

DAIRY FARM MONITOR PROJECT

TASMANIA ANNUAL REPORT 2019/20



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Further information regarding the Dairy Farm Monitor Project may be obtained from:

Lesley Irvine
Tasmanian Institute of Agriculture
PO Box 3523
Burnie, Tasmania, 7320
T 03 6430 4953
E lesley.irvine@utas.edu.au

Helen Quinn
Program Manager
Farm Business Management,
Farm Profit and Capability
Dairy Australia
Level 3, HWT Tower
40 City Road
Southbank, Victoria, 3006
T 03 9694 3724
E Helen.Quinn@dairyaustralia.com.au



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

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

The report presents visual descriptions of data for the 2019/20 year. Data are presented for individual farms, as state financial averages and for the state top 25% of farms ranked by return on total assets managed (RoTA). The presented averages should not be considered averages for the population of farms in Tasmania due to the small sample size and farms not being randomly selected.

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

In this report, the top 25% consists of eight farms from 32 participants in the 2019/20 Tasmanian Dairy Farm Monitor Project.

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

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

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

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

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

Any reference to ‘last year’ refers to the 2018/19 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 2018/19 are in the 2019/20 report. Nineteen of the farms that participated in 2018/19 also participated in 2019/20 and there were eight new participants. It is important to bear this in mind when comparing datasets between years.

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

WHAT'S NEW IN 2019/20

The Dairy Farm Monitor Report for 2019/20 includes a number of changes since last year's report:

- Fertiliser application rates are now reported on the milking area as compared with the usable area in previous years.
- Average data do not include zero values for the indicators given below. A note to this effect is also given in the Appendix Tables.

- Silage, hay and other feed values (\$/t)
- Land values
- Water asset values
- Equity values.

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

Summary



Earnings before interest and tax increased by 73% to an average of \$810,613 per farm in 2019/20. Return on Total Assets also increased from 5.2% to 8.7%.

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

In 2019/20, 27 Tasmanian dairy farms participated in the Dairy Farm Monitor Project. The average milk income of these participants was \$7.09, a 15% increase compared to the previous season.

Earnings before interest and tax (EBIT) averaged \$810,613 per farm, a 73% increase on the previous year. Return on total assets (RoTA) increase from 5.2% to 8.7%, a 67% increase from 2018/19. The top 25% of farms (as measured by RoTA) had a RoTA of 15.1%.

In 2018/19, three participants had a negative RoTA. In 2019/20 this had decreased to one participant with a negative RoTA. The range of RoTA in 2019/20 was from -0.1% to 17.7%.

Net farm income, calculated after interest and lease charges were deducted from EBIT, was on average \$678,286 per farm, a 114% increase from last year.

One out of the 27 farms recorded a negative return on equity (RoE). The average RoE was 15.4% and 30.0% for the top 25% performers. There was a relatively large increase in equity percentage from 64% to 74%. There was a decrease in debt service ratio from 10% to 7%.

Cost of production without inventory change increased from \$5.49/kg MS to \$5.57/kg MS, an increase of 1.5%.

Milk income of the top 25% was 2.5% higher than average at \$7.27/kg MS but there was only a 1 cent/kg MS difference in total farm income with the top 25% having a total farm income of \$7.93/kg MS compared to the average of \$7.94/kg MS. EBIT for the top 25% was 26.7% higher than average at \$3.27/kg MS compared to \$2.50/kg MS. The variable costs of the top 25% were 1% lower at \$3.09/kg MS than the average (\$3.13/kg MS). The top 25% performers spent 38% less on overhead costs at \$1.57/kg MS than the average (\$2.31/kg MS).

Milk production on a per hectare basis was similar in 2019/20 (948kg MS/ha) to the previous year (947kg MS/ha). After a decrease last year, milk production per cow increased slightly from 418kg MS/cow to 423kg MS/cow. The top performers sold more milk per cow and per hectare, 15% and 34% higher, respectively.

Stocking rate, measured as cows per usable hectare remained at 2.2 in 2019/20. Farms in the top 25% had a higher stocking rate than average at 2.7 cows/ha, a decrease from 2.9 cows/ha.

Average milk fat was 4.6% and milk protein was 3.7%. The fat percentage was the same as the previous two years, but the protein percentage had increased by 0.1%.

Average homegrown feed consumption was 10.7 t DM/ha on the milking area forming an estimated 74% of the diet.

Forty-five percent of participants expect their business returns to improve in 2020/21 while a further 35% expect their business returns to remain stable. The remaining 20% expect their business return to decline in 2020/21. Almost half of farmers expect milk price to decrease in 2020/21 and 81% expect their milk production to increase.

Milk price continues to be ranked as the most important issue facing the dairy industry both in the immediate and longer-term future.

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 Dairy Farm Monitor Project method

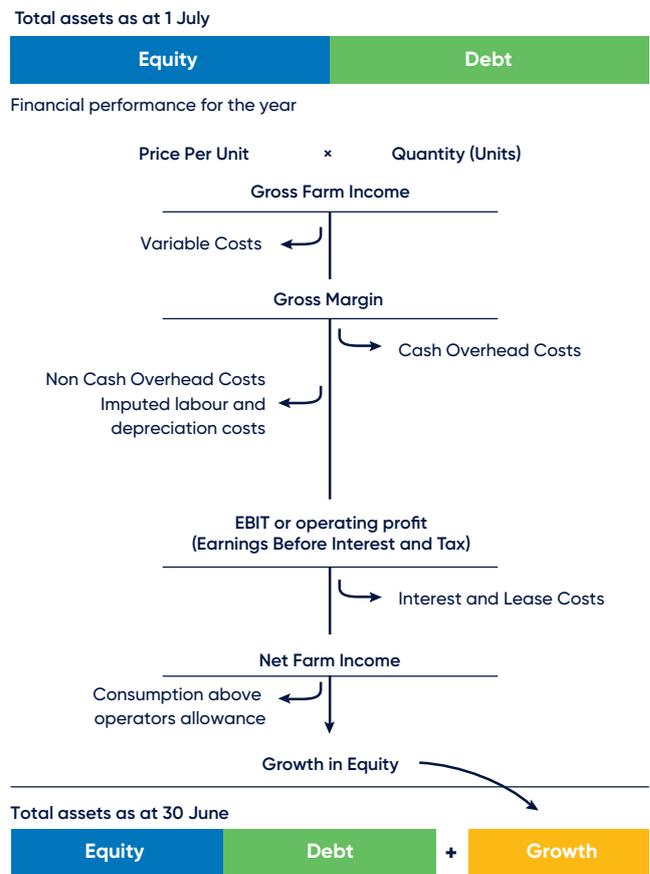


Figure 1 demonstrates how the different farm business economic terms fit together and are calculated. This has been adapted from an initial diagram developed by Bill Malcolm. The diagram shows the different profitability measures as costs are deducted from gross farm income. Growth is achieved by investing 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.

Gross farm income

The farming business generates a gross farm income which is the sum of milk cash income (net), livestock trading profit and 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, wages, 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) is 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.

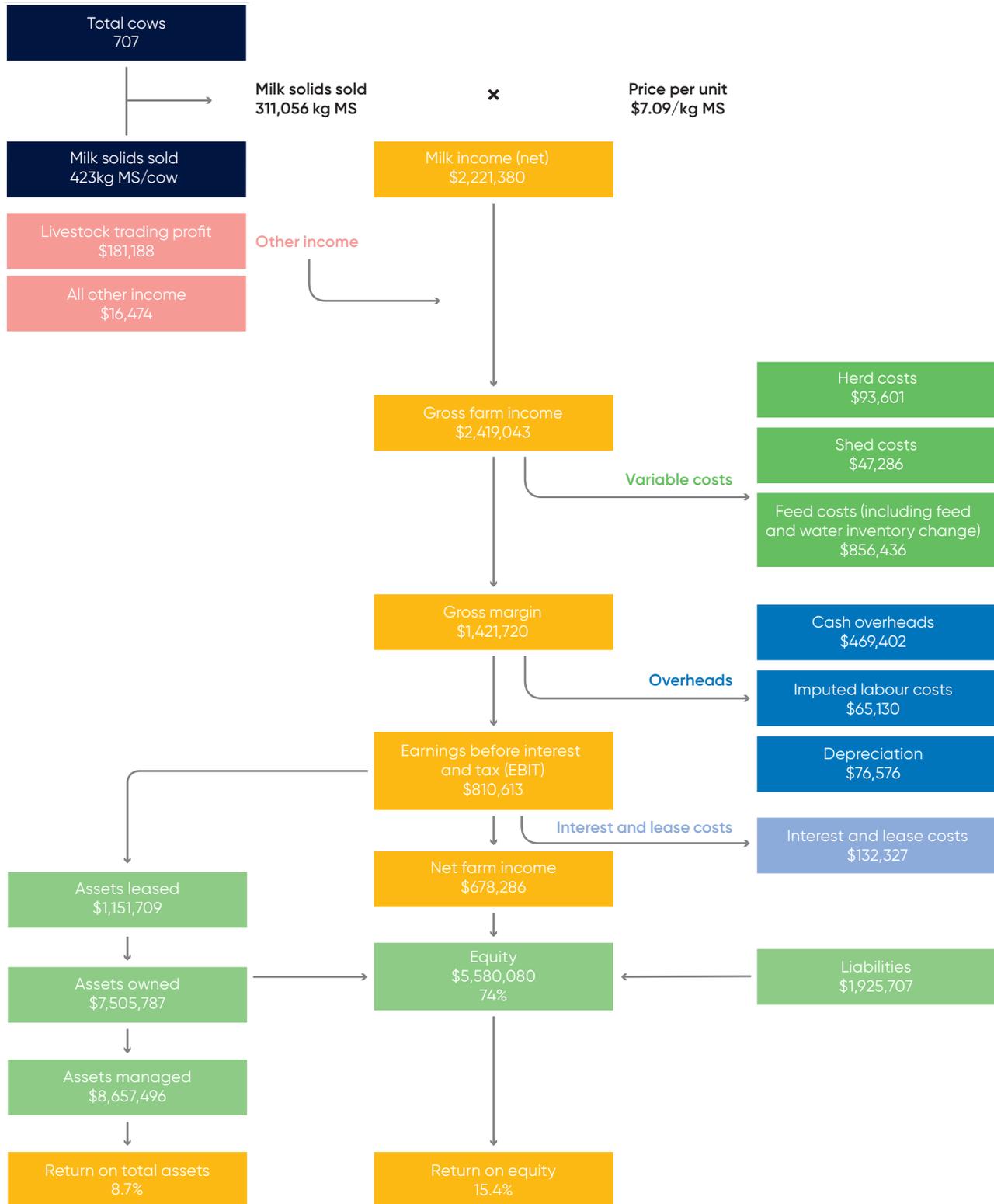
Return on assets indicates the overall earning of the total farm assets, irrespective of the capital structure of the business. It is EBIT expressed as a percentage of the total assets under management in the farm business, including the value of leased assets. Return on assets is sometimes referred 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 without capital appreciation. The RoE is reported in Appendix Table A1.

Figure 2 Dairy Farm Monitor Project method profit map – state average 2019/20 data*

All 27 farms



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

Tasmania overview



In 2019/20, 950 million litres of milk was sold in Tasmania which is a new record for milk production in the state.

