Balancing dairy production and profits in northern Australia

QDAS

Queensland Dairy Accounting Scheme - 2023

Dairy Australia

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QDAS Financial and production trends – 2023

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Introduction

This report contains physical and financial data from 49 farms and includes data from the South Queensland (incorporating the Southeast-coastal and Darling Downs regions), Central Queensland and North Queensland dairy regions (Figure 1).

The steady decline in Queensland milk production has continued with production decreasing by 20 million litres from 299 million litres in 2021-22 to 279 million litres in 2022-23 (Table 1). This declining trend was consistent across all states in Australia except for Tasmania in the 2022-23 period, with Queensland contributing 3.4% of total production.

Figure 2 shows Queensland's monthly milk production for 2021-22 and 2022-23.

Despite challenging seasonal conditions with most farms recovering from floods at the start of the year, to managing drought conditions in the latter half of the year and consequently rising input costs, profitability of farms remained high for the third consecutive year.

A thorough analysis of Queensland dairy businesses can be undertaken by reviewing performance using four business traits – liquidity, profitability, solvency and efficiency. These traits cover both the financial and physical aspects of the business.

Section 1 of this report presents a summary of the key findings. Three business traits – profitability, solvency and efficiency were used to measure farm performance. The results for these traits are presented using 15 key performance indicators.

Section 2 displays the distribution of the Queensland Dairy Accounting Scheme (QDAS) data for cow numbers, land area, labour, production, income, costs and profitability.

Section 3 details the characteristics of the most profitable farms in QDAS. Production per cow, the effect of herd size and milk from home grown feed are examined.

Section 4 details the amounts fed to milking cows in each of the regional production systems.

Regional production system statistics are summarised in Section 5 and are then examined individually in Sections 6 to 9.

Appendices contain summary reports for all QDAS farms, the top 25% farms and each regional production system. The appendices also contain a list of definitions for the business traits and key performance indicators used in QDAS.

Figure 1. The location of dairy farms in Queensland

Table 1. Annual milk production for Queensland (2019-20 to 2022-23)

Year	Annual production
2019-20	315 ML
2020-21	309 ML
2021-22	299 ML
2022-23	279 ML

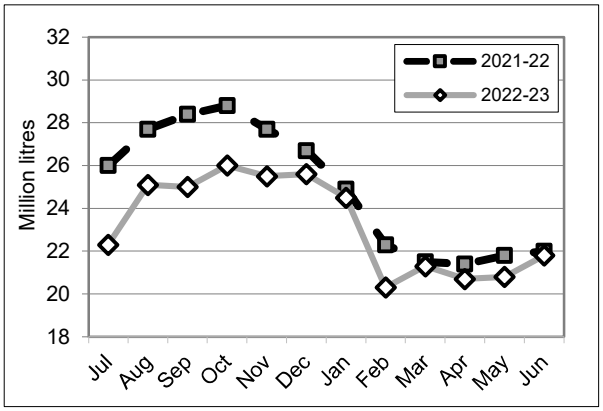

Figure 2. Queensland monthly milk production (2021-22 and 2022-23)

Objectives

The objectives of this publication are to:

- Provide QDAS participants with a summary of physical and financial data from each regional production system. This, together with their own farm reports, will give dairy businesses information that will enable them to make more informed business decisions.
- Act as a resource guide for local advisers, consultants and other industry service personnel to help understand industry trends and who wish to encourage positive change.
- Provide background material for industry participants negotiating with banks, governments, suppliers or other agents.

About QDAS

QDAS was established in 1976 to improve the understanding of business principles among advisors and dairy farmers by providing farm management accounting and analysis. Originally the basis of the analysis was an examination of the annual variable costs. The data was used to answer questions such as, "Is the production of an extra unit of milk profitable?" QDAS has evolved to now examine the business traits of profitability, solvency and efficiency but still maintains a similar aim to help dairy farmers make informed decisions based on business information.

Officers of the Department of Agriculture and Fisheries Queensland (DAF) supervise the collection and processing of data between August and November.

Farmer participation in QDAS is voluntary and free. Results and trends need to be interpreted carefully as QDAS farms have larger herds and produce more milk per farm than the Queensland average.

QDAS data is used by DairyBase, Dairy Australia's web-based farm comparative analysis tool, as their verified farm data for Queensland. Using DairyBase, farmers can calculate their financial performance and compare this to averages for Queensland (QDAS data) or verified data from other states. For more information go to: www.dairybase.com.au.

Acknowledgements

The authors wish to thank all cooperating farmers who supplied data and provided valuable feedback in discussion groups held during late 2023.

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December 2023

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1. 2022-23 Key findings

Fifteen Key Performance Indicators (KPI) are used to highlight the results for profitability, solvency and efficiency. Table 2 shows these results for 2022-23 and the preceding three years. Further to this is the calculation of these KPI for the top 25% of farms. These top farms have been identified as the farms with the highest Earnings Before Interest & Tax (EBIT) measured in dollars per cow.

EBIT highlights the amount of profit retained after paying all expenses except finance costs and taxes. These expenses include the non-cash items of depreciation and an allowance for the manager's time and skill (called imputed labour). Cattle trading profit and inventory adjustments are also included.

Table 2 has been presented to show the general industry trend. The participating farms have not been selected randomly. If using this data to compare with an individual farm situation, consideration needs to be given to the individual's position in the business lifecycle, personal goals, farming system and asset base.

Table 2. Financial and performance ratios for QDAS farms (2019-20 to 2022-23)

Business traits and indicators [1]	**Top 25%**	**QDAS average**	**Past QDAS averages**		
Profitability	**2022-23**	**2022-23**	**2021-22**	**2020-21**	**2019-20**
Return on assets managed (%)	8.0	4.2	4.0	4.1	1.3
Return on equity (%)	9.4	4.4	4.4	4.5	0.0
EBIT margin (%)	28.0	16.3	16.4	15.8	5.3
EBIT ($/cow)	2,044	983	861	787	246
Solvency					
Equity (%)	86	82	78	77	76
Debt to equity ratio	0.17	0.22	0.28	0.30	0.31
Efficiency – Capital/Finance					
Asset turnover ratio	0.33	0.32	0.30	0.32	0.30
Total liabilities per cow ($)	3,198	3,502	3,846	3,638	3,555
Interest paid/cow ($)	171	167	125	125	147
Efficiency – Productivity					
Feed related costs (c/L)	41.1	46.0	36.0	35.8	42.0
Margin over feed related costs (c/L)	46.8	42.6	36.6	34.3	26.2
Margin over feed related costs ($/cow)	3,536	2,646	2,287	2,171	1,614
Farm operating cash surplus (c/L)	33.0	23.8	23.2	21.8	14.7
Efficiency – Physical					
Production per cow (L)	7,550	6,205	6,254	6,330	6,151
Litres per labour unit					
- On farms <1.5 m L	437,274	379,992	371,426	381,284	368,138
- On farms >1.5 m L	533,417	420,727	446,724	456,011	449,845

[1] The definition of each indicator and how it is calculated can be found in Appendix 10.10

Profitability

The severe wet weather events that occurred in the previous financial year had carry-over impacts into the current year where production across the state declined significantly (Figure 2). This was followed by a below average rainfall year across most of the southern part of Queensland. Despite these challenges, profitability remained high for a third consecutive year. Table 2 shows that EBIT was $978 per cow, up from $861 per cow in 2021-22. Return on assets managed also increased from 4.0% in 2021-22 to 4.2% in 2022-23.

The increase in profitability is primarily a result of the large increase in milk income, up 16.0 c/L from the previous financial year. The increase in milk price proved timely as cattle trading profits diminished with the decline in the Australian beef market, and total feed costs were higher compared to the previous years.

Purchased feed costs were 8.5 c/L higher in 2022-23 compared to 2021-22 and total feed related costs were 10.0 c/L higher in 2022-23 compared to 2021-22. The higher income for milk outweighed the increase in feed related costs, as margin over feed related costs increased by 6.6 c/L to 46.0 c/L in 2022-23.

Detailed profit and cash flow reports can be found in Section 10 Appendices.

Production per cow

Table 2 shows that production per cow has decreased from 6,254 litres to 6,205 in 2022-23, which likely reflects some of the negative impacts of the wet weather in the south-east Queensland. The top 25% farms (sorted by EBIT per cow) achieved a production per cow of 7,550 litres in 2022-23, 1,345 litres higher than the QDAS average.

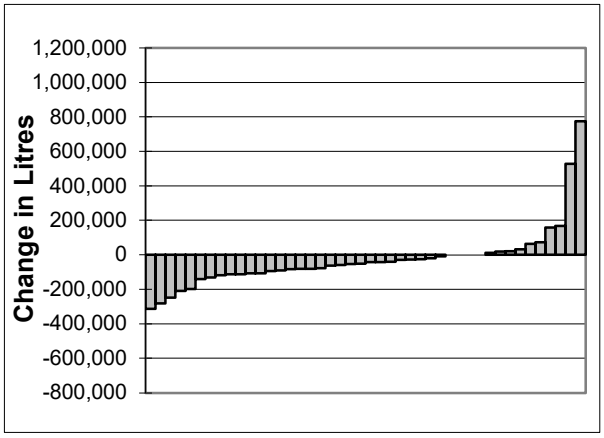


Figure 3. Change in milk production on individual farms between 2021-22 and 2022-23.

Production and prices

The average production of the QDAS farms was 1,775,778 litres in 2022-23, increasing from the 2021-22 average of 1,727,022. Figure 3 shows the changes in milk production between 2021-22 and 2022-23 for individual QDAS farms.

While the average milk production on all 49 QDAS farms was 1,775.778 litres, the production of the top 25% farms (sorted by EBIT per cow) was 2,005,038 litres. This is the result of milking 20 fewer cows that produce 1,345 litres more milk per cow.

QDAS average milk income increased by 16.0 c/L to 88.6 c/L. The increase was observed across all regions, with 100% of participating farms realising a milk income increase (Figure 4).

Figure 4 shows the changes in average milk income per litre between 2021-22 and 2022-23 for individual QDAS farms.

Consecutive good years

The 2022-23 results are pleasing and illustrate that the industry can bounce back after a challenging drought period. The average EBIT per cow from 2017-18 to 2019-20 was $253, whereas over the last three years farms were able to achieve an average EBIT per cow of $877. Feed related costs are higher in 2022-23 than 2018-19 when EBIT was as low as $113 per cow. Therefore, the higher EBIT in recent years is driven by both increases in milk income and cattle trading profit (in the previous two years).

One of the effects of the three years of low profitability is that equity dropped from 80% in 2017-18 to 76% in 2019-20, however this has increased over the past three years up to 82% in 2022-23.

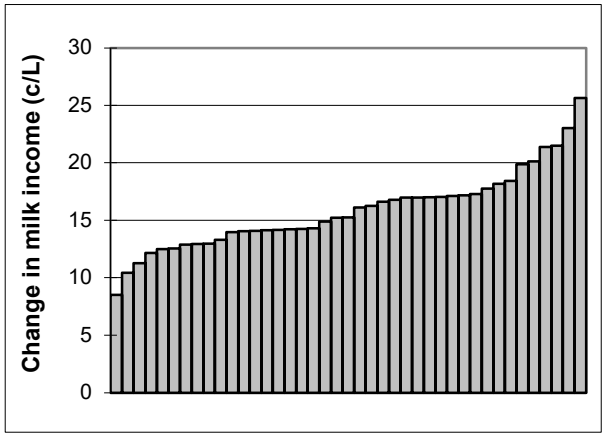


Figure 4. Change in average milk income on individual farms between 2021-22 and 2022-23.

