

# Dairy Farm Monitor Project

Tasmania Annual Report 2023/24



Delivering  
*for* Dairy



# Acknowledgements

## Participants

The participant farmers are thanked for their efforts in supplying data for the Dairy Farm Monitor Project for 2023/24. For continuing participants and those new to the project, thank you for your participation.

While efforts are made to select participants from each region and a range of farm sizes, results should not be viewed as a representation of the entire Tasmanian dairy farm population.

## Report

The report was prepared by Lesley Irvine in conjunction with Dairy Australia.

## Contributors/data collectors

Symon Jones and Lesley Irvine from the Tasmanian Institute of Agriculture collected the data for this report.

Thank you to Dairy Australia's consultant analyst, Fiona Smith, and Kerry Kempton for their expert data checking. And a further thank you to Fiona Smith for her significant contribution to data validation, data analysis and the preparation of this report.

## Appendix tables

The appendices at the end of this report provide detailed metrics on the historical physical and financial performance and efficiency for the average of the Tasmanian project participants.

## Further information

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# What's new in 2023/24

The Dairy Farm Monitor Report for 2023/24 includes some minor changes and updates from last year.

- The number of farms in the project increased by one to thirty.
- "Homegrown feed as % of ME consumed" is now aligned with the DairyBase calculation and is homegrown feed consumed (including wastage) + grazed feed. Historically the calculation was homegrown feed fed (no wastage included) + grazed feed.
- Changes to ADCC estimates
  - Changes in emission factors, e.g. electricity-derived emissions have come down for most states, although diesel-derived emissions have increased. Similarly, some CH<sub>4</sub> and N<sub>2</sub>O emission from fertiliser and waste management have decreased, while others have increased based on the most recent scientific results.
  - More accurate allocation of purchased feed-derived emissions to milk vs meat enterprise, based on where the purchased feed is fed on the farm. Any feed fed on the milking platform is allocated to the milk enterprise. Any feed fed on the support block is proportionally allocated to both enterprises based on the ratio of milk to meat produced. This change may increase meat emissions intensity for some farms.
  - Tree sequestration was missing for some regions when selected Radiata pine (i.e. Tasmania, Queensland, Mallee region, and the South Coast and Riverina/Inland region of NSW).
  - In 2022/23 greater detail was collected about manure management at the dairy and feeding areas, fuel usage by contractors and trees, meaning historical data may not be comparable.





# Executive summary

In 2023/24 the average Tasmania Dairy Farm Monitor profitability decreased compared to the previous year both in terms of EBIT and Return on Total Assets (RoTA) (accounting for inflation).

The reduced profitability on Tasmanian dairy farms was a result of a lower milk price and increased input costs.

There was a minor increase in farm equity and total asset value. Total liabilities were lower at the end of the financial year compared to the start.

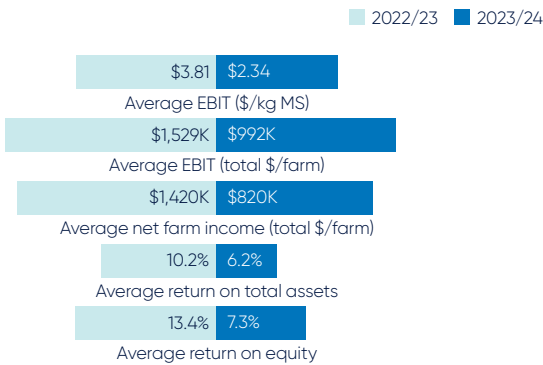
Homegrown feed production, a key profit driver in Tasmania's pasture-based industry, decreased in 2023/24 due to challenging seasonal conditions.

A lower milk price and higher input costs resulted in lower profitability on Tasmanian dairy farms in 2023/24. This was seen across all measures of profitability – EBIT (Earnings Before Interest and Tax), net farm income, return on total assets and return on equity.

There was a minor increase in farm equity, and liabilities decreased by approximately \$100,000 on average between 1 July 2023 and 30 June 2024. The average total asset value (excluding leased assets) also increased during the 12-month period.

Home grown feed consumption decreased slightly to 10.2 t DM/ha. Fifty-eight per cent of the energy consumed in the diet came from home grown feed. On average, 1.4 t DM/cow of purchased concentrates was fed.

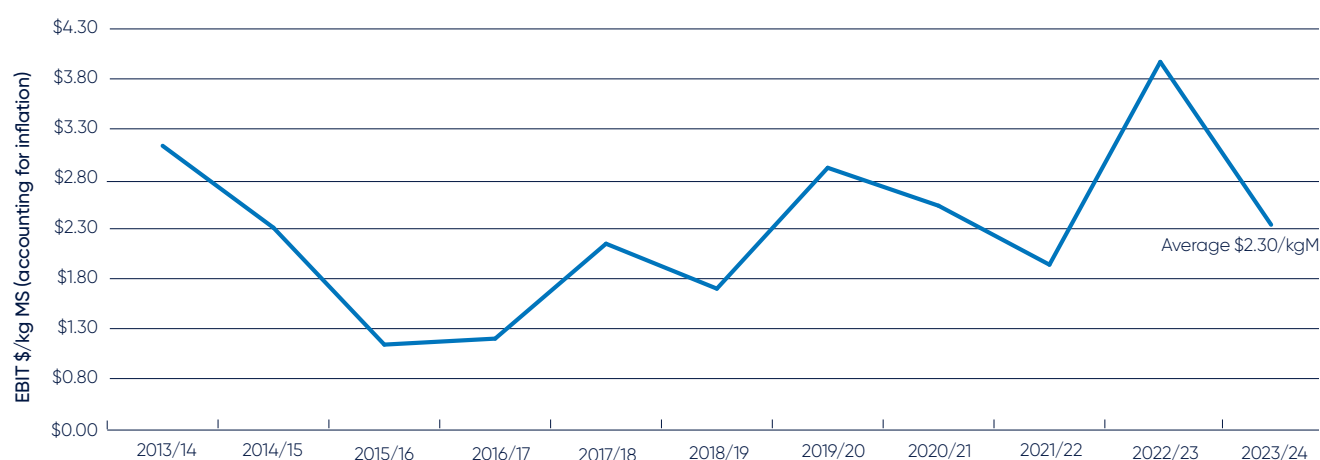
## Tasmania





## How does 2023/24 compare?

### Historical profitability



Average EBIT (per kg milk solids) in 2023/24 was \$2.34 which was slightly higher than the 11-year average for the Tasmania Dairy Farm Monitor Project of \$2.30/kg MS (adjusted for inflation).

### Milk price

Milk price decreased from \$9.88/kg MS in 2022/23 to \$9.26/kg MS. Milk income contributed on average, 94 per cent of total farm income.



Tasmania ↓ 6%  
to \$9.26/kg MS

### Expectations for profit in 2024/25

The majority (80 per cent) of participant farmers expect that farm business profits will decrease in 2024/25 on the back of 93 per cent believing milk prices would decrease. Milk price and input costs were identified by participants as the most important factor over the next 12 months and 5 years.

### Greenhouse gas emissions

The average carbon footprint for Tasmanian dairy farm participants was 5,406 tonnes of carbon dioxide equivalents per farm in 2023/24. Over the last five years, larger herd sizes and greater milk production per farm have contributed to increasing average greenhouse gas emissions.



# State overview

Despite a reduction in profitability, state-wide, average profitability in Tasmania was positive and above the 11-year average of the Tasmania Dairy Farm Monitor Project. The average Earnings Before Interest and Tax was \$992,154 compared to the average of \$752,806 (adjusted for inflation). The average Net Farm Income was \$819,851 compared to the average \$614,625 (adjusted for inflation).

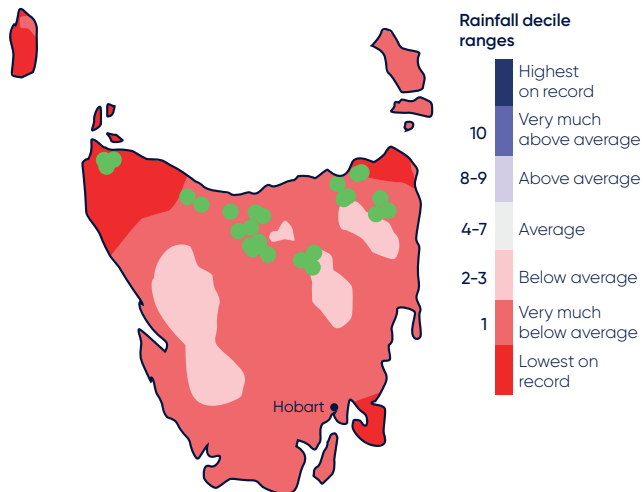
Feed costs increased again this year, along with many other input costs. With a reduction in milk price and reduced livestock trading income, Tasmanian dairy farm profitability decreased.

## Dairying in Tasmania



There were approximately **342 dairy farm businesses** in Tasmania that produced **934 million litres** or **11 per cent** of Australia's national milk production in 2023/24.

## Dairy Farm Monitor Project farm locations and rainfall in 2023/24



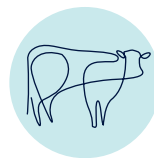
Note: The points on this map show the general location of the participant farms.

Source: Rainfall map sourced from Bureau of Meteorology [bom.gov.au](http://bom.gov.au)

## Physical farm characteristics

The average herd size of farms in the Tasmania Dairy Farm Monitor Project is 892. This is higher than the actual Tasmanian average of 523 cows. Milk sold per cow increased marginally from 435 kg MS/cow to 441 kg MS/cow.

The amount of homegrown feed was lower due to below average rainfall and a particularly challenging autumn. Nitrogen use increased slightly in 2023/24 but overall fertiliser use was slightly lower.



Average herd size

↑ 2%

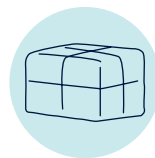
892 cows



Milk solids sold

↑ 1%

441 kg MS/cow



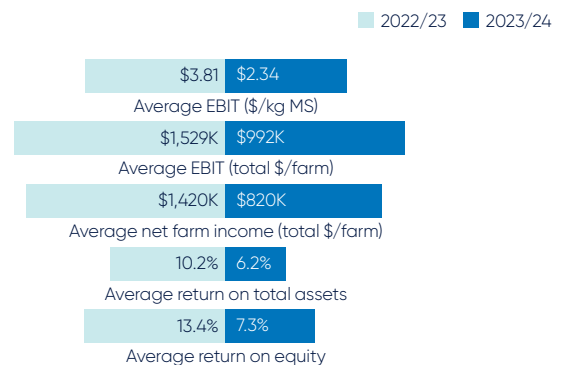
Homegrown feed

↓ 5%

58% of metabolisable energy consumed

## Profitability

In 2023/24, 97 per cent of all Tasmanian participants recorded a positive profit.