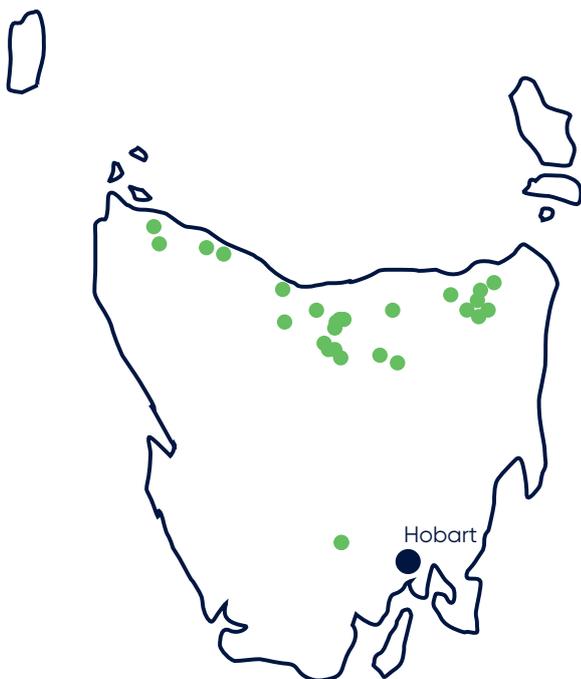
The number of registered dairy farms in Tasmania this year was 391, a decrease from 404 in 2018/19. The majority of farms are located in the higher rainfall (>1,000mm) regions of Tasmania along the northern coastline from Marrawah in the west to Pyengana in the east. There are a small number of farms on King Island and in the lower rainfall regions of the northern midlands and southern Tasmania.

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

Tasmania retains a seasonally based calving pattern with the majority of cows calved in spring. Many Tasmanian dairy farms now use cross-breeding in their herds.

Twenty-seven farms provided data for the 2019/20 Tasmanian Dairy Farm Monitor report, 19 of these farms had participated in previous years with 8 being new participants to the project. The approximate locations of the participating farms are shown in Figure 3.

Figure 3 Distribution of participant farms in 2019/20 across Tasmania



2019/20 SEASONAL CONDITIONS

Rainfall for the 2019/20 season was slightly below average for most regions in the state. Spring was drier than average but there was above average rainfall during summer and autumn.

Figure 4 shows Tasmanian dairy regions experienced below average rainfall during late winter and early spring and above average rainfall from mid-summer through autumn.

Winter was mild and while there were wet conditions in early winter, during calving most regions experienced below average rainfall.

There was less than average rainfall in spring but warmer than average conditions and good soil moisture early in spring resulted in good silage and hay harvests.

Below average rainfall was experienced in early summer and there was some very warm weather. However, there were some summer rainfall events through January & February and then significantly above average rainfall through autumn (it was the wettest autumn in Tasmania since 1975). This assisted in pasture growth and slowed the natural decline in milk production leading to record milk production for Tasmania.

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

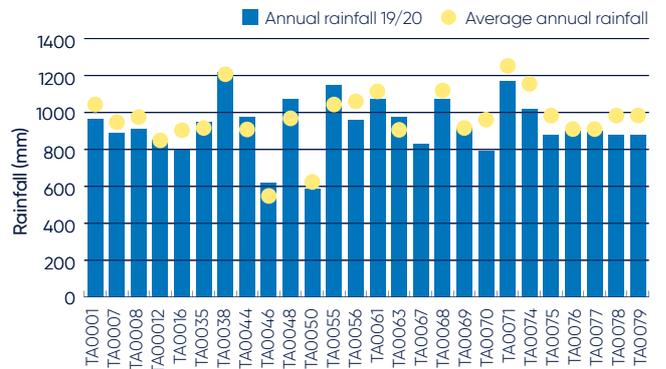
Figure 4 Monthly average rainfall (individual farms)





Figure 5 shows the variability in rainfall received by farms participating in the Dairy Farm Monitor Project for 2019/20. It also shows that most farms received below average rainfall for the season. However, for most regions it was the timing of the rainfall that was important, not the total amount received. Tasmania is winter rainfall dominant so less rain during this period (provided there is enough to fill dams) does not impact on pasture growth. There were some rainfall events through the typically drier summer and autumn which assisted with irrigation and dryland pasture growth.

Figure 5 Monthly average rainfall (individual farms)



WHOLE FARM ANALYSIS

Twenty-seven farms provided data for the Tasmanian Dairy Farm Monitor Project in 2019/20. The participating farms had an average herd size of 707 cows with an average stocking rate of 2.2 cows per usable hectare. Key whole farm physical parameters for Tasmania are presented below in Table 1.

The average herd size of participating farms was 707 cows. This is higher than the actual state average.

Rainfall was 8% lower in 2019/20 compared to the previous year. Total water use efficiency, a measure of the tonnes (DM) of feed grown on the farm per 100mm of rainfall or irrigation water received increased from 0.8 to 0.9 t DM/100mm/ha.

The average total usable area increased from 305ha to 326ha. Milking cows per usable hectares was 2.2 cows/ha this year, the same as the previous year. Average milk sold per cow increased by 1% while milk sold per hectare increased by 1kg MS/ha.

The percentage of metabolisable energy (ME) being derived from homegrown feed decreased slightly from 76% in 2018/19 to 74% in 2019/20.

After decreasing in 2018/19, labour efficiency per cow has increased by 2% from 152 cows/FTE to 155 cows/FTE. Labour efficiency measured as kg MS/FTE increased by 4%. Labour efficiency on Tasmanian dairy farms continues to be the highest of all states participating in the DFMP.

Table 1 presents the average and range of some farm physical characteristics for the state. Further details can be found in the Appendix Table A2.

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

There are seven farms in the top 25% this season. They have a significantly greater herd size (26% higher) than the Tasmanian average but a lower useable area resulting in a higher stocking rate. Per cow milk production is 13% higher and per hectare milk production is 40% higher. For the third consecutive season, the amount of energy coming from homegrown feed is slightly lower for the top 25%.

Labour efficiency is significantly higher on the top 25% farms and increased for both measures.

Table 1 Farm physical data – state overview

Farm Physical Parameters	State average	Q1 to Q3 range	Top 25% average
Annual Rainfall 19/20	896	864–996	851
Herd size	707	412–1,054	1,006
Total water use efficiency	0.9	0.7–1.0	1.0
Total usable area (hectares)	326	224–473	389
Milking cows per usable hectares	2.2	1.7–2.8	2.7
Milk sold (kg MS/cow)	423	361–486	491
Milk sold (kg MS/ha)	948	567–1,294	1,342
Home grown feed as % of ME consumed	74%	67%–82%	69%
Labour efficiency (cows/FTE)	155	132–184	183
Labour efficiency (kg MS/FTE)	66,464	52,694–83,786	89,400

Gross farm income

Gross farm income is inclusive of all farm incomes. It includes income from milk sales, livestock trading profit, milk factory shares and other farm income.

Figure 6 shows how milk income dominates gross farm income, forming 89% of gross farm income in 2019/20. Other income consists of livestock trading profit (10%) and other farm income (1%). This is very similar to last season.

Figure 6 also shows the variation in gross income per kilogram of milk solids from \$6.61/kg MS to \$8.26/kg MS. Average gross farm income was \$7.94/kg MS, a 15% increase from last year. The top 25% of farms increased gross farm income from \$6.83/kg MS to \$7.93/kg MS, a slightly larger percentage increase (16%) than the average but the total gross farm income for the top 25% was again lower than average at \$7.93/kg MS.

The increase in average gross farm income in 2019/20 was reflective of the higher milk price received that year. On average, milk price increased by 15%, from \$6.16/kg MS in 2018/19 to \$7.09/kg MS this year. The top 25% received a milk price of \$7.27/kg MS.

Figure 6 Gross farm income per kilogram of milk solids

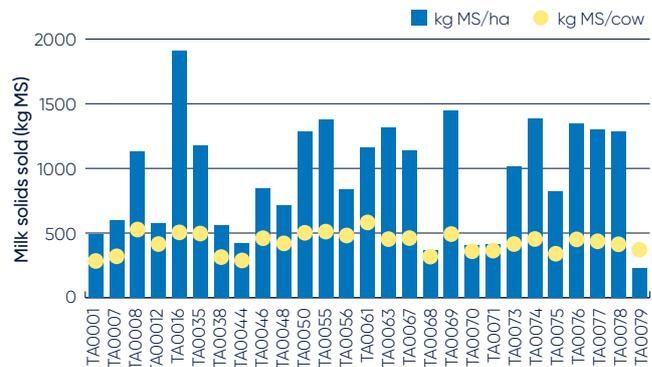


Milk solids sold

The average amount of milk solids sold increased slightly from 947kg MS/ha to 948kg MS/ha (Figure 7). The top 25% sold an average of 1,342kg MS/ha, 34% higher than the average of all participants. As can be seen in Figure 7, there is wide variation in the amount of milk solids sold per usable hectare, ranging from 231kg MS/ha to 1,907kg MS/ha. Some of this variation is due to strategies employed by different farmers in managing non-milking stock. Milk solids sold per hectare is calculated on the total dairy area which includes the support area, and because of this, farms which utilise their whole farm as milking area and use agistment for non-milking animals tend to have higher milk solids sold per hectare.

There is also a wide range of milk sold per cow, from 284kg MS/cow to 582kg MS/cow. The average milk production per cow is 423kg MS/cow an increase from 418kg MS/cow in the previous year.

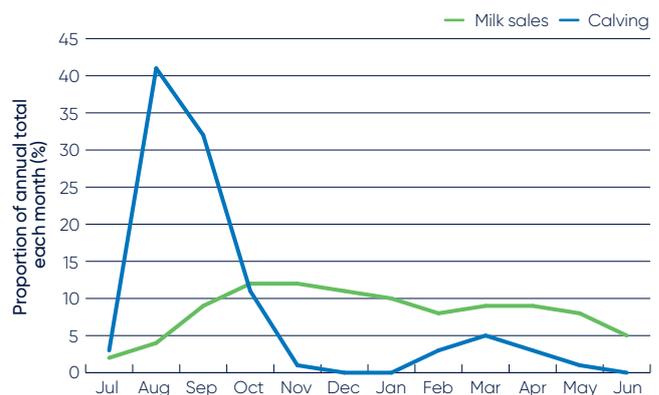
Figure 7 Milk solids sold per hectare



Milk sales versus calving pattern

Figure 8 shows the average monthly milk sales for all participant farms with the monthly distribution of calves born. Tasmanian farms have spring dominant calving patterns, with 95% of calves born between July and November. Milk sales are generally higher three months after peak calving. This year, peak milk sales occurred in October, November and December with 12% of the annual total in each month. Normally peak milk sales only occurs in October and November indicating that milk production decline was slower in 2019/20 than is typical.

Figure 8 Milk sales vs calving pattern



Variable costs

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

The average variable costs of the participant farms were 4% lower than last year. This decrease was due to a slight decrease in herd costs and home grown feed costs. There was also a reduction in feed inventory. Purchased feed costs increased and shed costs remained the same as the previous season.

Figure 9 shows the range of variable costs from \$1.71/kg MS to \$4.32/kg MS, with an average of \$3.13/kg MS.

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

Concentrates were the largest single feed cost category, costing farmers an average of \$1.30/kg MS in 2019/20, a slight decrease from \$1.31/kg MS in the previous year.