Production costs

Table 2 shows that feed related costs increased significantly by 10.0 c/L, from 36.0 c/L in 2021-22 to 46.0 c/L in 2022-23. This was driven by purchased feed costs increasing by 8.5 c/L. Home grown feed costs increased marginally as fertiliser costs increased by 0.5 c/L, fuel & oil costs increased by 0.4 c/L and all other home-grown feed costs remaining relatively stable.

The top 25% of farms' (sorted by EBIT per cow) feed related costs were 41.1 c/L. This is 5.5 c/L less than the average of all farms. However, feed related costs were $3,102 per cow in the top 25% of farms, with the average spending only $2,854 per cow. Therefore, the top 25% group were able to generate higher profits through higher milk production per cow resulting in margin over feed related costs being 4.4 c/L higher than the average. The top 25% of farms also had lower total variable costs, 6.1 c/L less than the average and overhead costs, 4.7 c/L less than the average. These reduced costs of production and higher margin over feed related costs resulted in an operating cash surplus of 33.0 c/L for the top 25% of farms compared to 23.8 c/L for the average.

Table 3 shows the prices of major farm inputs. These prices are sourced in southern Queensland and vary depending on contractual arrangements.

Table 4 shows the cash income and cash costs of production for QDAS farms for 2022-23. Full details of QDAS average cash income and cash costs can be found in Appendix 10.1.

Table 3. Indicative prices per tonne of major farm inputs (June 2020 to June 2023)

Farm input	June 2020	June 2021	June 2022	June 2023
Concentrates				
Sorghum	$360	$300	$360	$410
Barley	$360	$325	$425	$425
Wheat	$405	$340	$440	$420
Soybean meal	$650	$778	$1025	$1035
Canola meal	$550	$540	$670	$690
14% dairy pellet	$580	$520	$620	$635
Fertiliser				
Urea	$550	$740	$1200	$940
Diesel				
Bowser price	$1.18	$1.39	$2.31	$2.08

Table 4. Cash analysis of the costs of production (2022-23)

Farm income and costs	c/L
Farm income	
Milk income (Net)	88.6
Other farm income	7.1
Total farm income	**95.7**
Production costs	
Purchased feed	34.5
Home grown feed	11.5
Total feed related costs	46.0
Herd costs	4.1
Shed costs	2.1
Employed labour	11.3
Repairs & maintenance	4.1
Other overheads	3.9
Farm working expenses	**71.9**
Farm operating cash surplus	**23.8**
Interest, principal, lease	8.5
Capital purchases (unfinanced)	4.5
Net cash flow before tax & drawings	**10.7**

Labour

Average employed labour costs for all QDAS farms was $206,574 for 2.8 paid labour units. This equates to 11.6 c/L, which is 1.7 c/L higher than in 2021-22. As farms milk more cows there are opportunities to utilise labour more effectively. Table 5 shows that farms producing less than 0.75 ML (122 cows) do so at 290,545 litres per labour unit, whereas farms producing more than 2.0 ML (513 cows) do so at 424,277 litres per labour unit.

Table 5 also shows the increase in labour used, both paid and unpaid (owner/operator), as production increases. It is not surprising that the greater than 2.0 ML group has the largest use of paid labour at 6.4 full time equivalents (FTE).

Repairs and other overheads

The QDAS average repairs and maintenance costs are $73,684 (4.1 c/L). Table 5 shows that repairs and maintenance are 6.3 c/L for the farms that produce less than 0.75 ML and 3.7 c/L for the farms that produce more than 2.0 ML of milk.

The QDAS average for other overhead costs is $69,269 (3.9 c/L). While overhead costs increase as production increases, the costs get proportionately lower per litre. Table 5 shows other overhead costs falling from 5.6 c/L to 3.4 c/L as production increases. Other overhead costs include rates, insurance, registration, office expenses, accounting, phone and internet.

Table 5. Analysis of overhead costs (2022-2023)

Overhead costs	<0.75 ML	0.75 – 1.25 ML	1.25 – 2.0 ML	>2.0 ML
Milk production (L)	587,546	968,329	1,454,042	3,588,169
Cows (milkers + dry)	122	177	265	513
Overheads				
Repairs & Maintenance ($)	37,074	34,463	73,530	133,782
Repairs & Maintenance (c/L)	6.3	3.6	5.1	3.7
Other overheads ($)	32,861	38,555	67,892	122,473
Other overheads (c/L)	5.6	4.0	4.7	3.4
Labour				
Unpaid labour (FTE)	1.3	1.5	1.6	2.1
Paid labour (FTE)	0.7	1.0	2.4	6.4
Paid labour cost ($)	47,008	68,360	165,055	476,045
Litres per labour unit	290,545	395,858	364,421	424,277

2. The distribution of QDAS cooperating farms

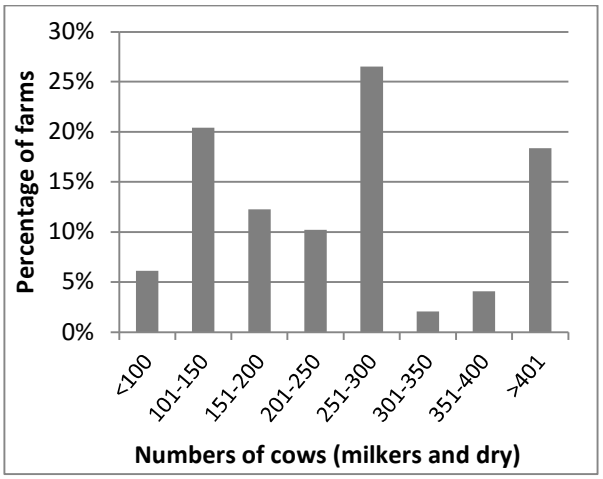


Figure 5. The distribution of QDAS farms by cow numbers

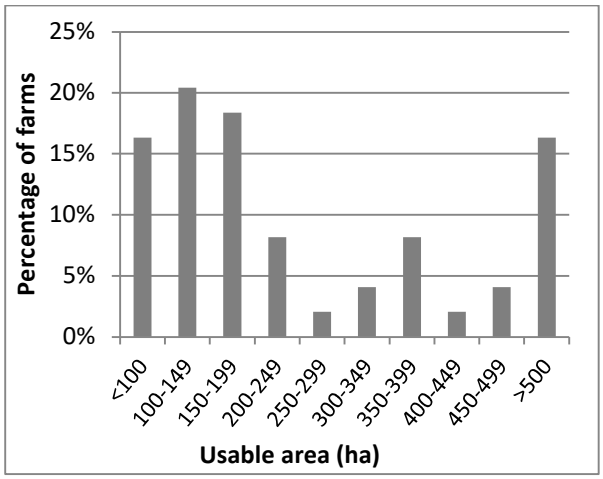


Figure 8. The distribution of QDAS farms by usable area

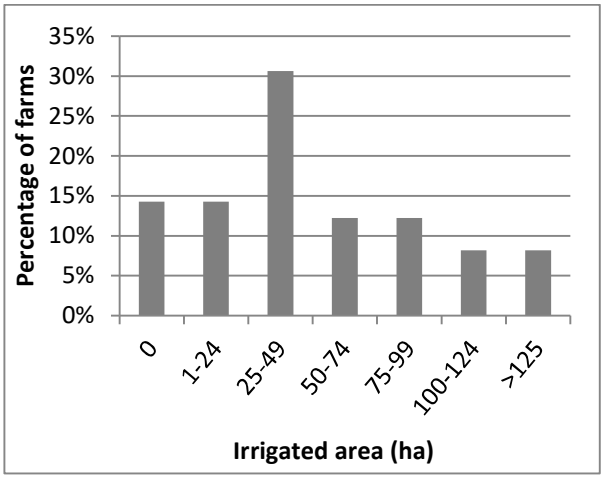


Figure 6. The distribution of QDAS farms by irrigated area

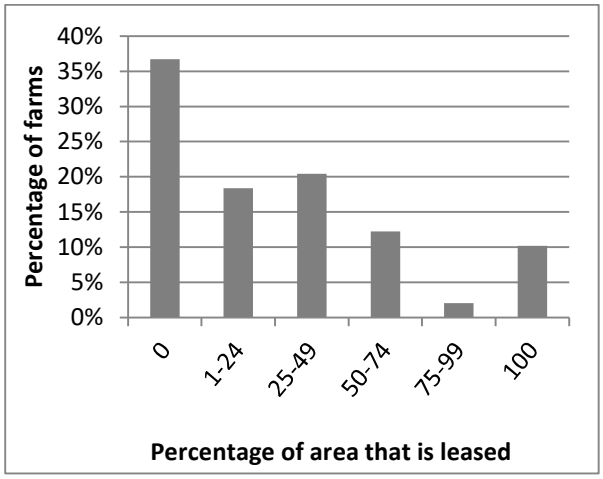


Figure 9. The distribution of QDAS farms by the percentage of total area that is leased

