

Balancing dairy production and profits in northern Australia



Queensland Dairy Accounting Scheme - 2020

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QDAS Financial and production trends – 2020

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This publication has been compiled by Ray Murphy, Ross Warren and Mark Bauer of Animal Science, Department of Agriculture and Fisheries.

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Introduction

This report contains physical and financial data from 55 farms and includes data from the South Queensland (incorporating the South East Coastal and Darling Downs regions), Central Queensland and North Queensland dairy regions (Figure 1).

Milk production in Queensland decreased by 47 million litres from 358 million litres in 2018-19 to 311 million litres in 2019-20, see Table 1. Low profitability, caused by continuing dry seasonal conditions and high purchased feed prices, has resulted in many farmers ceasing dairying operations and milk production decreasing in Queensland.

In 2019-20 Australian milk production was 8.8 billion litres with Queensland contributing 3.5% of this.

Figure 2 shows Queensland’s monthly milk production for 2018-19 and 2019-20.

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.

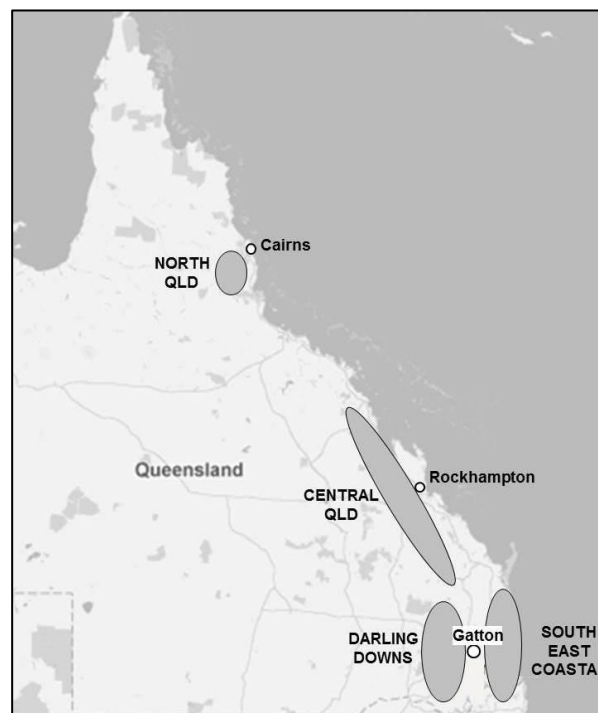


Figure 1. The location of dairy farms in Queensland

Table 1. Annual milk production for Queensland (2016-17 to 2019-20)

	Annual production
2016-17	418 m L
2017-18	399 m L
2018-19	358 m L
2019-20	311 m L

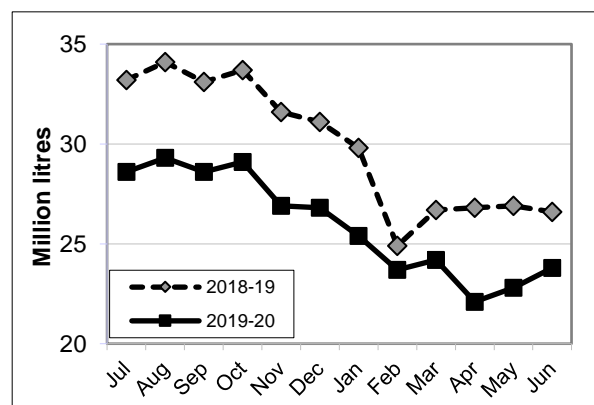


Figure 2. Queensland monthly milk production (2018-19 and 2019-20)

Objectives

The objectives of this book 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 farming families/enterprises 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 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

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1. 2019–20 Key findings

Fifteen Key Performance Indicators (KPI) are used to highlight the results for profitability, solvency and efficiency. Table 2 shows these results for 2019-20 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 (2016-17 to 2019-20)

