Dairy Australia

DAIRY FARM MONITOR PROJECT

TASMANIA ANNUAL REPORT 2021/22

ACKNOWLEDGEMENTS

Participants

The participant farmers are thanked for their efforts in supplying data for the Dairy Farm Monitor Project (DFMP) for 2021/2022. 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.

Sincere thanks to Agriculture Victoria for the redesign of the presentation of the data in the Annual Report.

Contributors/data collectors

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

The diligent work of Dairy Australia's consultant analysts Fiona Smith and Kerry Kempton who assisted with data collection, conducted data checking, validation and analysis is much appreciated.

Thank you also to Nathan Bakker from TIA for his assistance in preparing 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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TIA is a joint venture of the University of Tasmania and the Tasmanian Government

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EXECUTIVE SUMMARY

In 2021/22 the average Tasmania Dairy Farm Monitor profitability declined on the previous year both in terms of EBIT and RoTA (accounting for inflation).

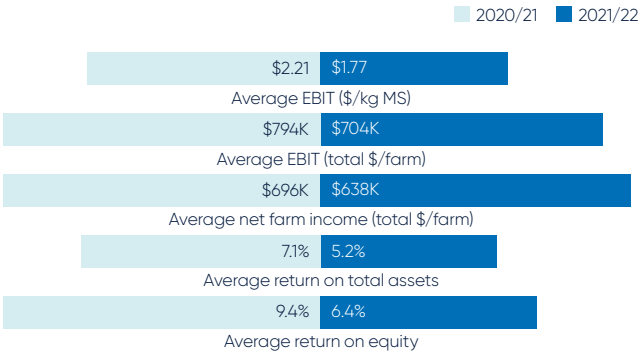
A higher milk price of $7.48 per kilograms of milk solids ($/kg MS) and slightly higher livestock trading at $0.89/kgMS was offset by higher costs, particularly feed costs, which impacted farm business margins in 2021/22.

Farms utilised the favourable cashflow position to invest in infrastructure and machinery and repay debt, resulting in an increase in average equity across participant farms.

Despite a higher milk price, higher costs, particularly homegrown feed costs and purchased feed and agistment costs, resulted in lower profitability for the Tasmanian Dairy Farm Monitor project participants. However, the majority of participants did invest in their business with 78 per cent increasing their equity and 94 per cent increasing their asset base.

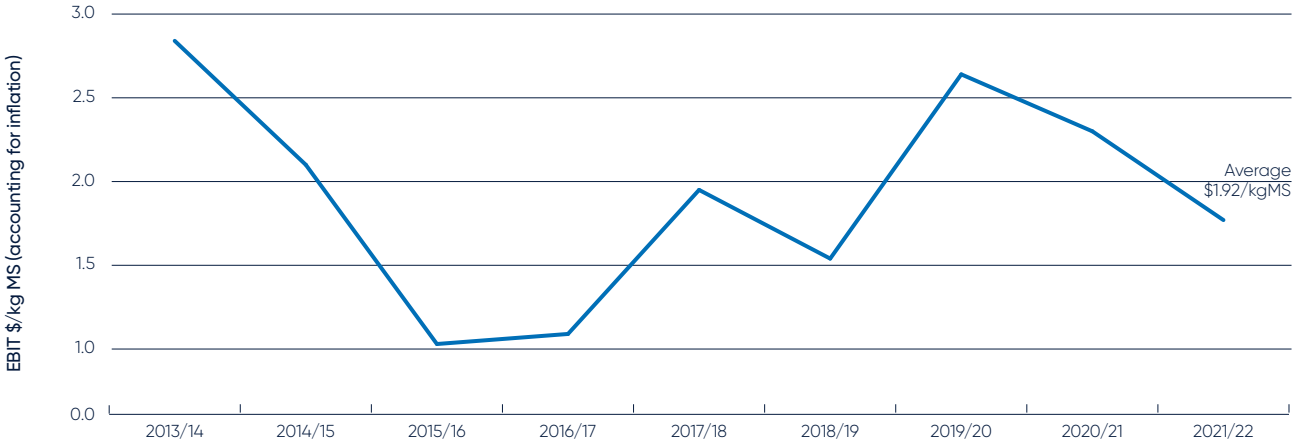
Home grown feed consumption decreased slightly to 10.5 t DM/ha. Sixty-nine per cent of the energy consumed in the diet came from home grown feed.

Tasmania



How does 2021/22 compare?

Historical profitability



Average profit (per kg milk solids) in 2021/22 was below the 9-year average for the Tasmania Dairy Farm Monitor Project of $1.92/kg MS (adjusted for inflation).

Milk Price

Milk price increased from $6.66/kg MS in 2020/21 to $7.48/kg MS. Milk income contributed on average, 89 per cent of total farm income.

Tasmania ↑ 12.3% to $7.48/kg MS

Expectations for profit in 2022/23

Participant farmers were generally optimistic in their outlook for farm business returns in the coming 12 months with 69 per cent of participants expecting better returns in 2022/23, and the remaining 31 per cent expecting returns to remain stable. For the 2022/23 season, input costs and labour were identified by participants as the greatest risk to their business.

Greenhouse gas emissions

The average carbon footprint for Tasmanian dairy farm participants was 5,175 tonnes of carbon dioxide equivalents per farm in 2021/22. Over the last five years, larger herd sizes and greater milk production per farm have contributed to increasing average greenhouse gas emissions with emissions intensity also increasing in 2021/22.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STATE OVERVIEW

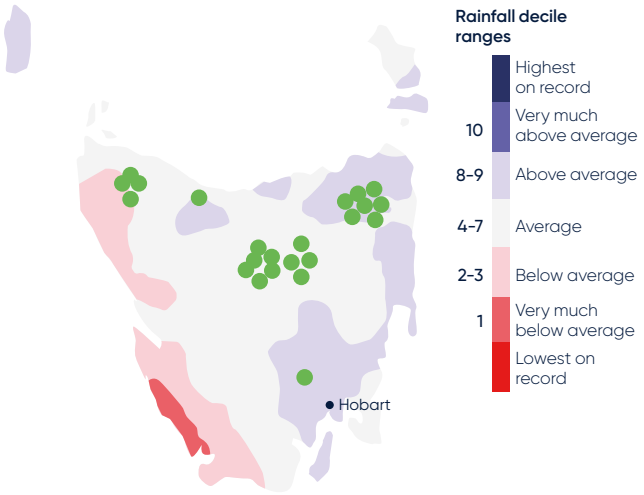
State-wide, average profitability in Tasmania was positive and well above the nine-year average of the Tasmania Dairy Farm Monitor Project. The average Earnings Before Interest and Tax (EBIT) was $704,259 compared to the average of $575,541 (adjusted for inflation). The average Net Farm Income was $637,726 compared to the average $450,887 (adjusted for inflation).

Feed costs, both homegrown and purchased, were significantly higher this year than the previous year. Strong prices received for milk and livestock helped farm businesses to manage the impact of higher costs but profitability for participants was lower than the previous year.

Dairying in Tasmania

There were approximately **365** dairy farm businesses in Tasmania that produced **887 million litres** or **10 per cent** of Australia's national milk production in 2021/22.

Dairy Farm Monitor Project farm locations and rainfall in 2021/22



The points on the map are representative of the general area where there are farms with some points having multiple participant farms in the same location.

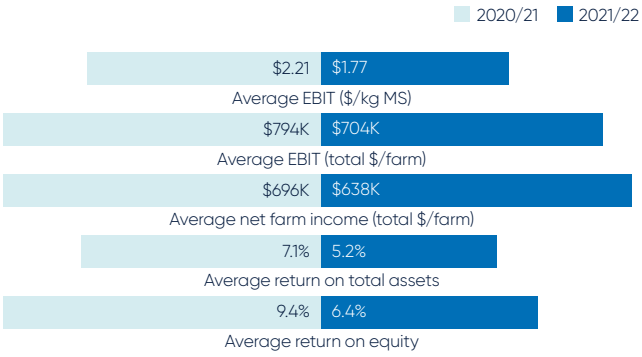
Physical farm characteristics

The average herd size of farms in the Tasmania Dairy Farm Monitor Project is 913 which is an increase from 769 cows in the previous season and is higher than the actual Tasmanian average of 477 cows. Milk sold per cow declined from 431kgMS/cow to 403kgMS/cow. Farms grazed less feed on their milking areas this year on the back of average or below average rainfall on most participant farms and this is despite an increase in nitrogen use.