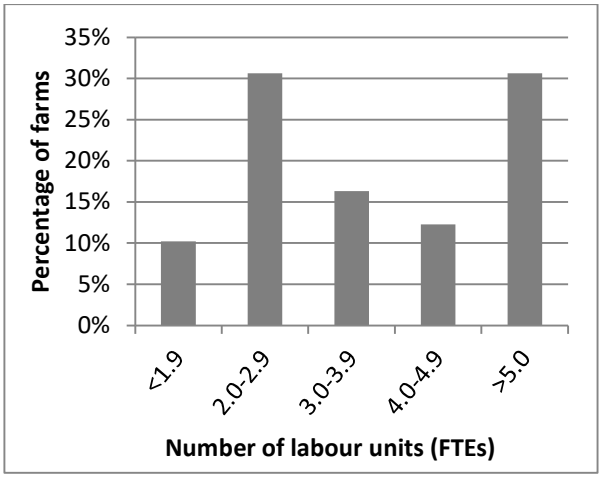


Figure 7. The distribution of QDAS farms by number of labour units

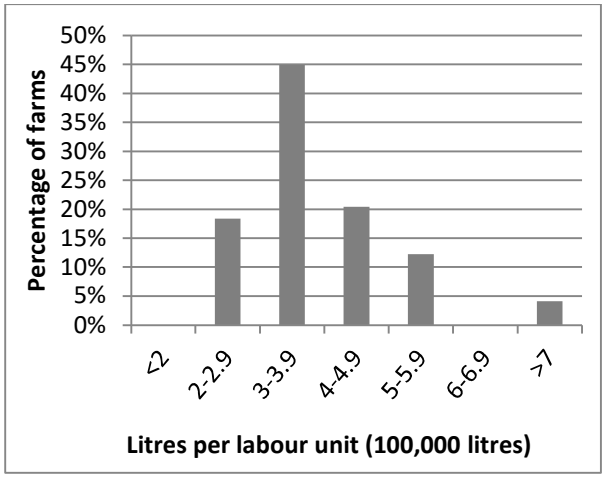


Figure 10. The distribution of QDAS farms by litres per labour unit

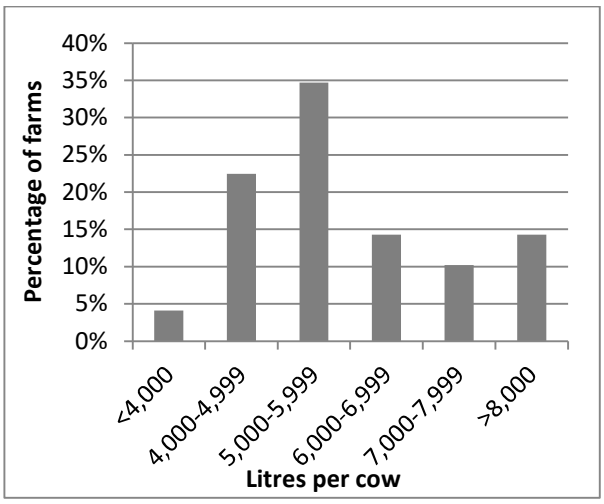


Figure 11. The distribution of QDAS farms by production per cow

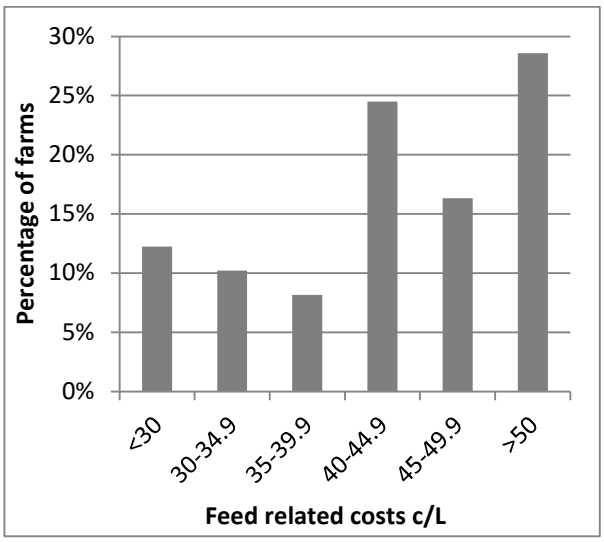


Figure 12. The distribution of QDAS farms by feed related costs

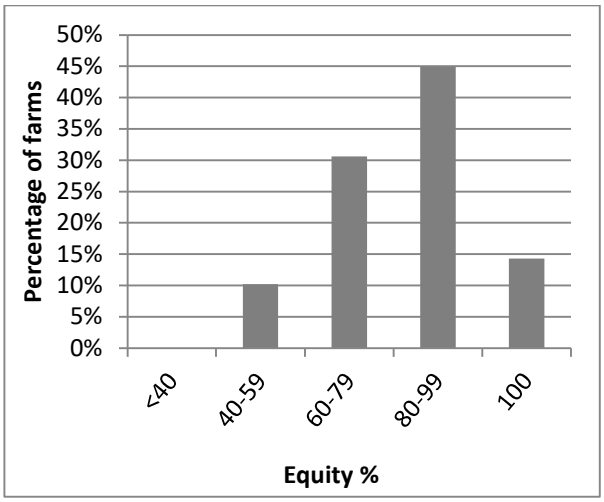


Figure 13. The distribution of QDAS farms by equity percentage

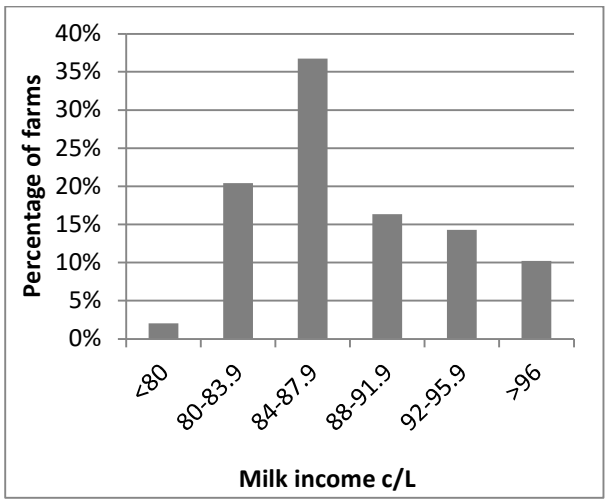


Figure 14. The distribution of QDAS farms by average milk income

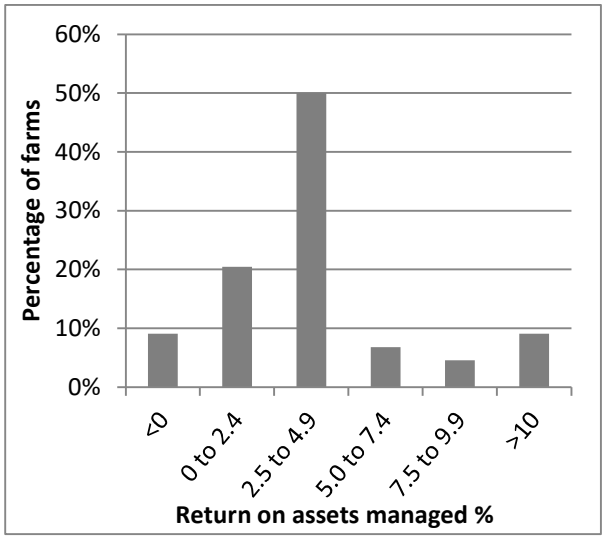


Figure 15. The distribution of QDAS farms by return on assets managed

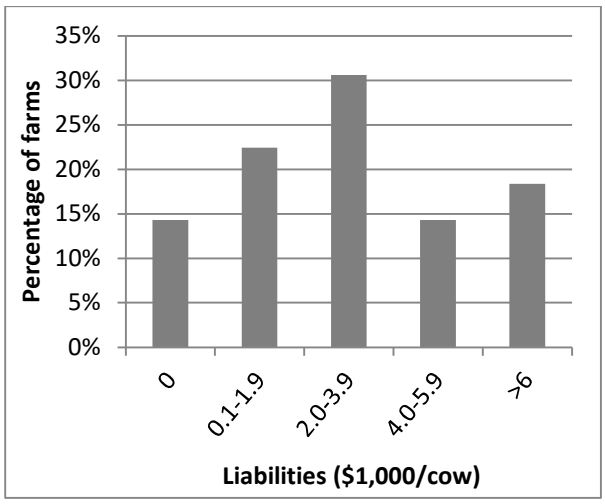


Figure 16. The distribution of QDAS farms by liabilities per cow

3. Factors affecting profitability

To investigate the factors affecting profitability, the QDAS results of the top 25% group (sorted by EBIT per cow) are compared with the results of the remaining 75% of farms (Table 6).

The higher EBIT per cow achieved by the top 25% group is directly linked to the following profit drivers:

- Higher production per cow. The top 25% group produced 1,740 litres per cow more than the remaining 75% group.
- Selling more litres of milk. The top 25% group sold 303,615 more litres of milk than the remaining 75% group. This is driven by production per cow.
- Better labour efficiency. The top 25% group produces 118,029 L more milk per labour unit than the other group.
- Higher margin over feed related costs. The top 25% group had MOFRC 5.8 c/L higher than the other group.
- Lower farm working expenses. The top 25% group had farm working expenses 14.9 c/L lower than the other group.

**Note: milk price and cattle sales were not related with higher profits in 2022-23, as both milk income (c/L) and livestock sales (c/L) were lower in the top 25% of farms (Table 6).*

Table 6. KPI for top 25% and the remaining 75% of farms (2022-23)

Profitability factors	Top 25%	Remaining 75%
Physical traits		
Cows (milkers + dry)	266	293
Farm production (L)	2,005,038	1,701,423
Efficiency - Physical		
Production per cow (L)	7,550	5,810
Milk from home grown feed (L/day)	9.9	9.1
Cows per labour unit	64	63
Litres per labour unit	486,561	368,532
Profit Analysis		
EBIT ($/cow)	2,044	671
Cash Analysis		
Milk income (c/L)	87.9	88.9
Livestock sales (c/L)	5.5	5.7
Feed related costs (c/L)	41.1	47.9
Farm working expenses (c/L)	61.1	76.0
Margin over FRC (c/L)	46.8	41.0

Production per cow

QDAS reports have always shown that farms with higher production per cow have higher profitability. Table 7 shows that EBIT per cow is highest in the 7,000 litres group, however in this financial year, farms with less 5,000 litres per cow had the second highest EBIT. This was primarily driven by having a higher MOFRC and lower operating costs.

The margin over feed related costs per litre is the highest in the <5,000 litres group at 52.0 c/L and decreases to 38.8 c/L in the 6,000 to 7,000 litres group. The margin over feed related costs per cow is highest in the >7,000 litres group at $3,432/cow and was lowest at $2,218/cow in the 5,000 to 6,000 litres group.

Table 7. KPI for four production groups (L per cow) in Queensland (2022-23)

Farm production	<5,000	5,000 - 6,000	6,000 - 7,000	>7,000
Farm milk production (L)	1,256,796	1,241,926	2,290,920	2,793,798
Cows (milkers + dry)	275	220	352	348
Production per cow (L)	4,427	5,515	6,536	8,065
Milk income (c/L)	87.1	86.6	91.5	88.7
Margin over FRC (c/L)	52.0	40.0	38.8	42.8
Margin over FRC ($/cow)	2,375	2,218	2,528	3,432
EBIT ($/cow)	760	393	720	1,635

Herd size

An important profit driver is the scale of operation. Increasing the scale of a farm's operation can lead to efficiencies in overheads and the use of labour. Table 8 shows the effect that increasing herd size has on profitability indicators.

In previous years QDAS reports have shown a steady increase in EBIT per cow as the herd size increases. This trend continued in 2022-23 with the >300 cow group having the highest EBIT per cow at $1,295 and the <150 cow group the lowest EBIT at $574 per cow.

For many years in QDAS, margin over feed related costs per cow increased as herd size increases. However, over the past two years this has not been the case as margin over feed related costs per cow has been similar across all herd sizes.

The farms with more than 300 cows (milkers and dry) had the highest production per cow at 6,974 litres. However, production per cow was similar across the other three groups, with the farms with <150 cows having the second highest production per cow at 6,067 L.

Therefore, the increase in EBIT with increasing herd size is driven by a combination of production per cow, margin over feed related costs and efficiencies in overheads and operating costs gained with scale.

Table 8. KPI for four herd size groups (number of milking and dry cows) in Queensland (2022-23)

Profitability indicators	< 150	150 - 240	240 - 300	> 300
Farm milk production (L)	738,975	969,407	1,612,534	3,761,408
Cows (milkers + dry)	120	192	281	551
Production per cow (L)	6,067	5,048	5,768	6,974
Margin over feed related costs ($/cow)	2,621	2,558	2,423	2,783
Cows per labour unit	58	75	65	62
Return on assets managed (%)	2.0	2.8	3.0	6.3
EBIT ($/cow)	574	751	733	1,295

4. Feed analysis

Feed related costs require significant attention by dairy farmers, especially in a subtropical environment. In 2022-23 feed related costs represented 52% of milk income on the QDAS average farm. On south Queensland total mixed ration (TMR) farms it represents 56% of milk income. This is a large decrease from 2019-20 where feed related costs represented 74% of milk income on south Queensland TMR farms.

QDAS allows farmers to investigate their feeding system and compare their feed inputs and milk responses with other farmers from the same regional production system. Table 9 shows the average amount of various feeds offered to milking cows over the 2022-23 year. This information is displayed as pie charts in Appendix 10.9.

Milk responses are allocated to each concentrate and conserved forage fed to milking cows to determine the milk produced from these feed sources. The remaining milk produced is then assumed to be as a result of grazing and the kilograms of dry matter (DM) required to be grazed to produce this milk is calculated.

The calculations of intake (kg DM/cow/day) and milk production (L/cow/day) in Table 9 assume a 300 day lactation.

Grain used on-farm is predominately wheat, barley and maize. Custom made pellets are utilised on farms with no grain milling equipment.

Protein is fed mainly as canola meal and soybean meal on partial mixed ration (PMR) and TMR farms. Whole cottonseed is a popular protein supplement on north Queensland farms when it is available at a reasonable price.

Molasses is a significant feed, especially in north Queensland.

Other concentrates include brewer's grain, bread, dough, flour and several other by-products.

Good quality silages include maize, cereals, legumes and ryegrass. Medium quality silages include forage sorghum and tropical grasses.

Good quality hays are predominately lucerne and cereals. Medium quality hays are mainly forage sorghum, millet and tropical grasses. Straw is also an important fibre source on some farms.

