Dairy Australia

Dairy Farm Monitor Project

Inland NSW & Northern Victoria total mixed ration feeding systems

2023/24

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Acknowledgements

Thank you to the farmer participants who generously supplied their data for this project.

Project participants should not be viewed to represent the entire dairy population.

Industry partners

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Contributor/data collectors

The report has been made possible through contributions from Tom Farran and Cameron Smith (Farmanco), Brian Crockart (Agribusiness Solutions) and Fiona Smith (F.Smith Agribusiness Consulting).

Technical input to the greenhouse gas emissions estimates was provided by Karen Christie-Whitehead (UTAS) and the climate emissions teams from Agriculture Victoria, NSW DPIRD and Dairy Australia.

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 project participants.

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Contents

Summary

The Australian dairy industry continues to evolve in response to climate change, among other drivers, and the range of production systems being used on farms has diversified.

Along with the traditional grazing-based dairy system, the level of interest in, and adoption of more intensive production systems has increased. These systems are zero-grazing, where the milking herd is fed a total mixed ration (TMR) and generally involves significant investment in cattle feeding and housing infrastructure. For the purposes of this report these farms are referred to as TMR farms. Over the eight-year analysis period, many of the TMR farms transitioned to a contained housing system involving significant capital investment and a changing risk profile.

The TMR farms were on average larger and had greater total and per cow milk production than their grazing Dairy Farm Monitor Project (DFMP) counterparts. Most TMR participants grew their herd size and total milk output, coinciding with their transition to a new production system. Their combined total milk production in their respective regions provides insights into their contribution to dairying. The six inland NSW TMR farms produced 16 per cent of total milk production in the inland/central NSW dairy region, while the eight northern Victoria TMR farms produced 6 per cent of total milk output in the northern Victoria dairy region (Dairy Australia Milk Production Reports 2023/24).

Building on the previous longitudinal study (**Economics of total mixed ration dairy feeding systems – where are the risks, 2024**), this report adds the 2023/24 financial year to help improve planning and decision-making of dairy farmers considering or operating TMR production systems.

Profit and production performance

In 2023/24, improved profitability for the TMR farms was supported by a continued strong and stable milk price and slightly lower costs per kilogram of milk solids ($/kg MS) than the previous year. Average profit and returns were similar between inland NSW and northern Victoria TMR farms.

The average profit for DFMP farms decreased compared to the previous year but remained among the highest in the eight-year analysis period. High and low farm returns were recorded in the TMR and DFMP groups and all farms recorded positive earnings before interest and tax (profit) in 2023/24.

The TMR farms managed their higher total costs to maintain profitability in a range of areas. Diluting some of the higher total costs with higher total milk production helped to lower average costs when measured per kilogram of milk solids. Increased efficiencies in labour and water use efficiency partially offset the extra costs, as well as increasing on farm feed inventory.

Preliminary greenhouse gas emissions estimates

Greenhouse gas (GHG) emissions and sequestration estimates for a small sample of TMR farms is reported for the first time providing industry and government with aggregated benchmark data on this cohort of farms to inform policy design and RD&E priorities.

Emissions profiles show that TMR farms had a greater share of their emissions contributed by methane, and in particular, methane from manure management, than grazing DFMP farms. Emissions intensity measures for northern Victorian TMR farms and inland NSW TMR farms were similar.

This preliminary GHG estimate provides valuable information for those calculating GHG emissions while also informing options for emission reduction relevant for TMR dairy production systems. The average GHG emissions estimates should not be taken as representative of the dairy industry.

About the study

This study provides dairy farmers with access to information that supports the transition of their production system to a TMR production system.

Building on the previous multi-year **study (2024)**, this report contributes another year of baseline data for TMR farms across northern Victoria and inland NSW. Farm data was collected using the Dairy Farm Monitor Project (DFMP) input spreadsheets, which provide a standardised method for evaluating dairy farm performance in Australia.

In 2023-24, a total of 14 TMR dairy farms participated – eight in northern Victoria and six in inland NSW. The TMR farms operated a range of contained facilities (freestall, loose housing and dry lots) and had all finished their transition to zero-grazing by 2022/23. Previous research has demonstrated that several years were needed to capture the advantages of new technologies or practices on farm business performance. Ho *et al.* (2012) found that the lag between the timing of the investment and reaping its benefits is an important consideration for an individual farm manager. As most of the farms are within the first few years of operating their new TMR production system, they will likely continue to find efficiencies and manage risks while navigating changes in their operating environment.

The performance of TMR farms was compared to their grazing DFMP counterparts for the relevant years and regions. The farms within the DFMP group directly grazed pasture or fodder crops as part of the lactating herd's diet providing a comparison with the zero-grazing TMR farms. Table 1 describes the different groups referred to in this project.

Average values are presented for all metrics, consistent with the way data is presented in the DFMP. The range is presented in brackets where possible and represents the middle 50 per cent of the dataset; or quartile one to quartile three. Dollar values are presented in real (adjusted for inflation) and nominal (unadjusted) where possible. Real dollar values are the nominal values converted to 2023/24 dollar equivalents by the consumer price index (CPI) to exclude the effects of inflation.

Table 1 Description of the different farm groups

Group name	Number of farms in 2023/24	Description
TMR	**14**	**Combined TMR farms; 8 northern Victoria plus 6 inland NSW TMR farms.**
Inland NSW TMR	6	Dairy farms feeding a TMR, located in inland NSW.
Nth Vic TMR	8	Dairy farms feeding a TMR, located in the northern irrigation district of Victoria.
DFMP	**30**	**Participants from northern Victoria DFMP and inland NSW DFMP groups.**
Inland NSW DFMP	6	Grazing participants in the NSW DFMP who were inland within the Southern NSW DFMP region, excluding TMR and coastal farms.
Nth Vic DFMP	24	Grazing participants in the Victorian DFMP who were in northern Victoria (northern irrigation district), excluding TMR and north-east Victoria farms.

Farm performance analysis

Physical performance

The TMR farms were larger than the DFMP farms in 2023/24, as measured by usable area and herd size (Table 2). Moving to a zero-grazing system has been associated with growing herd numbers and increasing feed intake per cow which contributed to the increasing total and per cow milk production for nearly all TMR farms.

The TMR farms fed a greater proportion of the diet from purchased feed sources and fed more purchased feed per milker than DFMP farms. The TMR farms appeared to be purchasing concentrates at a small discount compared to their respective grazing DFMP farms (Table 2).

Profitability

Gross farm income

In recent years (2021/22 to 2023/24), the TMR farms had higher gross farm income than DFMP farms. The strong and stable milk income remained a characteristic of the TMR farms, similar to the findings in the previous report. The flat milk supply achievable on the TMR farms – by moving to multiple or year-round calving, stopping grazing and minimsing climate effects, appeared to support their higher milk price offered by milk processors.

Other sources of farm income were important on TMR farms. On average, other farm income sources contributed 12 per cent to gross farm income, whereas the average on DFMP farms was 8 per cent in 2023/24. Building herds through replacements and young stock, as well as sales of other livestock and feed, were some of the activities that contributed to the higher other farm income on TMR farms.