Business traits and indicators ⁽¹⁾	Top 25%	QDAS average	Past QDAS averages		
	2019-20	2019-20	2018-19	2017-18	2016-17
Profitability					
Return on assets managed (%)	4.0	1.30	0.6	2.3	4.4
Return on equity (%)	4.3	0.0	-1.0	1.5	4.9
EBIT margin (%)	13.3	5.3	2.7	9.6	18.4
EBIT (\$/cow)	739	246	113	400	758
Solvency					
Equity (%)	83	76	79	80	78
Debt to equity ratio	0.22	0.31	0.26	0.25	0.28
Efficiency – Capital/Finance					
Asset turnover ratio	0.39	0.30	0.27	0.28	0.31
Total liabilities per cow (\$)	2,627	3,555	3,255	2,847	2,932
Interest paid/cow (\$)	105	147	161	136	141
Efficiency – Productivity					
Feed related costs (c/L)	42.7	42.0	35.8	30.2	27.1
Margin over feed related costs (c/L)	26.8	26.2	25.8	28.4	31.1
Margin over feed related costs (\$/cow)	1,915	1,614	1,591	1,768	1,951
Farm operating cash surplus (c/L)	17.0	14.7	13.4	17.4	20.0
Efficiency – Physical					
Production per cow (L)	7,149	6,151	6,158	6,232	6,266
Litres per labour unit					
- On farms <1.5 m L	380,177	368,138	381,969	333,310	384,182
- On farms >1.5 m L	493,154	449,845	485,808	503,426	511,572

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

Profitability

The third consecutive year of drought conditions across eastern Australia has resulted in another year of low profitability for Queensland dairy farms. Table 2 shows that Earnings Before Interest & Tax (EBIT) per cow was \$246, up from \$113 per cow in 2018-19. Return on assets managed has increased from 0.6% to 1.3%.

The increase in profitability is a combination of several cash and non-cash factors. The most significant impact of the drought has been the 6.2 c/L increase in feed related costs. A positive influence on EBIT was a 6.6 c/L increase in milk income. Another positive was a 0.7 c/L increase in livestock sales less purchases. However, there was a 1.2 c/L non-cash decrease in cattle inventories that resulted in a cattle trading profit of 4.6 c/L, down from 5.1 c/L in 2018-19. The decrease in cattle inventories was due to cattle being sold into a drought affected market for less than their QDAS book value. Finally, there was a 0.9 c/L increase in 2019-20 feed inventories, whereas there was a 1.0 c/L decrease in feed inventories in 2018-19. The 2019-20 increase in feed inventories was primarily due to farmers increasing their purchased feed stocks at the end of 2019-20 when feed prices started to fall.

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

Production per cow

Table 2 shows that production per cow has remained relatively static, decreasing from 6,158 litres to be 6,151 in 2019-20. The top 25% farms (sorted by EBIT per cow) achieved a production per cow of 7,149 litres in 2019-20, 998 litres higher than the QDAS average.

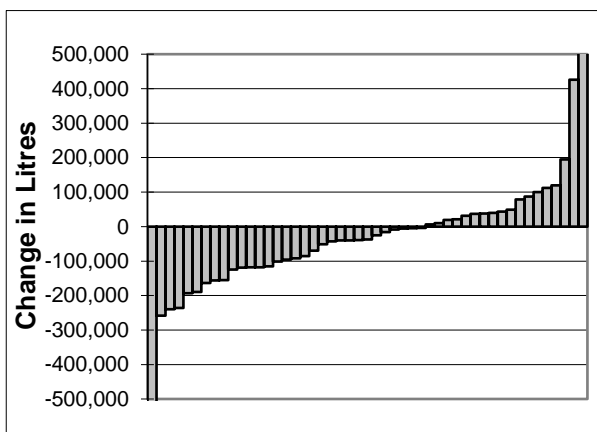


Figure 3. Change in milk production on individual farms between 2018-19 and 2019-20

Production and prices

The average production of the QDAS farms was 1,603,400 litres in 2019-20, very similar to the 2018-19 average of 1,580,774. Figure 3 shows the changes in milk production between 2018-19 and 2019-20 for individual QDAS farms.

While the average milk production on all 55 QDAS farms was 1,603,400 litres, the production of the top 25% farms (sorted by EBIT per cow) was much higher at 2,418,390 litres.