## 2023/24 farm profitability for the state has been influenced by:



↓ 6%

in average milk price to **\$9.26/kg MS**



↑ 12%

in purchased feed and agistment costs to **\$3.05/kg MS**



↑ 10%

in employed labour costs to **\$1.37/kg MS**



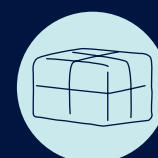
↑ 8%

in variable costs to **\$4.83/kg MS**



↑ 7%

in overhead costs to **\$2.67/kg MS**



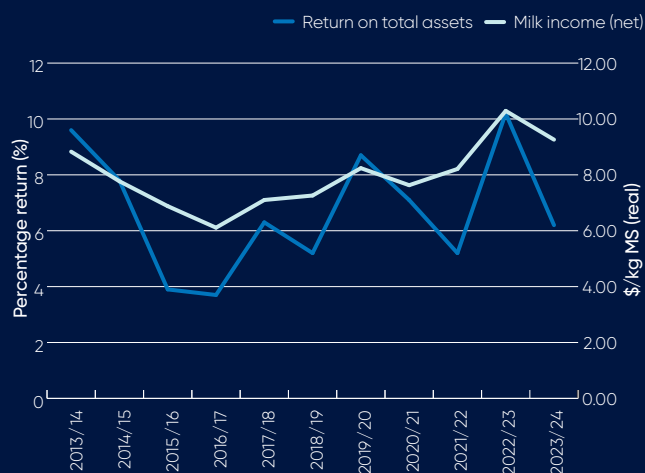
↓ 13%

in homegrown feed costs to **\$1.12/kg MS**

Overall, the cost of production (including inventory change) increased by 11 per cent from \$6.94/kg MS to \$7.73/kg MS.

Labour use efficiency continues to be high for Tasmanian DFMP participants although per cow efficiency did decrease this season, averaging 146 cows/FTE. Labour efficiency based on milk production also decreased to 64,119 kg MS/FTE.

### Return on total assets and milk price



# Physical parameters and seasonal conditions

All participant farms received below average rainfall in 2023/24.

Seasonal conditions throughout the year resulted in decreased homegrown feed consumption.

The amount of nitrogen applied in 2023/24 increased slightly.

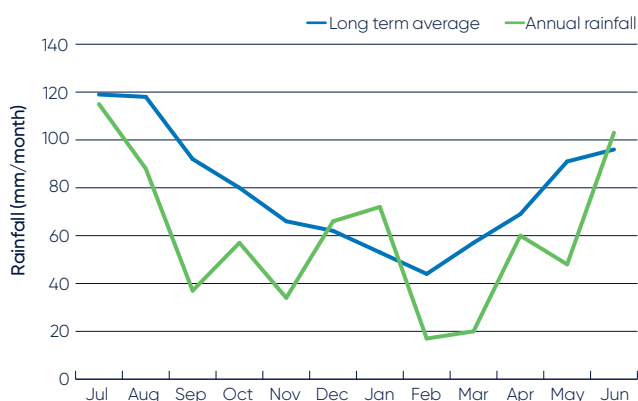
## Pasture based dairy production

Dairy production in Tasmania is predominantly pasture based, with an average of 58 per cent of all consumed metabolisable energy being derived from home grown feed. Spring and autumn rainfall are important drivers of homegrown feed production as is the availability of adequate water across irrigation areas.

## Rainfall

Rainfall was below average for all of 2023/24 except in December, January and June. The autumn period was particularly challenging with many farmers experiencing feed shortages due to the very late autumn break.

**Figure 1** Monthly rainfall 2023/24



## Feed consumption and harvest

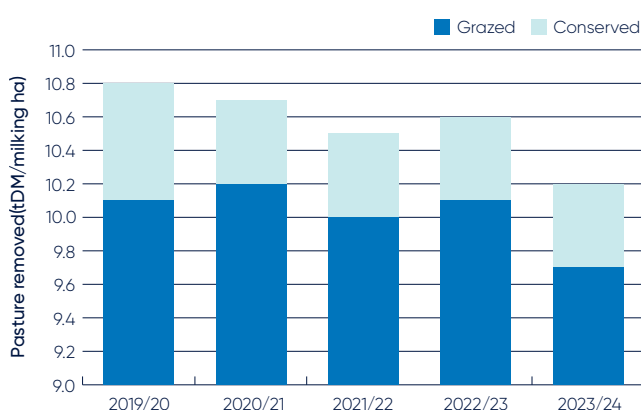
Homegrown feed consumption decreased from 10.6 t DM/ha to 10.2 t DM/ha. This was due to grazed pasture decreasing from 10.1 t DM/ha to 9.7 t DM/ha with homegrown conserved fodder reducing to 0.4 t DM/ha.

The percentage of grazed pasture in the diet decreased from 64 per cent in 2022/23 to 61 per cent in 2023/24.

The percentage of concentrate in the diet increased from 26 to 28 per cent. The average cow consumed 3.4 t DM of homegrown feed which consisted of 3.2 t DM/cow of grazed pasture and 0.2 t DM/cow of conserved pasture (silage or hay). The average cost of homegrown feed was \$134/t DM.

In addition to the homegrown feed, there was 1.4 t DM/cow of concentrate fed and 0.4 t DM of purchased fodder fed. This is a total per cow consumption of 5.2 t DM. The average cost of purchased feed was \$521/t DM. This was a 7 per cent increase on the cost of purchased feed.

**Figure 2** Estimated tonnes of homegrown feed removed

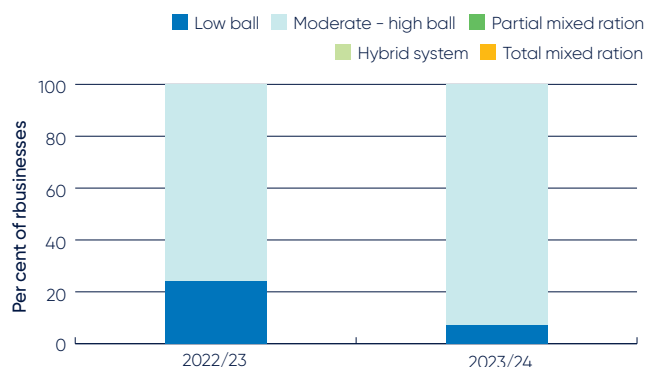




## Feeding system

Tasmania is predominantly a perennial, pasture-based system. All participant farms had perennial pasture and were either in the low bail feeding system (up to 1 tonne concentrate fed in bail) or moderate-high bail feeding system (more than 1 tonne concentrate fed in the bail) (Figure 3).

**Figure 3** Type of feeding systems



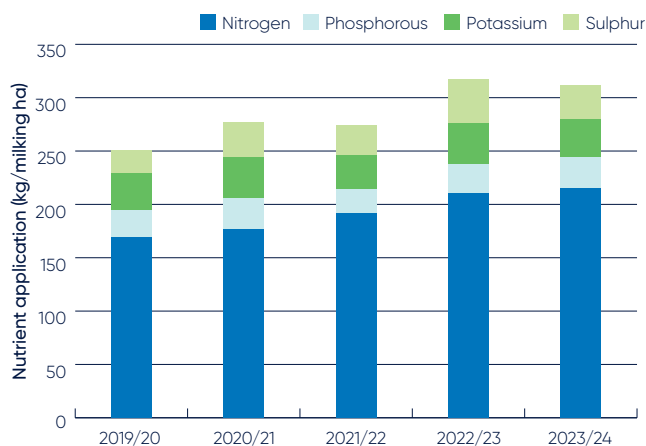
## Fertiliser application

The amount of nitrogen applied increased for the fourth year in a row. The amount of phosphorus and potassium was very similar to the previous year. The amount of sulphur applied increased by 46 per cent in 2022/23 but decreased in 2023/24 back in-line with previous years.

In comparison to the previous year, Figure 4 shows that in 2023/24 the amount of:

- Nitrogen applied was 215 kg/ha, a 2 per cent increase.
- Phosphorous applied was 29 kg/ha, a 4 per cent increase.
- Potassium applied was 36 kg/ha, a 5 per cent decrease.
- Sulphur applied was 31 kg/ha, a 24 per cent decrease.

**Figure 4** Nutrient application

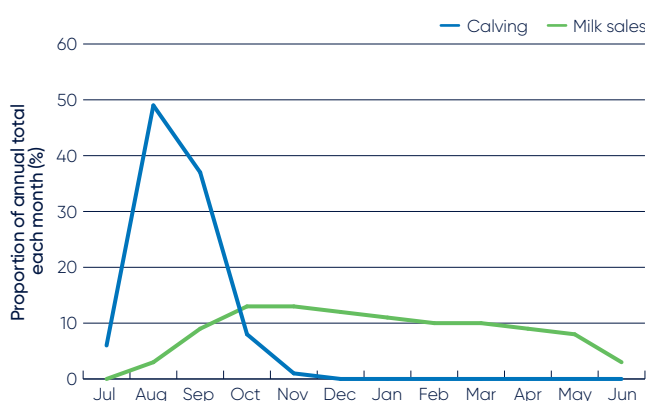


## Milk sold

The average herd size of the Tasmanian Dairy Farm Monitor participants in 2023/24 was 892 cows, ranging from 170 cows up to 1,400 cows. The total average milksolids sold (397,069 kg) was 2 per cent higher than the previous year. The milk sold per cow increased marginally from 435 kg MS/cow to 441 kg MS/cow. The average stocking rate on the milking area was 3.0 cows/Mha. Milk production per milking hectare was 1,388 kg MS/Mha.

Milk production reflects the seasonal nature of calving. Calving pattern determines milk production and subsequently the milk payment system available to participant farms (Figure 5).

**Figure 5** Monthly distribution of milk sales and calving



## Calving pattern

Tasmania is characterised as spring calving (Figure 5) with 99 per cent of cows from participant farms calving between July and November. In 2023/24 peak milk production occurred in October, November and December – each of these months has 11 per cent of the annual milk production. Fifty-three per cent of milk was produced from July to December in 2023 compared to forty-four per cent in 2022. This is a reasonably significant change in milk flow and is indicative of how challenging the autumn conditions in 2024 were.