Table 2 2023/24 average and range of physical performance for the different farm groups

Farm group	Total usable area	No. of milkers	Milk sold	Homegrown feed as % of ME consumed	Labour efficiency	Purchased feed per milker	Concentrate price
	ha	head	kg MS/cow	%	kg MS/labour unit	t DM/cow	$/t DM
TMR	**849 (529 to 1,071)**	**1042 (616 to 1,077)**	**698 (652 to 745)**	**52 (47 to 60)**	**57,799 (48,316 to 63606)**	**5.4 (4.6 to 6.1)**	**533 (511 to 558)**
Inland NSW TMR	683 (474 to 859)	762 (639 to 894)	689 (635 to 745)	51 (45 to 59)	56,930 (52,651 to 63,606)	5.1 (4.2 to 5.8)	539 (530 to 557)
Nth Vic TMR	973 (642 to 1,137)	1252 (660 to 1,87)	704 (664 to 738)	52.5 (47 to 59)	58,450 (48,151 to 60,441)	5.7 (5.2 to 6.1)	528 (503 to 557)
DFMP	**348 (166 to 407)**	**458 (254 to 513)**	**566 (508 to 632)**	**56 (46 to 66)**	**55,751 (43,849 to 69,074)**	**3.7 (2.8 to 4.6)**	**540 (479 to 605)**
Inland NSW DFMP	607 (297 to 659)	745 (408 to 1004)	588 (529 to 644)	56 (44 to 71)	50,801 (36,326 to 66,429)	3.6 (2.9 to 4.2)	549 (496 to 610)
Nth Vic DFMP	284 (158 to 405)	386 (252 to 498)	560 (504 to 644)	56 (47 to 71)	50,801 (36,326 to 68,637)	3.7 2.9 to 4.7)	537 (476 to 604)

Variable and overhead costs

There was a 38 per cent increase in total variable and overhead costs on TMR farms in 2023/24 compared to the previous year. Despite the rise in total costs, the average cost per kilogram of milk solids decreased by 15 per cent. The TMR farms produced significantly more milk (733,000 kg MS/farm compared to 263,000/farm for DFMP farms), which helped offset the increased total costs. The TMR farms have leveraged their economies of scale by producing more milk and diluting their costs when expressed per kilogram of milk solids.

The TMR farms had higher expenditure in nearly every variable cost category compared to DFMP farms in 2023/24. This contributed to about $1.00/kgMS higher variable costs on the TMR farms (Table 3). The notable exceptions were lower expenditure on fodder purchases and a build up of feed inventory change that lowered their variable costs. The TMR farms stored large amounts of homegrown feed to carry into the coming year, which helped lower variable costs by 4 per cent from the previous year. Overhead costs ($/kg MS) on the TMR farms were higher in every cost category compared to the DFMP farms in 2023/24 (Table 3).

Profit and returns

Average profit measured by earnings before interest and tax per kg MS for the TMR farms was the highest in the eight-year analysis period (Figure 1). While the inland NSW TMR farms decreased their profit position in 2023/24 from the previous year, average TMR profit increased due to the strong performance of the northern Victoria TMR farms. Regardless of the slightly different trajectories for the inland NSW and northern Victoria TMR groups, the profit and returns were similar in 2023/24.

The gap in profit between the average TMR and DFMP groups narrowed in 2023/24 compared to divergence observed in the previous two years (Figure 1). The sustained high gross farm income and the slightly lower variable and overhead costs per kilogram of milk solids on TMR farms, lifted the average profit and returns in 2023/24. For the DFMP farms, average profit and returns decreased in 2023/24, from 2022/23 yet remained among the highest recorded in the eight years.

All six farm groups showed a range in performance, meaning not all farms within a group performed equally well. Some farms in the TMR and DFMP groups achieved high returns, indicating strong financial performance. The feeding system alone doesn't determine profitability. Other factors – like management practices, herd health, labour efficiency, and market conditions – also play a major role.

Figure 1 Average earnings before interest and tax for the TMR and DFMP farms

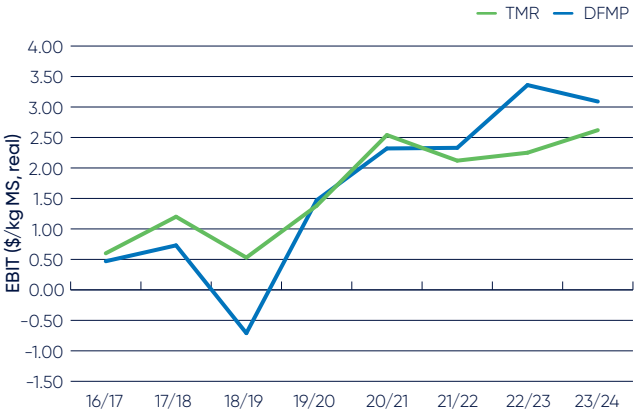


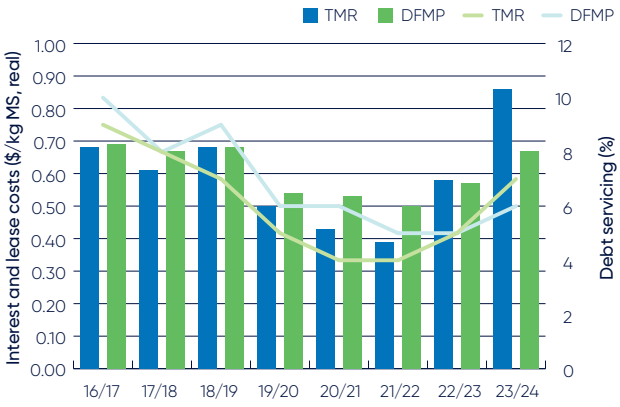
Table 3 2023/24 average and range of financial performance for the different farm groups

Farm group	Gross farm income	Variable costs	Overhead costs	Earnings before interest and tax	Return on total assets	Net farm income	Return on equity
	$/kg MS	$/kg MS	$/kg MS	$/kg MS	%	$/kg MS	%
TMR	**11.79 (10.98 to 11.76)**	**6.06 (5.60 to 6.54)**	**3.11 (2.64 to 3.44)**	**2.62 (1.76 to 3.37)**	**8.0 (5.9 to 10.6)**	**1.75 (1.05 to 2.71)**	**9.4 (5.5 to 13.9)**
Inland NSW TMR	11.81 (11.32 to 11.79)	5.98 (5.64 to 6.48)	3.05 (2.64 to 3.41)	2.78 (2.21 to 3.28)	8.4 (7.0 to 11.1)	1.73 (1.43 to 2.48)	10.3 (8.2 to 14.1)
Nth Vic TMR	11.77 (10.94 to 11.47)	6.12 (5.68 to 6.49)	3.15 (2.84 to 3.30)	2.50 (1.7 to 3.34)	7.7 (5.3 to 10.2)	1.77 (0.93 to 2.86)	8.8 (4.5 to 13.4)
DFMP	**11.00 (10.51 to 11.15)**	**5.08 (4.47 to 5.59)**	**2.84 (2.33 to 3.03)**	**3.09 (2.57 to 3.61)**	**8.0 (5.8 to 10.1)**	**2.41 (1.76 to 2.96)**	**10.0 (6.3 to 11.5)**
Inland NSW DFMP	11.83 (10.85 to 12.18)	5.26 (4.76 to 5.73)	3.31 (2.65 to 3.67)	3.26 (0.57 to 0.67)	9.1 (7.1 to 10.8)	2.79 (2.52 to 2.94)	10.5 (10.0 to 11.8)
Nth Vic DFMP	10.79 (10.45 to 11.10)	5.03 (4.44 to 5.55)	2.72 (2.30 to 2.95)	3.04 (2.53 to 3.40)	7.7 (5.7 to 9.3)	2.32 (1.71 to 2.98)	9.9 (6.1 to 10.5)

Average interest and lease costs in 2023/24 more than doubled for the TMR farms since 2021/22, underpinned by more borrowings and higher interest rates (Figure 2). The DFMP farms also had increasing average interest and lease costs for the same period (36 per cent increase). Aided by strong cash flows, many DFMP farms made capital purchases for land, buildings and infrastructure with part of this funded by borrowings.