QDAS average milk income (milk price) increased by 6.6 c/L to be 68.2 c/L. The biggest increase, 7.5 c/L, was recorded in south Queensland TMR (Total Mixed Ration) farms. North Queensland had the lowest increase in average milk income at 5.2 c/L.

Figure 4 shows the changes in average milk income per litre between 2018-19 and 2019-20 for individual QDAS farms. The farms with the large changes in milk income are the result of milk quality issues either worsening or resolving.

Three years of drought

A comparison of QDAS results from 2016-17 with 2019-20 shows the full cashflow impact of the drought on Queensland dairy farms.

In 2016-17 feed related costs were 27.1 c/L and have increased by 55% to be 42.0 c/L in 2019-20. The purchased feed component of these costs has increased by 68% in this time.

Milk income has increased by 17% from 58.2 c/L in 2016-17 to be 68.2 c/L in 2019-20. As a result the margin over feed related costs has decreased by 16% from 31.1 c/L in 2016-17 to be 26.2 c/L in 2019-20.

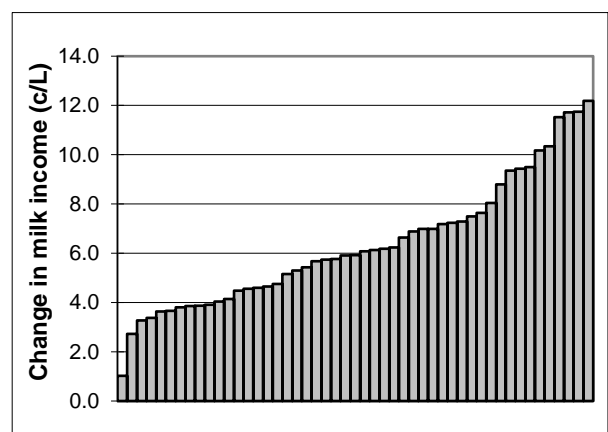


Figure 4. Change in average milk income on individual farms between 2018-19 and 2019-20

Production costs

Table 2 shows that feed related costs increased by 6.2 c/L, from 35.8 c/L in 2018-19 to be 42.0 c/L in 2019-20. Purchased feed contributed the majority of this increase with purchased grain and concentrates increasing by 3.3 c/L. Purchased hay and silage increased by 2.1 c/L.

The demand for and expenditure on purchased feed is exacerbated by the lack of pasture available for young stock which have been fed on rations usually reserved for productive milking cows.

The top 25% group (sorted by EBIT per cow) achieved feed related costs of 42.7 c/L. This is 0.7 c/L higher than the average of all farms. In 2019-20 feed costs consume 61% of milk income, up from 58% in 2018-19.

The margin over feed related costs increased by 0.4 c/L, from 25.8 c/L to 26.2 c/L, for the 2018-19 and 2019-20 years respectively.

The farm operating cash surplus for the top 25% group is 17.0 c/L, which is 2.3 c/L higher than the average of all farms. This difference is a combination of higher milk income (1.3 c/L), lower herd, shed and overheads costs (1.7 c/L) but higher feed related costs (0.7 c/L).

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 2019-20. 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 2017 to June 2020)

	June 2017	June 2018	June 2019	June 2020
Concentrates				
Sorghum	\$285	\$380	\$370	\$360
Barley	\$290	\$420	\$430	\$360
Wheat	\$300	\$433	\$435	\$405
Soybean meal	\$580	\$685	\$645	\$650
Canola meal	\$480	\$570	\$535	\$550
14% dairy pellet	\$420	\$550	\$550	\$580
Fertiliser				
Urea	\$650	\$550	\$580	\$550
Diesel				
Bowser price	\$1.26	\$1.52	\$1.47	\$1.18