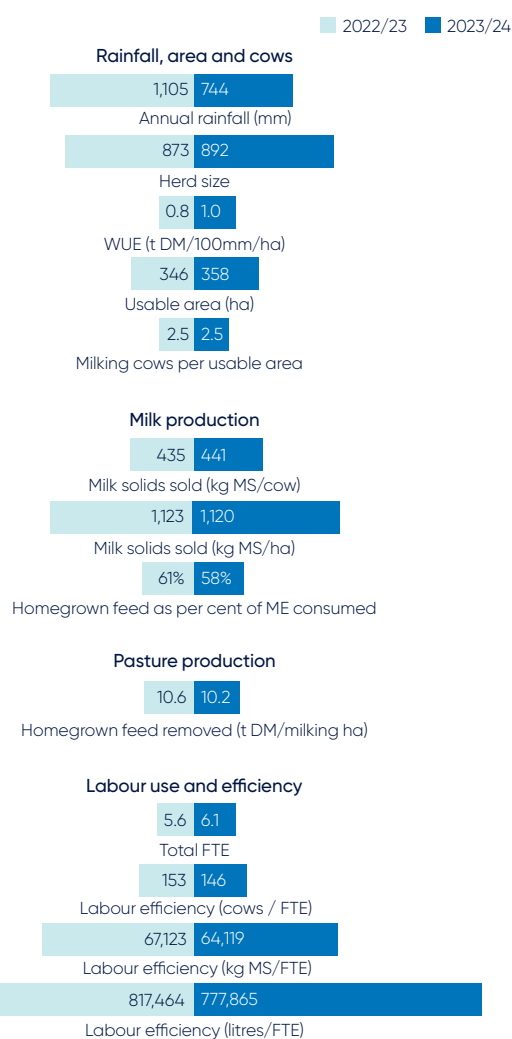
# Whole farm analysis

On average, farm profitability decreased in 2023/24. Earnings before Interest and Tax (EBIT) was positive for 97 per cent of participating farms.

Both variable and overhead costs increased in 2023/24.

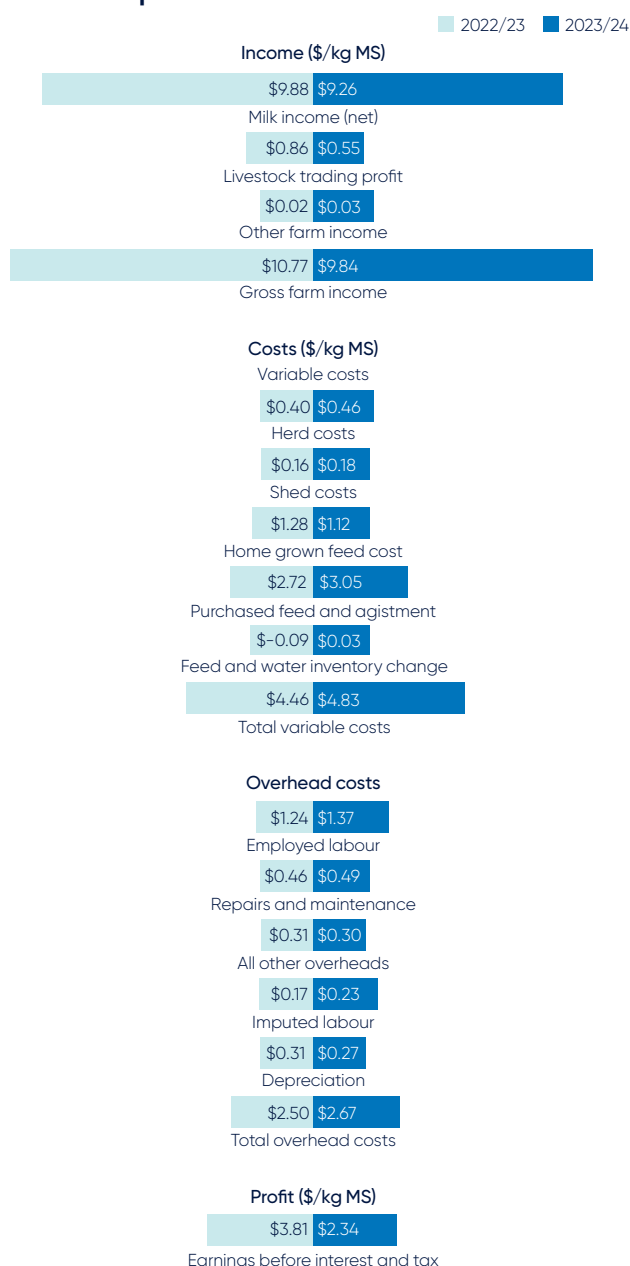
Return on Total Assets and Return on Equity decreased in 2023/24.

## Physical parameters





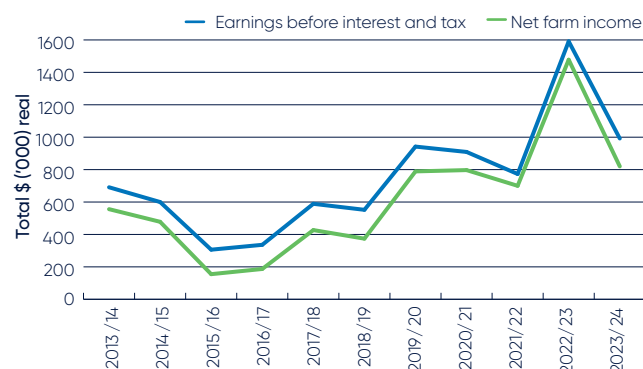
## Financial parameters



## Net farm income

There was a large decrease in EBIT and Net Farm Income in the 2023/24 season but when adjusted for inflation, both of these profit measures were still the second highest in the past 11 years.

**Figure 6** Earnings before interest and tax and net farm income adjusted for inflation



## Variable costs

Variable costs increased from \$4.46/kg MS in 2022/23 to \$4.83/kg MS in 2023/24. This was an increase of \$0.37/kg MS, or 8 per cent.

Purchased feed and agistment costs make-up the largest component of variable costs. In 2023/24 they increased by \$0.33/kg MS to \$3.05/kg MS, a 12 per cent increase. Concentrates were the largest contributor to this increase with an extra \$0.26/kg MS being spent this season, taking the cost of concentrates to \$1.95/kg MS. In 2023/24 the amount of concentrate being fed was 1.4 t DM/cow, 0.1t DM/cow higher than the previous year. While feeding more concentrate will increase the total feed cost, the main cause of the increased amount spent on concentrates was the unit cost. In 2022/23, the average cost of concentrate was \$582/t DM while in 2023/24 the average cost was \$600/t DM.

In comparison, homegrown feed costs decreased from \$1.28/kg MS to \$1.12/kg MS. This was largely due to a decrease in fertiliser costs from \$0.81/kg MS to \$0.64/kg MS. There was also a slight decrease in hay and silage making costs, and fuel and oil costs (\$0.01/kg MS each).

After a decrease in 2022/23, shed costs increased by \$0.02/kg MS to \$0.18/kg MS in 2023/24. Herd costs increased by \$0.06/kg MS to \$0.46/kg MS. Within herd costs, there was more spent on animal health (increased by \$0.03/kg MS to \$0.25/kg MS), AI and herd test (increased by \$0.02/kg MS to \$0.16/kg MS) and calf rearing (increased by \$0.01/kg MS to \$0.05/kg MS).

### Overhead costs

Total overhead costs increased from \$2.50/kg MS in 2022/23 to \$2.67/kg MS in 2023/24. This is a 7 per cent increase, similar to the increases over the past two years.

The largest contributor to this increase was employed labour costs which increased by \$0.13/kg MS. This is the same increase as the previous year.

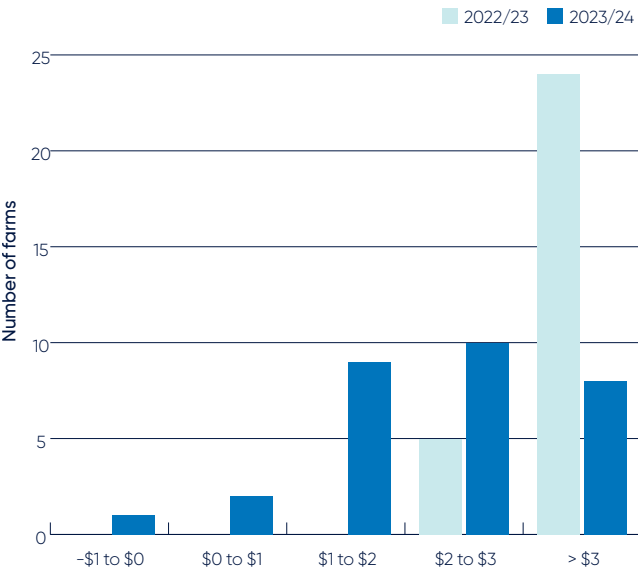
Other increased overhead costs were:

- Imputed labour (\$0.06/kg MS).
- Repairs and maintenance (\$0.03/kg MS).

### Earnings before interest and tax

In 2023/24, 97 per cent of participants had a positive EBIT (Figure 7). This was a decrease from 100 per cent in 2022/23. Average EBIT per farm (total dollars) was the second highest in the 11 years of the Tasmanian DFMP, accounting for inflation.

Figure 7 Average EBIT per kg MS



### Return on total assets and equity

A positive return on total assets (ROTA) was recorded for 97 per cent of participants (Figure 8). In 2023/24 average ROTA decreased to 6.2 per cent compared to 10.2 per cent the previous year. This is a result of a lower milk price and higher cost of production.

Average return on equity (ROE) in 2023/24 decreased to 7.3 per cent relative to the previous year at 13.4 per cent. Equity levels remained stable on the majority of farms during the last 12 months.

With the cost of financing lower than the returns from utilising additional assets (e.g. land and infrastructure upgrades), 43 per cent of the participants recorded higher ROE than ROTA meaning they have been able to grow their business.

Figure 8 Average returns ROTA and ROE









# Business confidence

The majority (80 per cent) of participants expect their farm business returns to decrease in 2024/25.

Over 90 per cent of participant farms expect milk price to be lower in 2024/25.