The proportion of gross farm income absorbed by interest and lease costs was 7.3 per cent on TMR farms in 2023/24, an increase from 4.8 per cent the previous year (debt servicing ratio for the DFMP farms was 6.1 per cent in 2023/24, up from 5.0 per cent in 2022/23). This illustrates the impact of rising interest and lease costs on farm profitability, especially for those farms who have used borrowings to fund capital investments.

Figure 2 Average interest and lease costs (left hand side axis) and debt servicing (right hand side axis) for the TMR and DFMP farms

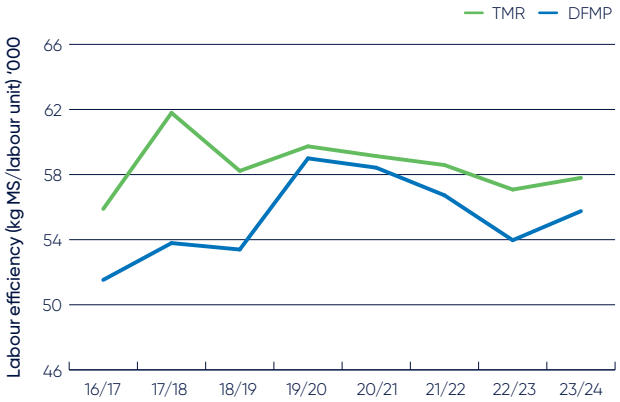


Higher efficiencies helped manage higher total costs on TMR farms

The TMR farms managed their higher total costs, while maintaining profitability, due to increased labour efficiency, water use efficiency and higher total milk production – as described above.

Labour efficiency (kg MS/full time equivalent) continued to be an area where the TMR farms were more efficient than DFMP farms in 2023/24 (Figure 3). The TMR farms had greater demand for labour on average than grazing DFMP farms (12.5 and 4.8 full time equivalent in 2023/24, respectively) due to their larger herds, higher total milk production and additional operations associated with housing cows. While this increased the total costs of labour, and the TMR farms had average higher labour costs per hour, the higher labour efficiency kept the labour costs ($/kg MS) similar between the TMR and DFMP groups in 2023/24.

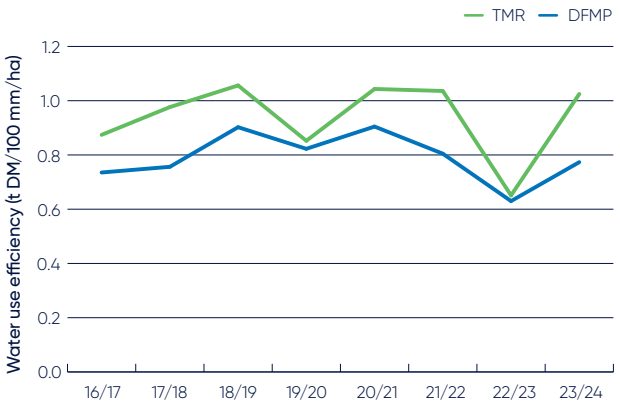
Figure 3 Average labour efficiency for the TMR and DFMP farms



Average water use efficiency (WUE; t DM/100 mm/ha) was higher on TMR farms than DFMP farms across the analysis period (Figure 4). The TMR farms produced more tonnes of dry matter per unit of water applied (rainfall and irrigation) than grazing DFMP farms.

In 2023/24, the good seasonal conditions and irrigation water availability supported more efficient water use compared to the wet spring 2022 conditions for both groups. These conditions helped the TMR farms conserve large tonnages of homegrown feed in 2023/24, with all but one inland NSW TMR farm storing more feed at the end of the year than at the start of 2023/24. This was reflected in the larger feed and water inventory change of -$0.56/kg MS for TMR farms compared to -$0.22/kg MS for the grazing DFMP farms. Water inventory change contributed around 3% to feed and water inventory change. A negative feed and water inventory change decreases feed costs.

Figure 4 Average water use efficiency for the TMR and DFMP farms (note that water use efficiency was not reported for DFMP farms in 2016/17)



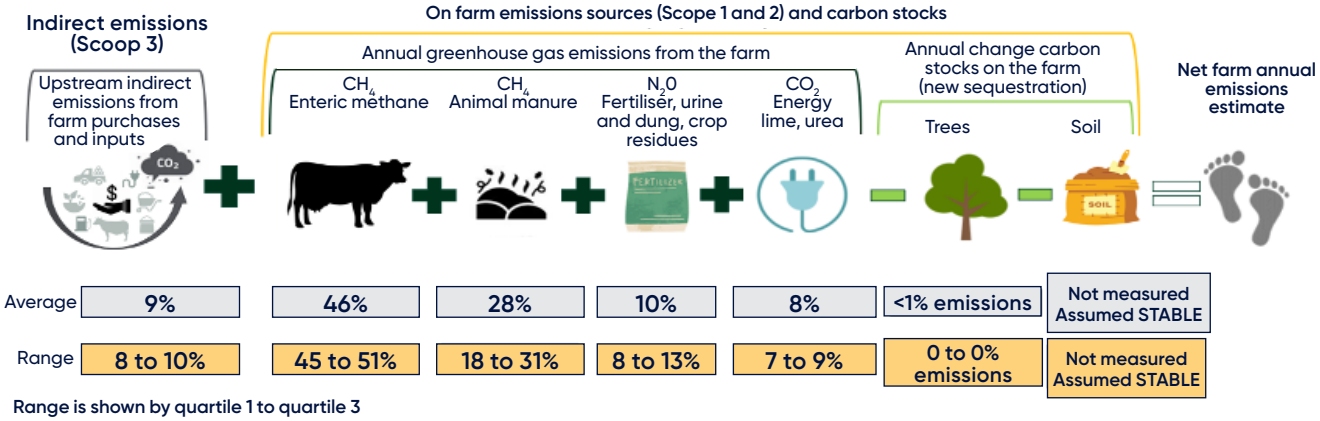
Preliminary greenhouse gas emissions estimates

The main agricultural greenhouse gas (GHG) emissions are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). The Australian Dairy Carbon Calculator (ADCC) Manual (2022) provides descriptions of GHG emissions and their potencies. Net annual farm emissions take into consideration the emissions generated on the farm – often referred to as Scope 1 and 2 emissions, upstream emission sources – often referred to as Scope 3 emissions, and the annual change in carbon stocks for trees (Figure 5).

The ADCC was used to estimate Scope 1, 2 and 3 emissions for the TMR and DFMP farms. The underlying assumptions of the ADCC are based on a typical farm and are not always sensitive enough to reflect the varying on-farm practices of individual farms.

For example, the calculator assumes consistent milk conversion efficiency (i.e. kg MS/ kg dry matter intake) irrespective of whether the farm is feeding a TMR or grazing-based system. As milk production per cow increases, the calculator assumes that intakes have needed to increase to achieve higher milk production, thus increasing emissions. This may disadvantage highly efficient animals and herds that can produce more milk without needing to increase intakes to achieve this. Due to the size and nature of the dataset, the results should not be taken as representative of the dairy industry. Historic data from northern Victorian TMR farms is presented to demonstrate the change over time. NSW data is only available for 2023/24.