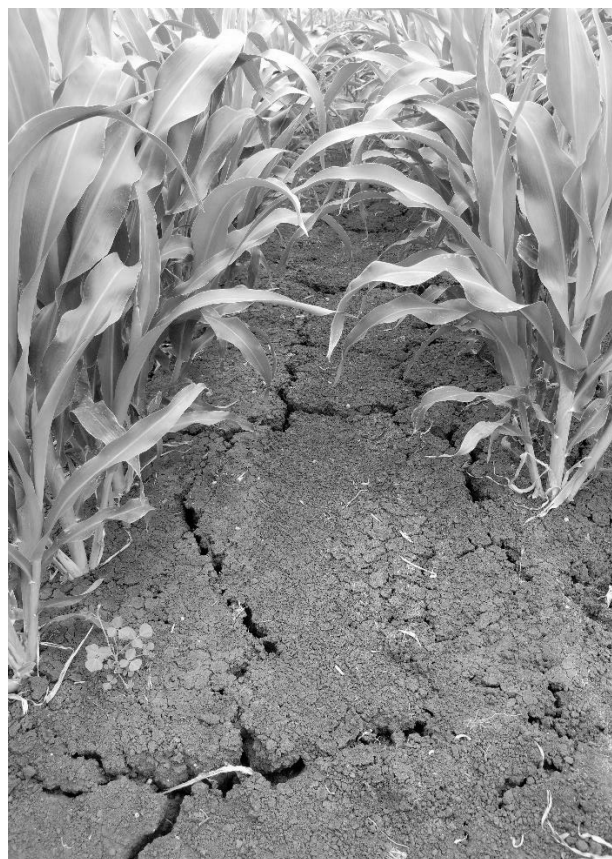


Table 4. Cash analysis of the costs of production (2019-20)

	c/L
Farm income	
Milk income (Net)	68.2
Other farm income	8.0
Total farm income	76.2
Production costs	
Purchased feed	32.8
Home grown feed	9.2
Total feed related costs	42.0
Herd costs	2.7
Shed costs	1.9
Employed labour	8.2
Repairs & maintenance	3.6
Other overheads	3.1
Farm working expenses	61.5
Farm operating cash surplus	14.7
Interest, principal, lease	7.7
Capital purchases (unfinanced)	1.8
Net cash flow before tax & drawings	5.2

Labour

Average employed labour costs for all QDAS farms are \$131,035 for 2.2 paid labour units. This equates to 8.2 c/L, which is 0.6 c/L higher than in 2018-19. As farms milk more cows there are opportunities to utilise labour more effectively. Table 5 shows that farms producing less than 0.75 m L (114 cows) do so at 266,850 litres per labour unit, whereas farms producing more than 2.0 m L (489 cows) do so at 455,377 litres per labour unit.

Table 5 also shows the increase in labour used, both paid and unpaid (family), as production increases. It is not surprising that the greater than 2.0 m L group has the largest use of paid labour at 5.2 full time equivalents (FTE).

Repairs and other overheads

The QDAS average repairs and maintenance costs are \$58,036 (3.6 c/L). Table 5 shows that repairs and maintenance are 4.2 c/L for the farms that produce less than 0.75 m L and 3.2 c/L for the farms that produce more than 2.0 m L of milk.

The QDAS average for other overhead costs is \$49,872 (3.1 c/L). While overhead costs increase as production increases, the costs get proportionately lower per litre. Table 5 shows other overhead costs falling from 4.6 c/L to 2.4 c/L as production increases. Other overhead costs include rates, insurance, registration, office expenses, accounting, industry levies and telephone.

Table 5. Analysis of overhead costs (2019-20)

	<0.75 m L	0.75 – 1.25m L	1.25 – 2.0m L	>2.0m L
Milk production (L)	531,476	953,032	1,514,421	3,307,992
Cows (milkers + dry)	114	167	259	489
Overheads				
Repairs & Maintenance (\$)	22,232	38,110	62,955	105,155
Repairs & Maintenance (c/L)	4.2	4.0	4.2	3.2
Other overheads (\$)	24,434	34,650	58,620	79,239
Other overheads (c/L)	4.6	3.6	3.9	2.4
Labour				
Unpaid labour (FTE)	1.5	1.6	1.6	2.1
Paid labour (FTE)	0.5	0.8	2.0	5.2
Paid labour cost (c/L)	27,714	48,805	127,558	311,176
Litres per labour unit	266,850	398,203	422,770	455,377