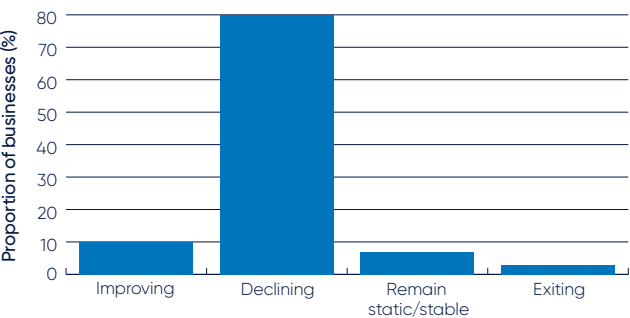
Milk price followed by input costs were listed as the major issues of concern for both the coming 12 months and the next 5 years.

Less than 50 per cent of participants expect costs to be higher in 2024/25.

## Expectations for business profit 2024/25

The participant survey considers different aspects of farming, from climate outlook to expectations about market conditions for dairy products. Eighty per cent of participants expect business profit to decrease, 7 per cent expect it to remain stable and 10 per cent expect profit to improve (Figure 9).

**Figure 9** Expected change to farm business profit in 2024/25

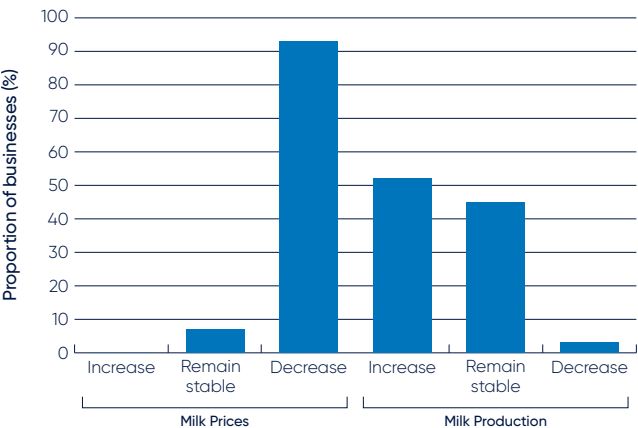


## Price and production expectations – milk

The majority of respondents (93 per cent) were expecting milk price to decrease for 2024/25 with 7 per cent expecting it to remain stable (Figure 10).

Fifty-two per cent of respondents expect milk production to increase in 2024/25. Only 3 per cent of respondents expected their milk production to decrease.

**Figure 10** Producer expectations of milk prices and production in 2024/25

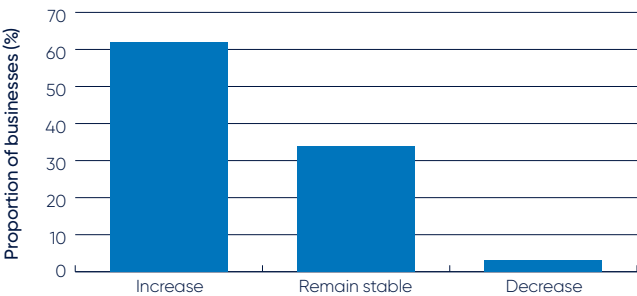




### Production expectations – fodder

Sixty-two per cent of respondents expected fodder production to be higher in 2024/25 than in the previous year. This optimism may be partly due to the challenging season in 2023/24 ("this season has to be better than that").

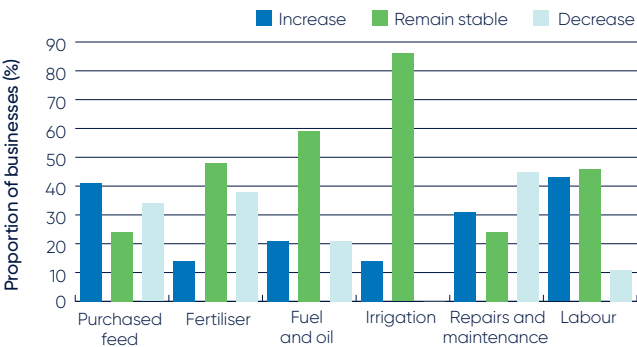
**Figure 11** Producer expectations of fodder production in 2024/25



### Cost expectations

The majority of participants expect costs to remain stable or decrease. Less than 50 per cent of participants expect costs to increase in any of the cost categories. Forty-five per cent of participants expect their repairs and maintenance costs to decrease in 2024/25.

**Figure 12** Producer expectations of costs for the dairy industry in 2024/25





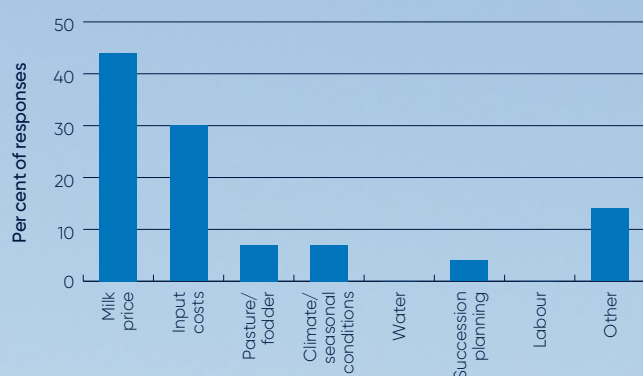
# Issues of importance to dairy businesses

Participants were asked to rank issues based on the level of importance to their business – with a ranking of (1) being most important and (7) being least important. The results are shown in Figure 13 for the short-term issues and Figure 14 for medium term issues.

## Short term issues – Next 12 months

Milk price has returned to its usual position as the highest ranked concern, followed by input costs.

**Figure 13** Major issues for individual businesses – 12 month outlook



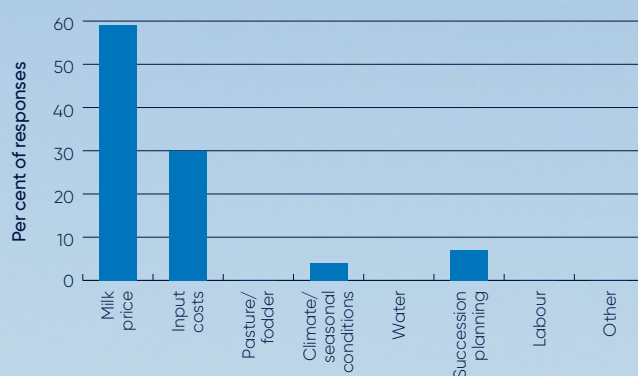
## Medium to long term issues – Next 5 years

As well as being the major concern for the 2024/25 season, milk price and input costs are the two highest concerns for the next 5 years.

While no one ranked pasture and fodder production as their number one concern, 48 per cent of respondents ranked it as their second major concern.

Again, water was not considered a major issue by the respondents with no-one ranking it in their top three issues.

**Figure 14** Major issues for individual businesses – 5 year outlook



# 2023/24 Greenhouse gas emissions

The average carbon footprint for Tasmanian dairy farm monitor farms was 5,406 tonnes of carbon dioxide equivalents (t CO<sub>2</sub>-e) per farm in 2023/24.

Methane from cow rumination (enteric) accounted for an average of 72 per cent of on-farm emissions.

Larger herd sizes and greater total farm milk production have contributed to the trend of increased greenhouse gas (GHG) emitted per farm over the last 5-years.

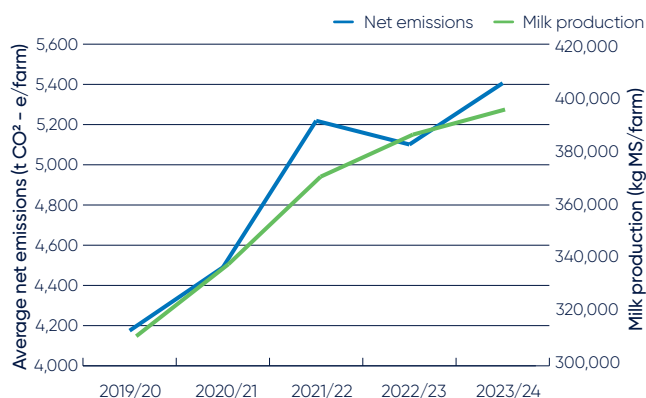
## Total emissions

Net greenhouse gas (GHG) emissions (average) in 2023/24 were the highest in 5 years at 5,406 tonnes of carbon dioxide equivalent (Table 1 and Figure 15). Over the last 5 years, higher average GHG emissions were also associated with greater herd size and milk production per farm.

There was a slight increase in nitrogen use in 2023/24 which can lead to greater greenhouse gas emissions.

The percentage of greenhouse gas emissions being derived from methane is relatively consistent across the years presented but there was a slight reduction in 2023/24. This is possibly due to additional data now being collected on contractor fuel usage.

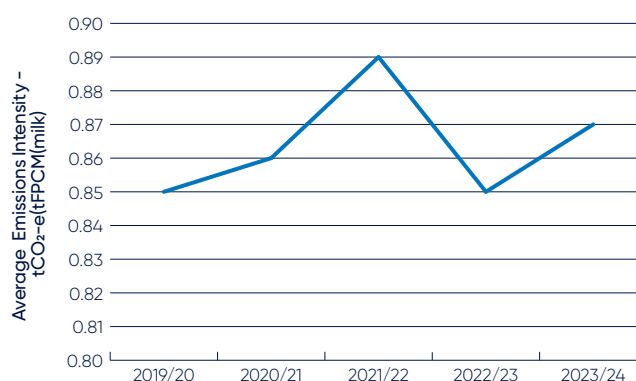
**Figure 15** Estimated average net farm GHG emissions and milk solid production between 2019/20 and 2023/24 (CO<sub>2</sub> equivalent)



## Emissions intensity

The emissions intensity allocated to milk production (once meat production is considered), has fluctuated over the years between 0.83 to 0.89 t CO<sub>2</sub>-e/t FPCM (Figure 16 and Table 1). Emissions intensity in 2023/24 was 0.87 t CO<sub>2</sub>-e/t FPCM. Emissions intensity is calculated by dividing total emissions by the amount of fat and protein corrected milk (FPCM); standard of 4.0 per cent fat and 3.3 per cent protein. Regional and farm variation was also observed over this period.

**Figure 16** Estimated average emissions intensity between 2019/20 and 2023/24 (CO<sub>2</sub> equivalent)





### The data

This year, several changes to the national inventory have been accounted for in the greenhouse analysis. In addition, a more accurate allocation of purchased feed emissions to milk versus meat has been made based on where the supplement is fed (i.e. milking area vs support area). It is important to note that the calculations with this year's data also re-estimates the historical data with the updated methodology.