Figure 5 The sources and types of farm emissions for TMR farms, adapted from Agriculture Victoria's On-Farm Emission Action Plan Pilot. Percentages reflect averages and range from 2023/24 financial year for the 14 TMR farms



Range is shown by quartile 1 to quartile 3

Group comparison

Larger farms within the northern Victorian TMR group led to higher average net emissions compared to the inland NSW TMR farms (Table 4). However, the emissions intensity (EI; GHG emissions per unit of milk, usually milk solids or fat and protein-corrected milk (FPCM)) measures allocated to milk production were relatively similar for both groups. This was expected, as although net farm emissions were sensitive to herd size, the increased total milk production that was also associated with higher herd numbers kept EI relatively stable. This suggests that farm herd size does not automatically correlate with GHG efficiency.

The larger herd sizes and milk production on the TMR farms contributed to the higher average net emissions compared to DFMP farms in 2023/24. More emissions from manure management sources also contributed to the higher net emissions. Greater deposition and collection of manure for TMR farms (compared to DFMP farms where most manure is deposited onto pastures), resulted in greater manure-derived emissions and thus higher EI for the TMR farms.

Emissions intensity measures for milk production (kg CO_2-e/kg MS and kg CO_2-e/kg FPCM) are based on allocating a proportion of emissions to milk production then dividing by either tonnes of milk solids (t MS) or tonnes of fat and protein-corrected milk (t FPCM). Emissions intensity for meat production is based on allocating a proportion of net emissions (kilograms) to meat production and dividing by total kilograms of liveweight sold (kg lwt). The percentage of net emissions allocated to milk was approximately 90 per cent for all groups.

Table 4 2023/24 average and range of net emissions and emissions intensity (EI) measures for the different farm groups

Farm group	Dataset size	Net emissions	EI - milk	EI - milk	EI - meat
	Number of farms	t CO_2-e/farm	kg CO_2-e/kg MS	kg CO_2-e/kg FPCM	kg CO_2-e/kg lwt
TMR	**14**	**13,600** (9,300 to 14,600)	**16.2 (14.3 to 17.8)**	**1.2 (1.0 to 1.3)**	**7.6 (5.6 to 7.5)**
Inland NSW TMR	6	9,900 (6,900 to 13,500)	15.5 (14 to 16.1)	1.1 (1.0 to 1.1)	6.5 (5.5 to 7.5)
Nth Vic TMR	8	16,400 (9,500 to 18,400)	16.8 (14.7 to 18.3)	1.2 (1.0 to 1.3)	8.4 (5.9 to 7.0)
DFMP	**30**	**3,700 (1,900 to 4,800)**	**12.4 (11.7 to 13)**	**0.9 (0.8 to 0.9)**	**5.4 (4.4 to 5.7)**
Inland NSW DFMP	6	6,200 (2,900 to 9,600)	12.6 (12.4 to 13.1)	0.9 (0.9 to 0.9)	5.9 (5.1 to 6)
Nth Vic DFMP	24	3,100 (1,800 to 4,600)	12.3 (11.6 to 12.9)	0.9 (0.8 to 0.9)	5.2 (4.4 to 5.4)

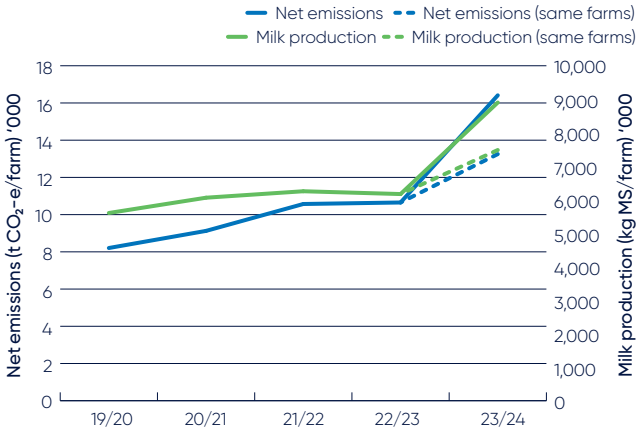
Average and range (shown by quartile 1 to quartile 3 in brackets) are provided.

Recent changes in northern Victoria TMR farm emissions

The transition from pasture-grazing to zero-grazing dairy production systems, increasing total milk production and change in on-farm manure management have increased net GHG emissions for the northern Victorian TMR farms (Figure 6). All farms in the northern Victorian TMR group had made their transition to zero-grazing by 2022/23. Annual average total milk production grew across the analysis period, as both average herd size and milk production per cow increased.

A new farm joined the northern Victoria TMR group in 2023/24 which contributed to a steep increase in net emissions and total milk production in that year – solid lines in Figure 6. When this farm was excluded from the average in 2023/24, the average net emissions and total milk production increased but not to the same extent – narrow-dotted line in Figure 6.

Figure 6 Average net emissions and milk production for the northern Victorian TMR farms between 2019/20 and 2023/24



Methane emissions – enteric and manure management

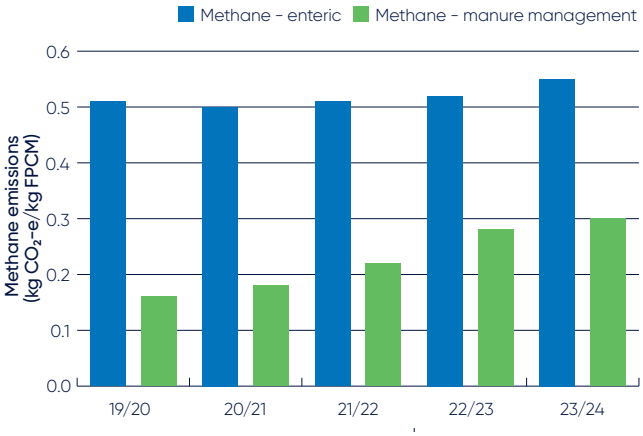
The single largest contributing source of greenhouse gas emissions on dairy farms is from methane – both enteric (produced from rumination) and manure management (produced from treatment and storage of manure) sources. Over the five years, enteric methane per kilogram of milk produced remained steady, while methane from manure management increased on the northern Victorian TMR farms (Figure 7).

The main factor affecting methane emissions from manure sources was the amount of manure produced and the proportion that decomposed anaerobically. As TMR farms had larger herd sizes and greater manure stored under anaerobic conditions, this contributed to the higher net emissions and emissions intensity compared to DFMP farms.

Decomposing manure under anaerobic conditions (i.e. in the absence of oxygen) during storage and treatment produces methane. For TMR production systems, these conditions occur readily when large numbers of animals are in contained areas, and the manure is captured in a liquid-based system such as flushing into a pond or lagoon. A form of solids entrapment prior to the effluent entering the pond or lagoon system reduces the proportion that decomposes anaerobically. The ADCC assumes that 20 per cent of solids decomposed aerobically while the remaining 80 per cent of effluent progresses to the pond or lagoon system (**DCCEEW 2024**). When manure solids are separated and stored prior to entering the liquid storage facility (e.g. in heaps or piles) or when it is deposited on pastures, it tends to decompose under more aerobic conditions and relatively less methane is produced.

The third edition **National Guidelines Dairy Feedpads and Contained Housing (2024)** provide recommended management practices suited to TMR farms and identify management options to reduce anaerobic digestion of manure solids.