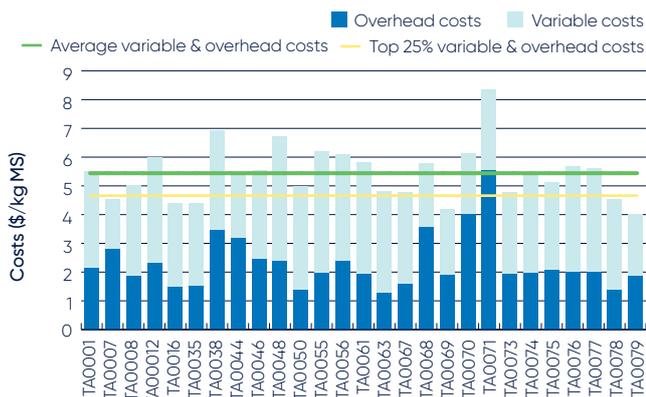
Fertiliser (\$0.47/kg MS) and agistment (\$0.28/kg MS) are the next largest variable costs – consistent with the previous season.

Variable costs for the top 25% were 1% lower than average at \$3.09/kg MS. This was a 4% decrease from the previous season.

The main areas in which the top 25% spent less than the average were grain/concentrate (-\$0.05/kg MS); pasture improvement/cropping (-\$0.05/kg MS); fuel and oil (-\$0.05/kg MS); hay and silage making (-\$0.04/kg MS); and fertiliser (-\$0.04/kg MS). Similar to previous years, the top 25% spent significantly more than average on agistment (+\$0.16/kg MS). The top 25% also spent more on calf rearing (+0.05/kg MS) and fodder purchases (+\$0.04/kg MS).

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

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



Overhead costs

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

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

The average overhead cost for 2019/20 was \$2.31/kg MS compared with \$2.19/kg MS in 2018/19. The range of overhead costs during 2019/20 was between \$1.27/kg MS and \$5.54/kg MS.

Labour costs were on average \$1.30/kg MS which was an increase from \$1.24/kg MS in the previous year. Employed labour continues to be the largest component of labour costs at \$0.86/kg MS an increase from \$0.73/kg MS previous year. Imputed labour fluctuates from year-to-year, this year decreasing back to the 2017/18 cost of \$0.44/kg MS.

The ability to maintain lower overhead costs appears to be a key to performing in the top 25% for Tasmania. The top 25% have overhead costs that are 38% lower than average at \$1.57/kg MS.

The top 25% have cash overhead costs of \$1.27/kg MS compared to the average of \$1.56/kg MS. The largest component of this difference in 2019/20 in the employed labour category where the top 25% spend \$0.12/kg MS less than the average. The top 25% also spend \$0.09/kg MS less on repairs and maintenance and \$0.09/kg MS less on all other overheads.

The top 25% also spent less on non-cash overhead costs. The imputed labour cost was \$0.30/kg MS lower and depreciation was \$0.14/kg MS lower. The lower depreciation cost indicates the top 25% have less depreciable assets per kilogram of milk solids produced than the average farm.

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

Table 2 Farm financial performance

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

Farm income and cost category	Average	Q1 to Q3 range	Top 25 per cent average
Income	\$ kg/MS	\$ kg/MS	\$ kg/MS
Milk income (net)	7.09	6.94–7.18	7.27
Livestock trading profit	0.77	0.51–0.78	0.63
Other farm income	0.00	0–0.1	0.01
Total income	7.94	7.58–8.25	7.93
Variable costs			
Herd cost	0.28	0.18–0.34	0.34
Shed cost	0.18	0.13–0.2	0.13
Home grown feed cost	1.02	0.81–1.11	0.79
Purchased feed and agistment	1.79	1.26–2.26	1.95
Feed inventory change	-0.13	-0.19–0	-0.11
Water inventory change	0.00	0–0	0.00
Total feed costs	2.68	2.38–3.11	2.62
Total variable costs	3.13	2.85–3.62	3.09
Gross margin	4.81	4.04–5.49	4.84
Overhead costs			
Employed labour	0.86	0.62–1.21	0.74
Repairs and maintenance	0.43	0.31–0.54	0.34
All other overheads	0.27	0.18–0.35	0.19
Imputed labour	0.44	0.02–0.54	0.14
Depreciation	0.30	0.18–0.39	0.16
Total overhead costs	2.31	1.85–2.42	1.57
Variable and overhead costs	5.44	4.79–5.9	4.66
Earnings before interest and tax	2.50	1.84–3.1	3.27

Table 3 Cost of production

Farm costs (\$/kgMS)	Average	Q1 to Q3 range	Top 25 per cent average
Cash cost of production	4.83	4.39–5.28	4.47
Cost of production (excl inventory changes)	5.57	4.77–6.14	4.77
Inventory change			
+/- feed and water inventory changes	-0.13	-0.19–0	-0.11
+/- livestock inventory changes minus purchases	-0.02	-0.3–0.11	-0.06
Cost of production (incl inventory changes)	5.41	4.86–6.13	4.60

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 also 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 3 shows the average cost of production was \$5.41/kg MS, a decrease of \$0.01/kg MS from the previous year. This does not follow the typical trend of increasing cost of production with increasing milk price.

The top 25% of farms increased their cost of production by 3% from \$4.46/kg MS to \$4.60/kg MS.

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.

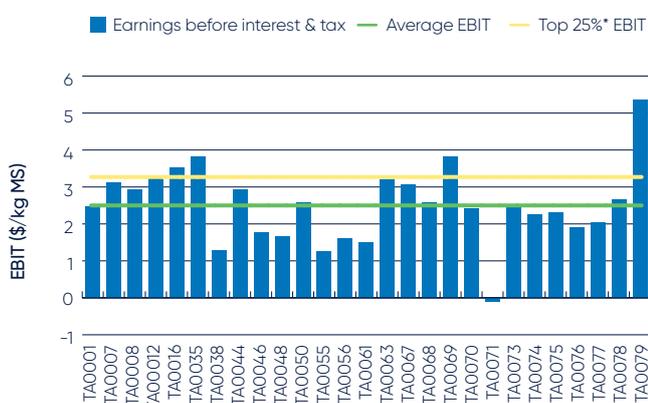
This season the average EBIT increased from \$1.44/kg MS to \$2.50/kg MS. This 73% increase in EBIT was due to receiving a higher milk price but maintaining the same cost of production as the previous year.

The EBIT of the top 25% was \$3.27/kg MS, a 48% increase from \$2.21/kg MS in 2018/19.

The difference between the average EBIT and the top 25% EBIT in 2019/20 remained at \$0.77/kg MS.

Twenty-six of the twenty-seven participants had a positive EBIT in 2019/20 (Figure 10).

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



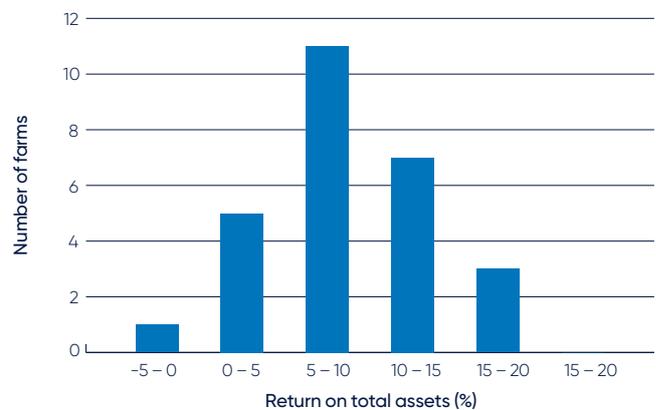
Return on assets and equity

Return on total assets (RoTA) is the EBIT expressed as a percentage of total assets under management. It is an indicator of the overall earning power of total assets, irrespective of capital structure.

Figures 11 to 14 were calculated excluding capital appreciation.

The average return on assets for 2019/20 was 8.7% with a range from -0.1% to 17.7% (Figure 11 and Appendix Table A1).

Figure 11 Distribution of farms by return on total assets



The average RoTA of 8.7% was a decrease from 5.2% last year. The top 25% have a higher RoTA than average at 15.1% an increase from 10.5% in 2018/19.

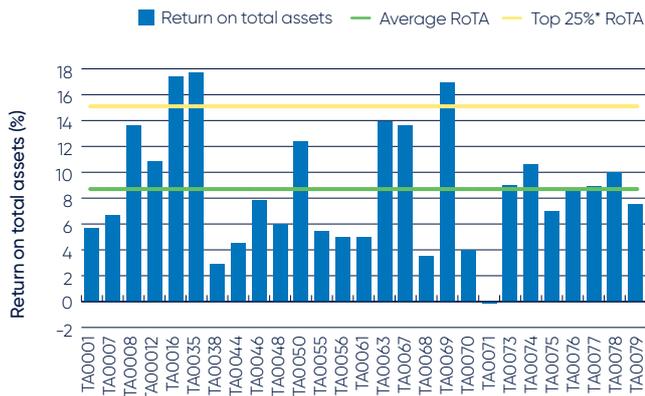
The average per hectare owned asset value this year has decreased from \$24,227/ha to \$23,482/ha.

The top 25% have a lower owned asset value of \$22,630/ha but this is an increase from the previous year's \$21,551/ha.

The average per farm total farm assets owned has increased from \$7,183,152 in 2018/19 to \$7,505,787 in 2019/20.

The variation between farms' return on assets (Figure 12) is indicative of the variation between farms' EBIT generated from the assets under management. An asset's ability to generate a profit for one owner/manager over another is identifiable where farms generate a similar EBIT, but manage total assets of a different value.

Figure 12 Return on total assets



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

A RoTA becomes a lesser return on equity when the rate of interest on loans or lease on leased capital is greater than the return from the additional assets managed. A negative return on equity will result when total interest and lease payments exceed EBIT. When the percentage of RoE increases compared to RoTA, it is the result of a higher return from the additional assets than the interest or lease rate.

The average RoE for the 27 farms was 15.4%, an increase from 6.5% in 2018/19. The average RoE is higher than RoTA.

Figure 13 Distribution of farms by return on equity



One farm out of the 27 had a negative RoE (Figure 13 and Figure 14). This has decreased from six farms with a negative RoE in 2018/19.

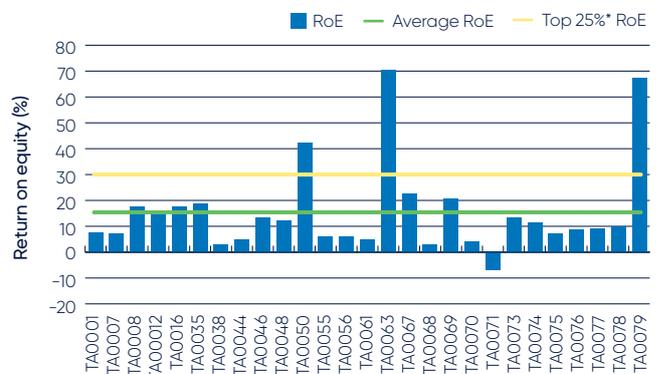
The top 25% group recorded a RoE of 30%.

Average interest and lease costs decreased from \$0.66/kg MS in 2018/19 to \$0.58/kg MS in 2019/20.

Average capital values can be seen in Appendix A8.

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

Figure 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 4 presents some key risk indicators. Refer to Appendix B for the definition of terms used in Table 4. The indicators in Table 4 can also be found in Appendix Tables A1, A3 and A8.

Exposure to risk in business is entirely rational if not unavoidable. It is through managing risk that greater profits can be made. It is also the case that by accepting a level of risk in one area of business, a greater risk in another area can be avoided. Using the example of feed sources, dairy farmers are generally better at dairy farming than they are at grain production. Thus by allowing someone who is experienced in producing grain to supply them, they lessen the production and other business risks as well as the financial risks they would have exposed themselves to by including extensive cropping in their own business. The trade-off is that they are in turn exposed to price and supply risks.

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

The higher the risk indicator (or lower with equity %) in Table 4, the greater the exposure to the risk of a shock in those areas of the business.