Average herd size	Milk solids sold	Homegrown feed
↑19%	↓6%	↓2%
913 cows	403kgMS/cow	69% of metabolisable energy consumed

Profitability

In 2021/22, 100 per cent of all TAS participants recorded a positive profit



In 2021/22 farm profitability for the state has been influenced by:

Higher average milk price of $7.48/kg MS

↑15%
in herd costs to **$0.39/kg MS**

↑13%
in shed costs to **$0.17/kg MS**

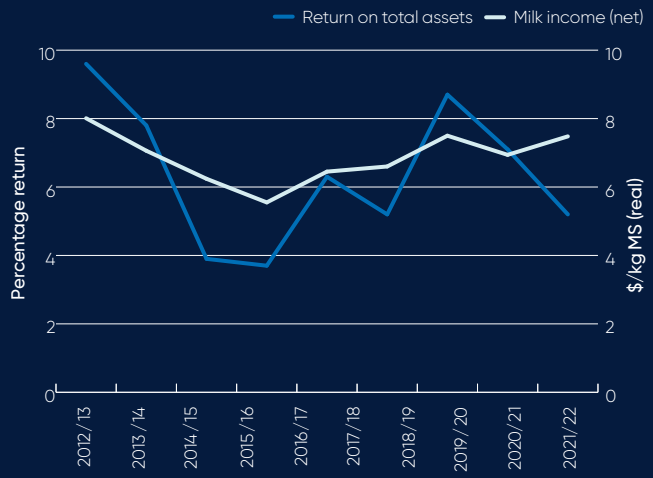
↑35%
in total feed costs to **$3.72/kg MS**

↑9%
in overhead costs to **$2.35/kg MS**

Increased costs across the state in most areas of the business reduced the benefit of positive livestock trading conditions and the higher milk price for the season.

Labour use efficiency continues to be high with the Tasmanian DFMP participants, averaging 170 cows/FTE and 68,445kg MS/FTE.

Return on total assets and milk price



PHYSICAL PARAMETERS AND SEASONAL CONDITIONS

The majority of farms received average or below average rainfall in 2021/22, largely impacted by a drier than average Summer and early Autumn. The timing of rainfall events in Spring also impacted the ability of farms to conserve high quality feed.

Seasonal conditions throughout the year resulted in a decrease in homegrown feed.

Farm systems have remained similar although the average herd size increased in 2021/22 to the highest in the projects nine year history

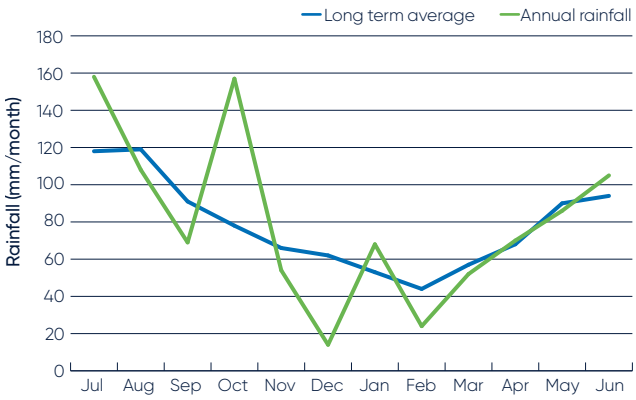
TAS pasture based dairy production

Dairy production in Tasmania is predominantly pasture based, with an average of 69 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

Above average Winter and Spring rainfall in 2021 was followed by below average rainfall across Summer and Autumn. This impacted on the physical and financial performance across Tasmania.

Figure 1 Monthly rainfall 2021/22



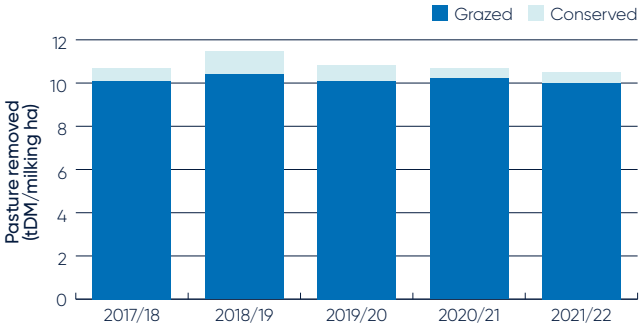
Significant rainfall in early Winter impacted pasture growth which was further compounded by above average rainfall in late Spring (Figure 1). This provided issues for participants in harvesting pasture either by direct grazing or through fodder conservation. Below average Summer and early Autumn rainfall resulted in reduced homegrown feed for grazing.

Feed consumption and harvest

Homegrown feed consumption decreased from 10.7t DM/ha to 10.5t DM/ha. This was a result of grazed pasture decreasing from 10.2t DM/ha to 10t DM/ha. Homegrown conserved fodder remained consistent at 0.5t DM/ha.

The percentage of grazed pasture in the diet decreased from 65 per cent in 2020/21 to 63 per cent in 2021/22. Concentrates filled this gap, increasing from 23 per cent of the diet to 25 per cent of the diet.

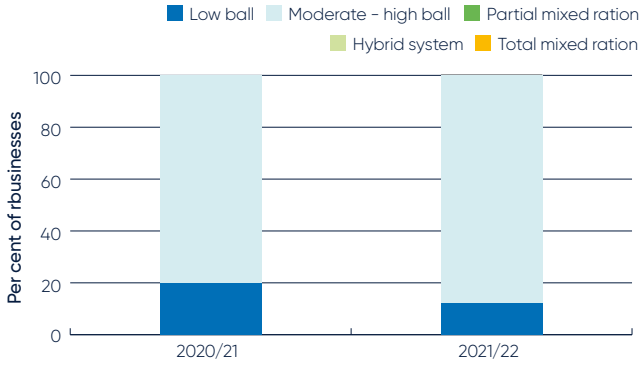
Figure 2 Estimated tonnes of homegrown feed removed



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



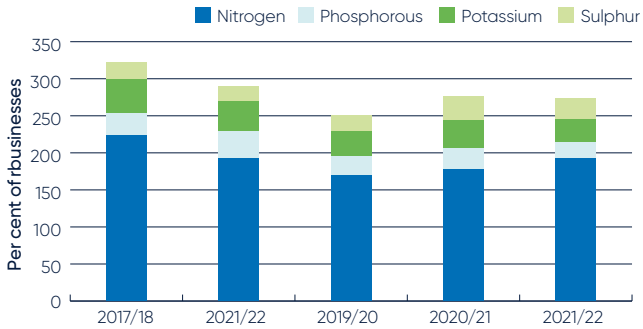
Fertiliser application

Nitrogen application increased from the previous two years while phosphorous, potassium and sulphur applications were the lowest for the past 5 years.

In comparison to the previous year, Figure 4 shows that in 2021/22:

- Nitrogen applied was 192kg/ha, an 8 per cent increase
- Phosphorous applied was 22kg/ha, a 24 per cent decrease
- Potassium applied was 32kg/ha, a 16 per cent decrease
- Sulphur applied was 28kg/ha, a 15 per cent decrease.

Figure 4 Nutrient application

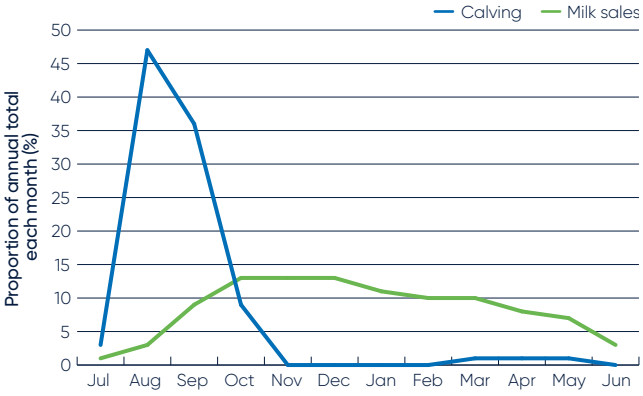


Milk solids sold

The average amount of milk solids sold from participants in the Tasmania Dairy Farm Monitor Project was higher than the previous year – the higher number of cows per farm would be the main contributor to this. The milk sold per cow decreased from 431kg MS/cow to 403kg MS/cow. Milk production per hectare increased from 955kg MS/ha to 1,041kg MS/ha, showing that the increased average herd size and stocking rate on participant farms was the major driver of this.

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 by Spring calving (Figure 5) with 96 per cent of cows from participant farms calving between July and October. The remaining 4 per cent of cows calved between March and May. Peak milk production occurs between October and December – each of these months has 13 per cent of the annual milk production. Fifty-one per cent of milk was produced from July to December.

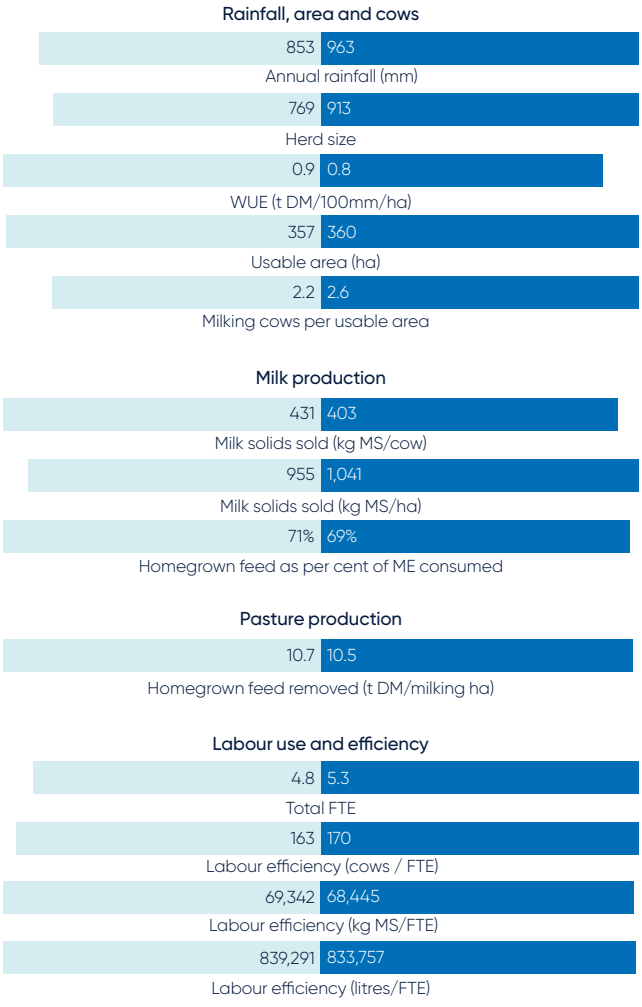
WHOLE FARM ANALYSIS

On average, farm profitability decreased in 2021/22. Earnings before Interest and Tax (EBIT) was positive for all of the participating farms.