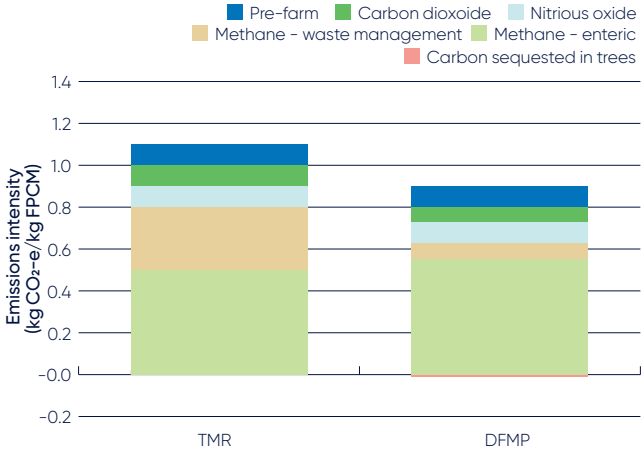
Figure 7 Average methane emissions from enteric and manure management sources on northern Victorian TMR farms



Emissions intensity

Figure 8 separates the emission sources for the TMR and grazing DFMP groups. The emissions from manure management sources were the main contributor to the higher average EI (kg CO_2-e/kg FPCM) for the TMR farms compared to the DFMP farms. The emissions from the other sources were similar. Tree sequestration contributed less than one per cent to net emissions for TMR farms and around one per cent for grazing based DFMP farms, on average.

Figure 8 Average emissions intensity (kg CO_2-e/kg FPCM) in 2023/24 for the TMR farms and grazing DFMP farms



Emissions abatement actions

The TMR farms selected areas of emission abatement from a list of 17 actions during the data collection phase of the project. All TMR farms adopted at least seven actions with two in common; feeding a high dietary fat supplement and actively balancing the energy to protein ratio of the milking herd's diet. Other common actions included renewable energy generation, extended lactation and strategic use of nitrogen fertiliser. Some of the newer emission-reduction technologies have not yet been adopted by farms in either the TMR and DFMP groups, such as covered ponds.

GHG emissions summary

This analysis is the first time that GHG estimates have been reported for this cohort of TMR farms, providing valuable information on the underlying assumptions for those calculating GHG emissions for dairy farms. It will also help to inform emission reduction options relevant for these dairy farms. The data presented is preliminary and should not be interpreted as representative of the entire dairy industry.

The differences observed in EI between grazing and zero-grazing production systems were mostly due to the greater contribution of emissions from manure management sources. Adopting and commercialising technologies from dairy and other agriculture industries have the potential to reduce emissions from these sources. Continued monitoring and data collection will provide the crucial insights into the factors influencing GHG emissions on TMR farms and contribute to the ongoing efforts to achieve targets set in the Australia Dairy Sustainability Framework.

Appendix

Table A1 TMR farms - average farm income, costs and profit per kilogram of milk solids

Income						
	Milk income net		All other farm income		Gross farm income	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	5.50	6.68	0.72	0.88	6.22	7.56
2017/18	5.99	7.15	0.84	1.01	6.84	8.16
2018/19	7.00	8.25	1.04	1.22	8.04	9.47
2019/20	7.54	8.77	1.08	1.25	8.62	10.02
2020/21	7.67	8.78	1.15	1.32	8.82	10.11
2021/22	7.99	8.76	1.79	1.96	9.77	10.72
2022/23	10.10	10.51	1.55	1.61	11.65	12.12
2023/24	10.35	10.35	1.43	1.43	11.79	11.79

Variable costs										
	Herd and shed costs		Homegrown feed costs		Purchased feed costs		Feed and water inventory change		Total variable costs	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	0.58	0.70	1.16	1.41	2.29	2.78	-0.54	-0.66	3.49	4.24
2017/18	0.54	0.64	1.09	1.30	2.12	2.53	0.04	0.05	3.79	4.52
2018/19	0.53	0.62	1.76	2.07	2.96	3.49	0.01	0.01	5.26	6.19
2019/20	0.60	0.70	1.13	1.33	3.63	4.23	-0.18	-0.21	5.18	6.02
2020/21	0.60	0.69	1.45	1.68	2.85	3.26	-0.68	-0.78	4.21	4.82
2021/22	0.70	0.77	1.64	1.81	3.16	3.46	-0.51	-0.56	4.98	5.47
2022/23	0.75	0.78	1.82	1.91	3.46	3.60	0.27	0.28	6.30	6.56
2023/24	0.71	0.71	2.17	2.17	3.74	3.74	-0.56	-0.56	6.06	6.06

Overhead costs							Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease costs		Net farm income		RoTA %	RoE %
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		
2016/17	1.55	1.89	0.68	0.83	2.24	2.72	0.50	0.60	0.56	0.68	-0.06	-0.08	2.0	-0.3
2017/18	1.40	1.67	0.64	0.76	2.04	2.44	1.01	1.20	0.51	0.61	0.49	0.59	4.8	5.1
2018/19	1.62	1.91	0.71	0.84	2.33	2.75	0.45	0.53	0.58	0.68	-0.13	-0.15	2.4	0.9
2019/20	1.64	1.91	0.61	0.71	2.25	2.62	1.19	1.38	0.43	0.50	0.76	0.89	5.5	6.2
2020/21	1.77	2.03	0.62	0.71	2.39	2.74	2.22	2.54	0.38	0.43	1.84	2.11	8.7	12.0
2021/22	2.07	2.27	0.78	0.86	2.85	3.13	1.94	2.12	0.36	0.39	1.58	1.73	6.1	7.6
2022/23	2.36	2.45	0.83	0.86	3.18	3.31	2.16	2.25	0.56	0.58	1.61	1.67	7.5	9.5
2023/24	2.32	2.32	0.79	0.79	3.11	3.11	2.62	2.62	0.86	0.86	1.75	1.75	8.0	9.4

Note: 'Real' dollar values are the nominal values converted to 2023/24 dollar equivalents by the consumer price index (CPI) to allow for inflation.

Table B1 TMR farms – average farm physical information

	Total usable area	Number of milkers	Milk sold	Homegrown feed as % of ME consumed	Water use efficiciency	Labour efficiency	Purchased feed per milker	Concentrate price	Concentrate price
Year	ha	head	kg MS/cow	%	t DM/ 100mm/ha	kg MS/ labour unit	t DM/cow	Nominal (/t DM)	Real (/t DM)
2016/17	535	608	598	56	0.9	55,889	3.9	365	444
2017/18	547	665	636	53	1.0	61,791	4.1	368	439
2018/19	592	675	642	n/a	1.1	58,225	3.8	515	607
2019/20	601	726	662	n/a	0.9	59,735	5.5	477	554
2020/21	613	757	669	41	1.0	59,135	5.7	401	459
2021/22	625	776	657	48	1.0	58,585	5.3	453	497
2022/23	656	836	626	50	0.7	57,078	5.4	526	548
2023/24	849	1042	698	52	1.0	57,799	5.4	533	533

Table A2 Inland NSW TMR farms - average farm income, costs and profit per kilogram of milk solids