The cost structure ratio provides variable costs as a proportion of total costs. A lower ratio implies that overhead costs comprised a greater proportion of total costs that in turn indicates less flexibility in the business. Table 4 shows that across Tasmania for every \$1.00 spent, \$0.58 was used to cover variable costs. One hundred minus this gives the proportion of total costs that are overhead costs.

The debt services ratio shows interest and lease costs as a proportion of gross farm income. The ratio decreased from 9% in 2018/19 to 7% this year. This indicates that on average farms repaid \$0.07 to their creditors from every dollar of gross farm income.

The benefit of taking on risk and borrowing money can be seen when farm incomes yield a higher return on equity than on return on assets. This year there were 15 out of the 27 (or 56%) participants who achieved a higher return on equity than return on assets compared to 47% last year.

In 2019/20, the equity percentage was 74%, an increase from 60% in 2018/19.

All farms in the Dairy Farm Monitor project sourced some of their metabolisable energy (ME) from imported feeds and are therefore somewhat exposed to fluctuations in prices and supply in the feed market. This year the amount of imported feed decreased further to 26% of the total ME of the diet.

Table 4 Risk indicators – statewide

	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20
Cost structure (proportion of total costs that are variable costs)	59	62	63	60	59	57	58
Debt servicing ratio (percentage of income as finance costs)	6	6	10	11	9	9	7
Debt per cow	\$2,660	\$2,601	\$3,141	\$4,313	\$4,479	\$4,060	\$3,349
Equity percentage (ownership of total assets managed)	75	74	70	61	62	60	74
Percentage of feed imported (as a percentage of total ME)	28	31	31	26	29	28	26

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

Grazed pasture provided an average of 68% of the total metabolisable energy (ME) on participant farms this year. Concentrates supplied 21% 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.

The contribution of different feed sources to the total ME consumed on the farm is presented in Figure 15. This includes feed consumed by dry cows and young stock. A cow's diet can consist of grazed pasture, harvested forage, crops, concentrates and other imported feeds.

Grazed pasture made up the majority of the diet with an average of 68% of the diet derived from directly grazed pasture.

The next biggest component of energy in the diet is concentrates at 21%, followed by silage at 7%, hay at 3%, and 1% other feed.

The percentage of ME supplied by concentrates ranged from 0% to 41%.

Appendix Table A3 provides further information on purchased feed.

Figure 15 Sources of whole farm metabolisable energy

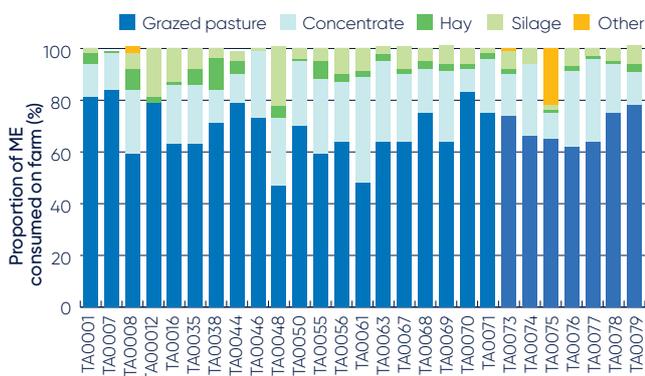


Figure 16 and Appendix Table A2 give an estimate of the average quantity for home grown feed consumed per milking hectare for participant farms across the state. It accounts only for the consumption of pasture that occurred on the milking area whether by milking, dry or young stock.

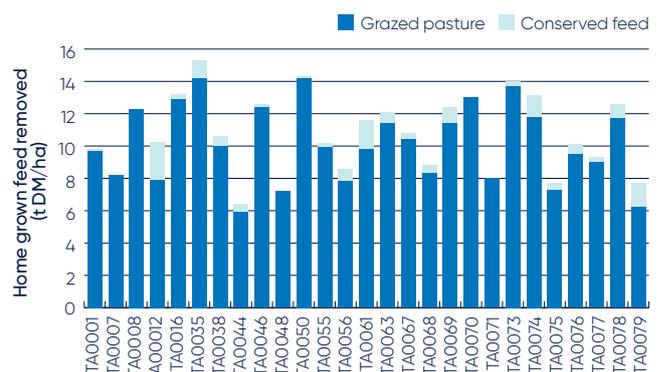
Average pasture production in 2019/20 was 10.7 t DM/ha consisting of 10.1 t DM/ha grazed pasture and 0.6 t DM/ha conserved pasture. This is an decrease in pasture consumption of 0.5 t DM/ha from 2019/20.

The top 25% achieved average pasture production of 12.9 t DM/ha, consisting of 12.4 t DM/ha grazed pasture and 0.5 t DM conserved pasture. This was a decrease in pasture produced of 0.9 t DM/ha from the previous year.

The amount of homegrown conserved fodder produced was lower this year than the previous year.

Both Figures 15 and 16 were estimated using the pasture consumption calculator in DairyBase. This involves a calculation based on the total ME required on the farm, live weight, average distance stock walk to and from the dairy and milk production. Metabolised energy imported from other feed sources is subtracted from the total farm ME requirements over the year to estimate the total produced on farm, divided into grazed and conserved feed depending on the quantity of fodder production recorded.

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



Fertiliser application

Table 5 shows the average application rates of nitrogen, phosphorus, potassium and sulphur per hectare for participants in the DFMP over the past six seasons.

The total amount of nutrients applied this year was 251kg/usable ha, 39kg lower than the previous year. 169kg N/ha was applied in 2019/20, a 12% decrease from 2018/19. Typically there has not been much variation in the amount of non-nitrogen fertiliser applied between the different years but in 2018/19, the amount of phosphorus applied increased by 9kg P/ha. In 2019/20 the amount of phosphorus decreased back to the more typical level of 26kg P/ha. Potassium application decreased by 8kg K/ha to 34kg K/ha and sulphur application has remained relatively stable over the past 7 years increasing from 20 to 22kg S/ha in 2019/20.

Farms in the top 25% (based on return on total assets) typically apply significantly more nitrogen than average but in 2019/20 only applied an average of 7kg N/ha more with 176kg N/ha being applied. The top 25% applied 22kg P/ha (4kg P/ha less than average), 36kg K/ha (2kg K/ha more than average) and 13kg S/ha (9kg S/ha less than average).

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

Appendix Table A2 provides further information on fertiliser application.

Table 5 Fertiliser use

Applied fertiliser	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20
Nitrogen kg/ha	152	177	179	202	201	192	169
Phosphorus kg/ha	27	27	27	24	28	37	26
Potassium kg/ha	35	43	40	46	42	42	34
Sulphur kg/ha	21	20	20	19	23	20	22

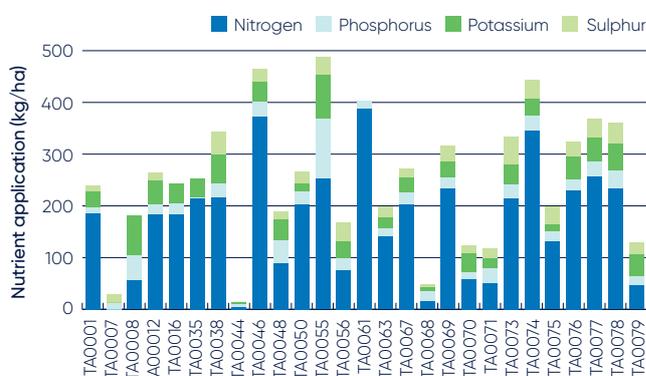
Participant farms in Tasmania used a wide range of fertilisers and fertiliser application rates (Figure 17).

Nitrogen was the main nutrient applied by participant farms, varying from 0kg/ha up to 388kg/ha. This is only a slight increase on the maximum amount of 376kg N/ha applied in 2018/19.

One farm out of the 27 participants did not use any nitrogen with another farm only applying an average of 5kg N/ha.

All farms applied phosphorus. One farm did not apply any potassium fertiliser and four farms did not apply any sulphur fertiliser.

Figure 17 Fertiliser application (kg/ha)



**Business
confidence survey**



EXPECTATIONS AND ISSUES

Responses to this business confidence survey were made in August to October 2020 with regard to the 2020/21 financial year and the next five years to 2024/25. Twenty-one farms provided responses to the business confidence survey.

Expectation for business returns

Most participants expect farm business returns to either improve or remain stable in 2020/21.

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

Of the respondents, 45% expect an improvement in their business returns while a further 35% expect their business returns to remain stable. Twenty percent of respondents expect business returns to decline. This is much higher than the previous year when only 4% expected a decline (Figure 19).

In the previous year's survey, 81% of respondents expected farm business returns to improve for the 2019/20 season and they were correct, average farm business returns of the dairy farm monitor project participants did improve.

Price and production expectations – Milk

Following-on from a relatively good milk price year, 48% of farmers expect milk price to decrease for the 2020/21 with a further 33% expecting milk price to remain stable. Nineteen percent of respondents expected milk price to increase again.

There was another increase in the number of respondents expecting their milk production to increase in 2020/21. Last year, 74% of respondents expected their milk production to increase. This year, 81% of respondents expect their milk production to increase with the other 19% expecting their milk production to remain stable. No-one thinks their milk production will decrease.

Production expectations – Fodder

More than half of respondents (57%) expect fodder production to increase for 2020/21 (Figure 21). This is slightly higher than the previous survey. A further 33% expect their fodder production to remain stable. The percentage of respondents expecting their fodder production to decrease is 10% compared to only 4% expecting a decrease in fodder production in the last survey, with only 4% expecting fodder production to decrease.

Given the pasture-based nature of the Tasmanian dairy industry, the fodder production expectations do not match the milk production expectations. This is perhaps explained by farmers anticipating additional milk production will be achieved by increasing cow numbers.

Figure 18 Expectation of business returns

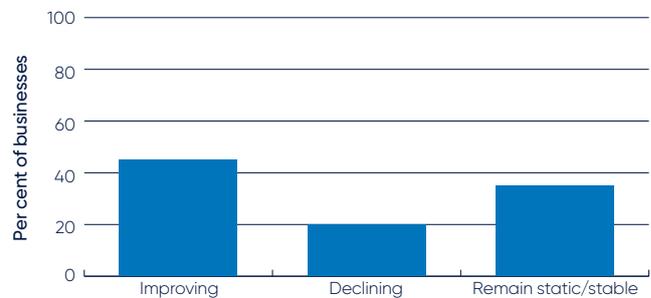


Figure 19 Price and production expectations – milk

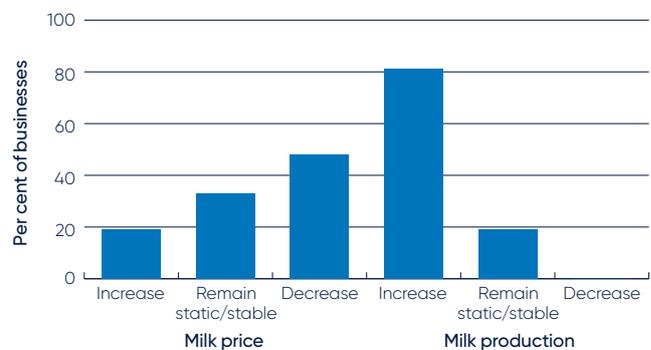
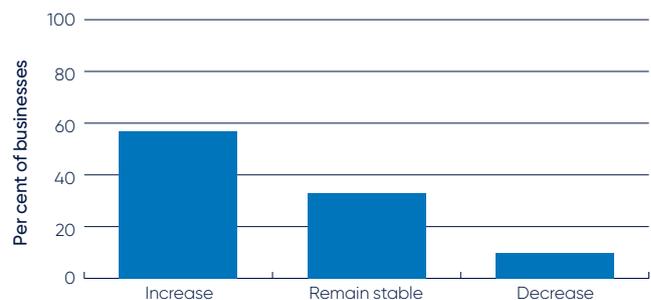


Figure 20 Producer expectations – fodder

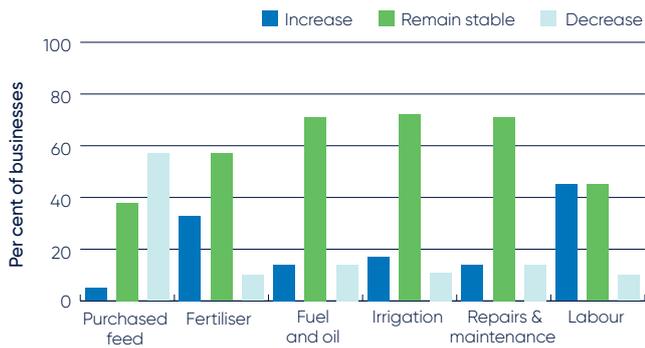


Cost expectations

In all of the cost categories except labour, respondents the majority of respondents expected costs to remain stable or decrease. Only 5% expected feed costs to increase.