Table 9. Amounts fed to milking cows in each of the regional production systems (2022-23)

Feed type	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All	All Qld
Grazing (kg DM/cow/day)	10.0	5.5	0.1	9.1	6.2
Grain and pellets (kg DM/cow/day)	6.0	5.4	5.9	4.4	5.4
Protein (kg DM/cow/day)	0.3	1.7	4.5	1.2	1.9
Molasses (kg DM/cow/day)	0.1	0.0	0.2	1.0	0.3
Other concentrates (kg DM/cow/day)	0.6	1.8	3.4	0.0	1.7
Silage good quality (kg DM/cow/day)	0.3	4.0	4.4	1.8	2.8
Silage medium quality (kg DM/cow/day)	0.0	1.0	4.2	0.2	1.3
Hay good quality (kg DM/cow/day)	0.4	0.6	0.3	0.0	0.3
Hay medium quality & straw (kg DM/cow/day)	0.5	0.2	1.1	0.0	0.4
Total intake (kg DM/cow/day)	18.3	20.2	24.0	17.8	20.0
Production (L/cow/day)	17.9	21.5	26.4	17.0	20.7
Forage to concentrate ratio	62:38	56:44	42:58	63:37	55:45

5. Production system analysis

QDAS data collection concentrates on gaining a "snap-shot" into different production systems in the regions. The three systems are:

Grazing (GRA) – Milk production principally from grazing, with grain and concentrates fed in the dairy. Less than 15% of dry matter intake is from hay or silage.

Partial Mixed Ration (PMR) – Milk production from a combination of grazing, grain, concentrates, hay and silage. More than 15% of dry matter intake is from hay or silage and at least 10% of dry matter intake is from grazing.

Total Mixed Ration (TMR) – Milk production principally from a silage based mixed ration fed on a pad. Less than 10% of dry matter intake is from grazing.

Table 10 shows the distribution of the participating QDAS farms among the regional production systems.

Table 10. The number of farms collected in each regional production system (2022-23)

Region	GRA	PMR	TMR	Total
North Queensland	6	6	0	12
Central Queensland	0	1	0	1
South Queensland	15	13	8	36
Total	21	20	8	49

Table 11 presents a summary of the KPI for each regional production system. There are several points of interest.

- Milk income varies from 86.4 c/L in north Queensland to 89.7 c/L on south Queensland PMR farms.
- Production per cow increases as the feeding system intensifies. South Queensland grazing farms averaged 5,358 L/cow, PMR farms averaged 6,447 L/cow and TMR farms averaged 7,933 L/cow. Conversely, margin over feed related costs decreased from 42.9 c/L for grazing farms to 39.1 c/L for TMR farms.
- South Queensland TMR farms achieved the highest EBIT of $1,669/cow. Both other production systems in South Queensland achieved an EBIT of at least $790/cow, however the average EBIT in north Queensland farms was $685/cow.

This data should not be interpreted as a definitive guide for changing a farming system. It should be noted that even if a regional production system is shown here to be more profitable, the skills, infrastructure and resources required on alternative systems are quite different. Farmers contemplating a change should seek help with the phasing and sizing of that change.

Table 11. KPI for farming systems (2022-23)

KPI	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All farms
Cows (milkers + dry)	183	337	371	298
Farm production (L)	978,454	2,172,042	2,943,251	1,524,168
Production per cow (L)	5,358	6,447	7,933	5,115
Milk income (c/L)	88.7	89.7	89.2	86.4
Feed related costs (c/L)	45.8	47.1	50.0	38.8
Total variable costs (c/L)	52.5	53.4	54.5	46.2
Margin over feed related costs (c/L)	42.9	42.6	39.1	47.6
EBIT ($/cow)	794	881	1,669	685
Return on assets managed (%)	3.2	3.8	6.8	3.0

6. South Queensland - Grazing

South Queensland grazing farms in the QDAS sample are found around Gympie, Sunshine Coast, Brisbane Valley and Darling Downs. These grazing farms either have high and reliable rainfall or significant areas of reliable irrigation. Permanent summer pastures are mainly kikuyu, panics and setaria, with irrigation areas planted to ryegrass, clover and lucerne. Kikuyu pastures are also oversown to winter forages with grazing crops of forage sorghum and oats also grown. Grain and pellets are readily available as supplements, fed at milking time.

The farms in this group have invested $16,846 per cow in their operation, of which 70% is in the land value. Equity levels are high, averaging at 86%, and a return on assets managed of 3.2% was achieved.

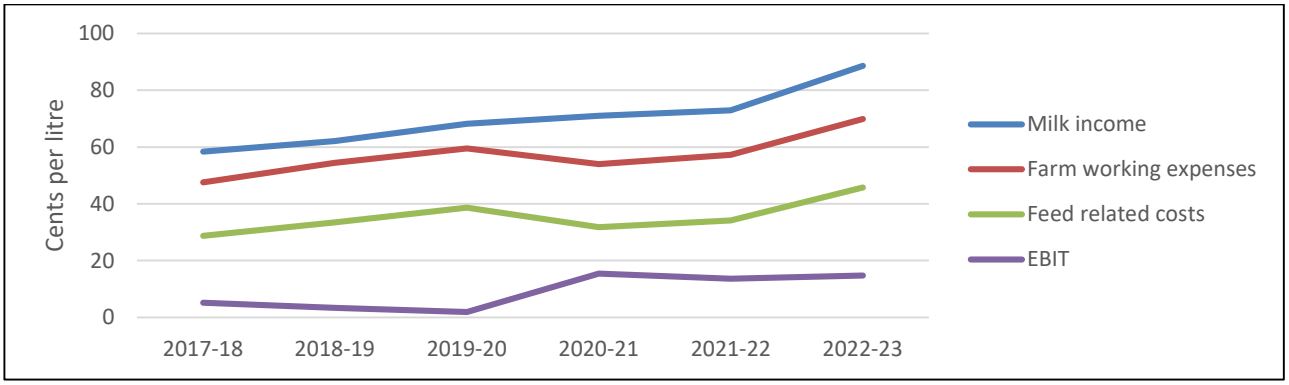
Figure 17 shows the data trends for south Queensland grazing farms between 2017-18 and 2022-22. There are several points of interest:

- Milk income has increased by 52% from 58.4 c/L in 2017-18 to 88.7 c/L in 2022-23.
- Feed related costs have increased by 59% from 28.8 c/L in 2017-18 to 45.8 c/L in 2022-23.
- Farm working expenses have increased by 47% from 47.6 c/L in 2017-18 to 69.9 c/L in 2022-23.
- EBIT has increased by 187% from 5.2 c/L in 2017-18 to 14.8 c/L in 2022-23 but was as low as 2.0 c/L in 2019-20.

Table 12. Statistics for South Queensland grazing farms – 15 farms (2022-23)

Resources	
Cows (milkers + dry)	183
Heifers >1 year old	77
Heifers <1 year old	61
Total dairy herd	323
Milking cow area (ha)	71
Usable area (ha)	168
Labour units	2.6
Assets and Liabilities	
Land, buildings, irrigation ($)	2,142,147
Livestock ($)	471,248
Machinery ($)	273,407
Other ($)	189,336
TOTAL ($)	3,076,137
Liabilities ($)	425,077
Equity (%)	86
Investment per cow ($)	16,846
Debt per cow ($)	2,328
Productivity	
Milk production (L)	978,454
Production per cow (L)	5,358
Financial	
Milk income (c/L)	88.7
Feed related costs (c/L)	45.8
Total variable costs (c/L)	52.5
Margin over feed related costs (c/L)	42.9
EBIT ($/cow)	794
Return on assets managed (%)	3.2

Figure 17. Trends for South Queensland grazing farms (2017-18 to 2022-23)



7. South Queensland - PMR

South Queensland PMR farms in the QDAS sample are found around Gympie, Sunshine Coast, Beaudesert, Moreton, Brisbane Valley and Darling Downs. They have the ability to grow similar forages to the prior group, but supplement their milkers with silage made from maize, sorghum, lucerne and/or ryegrass.

These farms have a higher investment in stock and plant. This production system usually results in higher production per cow than that of grazing farms.

The farms in this group have invested $18,365 per cow in their operation with 71% tied to the land. Equity levels are high, averaging at 82% and a return on assets managed of 3.8% was achieved.

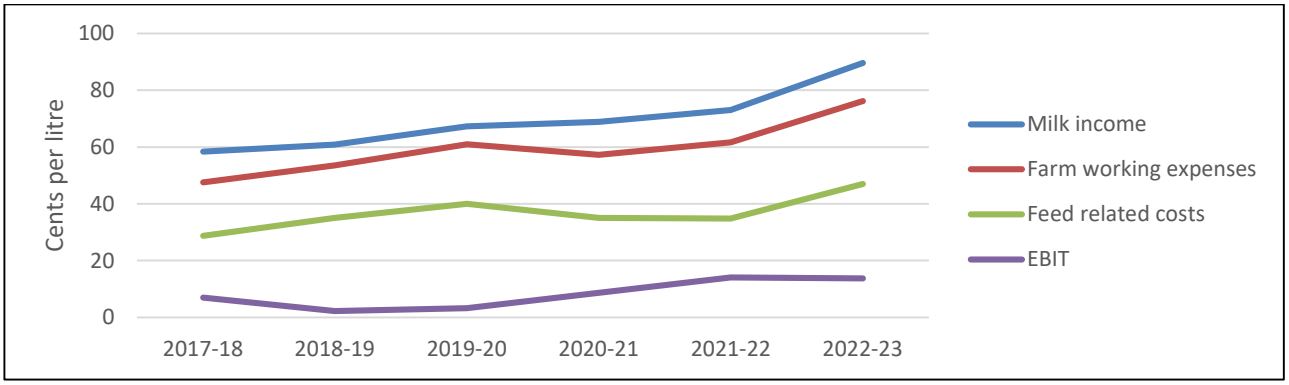
Figure 18 shows the data trends for south Queensland PMR farms between 2017-18 and 2022-23.There are several points of interest:

- Milk income has increased by 54% from 58.4 c/L in 2017-18 to 89.7 c/L in 2022-23.
- Feed related costs have increased by 64% from 28.8 c/L in 2017-18 to 47.1 c/L in 2022-23.
- Farm working expenses have increased by 60% from 47.6 c/L in 2017-18 to 76.3 c/L in 2022-22.
- EBIT has increased by 95% from 7.0 c/L in 2017-18 to 13.7 c/L in 2022-23 but was as low as 2.3 c/L in 2018-19.

Table 13. Statistics for South Queensland PMR farms – 13 farms (2022-23)

Resources	
Cows (milkers + dry)	337
Heifers >1 year old	127
Heifers <1 year old	120
Total dairy herd	588
Milking cow area (ha)	115
Usable area (ha)	312
Labour units	6.0
Assets and Liabilities	
Land & buildings ($)	4,384,834
Livestock ($)	868,080
Machinery ($)	577,268
Other ($)	357,418
TOTAL ($)	6,187,600
Liabilities ($)	1,089,824
Equity (%)	82
Investment per cow ($)	18,365
Debt per cow ($)	3,235
Productivity	
Milk production (L)	2,172,042
Production per cow (L)	6,447
Financial	
Milk income (c/L)	89.7
Feed related costs (c/L)	47.1
Total variable costs (c/L)	53.4
Margin over feed related costs (c/L)	42.6
EBIT ($/cow)	881
Return on assets managed (%)	3.8

Figure 18. Trends for South Queensland PMR farms (2017-18 to 2022-23)



8. South Queensland - TMR

South Queensland TMR farms in the QDAS sample are found in the Darling Downs and South Burnett and are mostly dryland farms with large cropping areas. Most farmers concentrate on growing large volumes of summer forages for silage. Winter crops are opportunistic in years when sub-soil moisture is available.