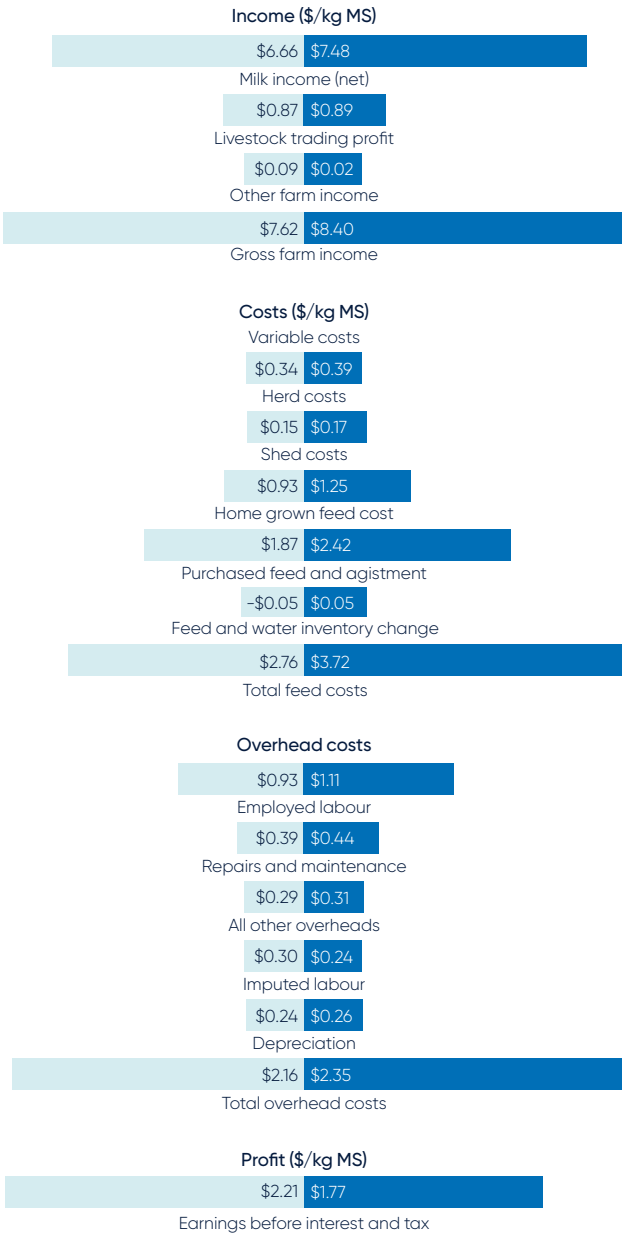
The improved milk price and livestock trading conditions did not lead to increased profitability across the state.

Variable costs increased by 31 per cent (primarily due to feed costs), with overhead costs higher by 9 per cent.

Physical parameters



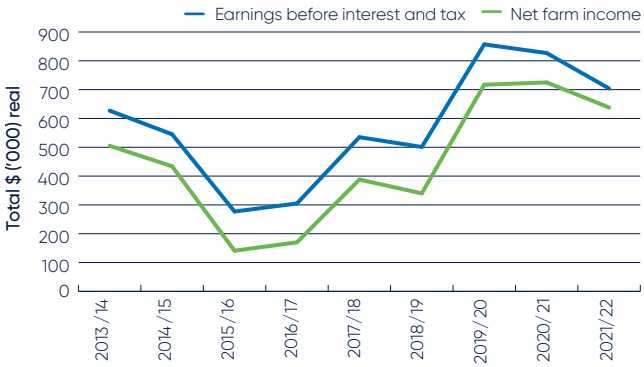
Financial parameters



Net farm income

Lower net farm income (nominal) was recorded in 2021/22 than the previous year. When accounting for inflation, it is the third highest over the 9 years of the Tasmania DFMP.

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



Variable costs

Variable costs increased from $3.26/kg MS in 2020/21 to $4.28/kg MS in 2021/22. This was an increase of $1.02/kg MS or 31 per cent.

Purchased feed and agistment costs increased by $0.55/kg MS. Agistment costs were the largest contributor to this, increasing by $0.31/kg MS. Concentrate was the next largest contributor increasing by $0.19/kg MS. Fodder purchases increased by $0.05/kg MS.

Homegrown feed costs increased by $0.32/kg MS. This was mainly driven by fertiliser costs increasing by $0.28/kg MS. Increases in fuel and oil and, pasture improvement and cropping were offset partially by increases in irrigation and hay/silage making.

Shed costs remained similar to last year. Shed power was the same at $0.08/kg MS and dairy supplies increased by $0.01/kg MS. Herd costs increased from $0.34/kg MS to $0.39/kg MS. This was mainly due to AI and herd test costs which increased by $0.04/kg MS. Calf rearing costs increased by $0.01kg MS.

Overhead costs

Total overhead costs increased from $2.16/kg MS in 2020/21 to $2.35/kg MS in 2021/22. This is a 9 per cent increase.

The largest contributor to this increase was employed labour costs which increased by $0.18/kg MS.

Other increased overhead costs were:

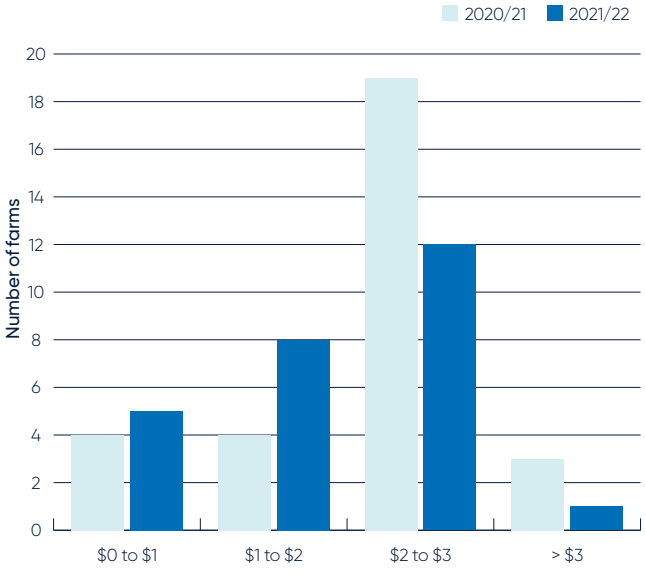
- Repairs and maintenance ($0.05/kgMS)
- Farm insurance ($0.02/kg MS)
- Depreciation ($0.02/kg MS)
- Motor vehicle expenses ($0.01/kg MS)

Other overheads and imputed labour decreased by $0.02/kg MS and $0.06/kg MS respectively.

Earnings before interest and tax

In 2021/22 all participants had a positive EBIT (Figure 7). Average EBIT per farm (total dollars) was the third highest in the nine years of the Tasmanian DFMP, accounting for inflation. Average EBIT ($/kg MS) was lower than the previous year, and the fourth lowest out of the past nine years, accounting for inflation.

Figure 7 Average EBIT per kg ms



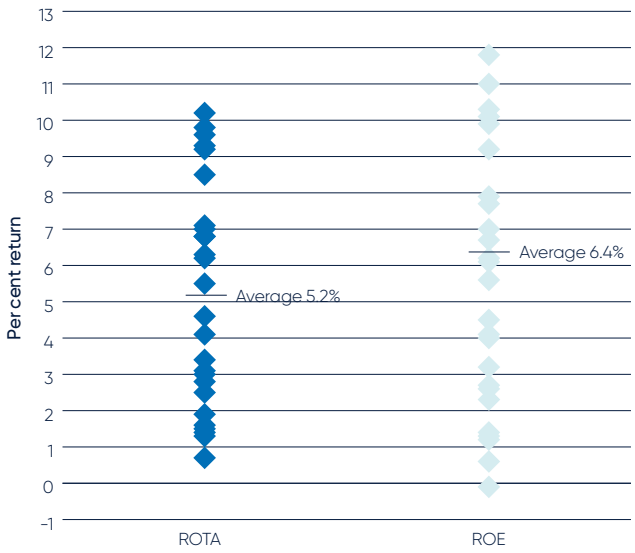
Return on total assets and equity

A positive return on total assets (ROTA) was recorded for all participants (Figure 8). In 2021/22 average ROTA reduced to 5.2 per cent compared to 7.1 per cent the previous year. The lower returns were a result of lower total EBIT combined with increasing values on total assets managed across participant farms.

Average return on equity (ROE) in 2021/22 decreased to 6.4 per cent relative to the previous year at 9.4 per cent. Equity levels increased on the majority of farms during the last 12 months.