Income						
	Milk income net		All other farm income		Gross farm income	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	6.23	7.58	1.28	1.56	7.52	9.14
2017/18	6.27	7.48	0.64	0.77	6.91	8.25
2018/19	7.50	8.84	1.26	1.49	8.77	10.32
2019/20	8.21	9.55	1.48	1.72	9.69	11.27
2020/21	8.41	9.64	1.46	1.67	9.87	11.31
2021/22	8.55	9.38	1.92	2.11	10.47	11.49
2022/23	10.62	11.06	1.56	1.62	12.18	12.68
2023/24	10.70	10.70	1.11	1.11	11.81	11.81

Variable costs										
	Herd and shed costs		Homegrown feed costs		Purchased feed costs		Feed and water inventory change		Total variable costs	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	0.78	0.95	0.97	1.18	2.64	3.21	-0.19	-0.23	4.21	5.11
2017/18	0.67	0.79	1.19	1.42	2.49	2.97	-0.19	-0.22	4.15	4.96
2018/19	0.62	0.73	1.80	2.12	3.36	3.96	0.02	0.02	5.80	6.83
2019/20	0.68	0.79	1.02	1.18	4.45	5.18	-0.29	-0.34	5.85	6.80
2020/21	0.72	0.83	1.38	1.58	3.09	3.54	-0.68	-0.78	4.52	5.17
2021/22	0.72	0.79	1.56	1.71	3.31	3.63	-0.45	-0.49	5.14	5.64
2022/23	0.78	0.81	1.64	1.70	3.59	3.74	0.24	0.25	6.25	6.51
2023/24	0.69	0.69	2.03	2.03	3.59	3.59	-0.33	-0.33	5.98	5.98

Overhead costs							Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease costs		Net farm income		RoTA %	RoE %
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		
2016/17	1.62	1.96	0.88	1.07	2.49	3.03	0.82	1.00	0.68	0.82	0.14	0.17	3.0	1.4
2017/18	1.36	1.62	0.85	1.02	2.22	2.64	0.54	0.65	0.65	0.77	-0.11	-0.13	3.4	3.4
2018/19	1.80	2.11	1.04	1.23	2.84	3.34	0.12	0.15	0.77	0.90	-0.64	-0.76	1.6	0.0
2019/20	1.88	2.19	0.77	0.90	2.65	3.08	1.19	1.38	0.50	0.58	0.69	0.80	5.8	6.7
2020/21	2.08	2.39	0.78	0.89	2.86	3.28	2.49	2.86	0.40	0.46	2.09	2.39	8.8	11.8
2021/22	2.33	2.56	0.89	0.98	3.22	3.54	2.11	2.31	0.43	0.47	1.68	1.84	6.2	7.4
2022/23	2.30	2.39	0.81	0.84	3.11	3.23	2.83	2.94	0.67	0.70	2.15	2.24	8.7	11.8
2023/24	2.21	2.21	0.84	0.84	3.05	3.05	2.78	2.78	1.05	1.05	1.73	1.73	8.4	10.3

Note: 'Real' dollar values are the nominal values converted to 2023/24 dollar equivalents by the consumer price index (CPI) to allow for inflation.

Table B2 Inland NSW TMR farms – average farm physical information

	Total usable area	Number of milkers	Milk sold	Homegrown feed as % of ME consumed	Water use efficiciency	Labour efficiency	Purchased feed per milker	Concentrate price	Concentrate price
Year	ha	head	kg MS/cow	%	t DM/ 100mm/ha	kg MS/ labour unit	t DM/cow	Nominal (/t DM)	Real (/t DM)
2016/17	345	524	553	53	1.0	47,354	4.8	350	426
2017/18	416	575	565	54	1.0	51,968	4.2	349	417
2018/19	485	496	621	n/a	n/a	42,483	3.6	523	616
2019/20	496	578	653	n/a	n/a	47,764	6.0	492	572
2020/21	496	579	653	38	1.0	46,664	6.0	402	461
2021/22	523	595	645	45	1.0	46,203	5.7	455	499
2022/23	593	721	603	52	0.6	52,691	5.4	514	535
2023/24	683	762	689	51	1.0	56,930	5.1	539	539

Table A3 Northern Victoria TMR farms - average farm income, costs and profit per kilogram of milk solids

Income						
	Milk income net		All other farm income		Gross farm income	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	5.31	6.46	0.58	0.71	5.89	7.17
2017/18	5.92	7.07	0.89	1.07	6.82	8.13
2018/19	6.72	7.91	0.91	1.07	7.63	8.98
2019/20	7.04	8.18	0.77	0.90	7.81	9.09
2020/21	7.11	8.15	0.93	1.06	8.04	9.21
2021/22	7.56	8.30	1.69	1.85	9.25	10.15
2022/23	9.71	10.11	1.54	1.60	11.24	11.70
2023/24	10.09	10.09	1.68	1.68	11.77	11.77

Variable costs										
	Herd and shed costs		Homegrown feed costs		Purchased feed costs		Feed and water inventory change		Total variable costs	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	0.53	0.64	1.20	1.46	2.20	2.68	-0.63	-0.76	3.31	4.02
2017/18	0.51	0.60	1.06	1.27	2.03	2.42	0.10	0.12	3.70	4.41
2018/19	0.47	0.55	1.74	2.05	2.73	3.22	0.00	0.00	4.94	5.82
2019/20	0.54	0.63	1.21	1.40	3.02	3.51	-0.10	-0.12	4.67	5.43
2020/21	0.51	0.58	1.49	1.71	2.66	3.05	-0.68	-0.78	3.98	4.56
2021/22	0.69	0.75	1.69	1.86	3.04	3.34	-0.55	-0.60	4.87	5.34
2022/23	0.72	0.75	1.97	2.05	3.35	3.49	0.30	0.31	6.33	6.59
2023/24	0.73	0.73	2.27	2.27	3.85	3.85	-0.73	-0.73	6.12	6.12

Overhead costs							Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease costs		Net farm income		RoTA %	RoE %
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		
2016/17	1.54	1.87	0.63	0.77	2.17	2.64	0.42	0.51	0.53	0.65	-0.12	-0.14	1.8	-0.7
2017/18	1.41	1.68	0.59	0.70	2.00	2.38	1.12	1.34	0.48	0.57	0.64	0.76	5.2	5.5
2018/19	1.52	1.80	0.52	0.61	2.04	2.41	0.64	0.75	0.47	0.55	0.17	0.20	2.9	1.3
2019/20	1.46	1.70	0.49	0.58	1.95	2.27	1.19	1.38	0.37	0.43	0.82	0.95	5.2	5.7
2020/21	1.54	1.77	0.50	0.57	2.04	2.34	2.02	2.31	0.36	0.41	1.66	1.90	8.5	12.3
2021/22	1.88	2.06	0.70	0.77	2.58	2.83	1.80	1.98	0.30	0.33	1.50	1.65	6.1	7.7
2022/23	2.40	2.50	0.84	0.87	3.24	3.37	1.67	1.74	0.47	0.49	1.19	1.24	6.6	7.7
2023/24	2.40	2.40	0.75	0.75	3.15	3.15	2.50	2.50	0.72	0.72	1.77	1.77	7.7	8.8

Note: 'Real' dollar values are the nominal values converted to 2023/24 dollar equivalents by the consumer price index (CPI) to allow for inflation.