These farms have commodity sheds. Grain, by-products and protein meals are purchased in bulk and forward contracting is common. They are ideally situated in relation to the grain growing areas of Queensland which reduces freight costs.

They have invested $23,757 per cow in their operation with 64% tied to the land. With the large investment in infrastructure that is required, they have a high debt per cow of $4,582 and equity of 81%, the lowest equity of all groups. A return on assets managed of 6.8% was achieved.

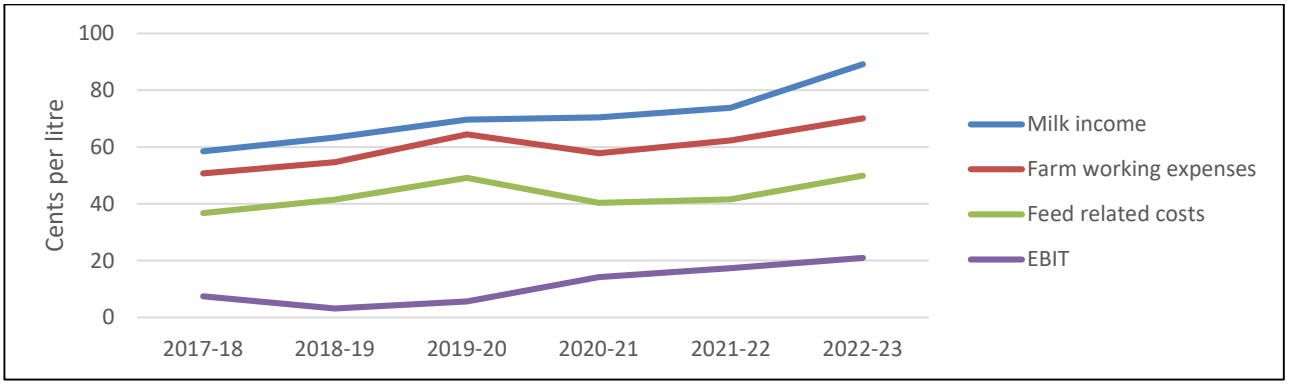
Figure 19 shows the data trends for south Queensland TMR between 2017-18 and 2022-23. There are several points of interest:

- Milk income has increased by 52% from 58.6 c/L in 2017-18 to 89.2 c/L in 2022-23.
- Feed related costs have increased by 36% from 36.8 c/L in 2017-18 to 50.0 c/L in 2022-23.
- Farm working expenses have increased by 38% from 50.8 c/L in 2017-18 to 70.2 c/L in 2022-23.
- EBIT has increased by 183% from 7.4 c/L in 2017-18 to 21.0 c/L in 2022-23 but was as low as 3.3 c/L in 2018-19.

Table 14. Statistics for South Queensland TMR farms – 8 farms (2022-23)

Resources	
Cows (milkers + dry)	371
Heifers >1 year old	205
Heifers <1 year old	174
Total dairy herd	765
Milking cow area (ha)	1
Usable area (ha)	491
Labour units	6.0
Assets and Liabilities	
Land & buildings ($)	5,637,981
Livestock ($)	1,283,564
Machinery ($)	1,163,313
Other ($)	728,963
TOTAL ($)	8,813,821
Liabilities ($)	1,699,797
Equity (%)	81
Investment per cow ($)	23,757
Debt per cow ($)	4,582
Productivity	
Milk production (L)	2,943,251
Production per cow (L)	7,933
Financial	
Milk income (c/L)	89.2
Feed related costs (c/L)	50.0
Total variable costs (c/L)	54.5
Margin over feed related costs (c/L)	39.1
EBIT ($/cow)	1,669
Return on assets managed (%)	6.8

Figure 19. Trends for South Queensland TMR farms (2017-18 to 2022-23)



9. North Queensland – Grazing and PMR

These farms are located in tropical North Queensland around the areas of Malanda, Millaa Millaa and Ravenshoe.

Grazing with grain, pellets or molasses fed in the dairy is the predominant production system in the tropics. This means the upper limit for daily grain intake is 6-8 kg. Some farms feed silage, hay and whole cottonseed to fill feed gaps.

The farms in this group have invested $18,364 per cow in their operation, of which 75% is in the land value. Equity levels varied across the sample, with the average being 79%, and a return on assets managed of 3.0% was recorded.

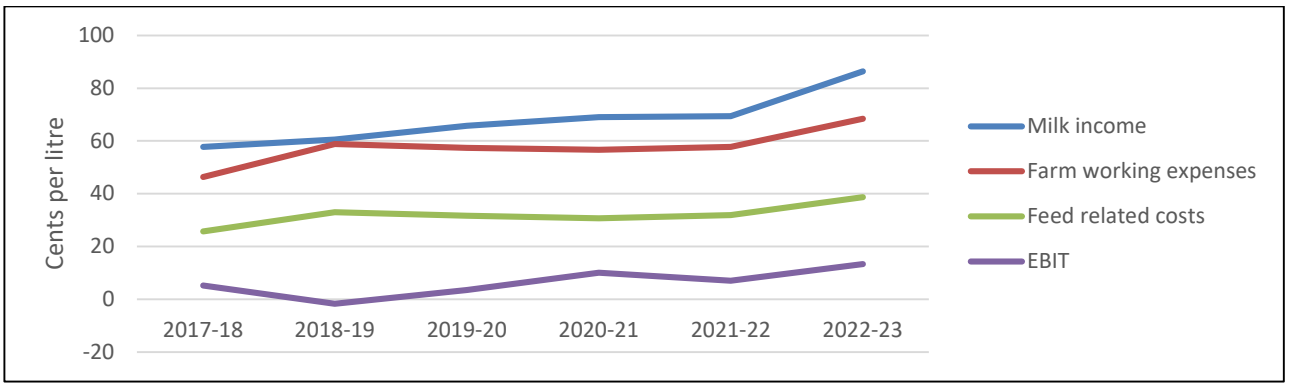
Figure 20 shows the data trends for north Queensland farms between 2017-18 and 2022-23.There are several points of interest:

- Milk income has increased by 49% from 57.8 c/L in 2017-18 to 86.4 c/L in 2022-23.
- Feed related costs have increased by 51% from of 25.7 c/L in 2017-18 to 38.8 c/L in 2022-23.
- Farm working expenses have increased by 48% from 46.4 c/L in 2017-18 to 68.5 c/L in 2022-23.
- EBIT has increased by 157% from 5.2 c/L in 2017-18 to 13.4 c/L in 2022-23 but was as low as -1.7 c/L in 2018-19.

Table 15. Statistics for North Queensland grazing and PMR farms – 12 farms (2022-23)

Resources	
Cows (milkers + dry)	298
Heifers >1 year old	67
Heifers <1 year old	82
Total dairy herd	452
Milking cow area (ha)	110
Usable area (ha)	249
Labour units	4.2
Assets and Liabilities	
Land & buildings ($)	4,101,389
Livestock ($)	684,844
Machinery ($)	337,723
Other ($)	348,649
TOTAL ($)	5,472,604
Liabilities ($)	1,144,230
Equity (%)	79
Investment per cow ($)	18,364
Debt per cow ($)	3,840
Productivity	
Milk production (L)	1,524,168
Production per cow (L)	5,115
Financial	
Milk income (c/L)	86.4
Feed related costs (c/L)	38.8
Total variable costs (c/L)	46.2
Margin over feed related costs (c/L)	47.6
EBIT ($/cow)	685
Return on assets managed (%)	3.0

Figure 20. Trends for North Queensland farms (2017-18 to 2022-23)



10. Appendices

10.1 Group cash flow – All 49 QDAS farms (2022-23)

Group cash flow

All farms 2022/2023

Farm Cash Income	c/L	$/cow	$/kg MS		Total $ Earned
Milk Income (net)	**88.6**	**5,499.3**	**11.98**		**1,573,708**
Livestock sales less purchases (dairy)	5.6	348.1	0.76		99,612
Feed sales	0.2	15.5	0.03		4,428
Other farm cash income	1.2	72.9	0.16		20,852
Total Farm Cash Income	**95.7**	**5,935.8**	**12.93**		**1,698,601**
Farm Cash Costs	**c/L**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ Spent**
Purchased grain, concentrates	26.8	1,666.1	3.63	30.3	476,767
Purchased fodder, silage, hay	5.2	321.4	0.70	5.8	91,968
Other purchased feed	2.5	154.8	0.34	2.8	44,312
Total Purchased Feed	**34.5**	**2,142.3**	**4.67**	**39.0**	**613,047**
Fertiliser	4.3	266.3	0.58	4.8	76,195
Fuel & oil	2.2	138.6	0.30	2.5	39,663
Pasture & crop costs	1.9	116.3	0.25	2.1	33,294
Irrigation costs	0.9	52.8	0.11	1.0	15,100
Hay and silage making costs	1.7	108.1	0.24	2.0	30,938
Agistment	0.1	8.7	0.02	0.2	2,498
Other feed costs	0.3	20.5	0.04	0.4	5,856
Feed Related Costs	**46.0**	**2,853.6**	6.22	**51.9**	**816,591**
Margin Over Feed Related Costs	**42.6**	**2,645.8**	**5.76**	**48.1**	**757,117**
Animal health	2.1	132.3	0.29	2.4	37,846
Herd improvement	1.0	62.2	0.14	1.1	17,808
Calf rearing	1.0	59.6	0.13	1.1	17,047
Herd Costs	**4.1**	**254.1**	**0.55**	**4.6**	**72,701**
Dairy shed - power	1.1	65.5	0.14	1.2	18,731
Dairy shed - supplies	1.1	67.1	0.15	1.2	19,201
Shed Costs	**2.1**	**132.6**	**0.29**	**2.4**	**37,932**
Total Variable Costs	**52.2**	**3,240.2**	**7.06**	**58.9**	**927,224**
Employed labour costs	11.6	721.9	1.57	13.1	206,574
Repairs & maintenance	4.1	257.5	0.56	4.7	73,684
Other overhead costs	3.9	242.1	0.53	4.4	69,269
Total Cash Overhead Costs	**19.7**	**1,221.4**	**2.66**	**22.2**	**349,527**
Total Farm Working Expenses	**71.9**	**4,461.6**	**9.72**	**81.1**	**1,276,751**
Farm Operating Cash Surplus	**23.8**	**1,474.2**	**3.21**	**26.8**	**421,850**
Interest costs	2.7	166.7	0.36	3.0	47,693
Loan principal repayments	3.8	235.4	0.51	4.3	67,367
Land lease costs	2.0	125.9	0.27	2.3	36,016
Other capital purchases (unfinanced)	4.5	281.3	0.61	5.1	80,486
Net Cashflow Before Tax & Drawings	**10.7**	**665.0**	**1.45**	**12.1**	**190,289**

Labour inputs		**Stock**		**Production**		
Paid labour	2.8	Cows (milking and dry)	286	Total litres sold		1,775,778
Unpaid labour	1.6	Total herd	542	Litres / cow		6,205
Total labour units	4.5	**Areas**		Butterfat (kg)	4.05%	71,872
Litres / Labour unit	395,029	Useable area (ha)	283	Protein (kg)	3.35%	59,517
Cows / labour unit	64	Irrigation area (ha)	56	Milk solids / cow (kg)		459