With the cost of financing lower than the returns from accessing additional assets (e.g. land and infrastructure upgrades), 42 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



Note: One participating business had a ROE of 28.7%. This was not included on the graph so the other points could be seen more clearly.

BUSINESS CONFIDENCE

Participant farmers were confident in their outlook for farm business returns in the coming 12 months (2022/23).

All participant farms expected milk price and milk production to increase or remain stable.

Input costs and labour were the major issues listed for the coming 12 months with labour being the most significant issue for the coming 5 years.

In 2022/23 costs were expected to increase across most categories except irrigation which the majority expected to remain stable.

Expectations for business profit 2022/23

The participant survey considers different aspects of farming, from climate outlook to expectations about market conditions for dairy products. Expectations for business profit in the coming year were generally positive with 69 per cent of farms expecting an increase in returns and the remaining 31 per cent expecting returns to remain stable (Figure 9).

Price and production expectations – milk

Participants were confident in their outlook for milk price, and milk production for 2022/23. This is mainly due to the timing of milk price announcements (1 June), with farmers having more informed choices on their milk factory at the time of the DFMP survey. The majority of respondents (62 per cent) were expecting milk price to increase with the remaining 38 per cent expecting it to remain stable. Fifty-eight per cent were expecting milk production to remain stable while the remaining 42 percent expected milk production to increase in the coming year (Figure 10).

Production expectations – fodder

Fodder production in 2022/23 was expected to remain stable for 58 per cent of participant farms with a further 38 per cent expecting an increase in fodder (Figure 11). Four per cent expected fodder production to decrease.

Figure 9 Expected change to farm business profit in 2022/23

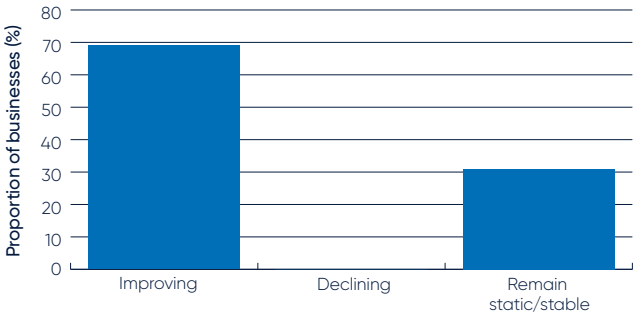


Figure 10 Producer expectations of milk prices and production in 2022/23

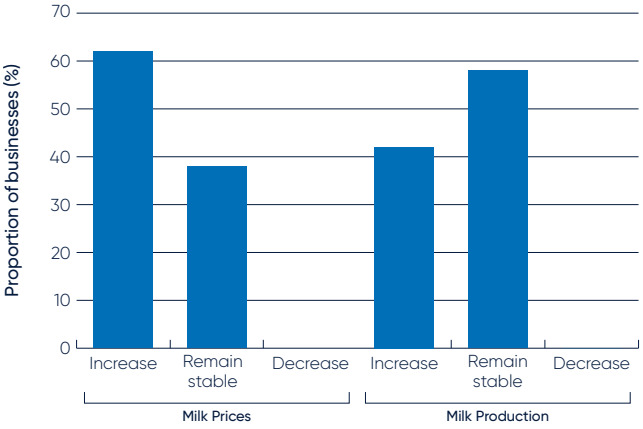
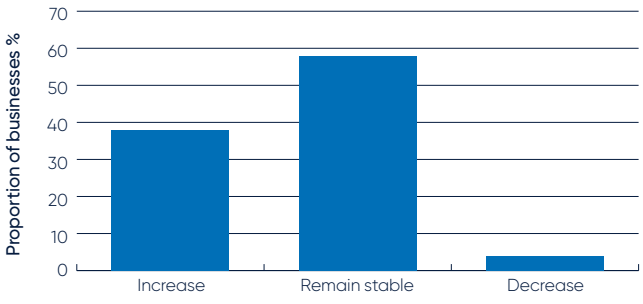


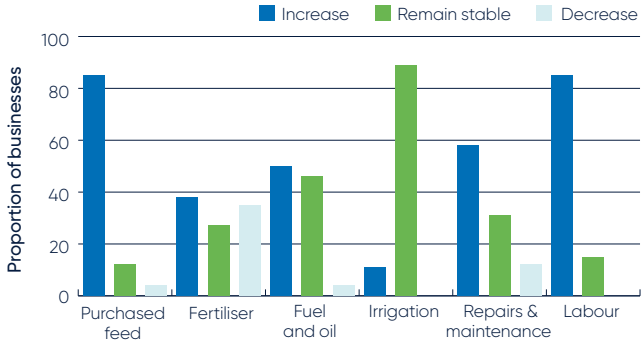
Figure 11 Producer expectations of fodder production in 2022/23



Cost expectations

Participants expected the majority of input costs to rise in 2022/23 with 85 per cent of respondents expecting increases in purchased feed and labour (Figure 11). Fifty-eight per cent of respondents expected repairs and maintenance to increase with 31 per cent expecting them to remain stable and 12 per cent expecting a decrease. Fifty per cent of respondents expected fuel and oil to increase and a further 46 per cent expected it to remain stable. Four per cent expected fuel and oil prices to decrease. Most respondents (89 per cent) expected irrigation costs to remain stable. Respondents were fairly evenly spread on their expectations about fertiliser costs – 38 per cent expected them to increase, 27 per cent expected them to remain stable and 35 per cent expected them to decrease.

Figure 12 Producer expectations of costs for the dairy industry in 2022/23



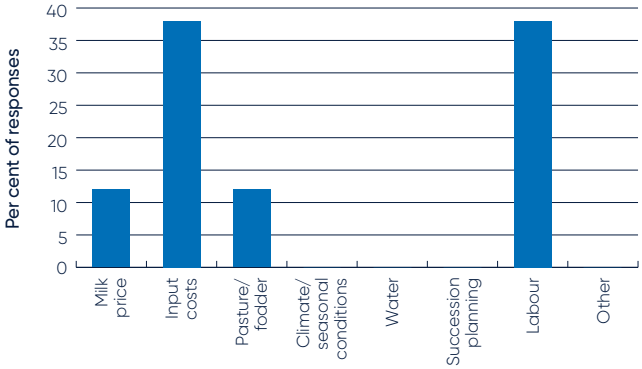
ISSUES OF IMPORTANCE TO DAIRY BUSINESSES

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

The most important issues in the coming 12 months were input costs and labour with 38 per cent of respondents ranking these as number 1. A further 42 per cent of respondents ranked input price as their second biggest concern for the next 12 months (labour was ranked second by 8 per cent of respondents). Milk price and pasture/fodder production were ranked the number one concern by 12 per cent of respondents. The other issues were not ranked as the first issue of concern by any of the respondents.

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



Medium to long term issues – Next five years

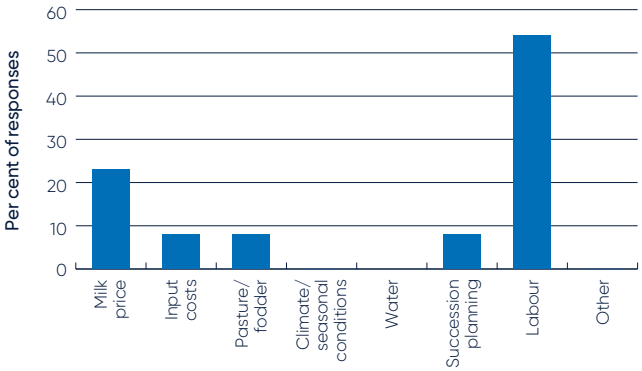
Typically, milk price is ranked as the number one issue when looking 5 years into the future but 54 per cent of the respondents in this survey ranked labour as their major issue of concern.

Milk price was ranked the number one concern by 23 per cent of respondents and 93 per cent ranked it in the top 3.

While only 8 per cent of respondents ranked input costs as their number one concern, 69 per cent ranked it as their second major concern.

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



2021/22 GREENHOUSE GAS EMISSIONS

The average carbon footprint for Tasmanian farm monitor farms was 5,175 tonnes of carbon dioxide equivalents (t CO^2-e) per farm in 2021/22.

Methane from cow rumination (enteric) accounted for an average of 67 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

Over the last five years, average GHG emissions have been trending upwards, mostly due to larger herd sizes and greater milk production per farm. In 2021/22, the average carbon footprint (net GHG emissions) for Tasmanian participants was estimated to be 5,175 t CO^2-e/farm (Figure 14).

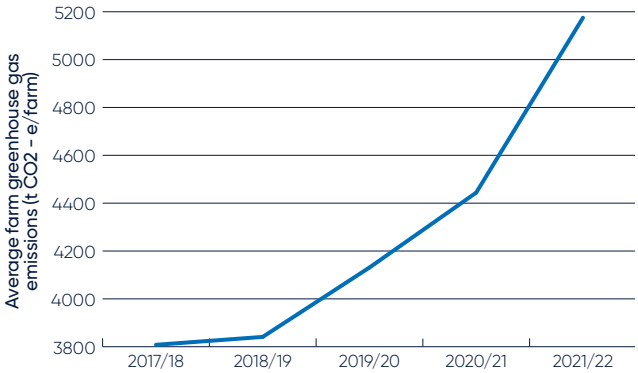
In 2021/22, there was an increase in methane emissions per farm, combined with increases in pre-farm emissions (fertiliser manufacture, production of purchased fodder, grain and concentrates), nitrous oxide emissions (gas produced from wastes – dung/urine, applied fertiliser and effluent ponds), resulting in an increase in average net emissions since last year. There was also an increase in carbon dioxide emissions from fossil fuel consumption (electricity or petrochemicals), with a portion of this increase coming from an improvement in capture of this data from participants over the past five years. Carbon capture from trees was noted as an offset on two of the participating farms.