Table B3 Northern Victoria TMR farms – average farm physical information

	Total usable area	Number of milkers	Milk sold	Homegrown feed as % of ME consumed	Water use efficiciency	Labour efficiency	Purchased feed per milker	Concentrate price	Concentrate price
Year	ha	head	kg MS/cow	%	t DM/ 100mm/ha	kg MS/ labour unit	t DM/cow	Nominal (/t DM)	Real (/t DM)
2016/17	583	629	609	56	0.8	58,023	3.7	369	448
2017/18	580	687	653	53	1.0	64,247	4.1	373	445
2018/19	653	777	653	58	1.2	67,220	4.0	511	602
2019/20	679	837	668	46	0.9	68,713	5.1	466	542
2020/21	701	890	681	43	1.1	68,488	5.4	399	457
2021/22	701	913	666	50	1.1	67,872	5.0	452	496
2022/23	704	922	643	49	0.7	60,367	5.3	536	558
2023/24	973	1252	704	53	1.0	58,450	5.7	528	528

Table A4 DFMP farms - average farm income, costs and profit per kilogram of milk solids

Income						
	Milk income net		All other farm income		Gross farm income	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	5.29	6.44	0.68	0.83	5.97	7.26
2017/18	6.00	7.15	0.65	0.78	6.65	7.93
2018/19	6.34	7.47	0.46	0.55	6.81	8.02
2019/20	7.43	8.64	0.65	0.75	8.08	9.39
2020/21	7.24	8.29	0.80	0.91	8.04	9.20
2021/22	7.73	8.48	0.96	1.05	8.69	9.53
2022/23	10.16	10.57	0.96	0.99	11.11	11.57
2023/24	10.16	10.16	0.84	0.84	11.00	11.00

Variable costs										
	Herd and shed costs		Homegrown feed costs		Purchased feed costs		Feed and water inventory change		Total variable costs	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	0.53	0.65	1.24	1.51	1.86	2.26			3.42	4.15
2017/18	0.52	0.62	1.34	1.60	1.84	2.20	0.18	0.21	3.88	4.63
2018/19	0.51	0.61	1.84	2.17	2.66	3.14	0.15	0.18	5.22	6.15
2019/20	0.48	0.56	1.34	1.56	3.07	3.57	-0.21	-0.25	4.68	5.44
2020/21	0.49	0.56	1.49	1.71	2.19	2.51	-0.39	-0.45	3.78	4.33
2021/22	0.56	0.62	1.48	1.62	2.25	2.47	-0.22	-0.24	4.08	4.48
2022/23	0.62	0.64	1.56	1.62	3.05	3.17	-0.13	-0.13	5.07	5.28
2023/24	0.64	0.64	1.73	1.73	2.93	2.93	-0.22	-0.22	5.08	5.08

Overhead costs							Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease costs		Net farm income		RoTA %	RoE %
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		
2016/17	1.15	1.40	1.01	1.23	2.16	2.63	0.39	0.47	0.57	0.69	-0.18	-0.22	1.2	-1.9
2017/18	1.07	1.28	1.08	1.29	2.16	2.57	0.61	0.73	0.57	0.67	0.04	0.05	2.4	0.8
2018/19	1.14	1.34	1.05	1.23	2.19	2.57	-0.60	-0.71	0.57	0.68	-1.17	-1.38	-2.2	-8.3
2019/20	1.14	1.32	1.00	1.16	2.14	2.49	1.26	1.47	0.46	0.54	0.80	0.93	4.4	4.3
2020/21	1.24	1.42	0.99	1.14	2.23	2.56	2.02	2.32	0.46	0.53	1.56	1.79	7.3	10.0
2021/22	1.39	1.53	1.09	1.19	2.48	2.72	2.13	2.33	0.45	0.50	1.67	1.84	6.3	8.1
2022/23	1.61	1.68	1.23	1.28	2.81	2.93	3.23	3.36	0.55	0.57	2.68	2.79	8.7	12.7
2023/24	1.78	1.78	1.06	1.06	2.84	2.84	3.09	3.09	0.67	0.67	2.41	2.41	8.0	10.0

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 does not include feed and water inventory changes. These are included in feed costs.

Table B4 DFMP farms – average farm physical information

	Total usable area	Number of milkers	Milk sold	Homegrown feed as % of ME consumed	Water use efficiciency	Labour efficiency	Purchased feed per milker	Concentrate price	Concentrate price
Year	ha	head	kg MS/cow	%	t DM/ 100mm/ha	kg MS/ labour unit	t DM/cow	Nominal (/t DM)	Real (/t DM)
2016/17	277	385	485	58	0.7	51,529	2.6	310	377
2017/18	252	367	521	60	0.8	53,791	2.5	360	430
2018/19	282	399	524	60	0.9	53,394	2.7	526	620
2019/20	288	394	562	49	0.8	58,996	4.0	502	584
2020/21	300	398	577	54	0.9	58,423	3.3	417	477
2021/22	321	392	580	56	0.8	56,726	3.5	483	530
2022/23	312	409	545	55	0.6	53,966	3.5	550	572
2023/24	348	458	566	56	0.8	55,751	3.7	540	540

Table A5 Inland NSW DFMP farms – average farm income, costs and profit per kilogram of milk solids

Income						
	Milk income net		All other farm income		Gross farm income	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	6.02	7.32	0.86	1.04	6.87	8.35
2017/18	6.56	7.83	0.68	0.81	7.24	8.64
2018/19	6.72	7.91	0.35	0.41	7.06	8.32
2019/20	7.59	8.82	0.58	0.68	8.17	9.49
2020/21	7.86	9.01	0.94	1.08	8.81	10.09
2021/22	8.21	9.01	1.14	1.25	9.35	10.26
2022/23	10.89	11.34	1.24	1.29	12.13	12.63
2023/24	10.97	10.97	0.86	0.86	11.83	11.83

Variable costs										
	Herd and shed costs		Homegrown feed costs		Purchased feed costs		Feed and water inventory change		Total variable costs	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	0.59	0.72	1.31	1.59	1.98	2.41			3.66	4.45
2017/18	0.49	0.58	1.56	1.86	1.89	2.26	0.11	0.13	4.04	4.82
2018/19	0.44	0.52	2.16	2.54	2.60	3.06	0.28	0.33	5.70	6.71
2019/20	0.43	0.50	1.38	1.60	3.13	3.64	0.01	0.01	4.92	5.72
2020/21	0.48	0.55	1.49	1.70	2.34	2.68	-0.52	-0.60	3.79	4.34
2021/22	0.56	0.61	1.79	1.96	2.27	2.49	-0.50	-0.54	4.15	4.55
2022/23	0.70	0.73	1.95	2.03	2.98	3.11	-0.49	-0.51	5.07	5.28
2023/24	0.62	0.62	1.90	1.90	3.02	3.02	-0.28	-0.28	5.26	5.26

Overhead costs							Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease costs		Net farm income		RoTA %	RoE %
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		
2016/17	1.34	1.63	1.00	1.22	2.35	2.86	0.87	1.05	0.46	0.56	0.41	0.50	3.2	1.8
2017/18	1.28	1.53	1.08	1.29	2.36	2.82	0.84	1.00	0.48	0.57	0.36	0.43	3.3	1.7
2018/19	1.24	1.46	0.82	0.96	2.05	2.42	-0.69	-0.81	0.44	0.51	-1.13	-1.33	-3.0	-8.9
2019/20	1.27	1.48	0.89	1.04	2.17	2.52	1.08	1.26	0.41	0.47	0.67	0.78	4.2	3.2
2020/21	1.43	1.63	0.87	0.99	2.30	2.63	2.72	3.12	0.37	0.42	2.36	2.70	10.1	14.9
2021/22	1.72	1.88	0.97	1.06	2.69	2.95	2.52	2.76	0.47	0.52	2.05	2.25	7.6	9.4
2022/23	2.05	2.14	1.28	1.33	3.19	3.32	3.87	4.03	0.36	0.38	3.51	3.65	10.5	12.7
2023/24	2.19	2.19	1.12	1.12	3.31	3.31	3.26	3.26	0.48	0.48	2.79	2.79	9.1	10.5

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 does not include feed and water inventory changes. These are included in feed costs.