Farms in this report:	49

10.2 Group cash flow – Top 25% of farms (2022-23)

Group cash flow

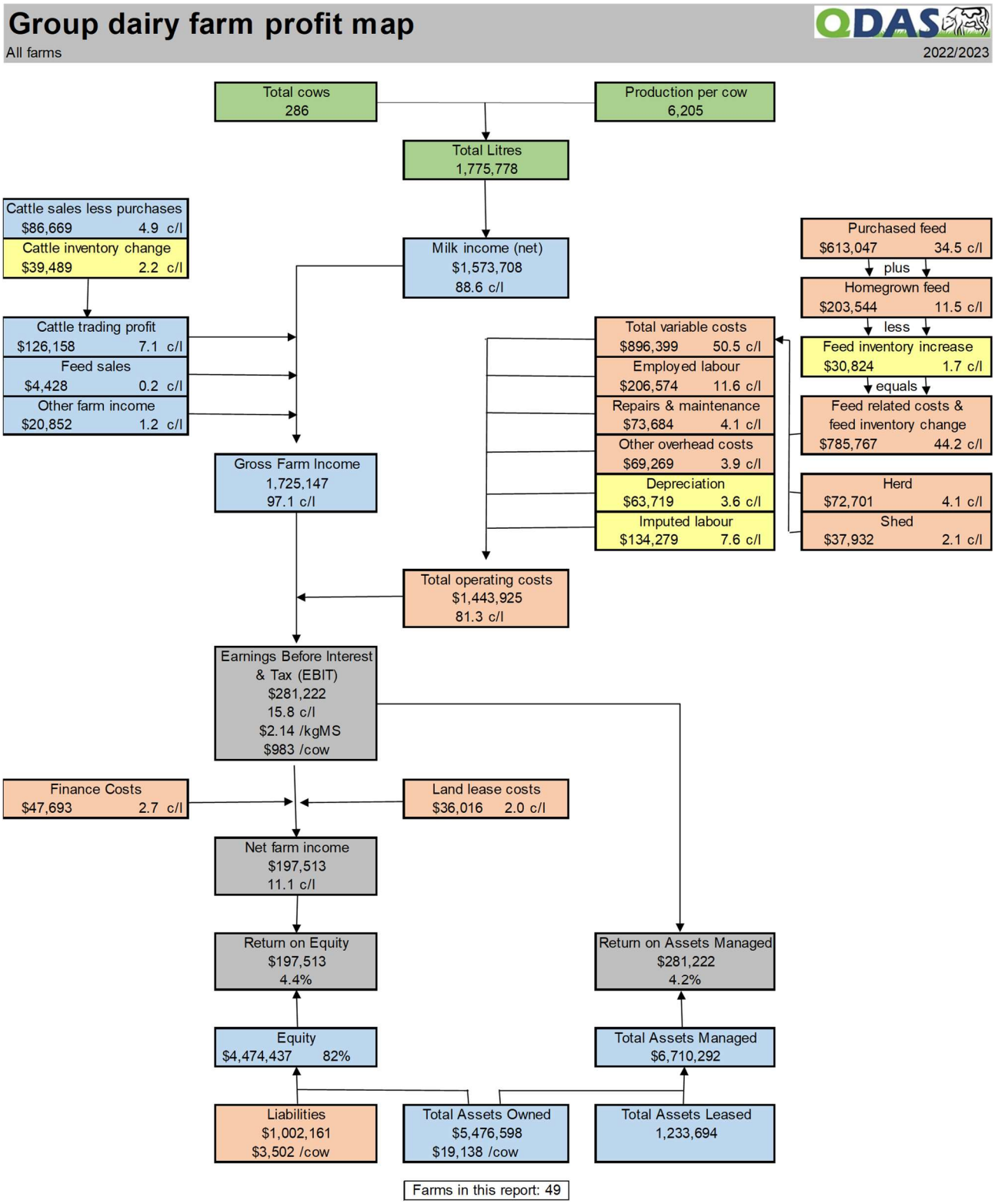
Top 25% 2022/2023

Farm Cash Income	c/L	$/cow	$/kg MS		Total $ Earned
Milk Income (net)	**87.9**	**6,638.0**	**12.22**		**1,762,932**
Livestock sales less purchases (dairy)	5.5	413.2	0.76		109,744
Feed sales	0.0	2.7	0.00		717
Other farm cash income	0.7	50.3	0.09		13,371
Total Farm Cash Income	**94.1**	**7,104.2**	**13.08**		**1,886,763**
Farm Cash Costs	**c/L**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ Spent**
Purchased grain, concentrates	24.8	1,870.2	3.44	28.2	496,683
Purchased fodder, silage, hay	4.5	343.2	0.63	5.2	91,161
Other purchased feed	3.6	274.0	0.50	4.1	72,764
Total Purchased Feed	**32.9**	**2,487.4**	**4.58**	**37.5**	**660,608**
Fertiliser	2.7	205.5	0.38	3.1	54,573
Fuel & oil	2.4	179.9	0.33	2.7	47,782
Pasture & crop costs	1.4	102.7	0.19	1.5	27,274
Irrigation costs	0.3	23.5	0.04	0.4	6,239
Hay and silage making costs	1.2	88.2	0.16	1.3	23,415
Agistment	0.1	3.9	0.01	0.1	1,028
Other feed costs	0.1	11.0	0.02	0.2	2,928
Feed Related Costs	**41.1**	**3,102.0**	5.71	**46.7**	**823,847**
Margin Over Feed Related Costs	**46.8**	**3,535.9**	**6.51**	**53.3**	**939,085**
Animal health	1.5	112.4	0.21	1.7	29,839
Herd improvement	0.6	44.6	0.08	0.7	11,844
Calf rearing	0.9	69.8	0.13	1.1	18,535
Herd Costs	**3.0**	**226.7**	**0.42**	**3.4**	**60,218**
Dairy shed - power	1.1	83.0	0.15	1.3	22,043
Dairy shed - supplies	0.9	66.6	0.12	1.0	17,683
Shed Costs	**2.0**	**149.6**	**0.28**	**2.3**	**39,726**
Total Variable Costs	**46.1**	**3,478.3**	**6.40**	**52.4**	**923,791**
Employed labour costs	9.0	679.2	1.25	10.2	180,385
Repairs & maintenance	2.4	182.8	0.34	2.8	48,556
Other overhead costs	3.6	268.7	0.49	4.0	71,370
Total Cash Overhead Costs	**15.0**	**1,130.8**	**2.08**	**17.0**	**300,311**
Total Farm Working Expenses	**61.1**	**4,609.1**	**8.48**	**69.4**	**1,224,101**
Farm Operating Cash Surplus	**33.0**	**2,495.1**	**4.59**	**37.6**	**662,662**
Interest costs	2.3	170.6	0.31	2.6	45,313
Loan principal repayments	2.5	186.4	0.34	2.8	49,512
Land lease costs	1.2	93.2	0.17	1.4	24,746
Other capital purchases (unfinanced)	4.6	346.5	0.64	5.2	92,036
Net Cashflow Before Tax & Drawings	**22.5**	**1,698.4**	**3.13**	**25.6**	**451,056**

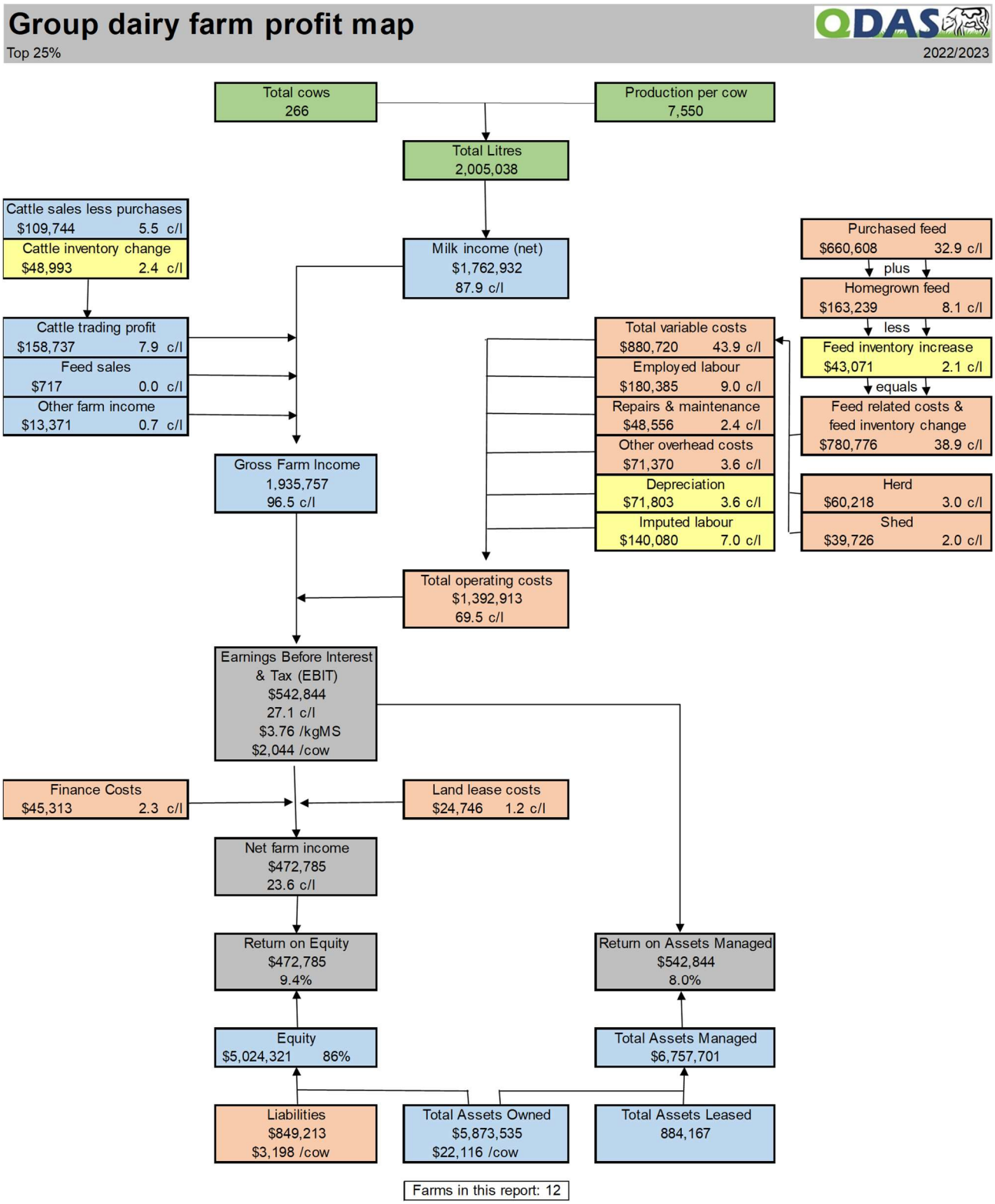
Labour inputs		**Stock**		**Production**		
Paid labour	2.4	Cows (milking and dry)	266	Total litres sold		2,005,038
Unpaid labour	1.7	Total herd	551	Litres / cow		7,550
Total labour units	4.1	**Areas**		Butterfat (kg)	3.86%	77,396
Litres / Labour unit	486,561	Useable area (ha)	349	Protein (kg)	3.34%	66,901
Cows / labour unit	64	Irrigation area (ha)	41	Milk solids / cow (kg)		543