Almost half (45%) of respondents expect their labour costs to increase in 2020/21.

Figure 21 Cost expectations

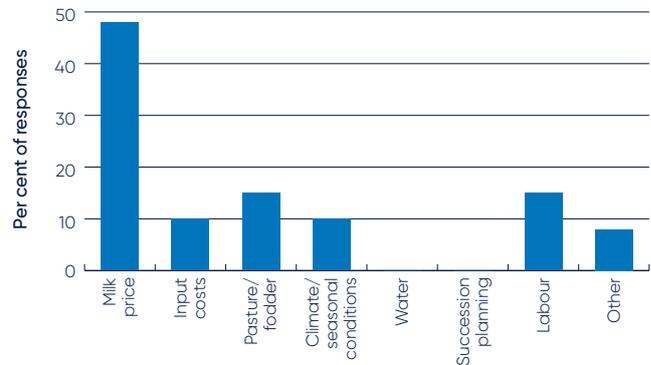


Major issues facing the industry dairy – the next 12 months

Figure 23 provides a summary of the ranking of key issues identified by participants for the 2020/21 season.

As usual, milk price was ranked as the issue of most concern. Often input costs is the next highest concern but for the 2020/21 season it was ranked fourth behind labour and pasture/fodder production. Water and succession planning were not considered a major issue for the 2020/21 season by any of the respondents.

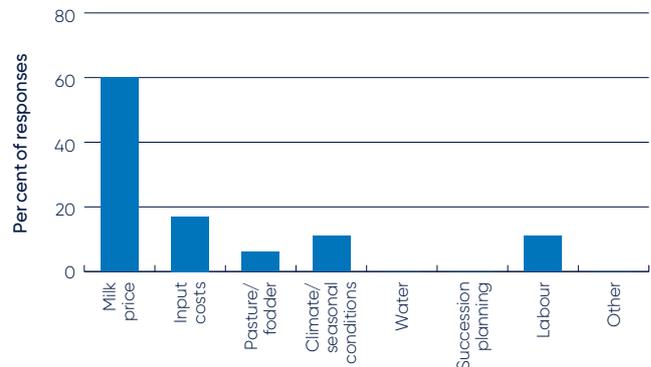
Figure 22 Major issues facing the dairy industry – the next 12 months



Major issues in the dairy industry – the next 5 years

Milk price is the dominant concern for participants over the next five years. This is followed by input costs, labour and climate/seasonal conditions.

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



Historical analysis



The dollar values are adjusted to allow comparison between years, however, the number of farms in the sample is not consistent and some farms do not participate each year and new farms are added to the sample; care needs to be taken when comparing performance across years.

Earnings before interest and tax and net farm income increased in 2019/20 to their highest level in the past 7 years.

As can be seen in Figure 25, EBIT and net farm income increased significantly in 2019/20 reaching their highest level in the past 7 years (the length of time Tasmania has been participating in the national Dairy Farm Monitor Project).

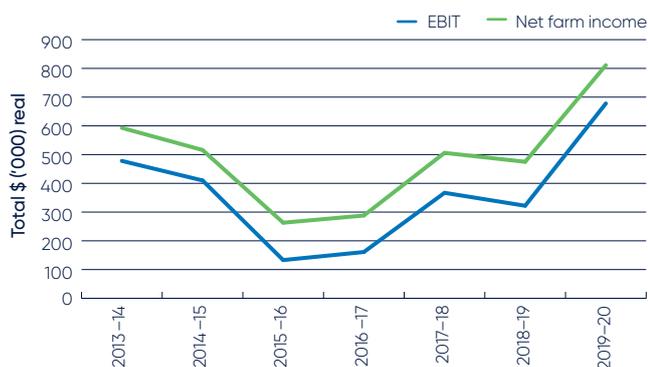
Net farm income increased from \$321,658 in 2018/19 (adjusted for inflation) to \$678,286 this season.

EBIT increased from \$474,633 in 2018/19 (adjusted for inflation) to \$810,613.

This significant increase was due largely to an increased milk price, but good cost control also contributed.

The difference between EBIT and net income is interest and lease costs. In real terms, interest and lease costs decreased from \$0.66/kg MS to \$0.58/kg MS. This is the same cost as the interest and lease costs in 2017/18.

Figure 24 Historical EBIT and net farm income

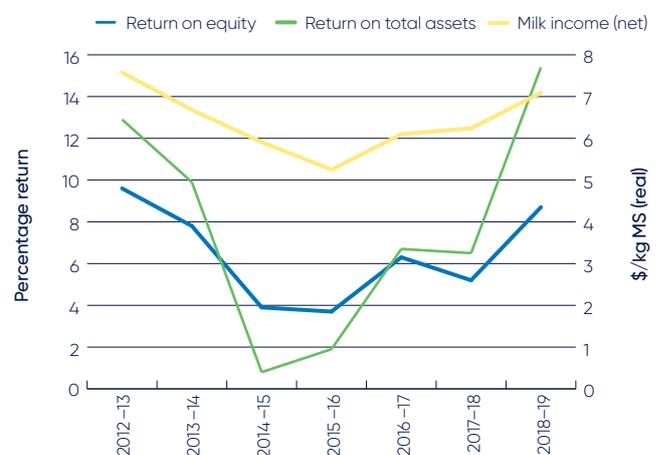


This is the second time in seven years RoTA has increased. In real terms (adjusted for inflation), the RoTA is the second highest achieved in the past seven years at 8.7%. The highest was 9.6% in 2013-14.

Return on equity also increased in 2019/20 reaching the highest it has been in the past seven years at 15.4%. When the percentage of RoE increases compared to RoTA, it is the result of a higher return from the additional assets than the interest or lease rate.

Milk price increased from \$6.24/kg MS (adjusted for inflation) in 2018/19 to \$7.09/kg MS in 2019/20.

Figure 25 Historical return on assets, return on equity and milk income



Appendices



APPENDIX A – 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 total assets (exc. capital apprec.)	Interest and lease charges	Debt servicing ratio	Net farm income	Return on equity
	\$ kg/ MS	\$/kg MS	\$ kg/ MS	\$/kg MS	\$/kg MS	per cent	\$/kg MS	per cent	\$/kg MS	per cent of income	\$ kg/ MS	per cent
TA0001	7.08	0.90	7.98	3.36	2.15	61	2.47	5.7	0.84	10.5	1.63	7.5
TA0007	7.12	0.52	7.64	1.71	2.81	38	3.13	6.7	0.42	5.5	2.71	7.3
TA0008	7.44	0.50	7.94	3.17	1.85	63	2.92	13.6	0.26	3.3	2.66	17.6
TA0012	8.26	0.98	9.24	3.70	2.30	62	3.23	10.8	0.31	3.4	2.92	16.0
TA0016	7.15	0.74	7.90	2.89	1.49	66	3.52	17.4	0.00	0.0	3.51	17.4
TA0035	7.62	0.59	8.21	2.89	1.50	66	3.83	17.7	0.08	0.9	3.75	18.7
TA0038	6.76	1.45	8.22	3.46	3.47	50	1.28	2.9	0.12	1.5	1.16	2.9
TA0044	7.77	0.59	8.36	2.25	3.19	41	2.92	4.5	1.84	22.1	1.07	4.9
TA0046	6.98	0.35	7.32	3.11	2.45	56	1.76	7.8	0.39	5.3	1.37	13.2
TA0048	6.96	1.39	8.36	4.32	2.39	64	1.65	6.0	0.58	7.0	1.06	12.2
TA0050	6.94	0.63	7.58	3.62	1.38	72	2.57	12.4	0.81	10.8	1.76	42.3
TA0055	6.95	0.52	7.47	4.24	1.97	68	1.26	5.4	0.42	5.6	0.84	6.0
TA0056	6.86	0.85	7.71	3.72	2.38	61	1.61	5.0	0.74	9.6	0.87	5.8
TA0061	6.95	0.34	7.29	3.86	1.94	66	1.49	5.0	0.78	10.7	0.71	4.7
TA0063	7.27	0.73	8.00	3.54	1.27	74	3.19	13.9	0.95	11.9	2.24	70.3
TA0067	7.22	0.65	7.87	3.20	1.59	67	3.07	13.6	0.35	4.5	2.72	22.6
TA0068	6.65	1.72	8.36	2.22	3.57	38	2.58	3.5	1.46	17.5	1.12	2.8
TA0069	7.22	0.78	8.01	2.32	1.88	55	3.81	16.9	0.26	3.2	3.55	20.6
TA0070	6.72	1.82	8.54	2.11	4.02	34	2.41	4.0	0.34	4.0	2.07	4.1
TA0071	6.61	1.67	8.28	2.83	5.54	34	-0.09	-0.1	1.60	19.3	-1.69	-6.9
TA0073	6.94	0.32	7.26	2.87	1.91	60	2.48	9.0	0.51	7.0	1.98	13.2
TA0074	7.09	0.59	7.68	3.47	1.96	64	2.25	10.6	0.15	2.0	2.09	11.4
TA0075	6.98	0.42	7.40	3.02	2.08	59	2.31	7.0	0.09	1.2	2.22	7.0
TA0076	7.03	0.56	7.58	3.68	1.99	65	1.91	8.5	0.02	0.2	1.89	8.5
TA0077	7.02	0.63	7.65	3.61	2.00	64	2.03	8.9	0.02	0.2	2.02	8.9
TA0078	7.03	0.18	7.21	3.19	1.36	70	2.66	10.0	0.02	0.3	2.64	10.0
TA0079	6.85	2.54	9.39	2.16	1.86	54	5.37	7.5	2.34	24.9	3.03	67.3
Average	7.09	0.85	7.94	3.13	2.31	58	2.50	8.7	0.58	7.1	1.92	15.4
Top 25*	7.27	0.66	7.93	3.09	1.57	66	3.27	15.1	0.39	4.9	2.88	30.0