Enteric methane accounted for approximately 67 per cent of emissions and is sensitive to changes in livestock weights and numbers on individual farms.

Emissions intensity

The emissions intensity allocated to milk production (once meat production is considered), has fluctuated over the five years but was higher in 2021/22 than the previous year (Table 1). Regional and farm variation was also observed over this period. These averages reflect the profiles of the participating farms and should not be taken as representative of the dairy industry.

Figure 15 Estimated average GHG emissions between 2017/18 and 2021/22 (CO^2 equivalent)



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

Changes to the emission accounting framework in 2021/22 include new factors for methane, nitrous oxide, fertiliser, purchased feeds, electricity and fuel. The scope considered other livestock on dairy farms (dairy beef) and the allocated proportion of GHG to meat production. Carbon capture and storage from trees was recorded more accurately in 2021/22. Data from all five years was analysed using the 2021/22 accounting framework.

Table 1 Estimated average GHG emissions and intensity between 2017/18 and 2021/22 (CO^2 equivalent)

Emission source	Units	17/18	18/19	19/20	20/21	21/22
Sample size		32	32	27	30	26
Methane	t CO^2-e/farm	2779	2864	3105	3292	3889
Pre-farm	t CO^2-e/farm	428	392	413	447	528
Nitrous oxide	t CO^2-e/farm	491	488	514	536	626
Carbon dioxide	t CO^2-e/farm	110	97	99	169	175
Tree carbon	t CO2-e/farm	0	0	0	0	-44
Net GHG emissions	t CO2-e/farm	3808	3841	4131	4444	5175
Emissions intensity	t CO2-e/FPCM (milk)	0.86	0.87	0.85	0.85	0.89
Emissions intensity	t CO2-e/t MS (milk)	11.9	12.0	11.7	11.8	12.2
Emissions intensity	t CO2-e/kg lwt (meat)	4.4	4.5	4.3	4.3	4.8

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	7.45	1.63	9.07	3.90	4.04	49	1.14	1.9	0.63	6.9	0.51	1.5
TA0008	7.52	0.92	8.45	4.61	1.78	72	2.06	6.8	0.14	1.7	1.91	7.9
TA0011	7.27	0.59	7.85	3.92	3.16	55	0.77	1.6	0.81	10.3	–0.04	–0.1
TA0012	6.83	1.06	7.89	4.06	2.34	63	1.49	3.4	0.23	2.9	1.26	4.0
TA0035	7.46	0.32	7.78	3.18	1.82	64	2.77	9.8	0.01	0.1	2.77	9.9
TA0038	7.23	2.67	9.90	3.85	4.52	46	1.54	3.0	0.02	0.2	1.51	3.2
TA0046	7.36	1.09	8.45	3.97	3.15	56	1.33	4.1	0.29	3.4	1.04	5.6
TA0048	7.07	3.14	10.21	4.22	3.60	54	2.38	5.5	0.65	6.4	1.74	7.7
TA0050	7.58	0.83	8.41	3.71	1.86	67	2.84	7.0	0.92	11.0	1.91	28.7
TA0053	7.53	0.72	8.25	4.05	1.74	70	2.46	9.2	0.16	2.0	2.30	11.0
TA0067	7.40	0.92	8.32	3.91	1.69	70	2.72	8.5	0.07	0.8	2.65	11.8
TA0074	7.70	1.10	8.79	4.44	1.81	71	2.54	10.2	0.04	0.5	2.50	10.1
TA0075	7.55	0.82	8.37	4.10	2.10	66	2.18	4.6	0.05	0.6	2.13	4.5
TA0076	7.66	0.37	8.03	4.74	2.26	68	1.03	2.8	0.08	0.9	0.95	2.6
TA0077	7.64	0.63	8.27	4.59	1.75	72	1.92	6.3	0.06	0.7	1.86	6.2
TA0078	7.69	0.53	8.22	3.69	1.37	73	3.16	9.3	0.04	0.5	3.12	9.2
TA0079	6.57	2.37	8.93	4.19	2.31	64	2.43	3.1	2.07	23.1	0.37	2.7
TA0081	7.48	0.48	7.96	3.74	2.06	65	2.15	9.6	0.31	3.9	1.84	10.3
TA0085	8.25	1.00	9.25	4.79	3.28	59	1.18	2.5	0.25	2.7	0.93	4.1
TA0086	7.55	0.21	7.75	5.11	2.39	68	0.25	0.7	0.03	0.4	0.22	0.6
TA0087	7.60	0.24	7.85	5.11	2.25	69	0.48	1.4	0.04	0.5	0.45	1.3
TA0088	7.73	0.65	8.39	4.21	1.90	69	2.28	7.1	0.04	0.5	2.24	7.0
TA0089	7.55	0.24	7.79	5.01	2.30	69	0.48	1.5	0.04	0.5	0.44	1.4
TA0090	7.63	0.79	8.41	4.58	1.78	72	2.06	6.8	0.04	0.5	2.02	6.7
TA0091	7.61	0.16	7.76	4.91	2.32	68	0.53	1.3	0.04	0.5	0.49	1.2
TA0092	7.69	0.32	8.01	4.59	1.63	74	1.79	6.2	0.03	0.4	1.76	6.1
Average	**7.48**	**0.89**	**8.40**	**4.28**	**2.35**	**65**	**1.77**	**5.2**	**0.27**	**3.1**	**1.50**	**6.4**
Top 25%	**7.57**	**0.67**	**8.24**	**3.89**	**1.77**	**69**	**2.58**	**9.1**	**0.10**	**1.2**	**2.49**	**9.9**

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	255	129	0.5	420	1.6	284	467	5.1	4.1
TA0008	480	323	0.7	1,200	2.5	501	1254	4.0	3.3
TA0011	343	182	0.4	485	1.4	434	614	4.5	3.5
TA0012	442	330	0.7	680	1.5	404	621	4.6	3.5
TA0035	520	340	0.9	1,100	2.1	488	1032	5.1	4.0
TA0038	315	210	0.6	535	1.7	317	539	4.5	3.4
TA0046	497	274	0.7	880	1.8	432	764	4.2	3.6
TA0048	107	85	0.6	209	2.0	395	771	4.4	3.3
TA0050	605	340	1.2	1,200	2.0	468	928	4.7	3.8
TA0053	370	360	0.9	1,200	3.2	458	1486	4.7	3.7
TA0067	530	398	1.1	1,390	2.6	418	1096	4.9	3.7
TA0074	336	300	0.8	1,129	3.4	457	1535	4.4	3.7
TA0075	538	523	0.7	1,367	2.5	332	844	4.5	3.6
TA0076	187	187	0.8	552	3.0	380	1122	4.9	3.7
TA0077	284	235	0.7	727	2.6	436	1115	4.6	3.7
TA0078	389	372	1.0	1,336	3.4	411	1411	4.5	3.6
TA0079	265	111	0.5	185	0.7	373	260	4.5	3.4
TA0081	151	151	1.2	530	3.5	470	1650	4.4	3.6
TA0085	400	305	0.6	870	2.2	415	902	4.6	3.6
TA0086	320	320	0.8	1,067	3.3	330	1099	4.7	3.7
TA0087	346	346	0.9	1,205	3.5	332	1159	4.5	3.5
TA0088	240	240	0.8	854	3.6	428	1521	4.7	3.7
TA0089	351	351	0.7	1,123	3.2	373	1196	4.6	3.7
TA0090	335	315	1.0	1,230	3.7	376	1377	4.6	3.7
TA0091	341	341	0.9	1,002	2.9	340	998	4.6	3.6
TA0092	410	336	0.9	1,260	3.1	422	1296	4.3	3.5
Average	**360**	**285**	**0.8**	**913**	**2.6**	**403**	**1,041**	**4.6**	**3.6**
Top 25%	**362**	**309**	**0.9**	**1,077**	**3.1**	**447**	**1,390**	**4.7**	**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	% of ME	kg/ha	kg/ha	kg/ha	kg/ha	hd/FTE	kg MS/FTE
TA0001	8.8	0.2	78	217	27	49	23	162	45,849
TA0008	10.7	0.0	66	–	13	19	16	150	75,216
TA0011	7.6	0.0	70	183	12	22	15	105	45,549
TA0012	5.7	1.2	74	131	10	21	6	149	60,010
TA0035	12.2	1.0	81	229	10	16	8	175	85,478
TA0038	9.1	0.9	77	179	20	39	30	100	31,668
TA0046	8.8	0.0	68	321	16	16	31	146	62,858
TA0048	7.6	0.6	71	122	14	39	32	137	54,087
TA0050	15.7	0.4	79	245	64	56	–	157	73,677
TA0053	11.6	0.4	68	260	47	54	70	211	96,434
TA0067	11.0	0.2	67	190	26	42	16	246	102,808
TA0074	12.1	0.0	62	157	27	29	29	159	72,633
TA0075	8.7	0.3	76	172	26	43	53	188	62,382
TA0076	8.2	0.7	63	166	26	49	63	174	65,972
TA0077	8.8	0.3	57	165	37	49	79	151	65,998
TA0078	12.6	0.0	70	254	33	54	37	269	110,670
TA0079	4.9	1.1	85	26	21	32	26	117	43,562
TA0081	13.5	0.1	74	327	25	61	32	168	79,096
TA0085	8.4	0.0	62	184	30	36	21	175	72,374
TA0086	9.3	0.0	62	167	3	–	0	179	58,901
TA0087	9.8	0.0	62	162	4	–	4	190	63,087
TA0088	13.2	0.8	71	312	16	28	66	132	56,311
TA0089	7.9	0.2	54	147	3	–	5	215	80,371
TA0090	12.7	0.0	68	249	27	27	28	200	75,031
TA0091	8.1	0.0	58	176	3	–	0	160	54,362
TA0092	12.8	0.0	65	260	40	44	34	202	85,182
Average	**10.0**	**0.5**	**69**	**192**	**22**	**32**	**28**	**170**	**68,445**
Top 25%*	**12.3**	**0.5**	**70**	**247**	**26**	**40**	**37**	**194**	**86,204**