Since 2020/21 there was a change in data capture including carbon sequestration in trees and in 2022/23 user defined inputs for manure management were

captured rather than utilising state defaults, accounting for some of the variation in total farm emissions. An enhanced effort on improving the data collection process for estimating GHG emissions is likely to have also contributed to the higher emissions.

#### Note

Greenhouse gas emission estimates are calculated using the **Australian Dairy Carbon Calculator** embedded within DairyBase.

Table 1 Estimated average GHG emissions and intensity between 2019/20 and 2023/24 (CO<sub>2</sub> equivalent)

Emission source	Units	2019/20	2020/21	2021/22	2022/23	2023/24
Sample size		27	31	26	29	30
Methane	t CO <sub>2</sub> -e/farm	3,116	3,305	3,903	3,825	3,899
Pre-farm	t CO <sub>2</sub> -e/farm	419	454	536	576	616
Nitrous oxide	t CO <sub>2</sub> -e/farm	540	562	655	661	685
Carbon dioxide	t CO <sub>2</sub> -e/farm	99	168	169	125	219
Tree carbon	t CO <sub>2</sub> -e/farm	0	0	-44	-86	-13
Net GHG emissions	t CO <sub>2</sub> -e/farm	4,175	4,490	5,219	5,101	5,406
Emissions intensity	t CO <sub>2</sub> -e/FPCM (milk)	0.85	0.86	0.89	0.85	0.87
Emissions intensity	t CO <sub>2</sub> -e/t MS (milk)	11.7	11.8	12.2	11.7	11.9
Emissions intensity	t CO <sub>2</sub> -e/kg lwt (meat)	4.5	4.6	5.1	4.7	4.8



# How does 2023/24 compare?

Farm profit was the second highest in the life of the Tasmanian Dairy Farm Monitor Project.

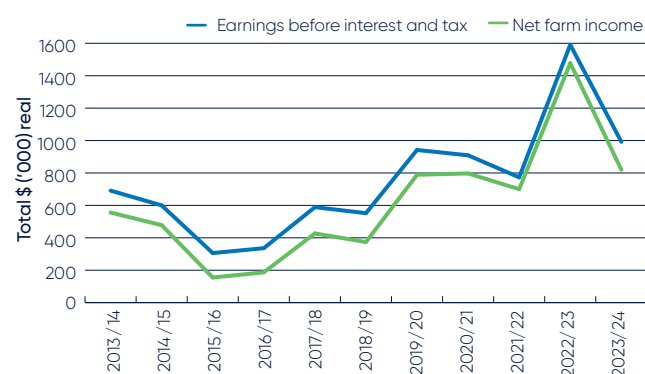
There was a large decrease in the average farm Earnings and Interest before Tax from \$1,591,267 (adjusted for inflation) to \$992,154 but it remains above the long-term average of \$752,806.

The decrease in EBIT resulted in a decrease in return on total assets to 6.2 per cent from 10.2 per cent.

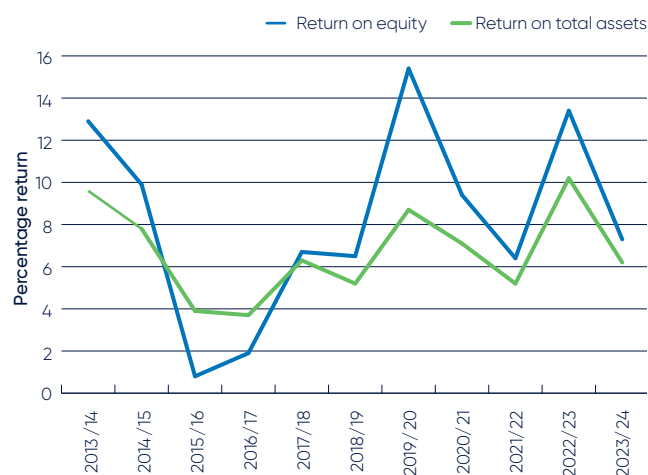
Farm profit (EBIT) in 2023/24 was the second highest (accounting for inflation) since the start of the Tasmanian DFMP in 2013/14 (Figure 17). Average EBIT was \$992,154 in 2023/24, compared to the long-term average of \$752,806. Net farm income was \$819,851 in 2023/24, compared to the long-term average of \$614,625. This was also the second highest (accounting for inflation) since the start of the Tasmanian DFMP in 2013/14.

Average ROTA was 6.2 per cent in 2023/24, decreasing from 10.2 per cent the previous year (Figure 18). This is below the 11-year average of 6.7 per cent. The average ROE decreased to 7.3 per cent in 2023/24 from 13.4 per cent in 2022/23. This is compared to the 11-year average of 8.2 per cent.

**Figure 17** Farm profitability between 2013/14 and 2023/24



**Figure 18** Whole farm performance between 2013/14 and 2023/24





# 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	%	\$/kg MS	%	\$/kg MS	% of income	\$/kg MS	%
TA0001	8.98	2.08	11.06	4.10	4.08	50%	2.88	3.2	1.61	14.6	1.27	2.0
TA0002	9.42	0.54	9.96	3.70	3.27	53	2.98	5.6	1.39	13.9	1.60	8.0
TA0003	9.76	0.78	10.54	5.21	1.88	74	3.45	11.8	0.29	2.7	3.16	14.0
TA0004	9.20	0.65	9.85	5.14	4.28	55	0.43	1.8	0.29	2.9	0.14	0.7
TA0005	9.41	0.35	9.76	4.57	1.96	70	3.22	8.3	1.35	13.8	1.87	29.0
TA0006	9.43	0.39	9.82	4.09	2.06	66	3.67	10.9	0.26	2.7	3.41	12.0
TA0007	8.81	0.84	9.65	4.79	2.86	63	1.99	3.6	0.78	8.1	1.21	3.1
TA0008	9.40	0.38	9.78	4.41	1.63	73	3.74	10.0	0.57	5.8	3.17	11.5
TA0009	9.42	0.09	9.50	4.51	2.20	67	2.79	8.1	0.01	0.1	2.78	8.3
TA0010	9.40	0.05	9.45	3.95	1.89	68	3.61	9.7	1.39	14.7	2.22	15.8
TA0011	9.29	0.53	9.82	5.26	3.05	63	1.50	5.3	0.14	1.4	1.36	5.6
TA0012	9.20	0.19	9.39	4.46	2.55	64	2.38	6.2	0.03	0.3	2.34	6.1
TA0013	8.92	0.08	9.00	5.52	3.58	61	-0.10	-0.2	0.06	0.6	-0.15	-0.4
TA0014	9.19	0.55	9.74	5.39	2.24	71	2.11	5.8	0.03	0.3	2.08	5.8
TA0015	9.20	0.35	9.55	5.53	2.25	71	1.76	4.9	0.01	0.1	1.75	4.9
TA0016	8.44	0.76	9.20	4.63	3.48	57	1.09	0.9	3.08	33.5	-1.99	-8.5
TA0017	9.13	0.46	9.59	4.35	2.41	64	2.83	6.6	1.10	11.5	1.73	6.0
TA0018	9.36	0.72	10.08	4.98	2.78	64	2.31	5.7	0.44	4.4	1.87	5.9
TA0019	9.49	0.34	9.82	3.59	2.46	59	3.77	9.0	0.79	8.1	2.98	14.5
TA0020	9.17	1.02	10.19	6.14	2.47	71	1.58	4.5	0.27	2.7	1.31	4.4
TA0021	9.27	0.66	9.93	5.85	2.35	71	1.73	5.9	0.04	0.4	1.69	5.8
TA0022	9.28	0.50	9.77	4.81	2.27	68	2.69	8.8	0.05	0.5	2.64	8.7
TA0023	9.23	0.66	9.89	5.26	2.16	71	2.47	9.4	0.14	1.5	2.32	9.8
TA0024	9.13	0.22	9.35	4.89	2.87	63	1.59	5.7	0.03	0.4	1.55	5.6
TA0025	9.27	0.17	9.44	6.29	2.60	71	0.56	1.7	0.04	0.4	0.51	1.6
TA0026	8.86	1.29	10.15	5.53	2.69	67	1.93	6.2	0.04	0.4	1.89	6.1
TA0027	9.30	1.25	10.55	5.73	3.15	65	1.67	3.5	0.60	5.7	1.06	3.5
TA0028	9.67	0.63	10.29	4.17	2.67	61	3.46	7.0	1.09	10.6	2.36	6.7
TA0029	9.67	0.78	10.45	4.18	2.45	63	3.82	10.8	0.66	6.3	3.16	17.1
TA0030	9.53	0.15	9.68	3.90	3.46	53	2.33	4.0	0.62	6.4	1.71	4.7
<b>Average</b>	<b>9.26</b>	<b>0.58</b>	<b>9.84</b>	<b>4.83</b>	<b>2.67</b>	<b>65</b>	<b>2.34</b>	<b>6.2</b>	<b>0.57</b>	<b>5.8</b>	<b>1.77</b>	<b>7.3</b>
<b>Top 25%*</b>	<b>9.46</b>	<b>0.48</b>	<b>9.94</b>	<b>4.44</b>	<b>2.10</b>	<b>68</b>	<b>3.40</b>	<b>10.1</b>	<b>0.52</b>	<b>5.3</b>	<b>2.88</b>	<b>12.9</b>