Table A2 Physical information

Farm number	Total usable area	Milking area	Total water use efficiency	Number of milking cows	Milking cows per usable area	Milk sold	Milk sold	Fat	Protein
	ha	ha	t DM/100mm/ha	hd	hd/ha	kg MS/cow	kg MS/ha	per cent	per cent
TA0001	240	144	0.7	460	1.9	284	545	5.1	4.1
TA0007	212	212	0.8	394	1.9	320	594	4.4	3.5
TA0008	512	300	0.9	1,100	2.1	527	1133	3.9	3.4
TA0012	442	330	0.9	610	1.4	415	572	4.6	3.6
TA0016	176	176	1.1	665	3.8	505	1907	4.9	3.8
TA0035	475	310	0.8	1,130	2.4	496	1179	4.9	3.8
TA0038	283	165	0.6	505	1.8	314	561	4.5	3.5
TA0044	297	234	0.6	430	1.4	288	417	5.3	3.9
TA0046	497	274	0.8	910	1.8	460	842	4.2	3.7
TA0048	135	70	0.5	230	1.7	420	715	4.4	3.5
TA0050	470	320	1.1	1,200	2.6	502	1281	4.6	3.8
TA0055	80	80	0.8	215	2.7	511	1374	4.5	3.5
TA0056	145	108	0.7	252	1.7	481	837	4.6	3.5
TA0061	500	300	0.8	1,000	2.0	582	1164	3.6	3.5
TA0063	290	266	1.1	840	2.9	453	1313	4.1	3.5
TA0067	522	398	1.0	1,290	2.5	461	1138	4.9	3.8
TA0068	389	161	0.5	450	1.2	318	369	4.8	3.6
TA0069	279	249	1.1	820	2.9	492	1445	4.5	3.7
TA0070	172	58	0.8	193	1.1	359	402	4.7	3.8
TA0071	240	110	0.5	273	1.1	364	414	4.4	3.4
TA0073	488	344	2.0	1,195	2.4	415	1017	4.7	3.9
TA0074	330	300	0.9	1,007	3.1	454	1386	4.4	3.8
TA0075	559	559	0.7	1,350	2.4	340	821	4.6	3.7
TA0076	187	187	0.9	559	3.0	451	1348	4.7	3.8
TA0077	235	235	0.8	703	3.0	436	1303	4.6	3.8
TA0078	372	372	1.0	1,156	3.1	413	1285	4.6	3.7
TA0079	265	111	0.5	165	0.6	371	231	4.6	3.4
Average	326	236	0.8	707	2.2	423	948	4.6	3.7
Top 25*	389	288	1.0	1,006	2.7	491	1,342	4.5	3.7

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	per cent of ME	kg/ha	kg/ha	kg/ha	kg/ha	hd/FTE	kg MS/FTE
TA0001	9.7	0.1	83	167	23	49	19	216	61,528
TA0007	8.2	0.0	84	-	12	-	16	113	36,003
TA0008	12.3	0.0	68	32	55	87	-	141	74,295
TA0012	7.9	2.3	97	148	19	46	15	147	60,846
TA0016	12.9	0.3	64	183	21	39	-	133	67,291
TA0035	14.2	1.1	74	169	2	26	0	226	111,989
TA0038	10.0	0.6	74	184	30	57	45	126	39,671
TA0044	5.9	0.5	89	4	4	4	-	154	44,204
TA0046	12.4	0.2	74	245	17	21	13	131	60,343
TA0048	7.2	0.0	60	66	40	38	10	177	74,271
TA0050	14.2	0.1	72	161	20	12	16	168	84,272
TA0055	9.9	0.3	60	252	116	85	33	145	73,894
TA0056	7.8	0.8	75	69	30	36	42	139	66,951
TA0061	9.8	1.8	59	313	8	-	1	161	93,882
TA0063	11.4	0.7	69	200	25	46	31	190	86,194
TA0067	10.4	0.4	67	172	20	34	14	219	101,000
TA0068	8.3	0.5	83	11	10	4	2	112	35,712
TA0069	11.4	1.0	66	207	19	29	26	205	100,758
TA0070	13.0	0.0	88	69	19	20	10	86	30,981
TA0071	8.0	0.0	77	26	22	11	19	53	19,455
TA0073	13.7	0.3	81	151	16	21	31	201	83,301
TA0074	11.8	1.3	72	315	25	30	34	123	55,787
TA0075	7.3	0.4	68	130	17	10	27	169	57,361
TA0076	9.5	0.6	65	230	18	38	27	156	70,350
TA0077	9.0	0.3	65	257	29	45	38	160	69,616
TA0078	11.7	0.9	80	233	35	52	41	206	84,964
TA0079	6.2	1.5	86	19	8	17	10	134	49,601
Average	10.1	0.7	74	149	24	32	19	155	66,464
Top 25*	12.4	0.6	69	161	23	39	13	183	89,400

*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	of total energy imported
	t DM/hd	\$/t DM	\$/t DM	\$/t DM	\$/t DM	\$/t DM	per cent of ME
TA0001	0.8	463	0	181	0	324	17
TA0007	0.8	459	0	128	0	403	16
TA0008	2.2	634	0	314	0	520	32
TA0012	0.3	585	228	360	0	518	3
TA0016	2.0	517	230	200	0	388	36
TA0035	1.4	509	0	169	0	393	26
TA0038	1.9	542	332	186	0	332	26
TA0044	0.5	444	0	0	0	444	11
TA0046	1.3	559	0	0	0	559	26
TA0048	2.3	550	171	169	0	335	40
TA0050	1.4	600	130	212	0	549	28
TA0055	2.5	593	426	157	0	433	40
TA0056	1.4	637	0	224	0	491	25
TA0061	2.8	464	0	0	0	464	41
TA0063	1.7	494	205	153	0	442	31
TA0067	1.7	523	290	277	0	456	33
TA0068	0.8	455	0	0	0	455	17
TA0069	1.8	0	225	157	0	46	34
TA0070	0.8	533	280	309	0	443	12
TA0071	1.2	556	66	66	258	515	23
TA0073	0.9	469	0	251	220	429	19
TA0074	1.3	471	162	0	0	457	28
TA0075	1.6	472	0	261	176	255	32
TA0076	1.7	482	261	168	0	425	35
TA0077	1.5	445	150	160	0	395	35
TA0078	0.9	474	0	154	0	455	20
TA0079	0.9	551	240	210	0	502	14
Average	1.4	519	226	203	218	423	26
Top 25*	1.7	546	216	212		399	31

Table A4 Variable costs

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd and shed costs	Fertiliser	Irrigation	Hay and silage making
	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS
TA0001	0.13	0.18	0.04	0.09	0.08	0.52	0.81	0.00	0.10
TA0007	0.06	0.08	0.00	0.05	0.03	0.22	0.22	0.02	0.02
TA0008	0.11	0.18	0.07	0.08	0.07	0.51	0.28	0.18	0.18
TA0012	0.01	0.07	0.02	0.12	0.08	0.30	0.64	0.21	0.21
TA0016	0.06	0.10	0.18	0.07	0.04	0.45	0.22	0.01	0.01
TA0035	0.10	0.15	0.03	0.05	0.04	0.37	0.56	0.16	0.16
TA0038	0.00	0.17	0.01	0.08	0.11	0.37	0.81	0.08	0.08
TA0044	0.05	0.05	0.01	0.09	0.30	0.51	0.57	0.07	0.07
TA0046	0.09	0.13	0.04	0.10	0.04	0.41	0.57	0.05	0.05
TA0048	0.09	0.06	0.03	0.12	0.12	0.42	0.40	0.60	0.60
TA0050	0.12	0.12	0.25	0.05	0.11	0.65	0.50	0.04	0.04
TA0055	0.24	0.29	0.07	0.08	0.06	0.73	0.50	0.07	0.07
TA0056	0.12	0.21	0.01	0.12	0.10	0.56	0.45	0.21	0.21
TA0061	0.08	0.22	0.03	0.10	0.06	0.50	0.51	0.17	0.17
TA0063	0.09	0.06	0.09	0.08	0.13	0.46	0.48	0.03	0.03
TA0067	0.08	0.13	0.02	0.03	0.04	0.29	0.44	0.09	0.09
TA0068	0.07	0.04	0.03	0.21	0.13	0.47	0.31	0.02	0.02
TA0069	0.10	0.20	0.13	0.11	0.04	0.57	0.51	0.10	0.10
TA0070	0.07	0.21	0.01	0.06	0.06	0.41	0.47	0.08	0.08
TA0071	0.05	0.06	0.07	0.27	0.07	0.51	0.32	0.03	0.03
TA0073	0.13	0.15	0.03	0.05	0.04	0.39	0.36	0.03	0.03
TA0074	0.11	0.14	0.07	0.09	0.03	0.43	0.51	0.13	0.13
TA0075	0.11	0.11	0.06	0.06	0.09	0.44	0.45	0.06	0.06
TA0076	0.10	0.13	0.08	0.13	0.04	0.49	0.42	0.06	0.06
TA0077	0.12	0.14	0.06	0.11	0.05	0.49	0.45	0.03	0.03
TA0078	0.09	0.11	0.07	0.08	0.09	0.44	0.49	0.12	0.12
TA0079	0.00	0.09	0.02	0.14	0.08	0.33	0.49	0.63	0.63
Average	0.09	0.13	0.06	0.10	0.08	0.45	0.47	0.12	0.13
Top 25*	0.09	0.13	0.11	0.07	0.07	0.47	0.43	0.09	0.09

Farm number	Fuel and oil	Pasture improvement/cropping	Other feed costs	Fodder purchases	Grain/concentrates/other	Agistment costs	Feed and water inventory change	Total feed costs	Total variable costs
	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS
TA0001	0.10	0.53	0.00	0.33	0.87	0.00	-0.18	2.84	3.36
TA0007	0.08	0.03	0.00	0.05	0.89	0.05	-0.03	1.49	1.71
TA0008	0.05	0.22	0.08	0.47	1.72	0.03	-0.57	2.66	3.17
TA0012	0.07	0.49	0.00	0.26	1.63	0.00	0.03	3.41	3.70
TA0016	0.03	0.01	0.01	0.39	1.14	0.55	0.00	2.44	2.89
TA0035	0.03	0.01	0.00	0.20	1.19	0.26	-0.11	2.52	2.89
TA0038	0.18	0.17	0.00	0.68	1.22	0.00	-0.16	3.09	3.46
TA0044	0.20	0.05	0.00	0.00	0.76	0.00	-0.04	1.74	2.25
TA0046	0.09	0.13	0.00	0.00	1.38	0.00	0.21	2.71	3.11
TA0048	0.07	0.43	0.00	0.70	1.76	0.00	-0.19	3.90	4.32
TA0050	0.05	0.15	0.00	0.05	1.51	0.47	0.02	2.98	3.62
TA0055	0.07	0.10	0.00	0.52	1.85	0.24	-0.10	3.51	4.24
TA0056	0.12	0.37	0.00	0.32	1.67	0.00	-0.31	3.15	3.72
TA0061	0.08	0.09	0.00	0.00	2.21	0.18	0.00	3.36	3.86
TA0063	0.03	0.10	0.04	0.10	1.86	0.39	-0.03	3.08	3.54
TA0067	0.03	0.10	0.00	0.29	1.33	0.61	-0.01	2.91	3.20
TA0068	0.19	0.07	0.00	0.00	1.17	0.00	-0.53	1.75	2.22
TA0069	0.05	0.11	0.00	0.18	0.00	0.75	-0.08	1.75	2.32
TA0070	0.18	0.12	0.00	0.31	0.84	0.00	-0.53	1.70	2.11
TA0071	0.16	0.03	0.00	0.02	1.77	0.00	-0.23	2.32	2.83
TA0073	0.03	0.07	0.05	0.07	0.92	0.28	0.10	2.48	2.87
TA0074	0.07	0.05	0.04	0.02	1.37	0.67	-0.02	3.04	3.47
TA0075	0.07	0.11	0.03	0.01	1.18	0.56	-0.01	2.58	3.02
TA0076	0.09	0.10	0.06	0.17	1.42	0.74	0.00	3.19	3.68
TA0077	0.06	0.14	0.07	0.10	1.37	0.83	-0.04	3.12	3.61
TA0078	0.06	0.10	0.02	0.02	0.99	0.84	0.00	2.75	3.19
TA0079	0.09	0.14	0.00	0.08	1.12	0.00	-0.72	1.83	2.16
Average	0.08	0.15	0.01	0.20	1.30	0.28	-0.13	2.68	3.13
Top 25*	0.04	0.10	0.02	0.24	1.25	0.44	-0.11	2.62	3.09