Farms in this report:	12

10.3 Group dairy farm profit map – All 49 QDAS farms (2022-23)



10.4 Group dairy farm profit map – Top 25% of farms (2022-23)



10.5 Group cash flow – South Queensland Grazing (2022-23)

Group cash flow

South Queensland Grazing 2022/2023

Farm Cash Income	c/L	$/cow	$/kg MS		Total $ Earned
Milk Income (net)	**88.0**	**4,559.9**	**11.88**		**902,202**
Livestock sales less purchases (dairy)	5.3	273.9	0.71		54,198
Feed sales	0.0	0.0	0.00		0
Other farm cash income	1.2	64.0	0.17		12,670
Total Farm Cash Income	**94.6**	**4,897.8**	**12.76**		**969,070**
Farm Cash Costs	**c/L**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ Spent**
Purchased grain, concentrates	27.4	1,417.7	3.69	31.1	280,511
Purchased fodder, silage, hay	2.7	140.4	0.37	3.1	27,774
Other purchased feed	1.3	68.5	0.18	1.5	13,550
Total Purchased Feed	**31.4**	**1,626.6**	**4.24**	**35.7**	**321,836**
Fertiliser	5.9	307.6	0.80	6.7	60,861
Fuel & oil	1.5	75.5	0.20	1.7	14,946
Pasture & crop costs	1.6	81.8	0.21	1.8	16,185
Irrigation costs	0.9	45.3	0.12	1.0	8,954
Hay and silage making costs	0.2	12.0	0.03	0.3	2,373
Agistment	0.2	9.8	0.03	0.2	1,940
Other feed costs	0.5	25.4	0.07	0.6	5,027
Feed Related Costs	**42.2**	**2,184.0**	5.69	**47.9**	**432,122**
Margin Over Feed Related Costs	**45.9**	**2,375.9**	**6.19**	**52.1**	**470,080**
Animal health	2.2	112.8	0.29	2.5	22,317
Herd improvement	1.4	71.8	0.19	1.6	14,211
Calf rearing	0.9	47.1	0.12	1.0	9,320
Herd Costs	**4.5**	**231.7**	**0.60**	**5.1**	**45,848**
Dairy shed - power	1.1	58.3	0.15	1.3	11,530
Dairy shed - supplies	1.4	71.7	0.19	1.6	14,178
Shed Costs	**2.5**	**129.9**	**0.34**	**2.8**	**25,708**
Total Variable Costs	**49.1**	**2,545.7**	**6.63**	**55.8**	**503,677**
Employed labour costs	9.2	477.7	1.24	10.5	94,520
Repairs & maintenance	4.4	227.3	0.59	5.0	44,971
Other overhead costs	4.5	230.9	0.60	5.1	45,694
Total Cash Overhead Costs	**18.1**	**936.0**	**2.44**	**20.5**	**185,185**
Total Farm Working Expenses	**67.2**	**3,481.6**	**9.07**	**76.4**	**688,863**
Farm Operating Cash Surplus	**27.3**	**1,416.2**	**3.69**	**31.1**	**280,208**
Interest costs	2.3	118.0	0.31	2.6	23,341
Loan principal repayments	4.5	230.7	0.60	5.1	45,640
Land lease costs	3.9	203.9	0.53	4.5	40,347
Other capital purchases (unfinanced)	3.8	197.7	0.52	4.3	39,123
Net Cashflow Before Tax & Drawings	**12.9**	**665.9**	**1.74**	**14.6**	**131,756**

Labour inputs		**Stock**		**Production**		
Paid labour	1.3	Cows (milking and dry)	198	Total litres sold		1,024,822
Unpaid labour	1.4	Total herd	364	Litres / cow		5,180
Total labour units	2.7	**Areas**		Butterfat (kg)	4.07%	41,718
Litres / Labour unit	374,283	Useable area (ha)	191	Protein (kg)	3.34%	34,211
Cows / labour unit	72	Irrigation area (ha)	30	Milk solids / cow (kg)		384

Farms in this report:	21

10.6 Group cash flow – South Queensland PMR (2022-23)

Group cash flow

South Queensland PMR 2022/2023

Farm Cash Income	c/L	$/cow	$/kg MS		Total $ Earned
Milk Income (net)	**88.6**	**5,388.1**	**11.87**		**1,858,614**
Livestock sales less purchases (dairy)	4.7	282.8	0.62		97,550
Feed sales	0.1	9.0	0.02		3,120
Other farm cash income	1.4	87.7	0.19		30,260
Total Farm Cash Income	**94.9**	**5,767.6**	**12.70**		**1,989,544**
Farm Cash Costs	**c/L**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ Spent**
Purchased grain, concentrates	24.8	1,509.3	3.32	28.0	520,647
Purchased fodder, silage, hay	6.1	368.0	0.81	6.8	126,934
Other purchased feed	2.1	124.8	0.27	2.3	43,052
Total Purchased Feed	**32.9**	**2,002.1**	**4.41**	**37.2**	**690,632**
Fertiliser	4.3	262.7	0.58	4.9	90,610
Fuel & oil	2.3	141.2	0.31	2.6	48,691
Pasture & crop costs	2.0	119.8	0.26	2.2	41,326
Irrigation costs	1.0	62.0	0.14	1.2	21,400
Hay and silage making costs	2.6	159.0	0.35	3.0	54,850
Agistment	0.2	10.4	0.02	0.2	3,581
Other feed costs	0.3	20.2	0.04	0.4	6,979
Feed Related Costs	**45.7**	**2,777.4**	6.12	**51.5**	**958,070**
Margin Over Feed Related Costs	**42.9**	**2,610.7**	**5.75**	**48.5**	**900,544**
Animal health	2.5	153.8	0.34	2.9	53,038
Herd improvement	1.1	65.9	0.15	1.2	22,738
Calf rearing	1.1	69.3	0.15	1.3	23,904
Herd Costs	**4.8**	**289.0**	**0.64**	**5.4**	**99,680**
Dairy shed - power	1.0	60.2	0.13	1.1	20,772
Dairy shed - supplies	1.1	66.1	0.15	1.2	22,815
Shed Costs	**2.1**	**126.4**	**0.28**	**2.3**	**43,587**
Total Variable Costs	**52.5**	**3,192.7**	**7.03**	**59.3**	**1,101,337**
Employed labour costs	14.3	866.7	1.91	16.1	298,969
Repairs & maintenance	4.6	280.1	0.62	5.2	96,615
Other overhead costs	3.9	234.6	0.52	4.4	80,930
Total Cash Overhead Costs	**22.7**	**1,381.4**	**3.04**	**25.6**	**476,514**
Total Farm Working Expenses	**75.2**	**4,574.1**	**10.07**	**84.9**	**1,577,851**
Farm Operating Cash Surplus	**19.6**	**1,193.5**	**2.63**	**22.2**	**411,693**
Interest costs	2.9	179.3	0.39	3.3	61,843
Loan principal repayments	4.0	245.6	0.54	4.6	84,719
Land lease costs	1.9	118.3	0.26	2.2	40,820
Other capital purchases (unfinanced)	4.4	264.9	0.58	4.9	91,385
Net Cashflow Before Tax & Drawings	**6.3**	**385.4**	**0.85**	**7.2**	**132,927**

Labour inputs		**Stock**		**Production**		
Paid labour	4.1	Cows (milking and dry)	345	Total litres sold		2,097,292
Unpaid labour	1.6	Total herd	611	Litres / cow		6,080
Total labour units	5.7	**Areas**		Butterfat (kg)	4.12%	86,422
Litres / Labour unit	366,435	Useable area (ha)	298	Protein (kg)	3.35%	70,206
Cows / labour unit	60	Irrigation area (ha)	81	Milk solids / cow (kg)		454

Farms in this report:	20

10.7 Group cash flow – South Queensland TMR (2022-23)

Group cash flow

South Queensland TMR 2022/2023

Farm Cash Income	c/L	$/cow	$/kg MS		Total $ Earned
Milk Income (net)	**89.2**	**7,073.2**	**12.27**		**2,624,147**
Livestock sales less purchases (dairy)	7.6	603.7	1.05		223,977
Feed sales	0.7	52.1	0.09		19,324
Other farm cash income	0.6	50.7	0.09		18,811
Total Farm Cash Income	**98.1**	**7,779.7**	**13.50**		**2,886,259**
Farm Cash Costs	**c/L**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ Spent**
Purchased grain, concentrates	30.0	2,378.0	4.13	33.6	882,240
Purchased fodder, silage, hay	5.9	466.5	0.81	6.6	173,062
Other purchased feed	4.4	345.6	0.60	4.9	128,209
Total Purchased Feed	**40.2**	**3,190.1**	**5.53**	**45.1**	**1,183,512**
Fertiliser	2.7	216.7	0.38	3.1	80,409
Fuel & oil	2.8	221.0	0.38	3.1	81,977
Pasture & crop costs	2.0	156.7	0.27	2.2	58,124
Irrigation costs	0.5	41.7	0.07	0.6	15,484
Hay and silage making costs	1.6	124.4	0.22	1.8	46,140
Agistment	0.0	3.4	0.01	0.0	1,256
Other feed costs	0.2	14.1	0.02	0.2	5,224
Feed Related Costs	**50.0**	**3,968.0**	6.88	**56.1**	**1,472,126**
Margin Over Feed Related Costs	**39.1**	**3,105.2**	**5.39**	**43.9**	**1,152,022**
Animal health	1.4	109.5	0.19	1.5	40,627
Herd improvement	0.5	40.2	0.07	0.6	14,925
Calf rearing	0.7	54.4	0.09	0.8	20,190
Herd Costs	**2.6**	**204.2**	**0.35**	**2.9**	**75,742**
Dairy shed - power	1.1	87.7	0.15	1.2	32,529
Dairy shed - supplies	0.8	62.9	0.11	0.9	23,353
Shed Costs	**1.9**	**150.6**	**0.26**	**2.1**	**55,881**
Total Variable Costs	**54.5**	**4,322.8**	**7.50**	**61.1**	**1,603,749**
Employed labour costs	9.2	727.0	1.26	10.3	269,727
Repairs & maintenance	3.1	247.2	0.43	3.5	91,728
Other overhead costs	3.5	274.9	0.48	3.9	102,001
Total Cash Overhead Costs	**15.7**	**1,249.2**	**2.17**	**17.7**	**463,456**
Total Farm Working Expenses	**70.2**	**5,572.0**	**9.67**	**78.8**	**2,067,205**
Farm Operating Cash Surplus	**27.8**	**2,207.7**	**3.83**	**31.2**	**819,054**
Interest costs	2.6	205.5	0.36	2.9	76,242
Loan principal repayments	2.8	218.4	0.38	3.1	81,020
Land lease costs	0.4	34.1	0.06	0.5	12,636
Other capital purchases (unfinanced)	5.5	436.2	0.76	6.2	161,815
Net Cashflow Before Tax & Drawings	**16.6**	**1,313.6**	**2.28**	**18.6**	**487,341**

Labour inputs		**Stock**		**Production**		
Paid labour	3.8	Cows (milking and dry)	371	Total litres sold		2,943,251
Unpaid labour	2.3	Total herd	836	Litres / cow		7,933
Total labour units	6.0	**Areas**		Butterfat (kg)	3.90%	114,652
Litres / Labour unit	487,495	Useable area (ha)	491	Protein (kg)	3.37%	99,223
Cows / labour unit	61	Irrigation area (ha)	60	Milk solids / cow (kg)		576