**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	%	%
TA0001	275	144	0.6	412	1.5	303	454	5.1	4.1
TA0002	190	120	1.1	380	2.0	477	955	4.9	3.9
TA0003	502	355	1.1	1,300	2.6	528	1367	3.9	3.3
TA0004	339	211	0.5	550	1.6	365	592	4.4	3.5
TA0005	585	365	1.2	1,300	2.2	500	1,110	4.7	3.9
TA0006	370	360	1.3	1,245	3.4	503	1694	4.5	3.7
TA0007	145	108	0.6	257	1.8	496	880	4.5	3.5
TA0008	553	433	1.0	1,400	2.5	463	1,172	4.8	3.8
TA0009	278	269	0.9	930	3.3	474	1,587	4.6	3.7
TA0010	657	396	1.0	1,251	1.9	410	781	5.0	4.1
TA0011	336	300	0.9	1,180	3.5	458	1,607	4.4	3.7
TA0012	538	523	0.8	1,270	2.4	437	1,031	4.6	3.6
TA0013	187	187	0.8	498	2.7	405	1,078	4.8	3.7
TA0014	235	235	0.8	665	2.8	409	1,158	4.7	3.7
TA0015	389	372	0.8	1,290	3.3	423	1,402	4.6	3.6
TA0016	265	111	0.6	190	0.7	246	177	4.6	3.5
TA0017	151	151	1.2	515	3.4	490	1,673	4.4	3.6
TA0018	407	304	0.8	980	2.4	491	1,182	4.6	3.7
TA0019	512	305	1.0	975	1.9	475	906	4.7	3.7
TA0020	381	320	1.1	999	2.6	415	1,088	4.7	3.8
TA0021	346	346	1.3	1,161	3.4	416	1,397	4.4	3.7
TA0022	240	236	0.8	851	3.5	450	1,594	4.7	3.7
TA0023	395	351	1.1	1,235	3.1	461	1,442	4.5	3.7
TA0024	336	315	1.3	1,222	3.6	407	1,482	4.7	3.8
TA0025	341	341	1.1	1,090	3.2	410	1,311	4.4	3.6
TA0026	410	336	2.3	1,236	3.0	386	1,164	4.5	3.8
TA0027	470	415	0.7	873	1.9	419	778	4.3	3.5
TA0028	487	290	0.6	765	1.6	408	640	4.5	3.5
TA0029	223	201	0.9	584	2.6	534	1,398	4.5	3.5
TA0030	190	170	0.3	170	0.9	557	499	3.9	3.2
<b>Average</b>	<b>358</b>	<b>286</b>	<b>1.0</b>	<b>892</b>	<b>2.5</b>	<b>441</b>	<b>1,120</b>	<b>4.6</b>	<b>3.7</b>
<b>Top 25</b>	<b>431</b>	<b>330</b>	<b>1.0</b>	<b>1,105</b>	<b>2.7</b>	<b>478</b>	<b>1,294</b>	<b>4.6</b>	<b>3.7</b>

Farm number	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed % as of ME consumed	Nitrogen application*	Phosphorous application*	Potassium application*	Sulphur application*	Labour efficiency	Labour efficiency
	t DM/ha	t DM/ha	% of ME	kg/ha	kg/ha	kg/ha	kg/ha	hd/FTE	kg MS/FTE
TA0001	8.8	1.0	77	243	18	25	13	158	47,979
TA0002	9.7	0.3	72	141	44	46	54	118	56,477
TA0003	11.3	1.8	60	126	41	75	41	145	76,545
TA0004	8.6	0.5	64	240	34	0	43	87	31,731
TA0005	15.8	0.5	75	254	35	34	3	174	86,699
TA0006	13.1	0.2	60	250	22	48	12	171	85,821
TA0007	7.3	0.6	63	48	20	38	24	114	56,448
TA0008	8.4	0.3	51	184	28	42	10	190	87,936
TA0009	10.8	0.1	52	226	13	23	22	200	94,836
TA0010	12.9	0.5	73	250	55	41	71	244	100,150
TA0011	11.2	0.0	51	205	33	21	39	118	53,989
TA0012	8.1	0.0	59	176	44	27	62	122	53,313
TA0013	6.5	0.6	46	130	30	22	48	80	32,245
TA0014	6.7	0.4	41	107	26	17	43	166	68,008
TA0015	9.5	0.1	47	208	36	84	44	184	77,907
TA0016	5.8	0.0	84	4	17	23	15	123	30,369
TA0017	12.8	0.1	64	334	34	69	54	151	74,244
TA0018	10.5	0.0	58	382	28	87	31	138	67,940
TA0019	14.5	0.8	74	190	33	61	24	169	80,175
TA0020	8.5	1.3	50	321	10	3	12	158	65,735
TA0021	10.0	0.2	48	364	1	-	0	182	75,915
TA0022	10.2	0.6	49	409	46	-	25	118	53,146
TA0023	9.9	0.8	49	353	1	2	7	159	73,430
TA0024	13.0	0.2	56	274	37	73	37	146	59,448
TA0025	6.7	0.3	35	209	-	-	-	142	58,426
TA0026	12.2	0.2	59	234	35	70	35	136	52,326
TA0027	6.3	0.6	54	179	33	7	17	144	60,391
TA0028	8.6	0.3	67	171	44	5	4	111	45,313
TA0029	10.5	0.5	56	190	84	127	125	137	72,918
TA0030	3.3	0.3	58	57	2	-	1	78	43,722
<b>Average</b>	<b>9.7</b>	<b>0.5</b>	<b>58</b>	<b>215</b>	<b>29</b>	<b>36</b>	<b>31</b>	<b>146</b>	<b>64,119</b>
<b>Top 25%*</b>	<b>11.4</b>	<b>0.7</b>	<b>59</b>	<b>244</b>	<b>39</b>	<b>49</b>	<b>39</b>	<b>167</b>	<b>78,765</b>

\*on milking area

Note: Calculation of the average for conserved feed excludes zero values





**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	% of ME
TA0001	1.4	472	-	383	-	469	23
TA0002	1.7	597	230	221	-	503	28
TA0003	2.9	855	-	280	717	605	40
TA0004	2.4	563	433	237	276	412	36
TA0005	1.1	653	586	586	-	637	25
TA0006	2.0	564	497	375	446	506	40
TA0007	2.8	630	480	167	-	458	37
TA0008	2.4	574	409	310	-	501	49
TA0009	1.9	610	393	219	-	499	48
TA0010	1.2	439	329	294	-	401	27
TA0011	2.0	617	224	295	-	539	49
TA0012	1.5	608	120	279	-	570	41
TA0013	2.2	598	284	290	-	498	54
TA0014	2.4	592	268	214	-	482	59
TA0015	2.1	619	394	255	-	547	53
TA0016	1.3	584	461	267	-	470	16
TA0017	1.5	708	819	173	-	649	36
TA0018	2.0	584	500	250	-	508	42
TA0019	1.5	549	380	262	-	479	26
TA0020	2.0	612	348	263	-	600	50
TA0021	2.1	620	212	342	-	606	52
TA0022	2.0	593	228	232	-	543	51
TA0023	2.3	589	326	347	-	550	51
TA0024	1.7	626	320	-	-	599	44
TA0025	3.1	598	531	325	-	571	65
TA0026	1.6	631	-	314	-	566	41
TA0027	2.0	587	493	194	-	516	46
TA0028	1.7	522	257	226	-	439	33
TA0029	2.2	601	428	119	-	450	44
TA0030	2.4	591	320	148	-	457	42
<b>Average</b>	<b>2.0</b>	<b>600</b>	<b>380</b>	<b>271</b>	<b>480</b>	<b>521</b>	<b>42</b>
<b>Top 25%</b>	<b>2.1</b>	<b>595</b>	<b>371</b>	<b>277</b>	<b>-</b>	<b>504</b>	<b>41</b>

Note: Calculation of average price of silage, hay and other feed excludes zero values



**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
	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS
TA0001	0.17	0.13	0.10	0.35	0.05	0.80	1.15	0.13	0.33
TA0002	0.08	0.13	0.06	0.07	0.06	0.40	0.84	0.08	0.14
TA0003	0.12	0.19	0.10	0.05	0.11	0.57	0.43	0.17	0.20
TA0004	0.00	0.23	0.02	0.05	0.21	0.50	1.01	0.06	0.21
TA0005	0.16	0.20	0.08	0.05	0.12	0.62	0.66	0.30	0.18
TA0006	0.14	0.23	0.04	0.03	0.05	0.49	0.59	0.11	0.03
TA0007	0.17	0.30	0.03	0.15	0.17	0.82	0.55	0.27	0.24
TA0008	0.11	0.13	0.02	0.03	0.06	0.35	0.61	0.04	0.08
TA0009	0.11	0.34	0.00	0.06	0.09	0.61	0.52	0.07	0.05
TA0010	0.16	0.30	0.00	0.06	0.08	0.59	0.74	0.55	0.00
TA0011	0.16	0.29	0.03	0.07	0.06	0.60	0.67	0.20	0.00
TA0012	0.14	0.33	0.07	0.06	0.07	0.67	0.71	0.13	0.00
TA0013	0.17	0.20	0.05	0.10	0.10	0.62	0.55	0.16	0.09
TA0014	0.20	0.21	0.04	0.08	0.09	0.62	0.45	0.08	0.04
TA0015	0.25	0.34	0.04	0.04	0.07	0.73	0.57	0.10	0.01
TA0016	0.07	0.24	0.05	0.26	0.16	0.78	0.27	0.00	0.09
TA0017	0.17	0.21	0.04	0.08	0.10	0.62	0.51	0.27	0.01
TA0018	0.19	0.35	0.11	0.03	0.10	0.78	0.90	0.17	0.09
TA0019	0.11	0.31	0.02	0.06	0.07	0.57	0.62	0.21	0.22
TA0020	0.26	0.36	0.12	0.08	0.06	0.89	0.80	0.10	0.17
TA0021	0.21	0.28	0.08	0.09	0.08	0.74	0.74	0.12	0.04
TA0022	0.11	0.17	0.03	0.06	0.07	0.44	0.66	0.25	0.08
TA0023	0.21	0.34	0.09	0.09	0.07	0.80	0.53	0.12	0.10
TA0024	0.18	0.23	0.03	0.03	0.07	0.53	0.66	0.16	0.04
TA0025	0.17	0.24	0.08	0.07	0.06	0.62	0.47	0.01	0.04
TA0026	0.18	0.20	0.11	0.15	0.05	0.69	0.85	0.19	0.04
TA0027	0.19	0.45	0.10	0.12	0.14	1.01	0.56	0.21	0.09
TA0028	0.16	0.22	0.05	0.08	0.08	0.59	0.70	0.16	0.15
TA0029	0.10	0.09	0.02	0.05	0.06	0.32	0.57	0.20	0.06
TA0030	0.27	0.13	0.01	0.11	0.11	0.62	0.36	0.15	0.15
<b>Average</b>	<b>0.16</b>	<b>0.25</b>	<b>0.05</b>	<b>0.09</b>	<b>0.09</b>	<b>0.63</b>	<b>0.64</b>	<b>0.16</b>	<b>0.10</b>
<b>Top 25%</b>	<b>0.13</b>	<b>0.22</b>	<b>0.04</b>	<b>0.05</b>	<b>0.07</b>	<b>0.52</b>	<b>0.59</b>	<b>0.21</b>	<b>0.10</b>