Table A5 Overhead costs

Farm number	Rates	Farm insurance	Motor vehicle expenses	Repairs and maintenance	Other overheads	Employed labour	Total cash overheads	Depreciation	Imputed owner/operator and family labour	Total overheads
	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS	\$ kg/MS
TA0001	0.08	0.07	0.02	0.32	0.29	0.60	1.39	0.17	0.59	2.15
TA0007	0.10	0.12	0.00	0.34	0.10	1.35	2.02	0.48	0.30	2.81
TA0008	0.04	0.08	0.03	0.39	0.18	0.63	1.34	0.24	0.26	1.85
TA0012	0.12	0.03	0.17	0.31	0.14	1.30	2.07	0.19	0.03	2.30
TA0016	0.02	0.04	0.02	0.22	0.06	0.84	1.21	0.21	0.07	1.49
TA0035	0.02	0.04	0.08	0.36	0.08	0.51	1.09	0.14	0.27	1.50
TA0038	0.07	0.11	0.01	0.86	0.17	1.36	2.58	0.41	0.48	3.47
TA0044	0.08	0.12	0.06	0.53	0.10	1.23	2.12	0.57	0.50	3.19
TA0046	0.01	0.07	0.01	0.74	0.17	0.93	1.92	0.29	0.23	2.45
TA0048	0.03	0.14	0.04	0.61	0.16	0.00	0.97	0.38	1.03	2.39
TA0050	0.02	0.02	0.00	0.26	0.06	0.97	1.33	0.05	0.00	1.38
TA0055	0.03	0.10	0.07	0.30	0.20	0.13	0.82	0.24	0.91	1.97
TA0056	0.05	0.11	0.05	0.55	0.07	0.04	0.88	0.40	1.10	2.38
TA0061	0.03	0.05	0.02	0.55	0.07	0.69	1.42	0.37	0.16	1.94
TA0063	0.04	0.04	0.03	0.30	0.04	0.49	0.93	0.04	0.30	1.27
TA0067	0.02	0.02	0.00	0.43	0.15	0.75	1.37	0.14	0.08	1.59
TA0068	0.03	0.09	0.06	0.51	0.12	1.93	2.73	0.61	0.23	3.57
TA0069	0.02	0.04	0.01	0.43	0.12	0.98	1.60	0.28	0.00	1.88
TA0070	0.13	0.13	0.03	0.71	0.11	1.18	2.29	0.45	1.28	4.02
TA0071	0.08	0.20	0.06	0.73	0.14	1.03	2.23	0.84	2.47	5.54
TA0073	0.02	0.02	0.04	0.31	0.10	1.03	1.52	0.35	0.03	1.91
TA0074	0.03	0.04	0.06	0.32	0.06	1.25	1.76	0.20	0.00	1.96
TA0075	0.03	0.05	0.05	0.43	0.06	1.25	1.87	0.21	0.00	2.08
TA0076	0.02	0.07	0.09	0.38	0.08	1.02	1.66	0.32	0.00	1.99
TA0077	0.03	0.08	0.12	0.44	0.06	1.02	1.73	0.27	0.00	2.00
TA0078	0.02	0.05	0.05	0.31	0.04	0.70	1.18	0.17	0.00	1.36
TA0079	0.00	0.12	0.04	0.04	0.02	0.00	0.22	0.08	1.55	1.86
Average	0.04	0.08	0.04	0.43	0.11	0.86	1.57	0.30	0.44	2.31
Top 25*	0.03	0.04	0.02	0.34	0.10	0.74	1.27	0.16	0.14	1.57

Table A6 Variable costs – percentage

Farm number	AI and herd test	Animal health	Calf rearing	Shed power	Dairy supplies	Total herd & shed costs	Fertiliser	Irrigation	Hay and silage making
	per cent of costs	per cent of costs	per cent of costs	per cent of costs					
TA0001	2.3	3.3	0.7	1.7	1.4	9.5	14.8	0.0	1.8
TA0007	1.3	1.8	0.1	1.0	0.6	4.8	4.8	0.3	0.3
TA0008	2.1	3.6	1.3	1.6	1.5	10.1	5.7	3.7	3.7
TA0012	0.1	1.2	0.3	2.0	1.3	5.0	10.7	3.6	3.6
TA0016	1.3	2.4	4.1	1.6	1.0	10.3	5.0	0.3	0.3
TA0035	2.3	3.5	0.8	1.1	0.8	8.5	12.8	3.7	3.7
TA0038	0.0	2.5	0.1	1.1	1.6	5.3	11.7	1.1	1.1
TA0044	1.0	0.9	0.1	1.7	5.6	9.3	10.4	1.3	1.3
TA0046	1.6	2.3	0.8	1.8	0.8	7.3	10.3	0.8	0.8
TA0048	1.4	0.9	0.5	1.7	1.7	6.3	5.9	8.9	8.9
TA0050	2.4	2.3	5.0	1.0	2.2	12.9	10.1	0.9	0.9
TA0055	3.9	4.6	1.1	1.3	1.0	11.8	8.0	1.1	1.1
TA0056	2.0	3.4	0.2	2.0	1.7	9.2	7.5	3.5	3.5
TA0061	1.4	3.8	0.6	1.7	1.1	8.6	8.8	2.9	2.9
TA0063	2.0	1.3	1.9	1.6	2.7	9.5	10.0	0.7	0.7
TA0067	1.6	2.7	0.4	0.7	0.7	6.0	9.1	1.8	1.8
TA0068	1.1	0.6	0.5	3.6	2.3	8.1	5.4	0.4	0.4
TA0069	2.3	4.7	3.0	2.6	0.9	13.5	12.3	2.3	2.3
TA0070	1.1	3.4	0.2	1.0	1.0	6.7	7.7	1.3	1.3
TA0071	0.6	0.7	0.8	3.2	0.8	6.1	3.8	0.3	0.3
TA0073	2.6	3.2	0.5	1.0	0.9	8.3	7.5	0.6	0.6
TA0074	2.0	2.5	1.2	1.6	0.5	7.9	9.4	2.4	2.4
TA0075	2.3	2.1	1.2	1.3	1.8	8.6	8.8	1.1	1.1
TA0076	1.8	2.3	1.5	2.2	0.8	8.7	7.4	1.1	1.1
TA0077	2.1	2.5	1.2	1.9	1.0	8.6	8.1	0.5	0.5
TA0078	2.0	2.5	1.5	1.7	2.0	9.7	10.7	2.7	2.7
TA0079	0.0	2.3	0.5	3.6	2.0	8.3	12.2	15.7	15.7
Average	1.7	2.5	1.1	1.8	1.5	8.5	8.8	2.3	2.4
Top 25*	2.0%	2.9%	2.3%	1.5%	1.4%	10.1%	9.3%	1.9%	1.9%

Farm number	Fuel and oil	Pasture improvement/cropping	Other feed costs	Fodder purchases	Grain/concentrates/other	Agistment costs	Feed and water inventory change	Total feed costs	Total variable costs
	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs
TA0001	1.7	9.5	0.0	5.9	15.7	0.0	-3.3	51.5	60.9
TA0007	1.7	0.6	0.0	1.1	19.7	1.1	-0.7	32.9	37.8
TA0008	1.0	4.4	1.6	9.3	34.2	0.6	-11.4	53.1	63.2
TA0012	1.1	8.2	0.0	4.3	27.2	0.0	0.5	56.7	61.7
TA0016	0.6	0.3	0.2	8.8	26.1	12.5	0.0	55.7	66.0
TA0035	0.6	0.2	0.0	4.6	27.0	5.9	-2.5	57.4	65.8
TA0038	2.7	2.5	0.1	9.8	17.5	0.0	-2.3	44.6	49.9
TA0044	3.6	0.9	0.0	0.0	13.9	0.0	-0.8	32.1	41.4
TA0046	1.6	2.4	0.0	0.0	24.7	0.0	3.8	48.7	56.0
TA0048	1.1	6.5	0.0	10.5	26.2	0.0	-2.8	58.2	64.4
TA0050	1.0	3.0	0.0	1.0	30.2	9.4	0.5	59.5	72.4
TA0055	1.2	1.5	0.0	8.3	29.8	3.9	-1.7	56.4	68.2
TA0056	1.9	6.0	0.0	5.3	27.4	0.0	-5.0	51.8	61.0
TA0061	1.4	1.6	0.0	0.0	38.1	3.0	0.0	57.8	66.5
TA0063	0.6	2.1	0.8	2.2	38.8	8.2	-0.7	64.1	73.6
TA0067	0.5	2.1	0.0	6.1	27.7	12.7	-0.1	60.8	66.8
TA0068	3.3	1.2	0.0	0.0	20.3	0.0	-9.1	30.2	38.4
TA0069	1.2	2.5	0.0	4.4	0.0	17.9	-2.0	41.7	55.2
TA0070	2.9	1.9	0.0	5.0	13.8	0.0	-8.7	27.7	34.4
TA0071	1.9	0.4	0.0	0.2	21.1	0.0	-2.7	27.7	33.8
TA0073	0.6	1.5	0.9	1.5	19.3	5.8	2.1	51.8	60.1
TA0074	1.2	1.0	0.7	0.4	25.2	12.4	-0.4	56.0	63.9
TA0075	1.3	2.2	0.6	0.2	23.2	11.0	-0.2	50.6	59.2
TA0076	1.6	1.7	1.0	3.1	25.1	13.0	0.0	56.3	64.9
TA0077	1.0	2.5	1.2	1.8	24.3	14.8	-0.7	55.7	64.3
TA0078	1.2	2.2	0.5	0.4	21.8	18.4	0.0	60.4	70.2
TA0079	2.1	3.5	0.0	1.9	27.9	0.0	-17.8	45.5	53.8
Average	1.5	2.7	0.3	3.6	23.9	5.6	-2.5	49.8	58.3
Top 25*	0.8	2.1	0.4	5.2	26.3	9.6	-2.3	56.0	66.1