*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	0.9	430	400	340	–	407	22
TA0008	2.3	655	–	250	663	534	34
TA0011	1.8	617	363	275	–	513	30
TA0012	1.5	454	132	240	–	410	26
TA0035	1.0	494	–	–	–	494	19
TA0038	1.7	492	–	209	–	304	23
TA0046	1.9	426	–	16	426	394	32
TA0048	1.4	507	–	127	–	437	29
TA0050	1.3	475	485	451	–	475	21
TA0053	1.7	418	384	230	–	359	32
TA0067	1.8	497	401	209	–	411	33
TA0074	2.0	487	–	262	–	454	38
TA0075	1.0	455	–	219	–	410	24
TA0076	1.8	454	360	210	–	392	37
TA0077	2.1	448	364	206	–	400	43
TA0078	1.5	454	–	210	–	402	30
TA0079	1.1	529	391	142	–	496	15
TA0081	1.3	451	265	314	–	425	26
TA0085	2.1	468	300	420	–	406	38
TA0086	1.6	494	448	367	–	480	38
TA0087	1.7	478	444	347	–	456	38
TA0088	1.5	476	380	297	–	458	29
TA0089	2.0	477	432	353	–	456	46
TA0090	1.4	509	–	323	–	489	32
TA0091	1.9	519	404	370	–	477	42
TA0092	1.7	487	–	317	–	467	35
Average	**1.6**	**487**	**372**	**268**	**544**	**439**	**31**
Top 25%	**1.5**	**468**	**358**	**254**	**–**	**429**	**30**

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	0.23	0.17	0.11	0.10	0.10	0.70	0.98	0.00	0.18
TA0008	0.14	0.14	0.09	0.06	0.09	0.52	0.29	0.09	0.09
TA0011	0.16	0.19	0.04	0.15	0.06	0.60	0.51	0.28	0.28
TA0012	0.14	0.05	0.08	0.07	0.10	0.44	0.77	0.34	0.34
TA0035	0.12	0.15	0.08	0.04	0.07	0.46	0.73	0.16	0.16
TA0038	0.00	0.27	0.03	0.09	0.11	0.50	0.96	0.07	0.07
TA0046	0.27	0.11	0.02	0.15	0.08	0.64	0.82	0.11	0.11
TA0048	0.19	0.13	0.06	0.16	0.19	0.72	0.72	0.06	0.06
TA0050	0.14	0.22	0.10	0.04	0.04	0.58	0.78	0.08	0.08
TA0053	0.24	0.21	0.08	0.03	0.03	0.60	0.95	0.05	0.05
TA0067	0.11	0.13	0.07	0.03	0.08	0.42	0.66	0.13	0.13
TA0074	0.12	0.21	0.04	0.07	0.06	0.50	0.68	0.05	0.05
TA0075	0.16	0.16	0.04	0.05	0.06	0.48	0.98	0.05	0.05
TA0076	0.08	0.17	0.04	0.10	0.10	0.49	0.91	0.08	0.08
TA0077	0.10	0.24	0.03	0.08	0.08	0.54	0.78	0.03	0.03
TA0078	0.12	0.14	0.07	0.05	0.07	0.45	0.80	0.00	0.00
TA0079	0.12	0.16	0.02	0.18	0.18	0.65	0.81	0.52	0.52
TA0081	0.15	0.15	0.06	0.16	0.07	0.60	0.73	0.03	0.03
TA0085	0.19	0.36	0.14	0.08	0.04	0.81	0.90	0.00	0.00
TA0086	0.16	0.21	0.02	0.08	0.08	0.55	0.68	0.00	0.00
TA0087	0.14	0.22	0.06	0.06	0.08	0.56	0.68	0.00	0.00
TA0088	0.12	0.20	0.06	0.06	0.06	0.50	0.79	0.08	0.08
TA0089	0.16	0.28	0.01	0.08	0.09	0.61	0.50	0.03	0.03
TA0090	0.15	0.17	0.03	0.04	0.05	0.44	0.87	0.00	0.00
TA0091	0.18	0.15	0.05	0.09	0.08	0.56	0.58	0.00	0.00
TA0092	0.16	0.18	0.04	0.04	0.07	0.48	0.87	0.00	0.00
Average	**0.15**	**0.18**	**0.06**	**0.08**	**0.08**	**0.55**	**0.76**	**0.09**	**0.09**
Top 25%	**0.14**	**0.17**	**0.07**	**0.06**	**0.06**	**0.50**	**0.76**	**0.07**	**0.07**

Table A4 Variable costs (continued)

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	0.14	0.32	0.04	0.62	1.01	0.00	−0.25	3.20	3.90
TA0008	0.07	0.38	0.00	0.33	2.03	0.16	0.53	4.09	4.61
TA0011	0.11	0.03	0.00	0.28	1.13	0.39	0.40	3.32	3.92
TA0012	0.12	0.52	0.00	0.12	1.38	0.00	0.26	3.62	4.06
TA0035	0.04	0.02	0.00	0.00	0.96	0.41	0.25	2.72	3.18
TA0038	0.47	0.19	0.00	0.55	1.11	0.00	−0.04	3.35	3.85
TA0046	0.10	0.06	0.00	0.00	1.57	0.00	0.20	3.33	3.97
TA0048	0.13	0.35	0.00	0.09	1.53	0.40	−0.03	3.50	4.22
TA0050	0.04	0.16	0.00	0.35	1.08	0.62	−0.22	3.13	3.71
TA0053	0.04	0.02	0.00	0.44	0.78	0.85	0.20	3.45	4.05
TA0067	0.02	0.05	0.02	0.51	1.36	0.80	−0.09	3.49	3.91
TA0074	0.07	0.13	0.00	0.16	1.75	0.87	0.03	3.94	4.44
TA0075	0.05	0.10	0.00	0.13	1.15	1.06	−0.01	3.62	4.10
TA0076	0.08	0.13	0.00	0.43	1.38	1.00	0.00	4.25	4.74
TA0077	0.03	0.16	0.00	0.26	1.71	1.01	−0.03	4.05	4.59
TA0078	0.03	0.05	0.00	0.16	1.28	0.75	0.00	3.24	3.69
TA0079	0.11	0.14	0.00	0.07	1.43	0.00	0.45	3.54	4.19
TA0081	0.09	0.13	0.00	0.13	1.03	0.69	−0.03	3.14	3.74
TA0085	0.05	0.33	0.00	0.78	1.48	0.41	−0.16	3.98	4.79
TA0086	0.07	0.12	0.00	0.29	2.06	1.24	0.00	4.56	5.11
TA0087	0.06	0.17	0.00	0.48	2.02	1.11	−0.02	4.55	5.11
TA0088	0.08	0.05	0.00	0.15	1.44	0.95	0.01	3.71	4.21
TA0089	0.05	0.11	0.00	0.46	2.06	1.13	−0.01	4.40	5.01
TA0090	0.06	0.03	0.00	0.13	1.74	1.12	0.00	4.14	4.58
TA0091	0.05	0.17	0.00	0.74	2.01	0.84	−0.06	4.35	4.91
TA0092	0.05	0.11	0.00	0.15	1.76	0.99	−0.02	4.11	4.59
Average	**0.08**	**0.16**	**0.00**	**0.30**	**1.47**	**0.65**	**0.05**	**3.72**	**4.28**
Top 25%	**0.05**	**0.06**	**0.00**	**0.22**	**1.23**	**0.76**	**0.05**	**3.39**	**3.89**