Farms in this report:	8

10.8 Group cash flow – North Queensland all farms (2022-23)

Group cash flow

North Queensland All — 2022/2023

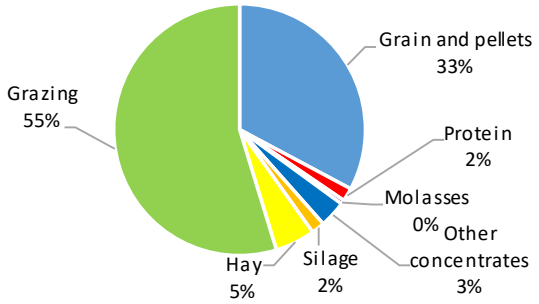
Farm Cash Income	c/L	$/cow	$/kg MS		Total $ Earned
Milk Income (net)	**86.4**	**4,417.0**	**12.03**		**1,316,252**
Livestock sales less purchases (dairy)	4.3	221.0	0.60		65,869
Feed sales	0.0	0.0	0.00		0
Other farm cash income	1.0	51.0	0.14		15,188
Total Farm Cash Income	**91.7**	**4,689.0**	**12.77**		**1,397,308**
Farm Cash Costs	**c/L**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ Spent**
Purchased grain, concentrates	24.9	1,274.4	3.47	28.9	379,774
Purchased fodder, silage, hay	6.0	305.4	0.83	6.9	91,012
Other purchased feed	0.7	35.3	0.10	0.8	10,531
Total Purchased Feed	**31.6**	**1,615.2**	**4.40**	**36.6**	**481,318**
Fertiliser	3.6	182.5	0.50	4.1	54,377
Fuel & oil	1.5	74.9	0.20	1.7	22,334
Pasture & crop costs	0.9	47.8	0.13	1.1	14,258
Irrigation costs	0.7	34.4	0.09	0.8	10,240
Hay and silage making costs	0.2	10.9	0.03	0.2	3,239
Agistment	0.3	13.9	0.04	0.3	4,133
Other feed costs	0.1	5.2	0.01	0.1	1,550
Feed Related Costs	**38.8**	**1,984.7**	5.41	**44.9**	**591,449**
Margin Over Feed Related Costs	**47.6**	**2,432.2**	**6.63**	**55.1**	**724,803**
Animal health	2.8	141.8	0.39	3.2	42,247
Herd improvement	1.5	75.7	0.21	1.7	22,555
Calf rearing	0.6	30.4	0.08	0.7	9,072
Herd Costs	**4.8**	**247.9**	**0.68**	**5.6**	**73,874**
Dairy shed - power	1.3	64.9	0.18	1.5	19,328
Dairy shed - supplies	1.3	67.5	0.18	1.5	20,118
Shed Costs	**2.6**	**132.4**	**0.36**	**3.0**	**39,446**
Total Variable Costs	**46.2**	**2,365.0**	**6.44**	**53.5**	**704,769**
Employed labour costs	12.7	649.9	1.77	14.7	193,670
Repairs & maintenance	5.1	259.8	0.71	5.9	77,417
Other overhead costs	4.5	227.9	0.62	5.2	67,908
Total Cash Overhead Costs	**22.2**	**1,137.6**	**3.10**	**25.8**	**338,995**
Total Farm Working Expenses	**68.5**	**3,502.6**	**9.54**	**79.3**	**1,043,764**
Farm Operating Cash Surplus	**23.2**	**1,186.4**	**3.23**	**26.9**	**353,544**
Interest costs	3.5	179.2	0.49	4.1	53,390
Loan principal repayments	3.8	196.2	0.53	4.4	58,476
Land lease costs	2.1	107.7	0.29	2.4	32,098
Other capital purchases (unfinanced)	1.2	62.3	0.17	1.4	18,571
Net Cashflow Before Tax & Drawings	**12.5**	**641.0**	**1.75**	**14.5**	**191,010**

Labour inputs		**Stock**		**Production**		
Paid labour	2.7	Cows (milking and dry)	298	Total litres sold		1,524,168
Unpaid labour	1.5	Total herd	481	Litres / cow		5,115
Total labour units	4.2	**Areas**		Butterfat (kg)	3.98%	60,684
Litres / Labour unit	363,836	Useable area (ha)	249	Protein (kg)	3.20%	48,707
Cows / labour unit	71	Irrigation area (ha)	40	Milk solids / cow (kg)		367

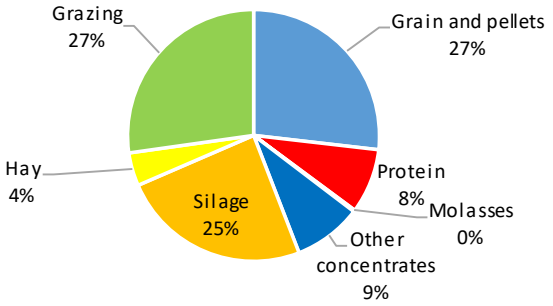
Farms in this report:	12

10.9 Average milker diets (kg DM/cow/day) for regional production systems (2022-23)

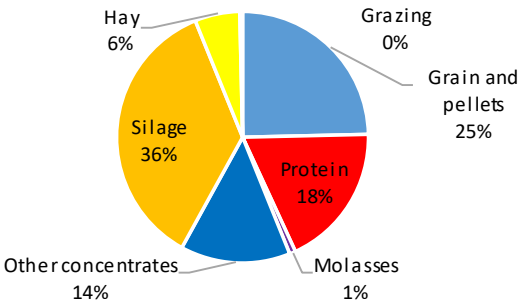
South Queensland Grazing	
Average milker diet	**kg/cow/day**
Grain and pellets	6.0
Protein	0.3
Molasses	0.1
Other concentrates	0.6
Silage	0.3
Hay	0.9
Grazing	10.0
TOTAL	**18.3**



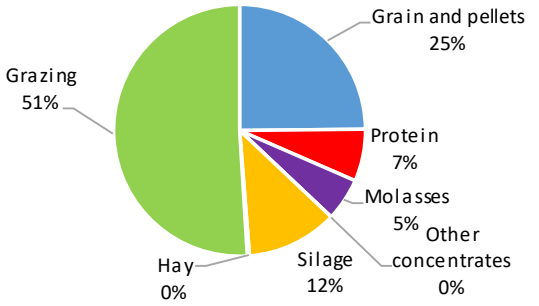
South Queensland PMR	
Average milker diet	**kg/cow/day**
Grain and pellets	5.4
Protein	1.7
Molasses	0.0
Other concentrates	1.8
Silage	4.9
Hay	0.9
Grazing	5.5
TOTAL	**20.2**



South Queensland TMR	
Average milker diet	**kg/cow/day**
Grain and pellets	5.9
Protein	4.4
Molasses	0.2
Other concentrates	3.4
Silage	8.6
Hay	1.4
Grazing	0.1
TOTAL	**24.0**



North Queensland All	
Average milker diet	**kg/cow/day**
Grain and pellets	4.4
Protein	1.2
Molasses	1.0
Other concentrates	0.0
Silage	2.1
Hay	0.0
Grazing	9.1
TOTAL	**17.8**



10.10 Business traits, key performance indicators and definitions

Key performance indicators (KPI) are used in QDAS to monitor farm performance. Table 16 shows these indicators grouped under the three key business trait headings:

- Solvency
- Profitability
- Efficiency

A further business trait, liquidity, is essential to measuring a business' ability to meet short term debts. QDAS does not report on this business trait as it concentrates reporting into the longer-term business traits.

Why use KPI

Put simply, a KPI is a calculation used for measurement, comparison and evaluation. Their use eliminates many simple dollar value comparisons, which can often be misleading and confusing. They can also be used to identify problems and opportunities.

Table 16. Key performance indicators used in QDAS

Profitability
- Return on asset managed – %
- Return on equity – %
- EBIT – $/cow
- EBIT margin – %

Solvency
- Equity%
- Debt to equity ratio

Efficiency - Capital
- Asset turnover ratio
- Total liabilities per cow – $/cow
- Interest per cow – $/cow

Efficiency - Production
- Feed related cost – c/L
- Margin over feed related costs – $/cow
- Total variable cost – c/L
- Gross margin milk – $/cow

Efficiency – Physical
- Litres of milk from home grown feed
- Production per cow – Litres
- Litres per labour unit

Profitability KPI used in QDAS

Profitability ratios measure the ability of the business manager to generate a satisfactory profit. These ratios are typically a good indicator of management's overall effectiveness in producing milk from the land and stock.

Return on asset managed

This measures the profit generating capacity of the total assets managed by the business. It measures the farm's effectiveness in using the available total assets (owned, financed and leased).

Calculation

(EBIT / Total assets managed) * 100

Return on equity

This KPI measures the return on the owner's investment in the business. Interest costs, land lease and rent are deducted from EBIT to make the calculation. It takes the investor's point of view and can be a good way to encourage further investment in a business; it also allows a comparison to be made with the returns available from external investments.

Calculation

(Net farm income / Equity) * 100

EBIT per cow

Earnings Before Interest and Tax (EBIT) is a calculation that highlights the amount of profit retained after all expenses are paid except debt servicing and taxation payments. It is a measure of the effectiveness of operations to generate and retain profits. Depreciation and a management allowance are included as expenses in this profit KPI.

Calculation

EBIT / Number of cows

EBIT margin

Similar to the above calculation but is expressed as a percentage of farm income.

Calculation

(EBIT / Total gross farm income) * 100

Solvency KPI used in QDAS

Solvency ratios indicate how the business is financed, e.g. by owner's equity or by external debt. Lenders of long-term funds and equity investors have an interest in solvency ratios. They can highlight:

- Possible problems for the business in meeting its long-term obligations.
- Show how much of the business' capital is provided by lenders versus owners.
- The asset liability statement will indicate to the lenders the potential risks in the recovery of their money.
- The potential amount of long-term funds that a business can borrow.

This KPI is often referred to as the 'sleep at night' factor – how comfortable do you feel with the current debt level?

Equity%

Lenders see an increased risk associated with borrowing as this percentage figure falls below a predetermined or agreed figure. To assess the risk potential it is important to look at both the debt and the business cash flow.

Calculation

((Assets – Liabilities) / Assets) *100

Debt to equity ratio

This is another way of expressing equity.

Calculation

Liabilities / (Assets – Liabilities)

Efficiency KPI used in QDAS

When examining a business these KPIs are often the starting point in an analysis; however, it is recommended that the emphasis should be on the first three business traits. Efficiency ratios show how well business resources are being used to achieve other KPI.

Efficiency - Capital

Asset turnover ratio (ATO)

This measures the amount of revenue generated per dollar of assets invested. It is a measure of the manager's effectiveness to generate revenues (capital efficiency). The calculation does not include any costs.

Calculation

Total gross farm income / Assets

Total liabilities per cow

A high value could indicate potential difficulties with both liquidity and solvency.

Calculation

Liabilities / Number of cows

Interest per cow

The total amount of dollars being paid in interest per cow is used to highlight one risk aspect for the business. Generally farms in a rapid development phase will have a higher figure than well established businesses.

Calculation

Total interest payments / Number of cows

Efficiency - Production

Feed related cost per litre

Feed related costs are variable cash costs and includes purchased as well as all home-grown feed input costs.

Calculation

Total of all feed related costs / Milk sold

Margin over feed related costs

Only the milk income is used in this calculation, which avoids the fluctuations that occur in annual cattle sales.

Calculation

(Milk income – Feed related costs) / Number of cows

(Milk income – Feed related costs) / Milk sold

Total variable cost per litre

In QDAS total variable costs are compiled under three headings – feed related, herd and shed costs.

Calculation

(Feed related + shed + herd costs) / Milk sold

Efficiency - Physical

Litres of milk from home grown feed

Home grown feed includes grazed pasture, home produced hay, grain and silage. QDAS uses milk conversion factors to calculate the milk from all feed sources including concentrates.

Calculation

The milk from home grown feed is expressed as litres per cow per day

Production per cow

In QDAS the milking cow numbers used in all calculations includes milkers plus dry cows. This implies each cow has a calf annually.

Calculation

Milk sold / Number of cows

Litres per labour unit

The inference is made that as margins have reduced, technology should be used to gain efficiency. The number of cows milked per labour unit will impact on profitability.

Calculation

Milk sold / Number of labour units (paid + unpaid)

General comments

Many of these KPI are representative of KPI that are used in most business reporting. A great number of additional KPI can be calculated from the vast amount of data collated in QDAS if and when required.

Other measures are important when examining an individual plan especially liquidity traits e.g. cash surpluses. Environmental KPI and other sustainability considerations are also important.

The change in net worth is also an important indicator for every farm owner and should be calculated regularly.