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
	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS
TA0001	0.09	0.04	0.00	0.03	1.21	0.00	0.31	3.30	4.10
TA0002	0.08	0.31	0.00	0.22	1.67	0.00	-0.04	3.30	3.70
TA0003	0.08	0.29	0.03	0.66	2.71	0.14	-0.07	4.65	5.21
TA0004	0.31	0.22	0.00	0.79	2.00	0.00	0.03	4.63	5.14
TA0005	0.06	0.06	0.00	0.38	1.31	0.94	0.07	3.96	4.57
TA0006	0.04	0.03	0.00	0.55	1.48	0.80	-0.04	3.60	4.09
TA0007	0.12	0.07	0.00	0.47	2.27	0.00	-0.02	3.98	4.79
TA0008	0.03	0.06	0.00	0.80	1.83	0.50	0.11	4.06	4.41
TA0009	0.06	0.02	0.00	0.48	1.75	1.02	-0.07	3.89	4.51
TA0010	0.04	0.21	0.00	0.31	0.87	0.64	-0.01	3.36	3.95
TA0011	0.05	0.07	0.00	0.30	2.27	1.24	-0.14	4.66	5.26
TA0012	0.04	0.13	0.00	0.09	1.82	0.74	0.13	3.79	4.46
TA0013	0.06	0.11	0.00	0.51	2.24	1.23	-0.05	4.90	5.52
TA0014	0.05	0.01	0.00	0.50	2.54	1.15	-0.05	4.77	5.39
TA0015	0.04	0.13	0.00	0.38	2.25	1.28	0.04	4.80	5.53
TA0016	0.13	0.24	0.00	1.03	1.49	0.21	0.38	3.85	4.63
TA0017	0.09	0.11	0.00	0.15	1.57	0.86	0.16	3.74	4.35
TA0018	0.11	0.23	0.00	0.38	1.81	0.45	0.06	4.20	4.98
TA0019	0.06	0.11	0.00	0.26	1.16	0.41	-0.02	3.02	3.59
TA0020	0.05	0.16	0.00	0.06	2.76	1.18	-0.03	5.26	6.14
TA0021	0.04	0.18	0.00	0.07	2.69	1.12	0.11	5.11	5.85
TA0022	0.07	0.05	0.00	0.13	2.09	0.89	0.14	4.37	4.81
TA0023	0.04	0.18	0.00	0.27	2.44	0.83	-0.04	4.46	5.26
TA0024	0.07	0.08	0.00	0.10	1.97	1.14	0.15	4.36	4.89
TA0025	0.04	0.17	0.05	0.98	2.79	0.99	0.13	5.67	6.29
TA0026	0.06	0.19	0.00	0.30	2.32	1.07	-0.17	4.83	5.53
TA0027	0.10	0.16	0.00	0.34	2.11	1.15	0.01	4.73	5.73
TA0028	0.08	0.30	0.00	0.31	1.42	0.54	-0.06	3.58	4.17
TA0029	0.07	0.10	0.00	0.36	1.55	0.95	0.00	3.86	4.18
TA0030	0.22	0.14	0.00	0.27	2.00	0.10	-0.13	3.27	3.90
<b>Average</b>	<b>0.08</b>	<b>0.14</b>	<b>0.00</b>	<b>0.38</b>	<b>1.95</b>	<b>0.72</b>	<b>0.03</b>	<b>4.20</b>	<b>4.83</b>
<b>Top 25%</b>	<b>0.05</b>	<b>0.13</b>	<b>0.00</b>	<b>0.42</b>	<b>1.77</b>	<b>0.65</b>	<b>0.01</b>	<b>3.92</b>	<b>4.44</b>



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
	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS	\$/kgMS
TA0001	0.16	0.10	0.16	0.51	0.69	1.30	2.91	0.48	0.69	4.08
TA0002	0.06	0.08	0.01	0.65	0.45	1.16	2.40	0.39	0.48	3.27
TA0003	0.05	0.12	0.01	0.32	0.13	0.79	1.42	0.21	0.25	1.88
TA0004	0.08	0.14	0.04	0.69	0.04	2.22	3.19	0.66	0.43	4.28
TA0005	0.02	0.04	0.00	0.39	0.12	1.34	1.91	0.05	0.00	1.96
TA0006	0.03	0.06	0.03	0.44	0.07	0.80	1.44	0.28	0.34	2.06
TA0007	0.07	0.16	0.06	0.56	0.18	0.65	1.67	0.34	0.85	2.86
TA0008	0.03	0.03	0.02	0.44	0.15	0.80	1.48	0.13	0.02	1.63
TA0009	0.03	0.07	0.01	0.65	0.14	1.01	1.91	0.29	0.00	2.20
TA0010	0.02	0.05	0.04	0.54	0.22	0.95	1.83	0.03	0.03	1.89
TA0011	0.02	0.02	0.01	0.42	0.15	1.99	2.61	0.45	0.00	3.05
TA0012	0.04	0.02	0.01	0.57	0.13	1.68	2.44	0.11	0.00	2.55
TA0013	0.05	0.05	0.02	0.33	0.22	2.78	3.44	0.14	0.00	3.58
TA0014	0.04	0.06	0.01	0.63	0.07	1.31	2.12	0.12	0.00	2.24
TA0015	0.03	0.03	0.01	0.35	0.36	1.38	2.16	0.09	0.00	2.25
TA0016	0.00	0.06	0.16	0.17	0.22	0.85	1.46	0.10	1.92	3.48
TA0017	0.02	0.23	0.04	0.44	0.12	1.32	2.18	0.23	0.00	2.41
TA0018	0.02	0.08	0.06	0.75	0.14	1.33	2.38	0.40	0.00	2.78
TA0019	0.04	0.08	0.01	0.42	0.12	1.20	1.87	0.59	0.00	2.46
TA0020	0.07	0.02	0.01	0.46	0.04	1.70	2.31	0.16	0.00	2.47
TA0021	0.09	0.07	0.02	0.49	0.05	1.42	2.13	0.22	0.00	2.35
TA0022	0.04	0.03	0.01	0.23	0.06	1.69	2.07	0.21	0.00	2.27
TA0023	0.07	0.02	0.01	0.46	0.02	1.45	2.03	0.14	0.00	2.16
TA0024	0.04	0.02	0.01	0.65	0.08	1.86	2.65	0.22	0.00	2.87
TA0025	0.06	0.04	0.01	0.49	0.05	1.82	2.47	0.13	0.00	2.60
TA0026	0.04	0.02	0.01	0.62	0.05	1.76	2.49	0.17	0.03	2.69
TA0027	0.04	0.10	0.02	0.58	0.16	1.64	2.53	0.62	0.00	3.15
TA0028	0.05	0.08	0.06	0.36	0.15	1.57	2.27	0.40	0.00	2.67
TA0029	0.04	0.06	0.00	0.54	0.12	1.31	2.06	0.39	0.00	2.45
TA0030	0.07	0.15	0.04	0.60	0.13	0.00	0.98	0.50	1.98	3.46
<b>Average</b>	<b>0.05</b>	<b>0.07</b>	<b>0.03</b>	<b>0.49</b>	<b>0.15</b>	<b>1.37</b>	<b>2.16</b>	<b>0.27</b>	<b>0.23</b>	<b>2.67</b>
<b>Top 25%</b>	<b>0.04</b>	<b>0.06</b>	<b>0.02</b>	<b>0.42</b>	<b>0.11</b>	<b>1.12</b>	<b>1.77</b>	<b>0.25</b>	<b>0.08</b>	<b>2.10</b>

**Table A6** 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
<b>Average</b>	29,921	12,063	1,017	493	885	5,870	188	374	38,255
<b>Top 25%</b>	31,431	11,648	1,655	821	845	6,421	174	574	41,100

Liabilities				Equity	
	Liabilities per usable hectare	Liabilities per milking cow	Liabilities per kgMS	Equity per usable hectare	Average equity
	\$/ha	\$/cow	\$/kgMS	\$/ha	%
<b>Average</b>	6,188	2,944	\$6.63	32,068	84.4
<b>Top 25%</b>	9,883	4,300	\$9.15	31,218	73.9

**Table A7** 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 (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)
2013/14	\$6.87	8.82	\$7.59	9.74	0.28	0.36	0.23	0.30	2.51	3.22	3.02	3.88
2014/15	\$6.19	7.77	\$6.90	8.66	0.29	0.36	0.20	0.25	2.65	3.33	3.13	3.93
2015/16	\$5.55	6.88	\$6.10	7.56	0.29	0.36	0.17	0.21	2.81	3.48	3.27	4.05
2016/17	\$5.03	6.12	\$5.84	7.10	0.28	0.34	0.20	0.24	2.38	2.89	2.87	3.49
2017/18	5.95	7.10	\$6.70	7.99	0.30	0.36	0.18	0.21	2.47	2.95	2.95	3.52
2018/19	6.16	7.26	\$6.90	8.12	0.30	0.36	0.18	0.22	2.78	3.27	3.27	3.85
2019/20	7.09	8.24	7.94	9.23	0.28	0.32	0.18	0.20	2.68	3.11	3.13	3.64
2020/21	6.66	7.63	7.62	8.73	0.34	0.39	0.15	0.17	2.76	3.16	3.26	3.73
2021/22	7.48	8.21	8.40	9.22	0.39	0.43	0.17	0.19	3.72	4.08	4.28	4.70
2022/23	9.89	10.30	10.77	11.21	0.40	0.42	0.16	0.17	3.90	4.06	4.46	4.64
2023/24	9.26	9.26	9.84	9.84	0.46	0.46	0.18	0.18	4.20	4.20	4.83	4.83
<b>Average</b>		<b>7.96</b>		<b>8.86</b>		<b>0.38</b>		<b>0.21</b>		<b>3.43</b>		<b>4.02</b>



