	5.0%	36.7%
WA0003	1.1%	0.2%	0.1%	7.9%	0.1%	1.4%	12.5%	23.4%	3.6%	11.8%	38.8%
WA0004	1.3%	0.4%	0.9%	6.3%	0.1%	1.5%	15.5%	26.0%	5.3%	6.6%	37.9%
WA0006	0.4%	0.2%	0.6%	6.7%	0.3%	1.8%	22.3%	32.3%	3.7%	5.0%	41.0%
WA0007	0.5%	1.7%	1.9%	5.2%	0.0%	0.7%	10.6%	20.5%	7.7%	10.3%	38.5%
WA0008	0.8%	0.2%	1.4%	9.5%	0.1%	1.9%	4.9%	18.9%	2.8%	15.6%	37.3%
WA0009	2.1%	0.2%	3.0%	11.9%	0.1%	1.3%	12.9%	31.5%	6.7%	12.6%	50.8%
WA0010	1.4%	0.0%	1.0%	7.0%	0.0%	0.8%	9.6%	19.9%	3.0%	15.9%	38.7%
WA0011	0.2%	0.3%	1.1%	4.7%	0.2%	1.6%	14.9%	23.0%	0.9%	8.3%	32.1%
WA0012	0.4%	0.7%	0.5%	8.5%	0.2%	0.4%	19.6%	30.4%	4.7%	2.7%	37.7%
WA0014	0.4%	1.1%	1.4%	5.1%	0.0%	1.4%	8.1%	17.4%	6.3%	5.2%	28.9%
WA0015	0.7%	0.4%	2.0%	6.8%	0.0%	1.1%	16.2%	27.1%	6.3%	10.1%	43.5%
WA0016	0.3%	0.2%	1.2%	3.8%	0.0%	0.0%	22.2%	27.8%	0.4%	0.0%	28.1%
WA0017	1.0%	0.7%	0.9%	8.8%	0.1%	2.3%	6.8%	20.6%	1.8%	17.0%	39.4%
WA0018	0.6%	1.2%	1.5%	11.2%	0.1%	1.9%	7.2%	23.7%	5.6%	19.5%	48.8%
WA0019	0.5%	0.1%	1.7%	6.9%	0.1%	1.7%	9.2%	20.1%	3.7%	10.8%	34.6%
WA0020	1.8%	0.4%	2.1%	8.1%	0.0%	2.1%	9.3%	23.8%	1.3%	13.2%	38.3%
WA0021	0.6%	0.7%	1.0%	5.5%	0.1%	4.5%	9.1%	21.5%	2.5%	9.7%	33.7%
WA0024	1.0%	0.3%	1.7%	10.8%	0.2%	1.9%	7.9%	23.8%	4.7%	9.0%	37.4%
WA0026	0.2%	0.2%	0.3%	5.7%	0.6%	1.4%	16.4%	24.8%	3.1%	3.9%	31.9%
WA0027	0.3%	0.4%	0.8%	8.6%	0.0%	1.7%	16.8%	28.6%	2.0%	2.5%	33.1%
WA0028	1.0%	0.1%	1.4%	6.6%	0.4%	0.3%	15.1%	25.0%	4.3%	6.3%	35.5%
WA0029	0.2%	0.1%	1.9%	6.4%	0.1%	3.6%	23.2%	35.5%	6.1%	2.6%	44.2%
WA0030	0.8%	0.2%	0.7%	8.7%	0.0%	1.3%	9.3%	21.0%	2.5%	6.4%	29.8%
WA0031	0.6%	0.2%	1.0%	7.1%	0.1%	1.7%	8.5%	19.2%	2.6%	13.6%	35.3%
WA0032	0.4%	0.5%	2.4%	7.0%	0.1%	1.3%	6.8%	18.6%	5.8%	15.6%	40.0%
WA0033	0.2%	0.1%	0.3%	5.9%	0.6%	2.0%	14.1%	23.3%	3.3%	0.6%	27.2%
Average	0.7%	0.4%	1.3%	7.3%	0.1%	1.7%	12.5%	24.0%	4.1%	9.0%	37.1%
Top 25%*	0.6%	0.4%	1.3%	6.5%	0.1%	1.8%	11.9%	22.6%	3.4%	6.9%	32.9%

* 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	\$14,815	\$9,914	\$2,077	\$1,121	\$1,424	\$2,039	\$89	\$80	\$13,147
Top 25%*	\$14,519	\$9,020			\$1,385	\$2,323	\$113	\$154	\$14,232

	LIABILITIES		EQUITY	
	Liabilities per usable hectare	Liabilities per milking cow	Equity per usable hectare	Average equity
	\$/ha	\$/cow	\$/ha	%
Average	\$2,842	\$3,138	\$10,305	76%
Top 25%*	\$2,308	\$2,138	\$11,924	83%

Table A9 Historical data – Western Australia.
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	\$6.62	\$6.79	\$7.75	\$7.94	\$0.24	\$0.25	\$0.26	\$0.26	\$3.29	\$3.38	\$3.79	\$3.89
2014–15	\$7.07	\$7.14	\$8.26	\$8.34	\$0.25	\$0.25	\$0.26	\$0.26	\$3.31	\$3.34	\$3.82	\$3.86
2015–16	\$7.22	\$7.22	\$8.29	\$8.29	\$0.26	\$0.26	\$0.24	\$0.24	\$3.45	\$3.45	\$3.95	\$3.95
Average		\$7.05		\$8.19		\$0.25		\$0.26		\$3.39		\$3.90

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 – Western Australia.
Average farm income, costs and profit per kilogram of milk solids (continued)

OVERHEAD COSTS						
Year	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	\$1.50	\$1.54	\$0.86	\$0.88	\$2.36	\$2.42
2014–15	\$1.47	\$1.48	\$0.80	\$0.80	\$2.26	\$2.29
2015–16	\$1.51	\$1.51	\$0.82	\$0.82	\$2.33	\$2.33
Average		\$1.51		\$0.83		\$2.34

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

PROFIT								
Year	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	\$1.59	\$1.63	\$0.65	\$0.66	\$0.95	\$0.97	4.6%	5.2%
2014–15	\$2.17	\$2.19	\$0.59	\$0.60	\$1.58	\$1.60	6.7%	9.0%
2015–16	\$2.02	\$2.02	\$0.53	\$0.53	\$1.48	\$1.48	6.6%	9.4%
Average		\$1.95		\$0.60		\$1.35	5.9%	7.8%

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 – Western Australia.
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	Real (\$/T DM)
	ha	ha	mm/ha	hd	hd/ha	kg MS/cow	kg MS/ha	t DM/ha	t DM/ha	% of ME	Nominal (\$/T DM)	
2013–14	606	280	1081	522	0.9	505	453	3.3	1.5	62%	\$418	\$429
2014–15	625	296	930	543	0.9	535	486	3.6	1.7	63%	\$421	\$425
2015–16	575	283	964	545	1.0	557	541	4.1	1.7	57%	\$445	\$445
Average	600	290	947	544	0.9	532	494	3.6	1.6	60%		\$433

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

Appendix B: Glossary of terms, abbreviations and standard values

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

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