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	0.11	0.10	0.29	0.70	0.35	1.18	2.74	0.61	0.68	4.04
TA0008	0.05	0.06	0.01	0.34	0.16	0.67	1.29	0.23	0.27	1.78
TA0011	0.04	0.09	0.03	0.78	0.13	0.95	2.02	0.45	0.69	3.16
TA0012	0.08	0.02	0.08	0.24	0.24	1.46	2.13	0.20	0.01	2.34
TA0035	0.02	0.05	0.06	0.32	0.06	0.74	1.23	0.25	0.34	1.82
TA0038	0.06	0.12	0.03	1.12	0.04	1.73	3.11	0.54	0.86	4.52
TA0046	0.02	0.17	0.09	0.79	0.32	1.10	2.50	0.41	0.24	3.15
TA0048	0.04	0.16	0.13	0.84	0.25	0.24	1.65	0.71	1.24	3.60
TA0050	0.03	0.09	0.06	0.38	0.09	1.19	1.83	0.04	0.00	1.86
TA0053	0.02	0.06	0.02	0.38	0.05	0.92	1.45	0.26	0.03	1.74
TA0067	0.02	0.07	0.04	0.32	0.19	0.82	1.47	0.17	0.06	1.69
TA0074	0.03	0.04	0.04	0.34	0.05	1.23	1.71	0.10	0.00	1.81
TA0075	0.04	0.04	0.07	0.54	0.03	1.21	1.94	0.16	0.00	2.10
TA0076	0.02	0.07	0.08	0.56	0.11	1.28	2.12	0.14	0.00	2.26
TA0077	0.04	0.04	0.05	0.35	0.08	1.13	1.67	0.08	0.00	1.75
TA0078	0.02	0.04	0.04	0.30	0.06	0.79	1.26	0.11	0.00	1.37
TA0079	0.00	0.03	0.04	0.14	0.15	0.58	0.94	0.09	1.28	2.31
TA0081	0.02	0.27	0.06	0.20	0.28	1.00	1.82	0.24	0.00	2.06
TA0085	0.04	0.06	0.02	0.39	0.12	1.96	2.58	0.70	0.00	3.28
TA0086	0.07	0.07	0.15	0.46	0.04	1.42	2.21	0.18	0.00	2.39
TA0087	0.07	0.12	0.11	0.29	0.03	1.36	1.99	0.27	0.00	2.25
TA0088	0.04	0.05	0.03	0.21	0.02	0.86	1.21	0.23	0.46	1.90
TA0089	0.05	0.06	0.12	0.45	0.04	1.38	2.10	0.19	0.00	2.30
TA0090	0.02	0.03	0.09	0.38	0.05	1.02	1.59	0.19	0.00	1.78
TA0091	0.05	0.04	0.09	0.40	0.05	1.56	2.18	0.14	0.00	2.32
TA0092	0.02	0.03	0.09	0.23	0.04	1.07	1.48	0.15	0.00	1.63
Average	**0.04**	**0.08**	**0.07**	**0.44**	**0.12**	**1.11**	**1.85**	**0.26**	**0.24**	**2.35**
Top 25%	**0.02**	**0.08**	**0.04**	**0.30**	**0.10**	**0.91**	**1.45**	**0.19**	**0.13**	**1.77**

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
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
TA0001	2.8	2.1	1.4	1.3	1.3	8.9	12.3	0.0	2.2
TA0008	2.1	2.2	1.4	0.9	1.5	8.1	4.6	1.4	1.4
TA0011	2.2	2.7	0.6	2.1	0.8	8.4	7.2	4.0	4.0
TA0012	2.2	0.7	1.2	1.2	1.6	6.9	12.1	5.4	5.4
TA0035	2.3	3.1	1.5	0.8	1.4	9.1	14.7	3.2	3.2
TA0038	0.0	3.3	0.4	1.0	1.3	6.0	11.5	0.9	0.9
TA0046	3.7	1.6	0.3	2.1	1.1	8.9	11.5	1.5	1.5
TA0048	2.4	1.7	0.7	2.0	2.4	9.2	9.2	0.8	0.8
TA0050	2.6	4.0	1.8	0.7	0.6	10.5	13.9	1.4	1.4
TA0053	4.1	3.6	1.4	0.6	0.6	10.4	16.4	0.8	0.8
TA0067	2.1	2.4	1.2	0.6	1.3	7.5	11.8	2.3	2.3
TA0074	1.9	3.3	0.7	1.2	1.0	8.0	10.9	0.8	0.8
TA0075	2.7	2.7	0.6	0.8	1.0	7.7	15.9	0.8	0.8
TA0076	1.2	2.4	0.5	1.5	1.4	7.0	13.0	1.2	1.2
TA0077	1.6	3.8	0.4	1.3	1.3	8.5	12.2	0.4	0.4
TA0078	2.3	2.7	1.3	1.1	1.3	8.8	15.8	0.1	0.1
TA0079	1.8	2.4	0.3	2.7	2.8	10.0	12.5	8.0	8.0
TA0081	2.6	2.7	1.1	2.7	1.3	10.3	12.6	0.5	0.5
TA0085	2.3	4.4	1.8	1.0	0.5	10.0	11.2	0.0	0.0
TA0086	2.1	2.8	0.3	1.1	1.0	7.4	9.0	0.0	0.0
TA0087	1.9	3.0	0.8	0.8	1.1	7.6	9.2	0.0	0.0
TA0088	2.0	3.2	0.9	1.0	1.0	8.2	13.0	1.3	1.3
TA0089	2.2	3.8	0.1	1.0	1.2	8.3	6.9	0.3	0.3
TA0090	2.3	2.6	0.4	0.7	0.8	6.9	13.6	0.0	0.0
TA0091	2.6	2.1	0.6	1.3	1.1	7.7	8.1	0.0	0.0
TA0092	2.5	2.8	0.6	0.7	1.1	7.8	13.9	0.0	0.0
Average	**2.3**	**2.8**	**0.9**	**1.2**	**1.2**	**8.4**	**11.7**	**1.3**	**1.4**
Top 25%	**2.5**	**3.0**	**1.2**	**1.1**	**1.1**	**8.9**	**13.6**	**1.3**	**1.3**

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
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
TA0001	1.8	4.0	0.5	7.8	12.7	0.0	−3.1	40.3	49.1
TA0008	1.2	5.9	0.0	5.2	31.7	2.5	8.3	64.0	72.1
TA0011	1.5	0.4	0.0	3.9	15.9	5.5	5.7	46.9	55.4
TA0012	1.8	8.2	0.0	1.9	21.5	0.0	4.1	56.6	63.5
TA0035	0.9	0.4	0.0	0.0	19.2	8.2	5.0	54.5	63.6
TA0038	5.6	2.3	0.0	6.6	13.2	0.0	−0.4	40.0	46.0
TA0046	1.4	0.8	0.0	0.1	22.1	0.0	2.9	46.8	55.8
TA0048	1.6	4.5	0.0	1.1	19.5	5.1	−0.3	44.7	53.9
TA0050	0.7	2.9	0.0	6.4	19.4	11.1	−4.0	56.1	66.6
TA0053	0.6	0.4	0.0	7.6	13.5	14.7	3.4	59.6	69.9
TA0067	0.4	0.9	0.3	9.1	24.2	14.2	−1.6	62.3	69.8
TA0074	1.1	2.0	0.0	2.6	28.0	13.8	0.5	63.0	71.0
TA0075	0.8	1.6	0.0	2.1	18.5	17.0	−0.2	58.4	66.2
TA0076	1.1	1.9	0.0	6.1	19.7	14.3	0.0	60.7	67.7
TA0077	0.5	2.5	0.0	4.2	27.0	15.8	−0.5	63.9	72.4
TA0078	0.7	1.0	0.0	3.2	25.3	14.8	0.0	64.2	73.0
TA0079	1.7	2.2	0.0	1.1	22.1	0.0	6.9	54.5	64.5
TA0081	1.6	2.2	0.0	2.2	17.7	11.9	−0.5	54.2	64.5
TA0085	0.6	4.1	0.0	9.6	18.3	5.1	−2.0	49.3	59.4
TA0086	1.0	1.6	0.0	3.8	27.5	16.6	0.0	60.8	68.1
TA0087	0.8	2.3	0.0	6.5	27.4	15.1	−0.3	61.8	69.4
TA0088	1.2	0.9	0.0	2.4	23.6	15.6	0.2	60.7	68.9
TA0089	0.6	1.5	0.0	6.3	28.2	15.5	−0.1	60.2	68.6
TA0090	0.9	0.4	0.0	2.0	27.4	17.7	0.0	65.1	72.0
TA0091	0.7	2.3	0.0	10.2	27.7	11.7	−0.8	60.2	67.9
TA0092	0.8	1.8	0.0	2.5	28.3	15.9	−0.3	66.1	73.8
Average	**1.2**	**2.3**	**0.0**	**4.4**	**22.3**	**10.1**	**0.9**	**56.7**	**65.1**
Top 25%	**0.9**	**1.1**	**0.0**	**3.9**	**21.6**	**13.3**	**1.0**	**59.8**	**68.7**