Table A7 Overhead costs – percentage

Farm number	Rates	Farm insurance	Motor vehicle expenses	Repairs and maintenance	Other	Employed labour	Total cash	Depreciation	Imputed owner/operator and family labour	Total
	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs	per cent of costs
TA0001	1.4	1.3	0.4	5.9	5.3	10.9	25.2	3.2	10.7	39.1
TA0007	2.3	2.7	0.0	7.6	2.2	29.9	44.8	10.7	6.7	62.2
TA0008	0.8	1.6	0.5	7.7	3.5	12.6	26.7	4.9	5.3	36.8
TA0012	2.0	0.5	2.9	5.1	2.4	21.7	34.5	3.2	0.5	38.3
TA0016	0.5	1.0	0.4	5.1	1.4	19.2	27.5	4.8	1.7	34.0
TA0035	0.4	0.9	1.9	8.3	1.8	11.7	24.8	3.1	6.3	34.2
TA0038	0.9	1.6	0.2	12.3	2.4	19.7	37.2	6.0	7.0	50.1
TA0044	1.4	2.2	1.1	9.8	1.8	22.7	39.0	10.6	9.1	58.6
TA0046	0.2	1.2	0.1	13.3	3.0	16.8	34.6	5.3	4.1	44.0
TA0048	0.4	2.0	0.6	9.1	2.3	0.0	14.5	5.7	15.4	35.6
TA0050	0.3	0.4	0.0	5.2	1.2	19.3	26.5	1.1	0.0	27.6
TA0055	0.5	1.6	1.1	4.8	3.2	2.0	13.2	3.9	14.6	31.8
TA0056	0.8	1.9	0.9	9.0	1.2	0.6	14.4	6.6	18.1	39.0
TA0061	0.6	0.9	0.3	9.6	1.1	11.9	24.4	6.4	2.7	33.5
TA0063	0.9	0.8	0.5	6.1	0.8	10.2	19.4	0.7	6.3	26.4
TA0067	0.5	0.4	0.0	8.9	3.1	15.7	28.6	2.8	1.8	33.2
TA0068	0.5	1.6	1.0	8.7	2.0	33.3	47.1	10.5	4.0	61.6
TA0069	0.6	1.0	0.2	10.2	2.8	23.4	38.1	6.7	0.0	44.8
TA0070	2.2	2.1	0.5	11.6	1.8	19.3	37.4	7.4	20.8	65.6
TA0071	0.9	2.4	0.8	8.7	1.7	12.3	26.7	10.0	29.5	66.2
TA0073	0.4	0.4	0.8	6.5	2.2	21.6	31.9	7.4	0.6	39.9
TA0074	0.5	0.8	1.2	6.0	1.0	23.0	32.5	3.6	0.0	36.1
TA0075	0.6	0.9	1.0	8.4	1.2	24.5	36.6	4.2	0.0	40.8
TA0076	0.4	1.2	1.6	6.8	1.5	18.0	29.3	5.7	0.0	35.1
TA0077	0.4	1.3	2.1	7.8	1.1	18.1	30.8	4.9	0.0	35.7
TA0078	0.5	1.1	1.1	6.9	0.9	15.5	26.0	3.8	0.0	29.8
TA0079	0.0	3.0	1.0	1.1	0.5	0.0	5.6	2.0	38.5	46.2
Average	0.8	1.4	0.8	7.8	2.0	16.1	28.8	5.4	7.6	41.7
Top 25*	0.6	0.9	0.5	7.4	2.1	16.0	27.4	3.4	3.0	33.9

Table A8 Capital structure

Farm assets					Other farm assets (per usable hectare)				
	Land value	Land value	Permanent water value	Permanent water value	Plant and equipment	Livestock	Hay and grain	Other assets	Total assets
	\$/ha	\$/cow	\$/ha	\$/cow	\$/ha	\$/ha	\$/ha	\$/ha	\$/ha
Average	17,036	8,403	1,136	533	891	4,178	131	109	23,482
Liabilities					Equity				
	Liabilities per usable hectare			Liabilities per milking cow	Equity per usable hectare				Average equity
	\$/ha			\$/cow	\$/ha				per cent
Average	5,912			3,349	17,569				74

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

Income					Variable costs									
Milk income (net)		Gross farm income			Herd costs		Shed costs		Feed costs		Total variable costs			
Year	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)		
2013–14	6.87	7.58	7.59	8.37	0.28	0.31	0.23	0.25	2.51	2.77	3.02	3.33		
2014–15	6.19	6.67	6.90	7.44	0.29	0.31	0.20	0.22	2.65	2.86	3.13	3.38		
2015–16	5.55	5.91	6.10	6.49	0.29	0.31	0.17	0.18	2.81	2.99	3.27	3.48		
2016–17	5.03	5.25	5.84	6.10	0.28	0.29	0.20	0.21	2.38	2.49	2.87	3.00		
2017–18	5.95	6.10	6.70	6.87	0.30	0.31	0.18	0.18	2.47	2.53	2.95	3.02		
2018–19	6.16	6.24	6.90	6.98	0.30	0.31	0.18	0.19	2.78	2.81	3.27	3.31		
2019–20	7.09	7.09	7.94	7.94	0.28	0.28	0.18	0.18	2.68	2.68	3.13	3.13		
Average		6.41		7.17		0.30		0.20		2.73		3.24		
Overhead costs							Profit							
Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease charges		Net farm income				
Year	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Nominal (\$ kg/MS)	Real (\$ kg/MS)	Return on total assets per cent	Return on equity per cent
2013–14	1.41	1.56	\$0.73	0.81	2.14	2.36	2.44	2.69	0.47	0.52	1.97	2.13	9.6	12.9
2014–15	1.34	1.45	\$0.60	0.65	1.94	2.09	1.84	1.98	0.42	0.46	1.42	1.51	7.8	9.9
2015–16	1.43	1.52	\$0.48	0.51	1.91	2.03	0.92	0.98	0.56	0.60	0.36	0.38	3.9	0.8
2016–17	1.30	1.36	\$0.68	0.71	1.98	2.07	0.99	1.03	0.63	0.66	0.36	0.37	3.7	1.9
2017–18	1.36	1.40	\$0.73	0.75	2.09	2.15	1.80	1.85	0.66	0.68	1.14	1.16	6.3	6.7
2018–19	1.35	1.37	\$0.84	0.85	2.19	2.22	1.44	1.46	0.66	0.67	0.78	0.78	5.2	6.5
2019–20	1.57	1.57	0.74	0.74	2.31	2.31	2.50	2.50	0.58	0.58	1.92	1.92	8.7	15.4
Average		1.46		0.72		2.17		1.79		0.60		1.19	6.5	7.7

Note: 'Real' dollar values are the nominal values converted to 2017–18 dollar equivalents by the consumer price index (CPI) to allow for inflation. The gross income in 2017–18 did not include feed inventory changes and changes to the value of carry-over water. These were included in feed costs.

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, dividends, interest payments received, and rent from farm cottages.	Feed costs	Cost of fertiliser, irrigation (including effluent), hay and silage making, fuel and oil, pasture improvement, fodder purchases, grain/concentrates, agistment and lease costs associated with any of the above costs, and feed inventory change.
Annual hours	Total hours worked by a person during the given twelve-month period.	Feed inventory change	An estimate of the feed on hand at the start and end of the financial year to capture feed used in the production of milk and livestock.
Appreciation	An increase in the value of an asset in the marketplace. Often only applicable to land value.	Finance costs	See interest and lease costs.
Asset	Anything managed by the farm, whether it is owned or not. Assets include owned land and buildings, leased land, plant and machinery, fixtures and fittings, trading stock, farm investments (i.e. Farm Management Deposits), debtors, and cash.	Full time equivalent (FTE)	Standardised labour unit. Equal to 2,400 hours a year. Calculated as 48 hours a week for 50 weeks a year.
Cash overheads	All fixed costs that have a cash cost to the business. Includes all overhead costs except imputed labour costs and depreciation.	Grazed area	Total usable area minus any area used only for fodder production during the year.
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; <ul style="list-style-type: none"> • 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 	Grazed pasture	Calculated using the energetics method. Grazed pasture is calculated as the gap between total energy required by livestock over the year and amount of energy available from other sources (hay, silage, grain and concentrates). Total energy required by livestock is a factor of age, weight, growth rate, pregnancy and lactation requirements, distance to shed, terrain and number of animals. Total energy available is the sum of energy available from all feed sources except pasture, calculated as (weight (kg) x dry matter content (DM %) x metabolisable energy (MJ/kg DM)).
Cost structure	Variable costs as a percentage of total costs, where total costs equals variable costs plus overhead costs.	Gross farm income	Farm income including milk sales, livestock trading and other income such as income from grants and rebates.
Debt servicing ratio	Interest and lease costs as a percentage of gross farm income.	Gross margin	Gross farm income minus total variable costs.
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.	Herd costs	Cost of artificial insemination (AI) and herd tests, animal health and calf rearing.
Earnings before interest & tax (EBIT)	Gross income minus total variable and total overhead costs.	Imputed	An estimated amount, introduced into economic management analysis to allow reasonable comparisons between years and between other businesses.
EBIT %	The ratio of EBIT compared to gross income. Indicates the percentage of each dollar of gross income that is retained as EBIT.	Imputed labour cost	An allocated allowance for the cost of owner/operator, family and sharefarmer time in the business, valued at \$28 per hour.
Employed labour cost	Cash cost of any paid employee, including on-costs such as superannuation and Workcover.	Interest and lease costs	Total interest plus total lease costs paid.
Equity	Total assets minus total liabilities. Equal to the total value of capital invested in the farm business by the owner/ operator(s).	Labour cost	Cost of the labour resource on farm. Includes both imputed and employed labour costs.
Equity %	Total equity as a percentage of the total assets owned. The proportion of the total assets owned by the business.	Labour efficiency	FTEs per cow and per kilogram of milk solid. Measures of productivity of the total labour resources in the business.
Farm income	See gross farm income.	Labour resource	Any person who works in the business, be they the owner, family, sharefarmer or employed on a permanent, part time or contract basis.
		Liability	Money owed to someone else, e.g. family or a financial institute such as a bank.



Livestock trading profit	An estimate of the annual contribution to gross farm income by accounting for the changes in the number and value of livestock during the year. It is calculated as the trading income from sales minus purchases, plus changes in the value and number of livestock on hand at the start and end of the year, and accounting for births and deaths. An increase in livestock trading indicates there was an appreciation of livestock or an increase in livestock numbers over the year.
Metabolisable energy	Energy available to livestock in feed, expressed in megajoules per kilogram of dry matter (MJ/kg DM).
Milk income	Income through the sales of milk. This is net of compulsory levies and charges.
Milking area	Total usable area minus out-blocks or run-off areas.
Net farm income	<i>Previously reported as business profit.</i> Earnings before interest and tax (EBIT) minus interest and lease costs. The amount of profit available for capital investment, loan principal repayments and tax.
Nominal terms	Dollar values or interest rates that include an inflation component.
Number of milkers	Total number of cows milked for at least three months.
Other income	Income to the farm from other farm owned assets and external sources. Includes dividends, interest payments received, and rents from farm cottages.
Overhead costs	All fixed costs incurred by the farm business e.g. rates, administration, depreciation, insurance and imputed labour. Interest, leases, capital expenditure, principal repayments and tax are not included.
Real terms	Dollar values or interest rates that have no inflation component.
Return on assets (RoA)	Earnings before interest and tax divided by the value of total assets under management, including owned and leased land.
Return on equity (RoE)	Net farm income divided by the value of total equity.
Shed costs	Cost of shed power and dairy supplies such as filter socks, rubberware, vacuum pump oil etc.
Total income	See gross farm income.
Total usable area	Total hectares managed minus the area of land which is of little or no value for livestock production 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 e.g. herd, shed and feed costs (including feed inventory change).

List of abbreviations

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

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	\$1,600	\$1,600
15–16 heifers	\$1,200	\$1,600
16–17 heifers	\$600	\$1,200
17–18 calves		\$600
Mature bulls	\$2,400	\$2,400

Imputed owner/operator and family labour

In 2017/18 the imputed owner/operator and family labour rate was \$30.33/hr based on a full time equivalent (FTE) working 48 hours/week for 50 weeks of the year. The imputed labour rate was increased from \$67,200/FTE in 2016/17 to \$72,800/FTE in 2017/18.



Dairy Australia Limited ABN 60 105 227 987
Level 3, HWT Tower
40 City Road, Southbank Vic 3006 Australia
T +61 3 9694 3777 F +61 3 9694 3701
E enquiries@dairyaustralia.com.au
dairyaustralia.com.au

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