Table B5 Inland NSW DFMP farms – average farm physical information

	Total usable area	Number of milkers	Milk sold	Homegrown feed as % of ME consumed	Water use efficiciency	Labour efficiency	Purchased feed per milker	Concentrate price	Concentrate price
Year	ha	head	kg MS/cow	%	t DM/ 100mm/ha	kg MS/ labour unit	t DM/cow	Nominal (/t DM)	Real (/t DM)
2016/17	498	595	507	62	0.9	49,660	2.8	319	388
2017/18	419	505	524	64	0.9	48,678	2.1	378	451
2018/19	552	618	571	61	0.8	57,507	2.4	563	664
2019/20	568	597	597	47	0.7	60,620	4.2	529	615
2020/21	570	575	608	49	0.9	56,798	3.2	332	380
2021/22	590	609	611	55	0.9	54,928	4.1	453	496
2022/23	608	684	565	56	0.7	50,333	3.5	534	556
2023/24	607	745	588	56	0.9	50,801	3.6	549	549

Table A6 Northern Victoria DFMP farms – average farm income, costs and profit per kilogram of milk solids

	Income					
	Milk income net		All other farm income		Gross farm income	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	5.07	6.17	0.63	0.76	5.70	6.93
2017/18	5.83	6.95	0.64	0.77	6.47	7.72
2018/19	6.24	7.35	0.49	0.58	6.74	7.94
2019/20	7.40	8.60	0.66	0.77	8.06	9.37
2020/21	7.07	8.10	0.76	0.87	7.83	8.97
2021/22	7.61	8.35	0.91	1.00	8.52	9.35
2022/23	9.97	10.38	0.88	0.92	10.86	11.30
2023/24	9.96	9.96	0.83	0.83	10.79	10.79

	Variable costs									
	Herd and shed costs		Homegrown feed costs		Purchased feed costs		Feed and water inventory change		Total variable costs	
Year	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS	Nominal $/kgMS	Real $/kgMS
2016/17	0.52	0.63	1.22	1.48	1.82	2.22			3.35	4.07
2017/18	0.53	0.63	1.28	1.53	1.83	2.18	0.20	0.24	3.84	4.58
2018/19	0.53	0.63	1.76	2.07	2.68	3.16	0.12	0.14	5.09	6.00
2019/20	0.49	0.57	1.34	1.55	3.06	3.55	-0.26	-0.31	4.62	5.38
2020/21	0.49	0.56	1.49	1.71	2.16	2.47	-0.36	-0.41	3.78	4.33
2021/22	0.57	0.62	1.40	1.54	2.24	2.46	-0.14	-0.16	4.06	4.46
2022/23	0.59	0.62	1.46	1.52	3.05	3.18	-0.04	-0.04	5.07	5.28
2023/24	0.64	0.64	1.68	1.68	2.90	2.90	-0.20	-0.20	5.03	5.03

	Overhead costs						Profit							
	Cash overhead costs		Non-cash overhead costs		Total overhead costs		Earnings before interest and tax		Interest and lease costs		Net farm income		RoTA %	RoE %
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		
2016/17	1.09	1.33	1.02	1.24	2.11	2.56	0.25	0.30	0.60	0.73	-0.35	-0.43	0.6	-3.0
2017/18	1.01	1.21	1.08	1.29	2.10	2.50	0.54	0.64	0.59	0.70	-0.05	-0.06	2.1	0.5
2018/19	1.11	1.31	1.11	1.30	2.22	2.61	-0.58	-0.68	0.61	0.72	-1.19	-1.40	-2.0	-8.2
2019/20	1.11	1.29	1.02	1.19	2.13	2.48	1.30	1.51	0.48	0.56	0.82	0.96	4.5	4.6
2020/21	1.19	1.36	1.03	1.17	2.22	2.54	1.84	2.11	0.48	0.55	1.36	1.56	6.6	8.7
2021/22	1.31	1.44	1.12	1.22	2.43	2.67	2.03	2.22	0.45	0.49	1.58	1.73	6.0	7.8
2022/23	1.50	1.56	1.22	1.27	2.72	2.83	3.07	3.19	0.59	0.62	2.47	2.58	8.3	12.8
2023/24	1.67	1.67	1.05	1.05	2.72	2.72	3.04	3.04	0.72	0.72	2.32	2.32	7.7	9.9

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 does not include feed and water inventory changes. These are included in feed costs.

Table B6 Northern Victoria DFMP farms – average farm physical information

	Total usable area	Number of milkers	Milk sold	Homegrown feed as % of ME consumed	Water use efficiciency	Labour efficiency	Purchased feed per milker	Concentrate price	Concentrate price
Year	ha	head	kg MS/cow	%	t DM/ 100mm/ha	kg MS/ labour unit	t DM/cow	Nominal (/t DM)	Real (/t DM)
2016/17	211	321	479	57	0.7	52,090	2.6	308	374
2017/18	202	325	520	59	0.7	55,325	2.7	355	423
2018/19	211	341	511	59	0.9	52,311	2.7	517	609
2019/20	227	350	555	49	0.8	58,642	4.0	496	577
2020/21	230	352	569	56	0.9	58,847	3.4	439	503
2021/22	254	338	572	56	0.8	57,175	3.4	491	539
2022/23	238	341	540	54	0.6	54,874	3.5	554	576
2023/24	284	386	560	56	0.8	56,989	3.7	537	537

Glossary

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.

Asset
Anything managed by the farm, whether it is owned or not. Assets include owned and leased land and buildings, plant and machinery, fixtures and fittings, trading stock, farm investments (i.e. Farm Management Deposits), debtors, and cash.

Average
The sum of all values in a category divided by the number of summed values unless an exclusion has been specified.

Concentrates
Refers to feeds with a concentrated source of energy such as grains, pellets and other grain mixes.

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. Also referred to as paid labour.

Equity
Total assets minus total liabilities. Equal to the total value of capital invested in the farm business by the owner/operator(s).

Fat and protein corrected milk (FPCM)
Milk composition standardised for fat and protein to allow comparisons based on nutritional content.

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.

Full time equivalent (FTE)
Standardised labour unit. Equal to 2,400 hours a year. Calculated as 50 hours a week for 48 weeks a year.

Gross farm income
Farm income including milk sales, livestock trading, feed sales and other farm related income.

Herd costs
Cost of artificial insemination (AI) and herd tests, animal health and calf rearing.

Imputed labour cost
An allocated allowance for the cost of owner/operator, family, and sharefarmer time in the business. Also referred to as unpaid labour.

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 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.

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.

Number of milkers
Total number of cows milked for at least three months.

Overhead costs
All fixed costs incurred by the farm business that do not generally vary with the level of production. These include cash overhead costs such as employed labour and non-cash 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.

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.

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
Estimated irrigation water values on hand at the start and end of the financial year to capture water used in the production of pasture and crops.

Water use efficiency
Homegrown feed consumed and harvested per 100 mm water 'applied' (rainfall and irrigation) to the usable hectares on the farms.

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 he year.

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