**Table A8** Historical data – average farm income, costs and profit per kilogram of milk solids (continued)

Overhead costs							Profit							
Year	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease charges		Net farm income			
	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Nominal (\$/kgMS)	Real (\$/kgMS)	Return on total assets %	Return on equity %
2013/14	1.41	1.81	\$0.73	0.94	2.14	2.75	2.44	3.13	0.47	0.61	1.97	2.53	9.6	12.9
2014/15	1.34	1.68	\$0.60	0.75	1.94	2.44	1.84	2.31	0.42	0.53	1.42	1.78	7.8	9.9
2015/16	1.43	1.77	\$0.48	0.59	1.91	2.37	0.92	1.14	0.56	0.69	0.36	0.45	3.9	0.8
2016/17	1.30	1.58	\$0.68	0.83	1.98	2.41	0.99	1.20	0.63	0.77	0.36	0.43	3.7	1.9
2017/18	1.36	1.63	\$0.73	0.87	2.09	2.50	1.80	2.15	0.66	0.79	1.14	1.36	6.3	6.7
2018/19	1.35	1.59	\$0.84	0.99	2.19	2.58	1.44	1.70	0.66	0.78	0.78	0.92	5.2	6.5
2019/20	1.57	1.82	0.74	0.86	2.31	2.68	2.50	2.91	0.58	0.68	1.92	2.24	8.7	15.4
2020/21	1.61	1.84	0.54	0.62	2.16	2.47	2.21	2.53	0.37	0.42	1.84	2.11	7.1	9.4
2021/22	1.85	2.03	0.50	0.55	2.35	2.58	1.77	1.94	0.27	0.30	1.50	1.65	5.2	6.4
2022/23	2.02	2.10	0.48	0.50	2.50	2.60	3.81	3.97	0.41	0.43	3.40	3.54	10.2	13.4
2023/24	2.16	2.16	0.51	0.51	2.67	2.67	2.34	2.34	0.57	0.57	1.77	1.77	6.2	7.3
<b>Average</b>		<b>1.82</b>		<b>0.73</b>		<b>2.55</b>		<b>2.30</b>		<b>0.60</b>		<b>1.70</b>	<b>6.7</b>	<b>8.2</b>

Note: 'Real' dollar values are the nominal values converted to 2023/24 dollar equivalents by the consumer price index (CPI) to allow for inflation. From 2017/18 gross farm income did not include feed inventory changes and changes to the value of carry-over water. These are now included in feed costs.

**Table A9** Historical data – average farm physical information

Year	Total usable area	Milking area	Total water use efficiency	Number of milking cows	Milking cows per usable area	Milk sold	Milk sold	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Concentrate price	
	ha	ha	tDM/100mm/ha	hd	hd/ha	kg MS/cow	kg MS/ha	t DM/ha	t DM/ha	% of ME	Nominal (\$/T DM)	Real (\$/T DM)
2013/14	260	178	0.6	502	2.1	425	894	9.0	0.6	70	437	561
2014/15	280	191	0.8	545	2.1	447	924	9.3	0.7	67	429	538
2015/16	302	198	0.7	580	2.1	444	936	10.2	0.5	68	440	545
2016/17	268	190	0.6	542	2.2	433	976	9.7	0.7	68	390	474
2017/18	289	208	0.9	607	2.3	445	1,031	10.1	0.6	67	426	508
2018/19	305	210	0.8	639	2.2	418	947	10.4	1.1	72	550	647
2019/20	326	236	0.8	707	2.2	423	948	10.1	0.7	70	519	603
2020/21	357	249	0.9	769	2.2	431	955	10.2	0.5	66	462	529
2021/22	360	285	1.0	913	2.6	403	1,041	10.0	0.5	62	487	534
2022/23	346	284	0.8	873	3.0	435	1,123	10.1	0.5	61	582	606
2023/24	358	286	1.0	892	2.5	441	1,120	9.7	0.5	58	600	600
<b>Average</b>	<b>314</b>	<b>229</b>	<b>0.8</b>	<b>688</b>	<b>2.3</b>	<b>431</b>	<b>990</b>	<b>9.9</b>	<b>0.6</b>	<b>66</b>		<b>559</b>

## Appendix A Glossary of terms, abbreviations and standard values

All other farm income	Income to the farm from all sources except milk. Includes livestock trading profit, dividends, interest payments received, and rent from farm houses.	Feeding Systems	<p><b>Low bail</b> Low bail is defined by the one-tonne annual cap of grain or concentrates fed in the dairy bail – i.e. cows are fed up to one tonne of grain and concentrate in the dairy at milking time throughout lactation and livestock graze pasture all year round.</p> <p><b>Moderate – High bail</b> The level of grain or concentrate fed in the bail is more significant than one tonne per annum, and livestock graze pasture all year round.</p> <p><b>Partial mixed ration</b> In the partial mixed ration (PMR) system, livestock animals graze on pasture for most of the year, if not all of the year, while being fed a PMR on a feed pad.</p> <p><b>Hybrid system</b> Hybrid systems are classified as grazing pasture for fewer than nine months of the year while feeding a partial mixed ration on a feed pad with grain or concentrates.</p> <p><b>Total mixed ration</b> A total mixed ration or TMR is classified by zero-grazing, where cows are contained and fed a TMR throughout the year.</p>
Allocation	Water that is actually available to use or trade in any given year, including new allocations and carryover. Previously known as temporary water. Full allocation means irrigators receive 100 per cent of their HRWS.		
Allocation trade	The transfer of a volume of allocation water between a seller and buyer. Water is traded within a current irrigation season. Previously this was known as trading of temporary water entitlement and some irrigators still use this term.		
Appreciation	An increase in the value of an asset in the market, often only applicable to land value.		
Asset	Anything managed by the farm, whether it is owned or not. Assets include owned land and buildings, leased land, plant and machinery, fixtures and fittings, trading stock, farm investments (i.e., Farm Management Deposits), debtors, and cash.		
Cash overheads	All fixed costs that have a cash cost to the business. Includes all overhead costs except imputed labour costs and depreciation.		
Cost structure	Variable costs as a percentage of total costs, where total costs equal variable costs plus overhead costs.	Finance costs	See interest and lease costs.
Concentrates	Refers to feeds with a concentrated source of energy such as grains, pellets and other grain mixes.	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.
Debt servicing ratio	Interest and lease costs as a percentage of gross farm income.	Grazed pasture	Calculated using the back-calculation approach. Grazed pasture is calculated as the difference between total metabolisable energy required by livestock over the year and amount of metabolisable energy available from other sources (hay, silage, grain, and concentrates). Total metabolisable energy required by livestock is a factor of age, weight, growth rate, pregnancy, and lactation requirements, walking distance to shed, terrain and number of animals. Total metabolisable energy available is the sum of metabolisable energy from all feed sources except pasture, calculated as (weight (kg) x dry matter content (DM per cent) x metabolisable energy (MJ/ kg DM)).
Depreciation	Decrease in value over time of capital asset, usually as a result of using the asset. Depreciation is a non-cash cost of the business but reduces the book value of the asset and is therefore a cost.		
Earnings before interest and tax (EBIT)	Gross income minus total variable and total overhead costs.		
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).	Gross farm income	Farm income including milk sales, livestock trading and other income such as income from grants and rebates.
Equity per cent	Total equity as a percentage of the total assets owned. The proportion of the total assets owned by the business.	Gross margin	Gross farm income minus total variable costs.
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.	Herd costs	Cost of artificial insemination (AI) and herd tests, animal health and calf rearing.
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.	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.

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 kg MS. Measures productivity of the total labour resources in the business.
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.
Milk income	Income from the sale of milk. This is net of compulsory levies and charges.
Milking area	The area of land grazed by milking cows to produce milk.
Net farm income	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 farm business related external sources. Includes milk factory dividends, interest payments received, and rent from farm cottages.
Overhead costs	All fixed costs incurred by the farm business that do not vary with the level of production. These include cash overhead costs such as employed labour and noncash costs such as imputed owner-operator labour, family labour and depreciation of plant and equipment. It excludes interest, lease costs, capital expenditure, principal repayments, drawings, and tax.
Real terms	Dollar values or interest rates that have no inflation component.
Return on equity (ROE)	Net farm income divided by the value of total equity.
Return on total assets (ROTA)	Earnings before interest and tax divided by the value of total assets under management, including owned and leased land.
Shed costs	Cost of shed power and dairy supplies such as filter socks, rubberware, vacuum pump oil etc.
Top 25%	Regional or State average for the Top 25% of participant farms ranked by return on total assets; can also be referred to as the top group, top performers within a region or the state.
Total income	See gross farm income.

Total usable area	Total hectares managed minus the area of land which is of little or no value for livestock production e.g., house and shed area.
Total water use efficiency	Homegrown feed consumed or harvested per 100mm water 'applied' (rainfall and irrigation) to the usable hectares on the farm.
Variable costs	All costs that vary with the size of production in the enterprise e.g., herd, shed and feed costs (including feed and water inventory change).
Water inventory change	An estimate of the values irrigation water on hand at the start and end of the financial year to capture water used in the production of pasture and crops.

## List of abbreviations

AI	Artificial insemination
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> -e	Carbon dioxide equivalent
CoP	Cost of production
DFMP	Dairy Farm Monitor Project
DM	Dry matter of feed stuffs
DJPR	Department of Jobs, Precincts and Resources, Victoria
EBIT	Earnings before interest and tax
FPCM	Fat and protein corrected milk
FTE	Full time equivalent
ha	Hectare(s)
hd	Head
HRWS	High Reliability Water Shares
kg	Kilograms
LRWS	Low Reliability Water Shares
ME	Metabolisable energy (MJ/kg DM)
MJ	Megajoules of energy
ML	Megalitres
mm	Millimetres. 1mm is equivalent to 4 points or 1/25th of an inch of rainfall
MS	Milk solids (protein and fat)
N <sub>2</sub> O	Nitrous oxide
Q1	First quartile, i.e., the value of which one quarter, or 25 per cent, of data in that range is less than the average
Q3	Third quartile, i.e., the value of which one quarter, or 25 per cent, of data in that range is greater than the average
ROTA	Return on total assets
ROE	Return on equity
t	Tonne = 1,000kg



## Standard values

### Pasture consumption

The pasture consumption calculation assumes 11 ME for homegrown feed.

### Livestock values

The standard vales used to estimate the inventory values of livestock were determined by breed and liveweight.

Example values for Friesians were:

Category	Opening value (\$/hd)	Closing value (\$/hd)
Mature cows (550kg)	\$2,200	\$2,200
2-year-old heifers	\$1,650	\$2,200
1-year old heifers	\$825	\$1,650
2023/24 calves		\$825
Mature bulls	\$3,300	\$3,300

### Imputed owner/operator and family labour

In 2023/24, the imputed owner/operator and family labour rate was \$36/hr based on a full time equivalent (FTE) working 48 hours/week for 50 weeks of the year.

#### Disclaimer

The content of this publication is provided for general information only and has not been prepared to address your specific circumstances. We do not guarantee the completeness, accuracy or timeliness of the information.

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