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
	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs	% of costs
TA0001	1.4	1.3	3.7	8.9	4.4	14.9	34.5	7.7	8.6	50.9
TA0008	0.7	0.9	0.2	5.3	2.5	10.5	20.1	3.5	4.2	27.9
TA0011	0.5	1.3	0.4	11.1	1.8	13.4	28.6	6.4	9.7	44.6
TA0012	1.2	0.4	1.3	3.8	3.7	22.9	33.3	3.1	0.2	36.5
TA0035	0.4	1.0	1.1	6.4	1.1	14.7	24.6	4.9	6.8	36.4
TA0038	0.8	1.4	0.4	13.4	0.4	20.7	37.1	6.5	10.3	54.0
TA0046	0.3	2.4	1.3	11.1	4.5	15.5	35.1	5.8	3.3	44.2
TA0048	0.5	2.1	1.6	10.7	3.2	3.0	21.1	9.1	15.8	46.1
TA0050	0.5	1.5	1.2	6.8	1.6	21.3	32.8	0.6	0.0	33.4
TA0053	0.4	1.0	0.3	6.5	0.9	16.0	25.0	4.6	0.5	30.1
TA0067	0.4	1.3	0.7	5.8	3.4	14.6	26.2	3.0	1.0	30.2
TA0074	0.4	0.6	0.6	5.4	0.8	19.6	27.4	1.6	0.0	29.0
TA0075	0.6	0.7	1.2	8.8	0.5	19.5	31.3	2.5	0.0	33.8
TA0076	0.3	1.0	1.2	8.0	1.6	18.3	30.3	2.0	0.0	32.3
TA0077	0.6	0.6	0.8	5.5	1.2	17.8	26.4	1.3	0.0	27.6
TA0078	0.5	0.8	0.8	5.9	1.2	15.7	24.8	2.2	0.0	27.0
TA0079	0.0	0.4	0.6	2.2	2.3	8.9	14.5	1.3	19.7	35.5
TA0081	0.4	4.6	1.0	3.4	4.8	17.1	31.4	4.1	0.0	35.5
TA0085	0.5	0.7	0.2	4.8	1.5	24.3	32.0	8.7	0.0	40.6
TA0086	0.9	0.9	2.0	6.1	0.5	19.0	29.4	2.4	0.0	31.9
TA0087	1.0	1.6	1.5	3.9	0.4	18.5	27.0	3.6	0.0	30.6
TA0088	0.6	0.8	0.6	3.5	0.4	14.0	19.9	3.7	7.5	31.1
TA0089	0.7	0.9	1.7	6.1	0.5	18.9	28.8	2.7	0.0	31.4
TA0090	0.3	0.5	1.4	5.9	0.8	16.1	25.0	3.0	0.0	28.0
TA0091	0.8	0.6	1.2	5.5	0.6	21.5	30.2	1.9	0.0	32.1
TA0092	0.4	0.5	1.5	3.7	0.6	17.1	23.8	2.4	0.0	26.2
Average	**0.6**	**1.1**	**1.1**	**6.5**	**1.7**	**16.7**	**27.7**	**3.8**	**3.4**	**34.9**
Top 25%	**0.4**	**1.4**	**0.7**	**5.3**	**1.8**	**16.0**	**25.6**	**3.4**	**2.3**	**31.3**

Table A8 Capital structure

Farm assets				
	Land value	Land value	Permanent water value	Permanent water value
	$/ha	$/cow	$/ha	$/cow
Average	26,147	9,999	321	180
Top 25%	31,016	9,981	125	45

Other farm assets (per usable hectare)				
Plant and equipment	Livestock	Hay and grain	Other assets	Total assets
$/ha	$/ha	$/ha	$/ha	$/ha
854	6,049	165	149	33,684
891	6,990	174	182	39,378

Liabilities	
Liabilities per usable hectare	Liabilities per milking cow
$/ha	$/cow
4,127	2,007
3,888	1,294

Equity	
Equity per usable hectare	Average equity
$/ha	%
29,557	87.2
35,489	89.5

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 ($/kgMS)	Real ($/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	8.01	7.59	8.85	0.28	0.33	0.23	0.27	2.51	2.93	3.02	3.52
2014/15	6.19	7.05	6.90	7.86	0.29	0.33	0.20	0.23	2.65	3.02	3.13	3.57
2015/16	5.55	6.24	6.10	6.86	0.29	0.33	0.17	0.19	2.81	3.16	3.27	3.68
2016/17	5.03	5.56	5.84	6.45	0.28	0.31	0.20	0.22	2.38	2.63	2.87	3.17
2017/18	5.95	6.45	6.70	7.26	0.30	0.33	0.18	0.20	2.47	2.68	2.95	3.20
2018/19	6.16	6.60	6.90	7.38	0.30	0.33	0.18	0.20	2.78	2.97	3.27	3.50
2019/20	7.09	7.50	7.94	8.40	0.28	0.29	0.18	0.19	2.68	2.83	3.13	3.31
2020/21	6.66	6.94	7.62	7.94	0.34	0.35	0.15	0.16	2.76	2.88	3.26	3.40
2021/22	7.48	7.48	8.40	8.40	0.39	0.39	0.16	0.16	3.72	3.72	4.28	4.28
Average		**6.87**		**7.71**		**0.33**		**0.20**		**2.98**		**3.51**

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

	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 ($/kgMS)	Real ($/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	1.64	0.73	0.85	2.14	2.49	2.44	2.84	0.47	0.55	1.97	2.29	9.6	12.9
2014/15	1.34	1.53	0.60	0.68	1.94	2.21	1.84	2.10	0.42	0.48	1.42	1.61	7.8	9.9
2015/16	1.43	1.61	0.48	0.54	1.91	2.15	0.92	1.03	0.56	0.63	0.36	0.40	3.9	0.8
2016/17	1.30	1.44	0.68	0.75	1.98	2.19	0.99	1.09	0.63	0.70	0.36	0.39	3.7	1.9
2017/18	1.36	1.48	0.73	0.79	2.09	2.27	1.80	1.95	0.66	0.72	1.14	1.24	6.3	6.7
2018/19	1.35	1.44	0.84	0.90	2.19	2.34	1.44	1.54	0.66	0.71	0.78	0.83	5.2	6.5
2019/20	1.57	1.66	0.74	0.78	2.31	2.44	2.50	2.65	0.58	0.62	1.92	2.03	8.7	15.4
2020/21	1.61	1.68	0.54	0.56	2.16	2.25	2.21	2.30	0.37	0.39	1.84	1.92	7.1	9.4
2021/22	1.85	1.85	0.50	0.50	2.35	2.35	1.77	1.77	0.27	0.27	1.50	1.50	5.2	6.4
Average		**1.59**		**0.71**		**2.30**		**1.92**		**0.56**		**1.36**	**6.4**	**7.8**

Note: 'Real' dollar values are the nominal values converted to 2021/22 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 A10 Historical data – average farm physical information

Year	Total usable area	Milking area	Total water use efficiency	Number of milking cows	Milking cows per useable area	Milk sold	Milk sold	Estimated grazed pasture*	Estimated conserved feed*	Home grown feed as % of ME consumed	Concentrate price	
	ha	ha	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	72	437	509
2014/15	280	191	0.8	545	2.1	447	924	9.3	0.7	69	429	489
2015/16	302	198	0.7	580	2.1	444	936	10.2	0.5	69	440	495
2016/17	268	190	0.6	542	2.2	433	976	9.7	0.7	74	390	431
2017/18	289	208	0.9	607	2.3	445	1,031	10.1	0.6	71	426	462
2018/19	305	210	0.8	639	2.2	418	947	10.4	1.1	76	550	588
2019/20	326	236	0.8	707	2.2	423	948	10.1	0.7	74	519	548
2020/21	357	249	0.9	769	2.2	431	955	10.2	0.5	71	462	481
2021/22	360	285	0.8	913	2.6	403	1041	10.0	0.5	69	487	487
Average	**305**	**216**	**0.8**	**645**	**2.2**	**430**	**961**	**9.9**	**0.7**	**72**		**499**

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.
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.
Concentrates	Refers to feeds with a concentrated source of energy such as grains, pellets and other grain mixes.
Debt servicing ratio	Interest and lease costs as a percentage of gross farm income.
Depreciation	Decrease in value over time of capital asset, usually as a result of using the asset. Depreciation is a non-cash cost of the business but reduces the book value of the asset and is therefore a cost.
Earnings before interest and tax (EBIT)	Gross income minus total variable 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).
Equity per cent	Total equity as a percentage of the total assets owned. The proportion of the total assets owned by the business.
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.
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.
Feeding Systems	**Low bail** 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. **Moderate – High bail** 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. **Partial mixed ration** 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. **Hybrid system** 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. **Total mixed ration** A total mixed ration or TMR is classified by zero-grazing, where cows are contained and fed a TMR throughout the year.
Finance costs	See interest and lease costs.
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.
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)).
Gross farm income	Farm income including milk sales, livestock trading and other income such as income from grants and rebates.
Gross margin	Gross farm income minus total variable costs.
Herd costs	Cost of artificial insemination (AI) and herd tests, animal health and calf rearing.
Imputed	An estimated amount introduced into economic management analysis to allow reasonable comparisons between years and between other businesses.
Imputed labour cost	An allocated allowance for the cost of owner/operator, family, and sharefarmer time in the business.

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
CH4	Methane
CO^2	Carbon dioxide
CO^2-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_2O	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
21/22 calves		$825
Mature bulls	$3,300	$3,300

Imputed owner/operator and family labour

In 2021/22, the imputed owner/operator and family labour rate was $34/hr based on a full time equivalent (FTE) working 48 hours/week for 50 weeks of the year.

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