2. The distribution of QDAS cooperating farms

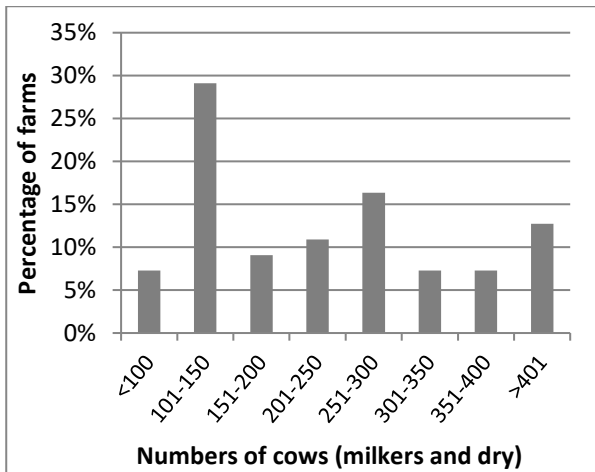


Figure 5. The distribution of QDAS farms by cow numbers

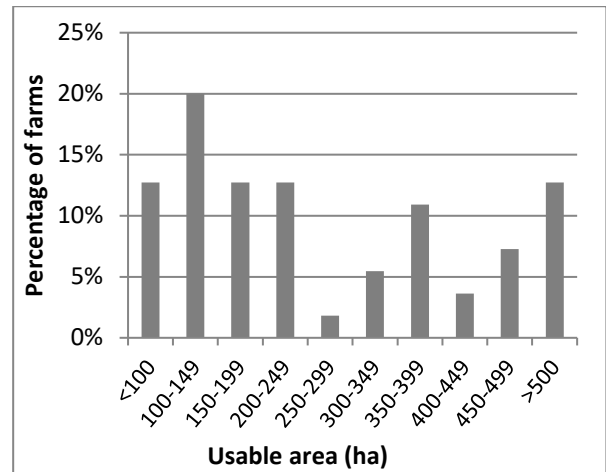


Figure 8. The distribution of QDAS farms by usable area

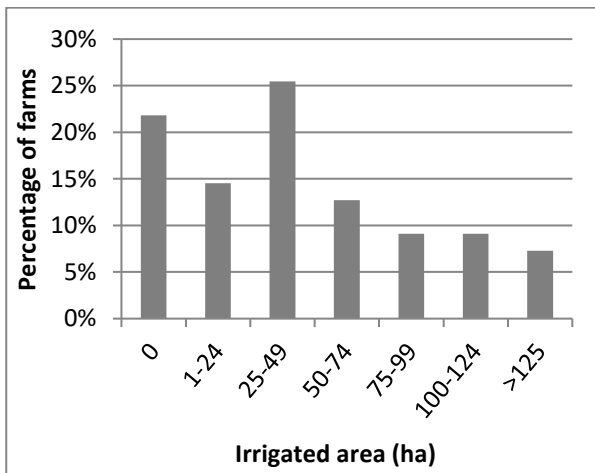


Figure 6. The distribution of QDAS farms by irrigated area

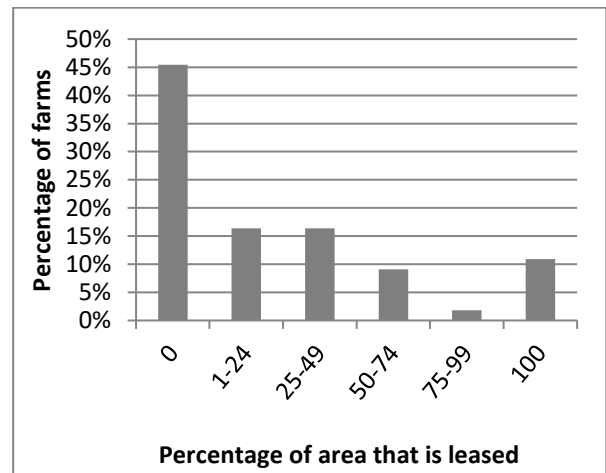


Figure 9. The distribution of QDAS farms by the percentage of total area that is leased



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

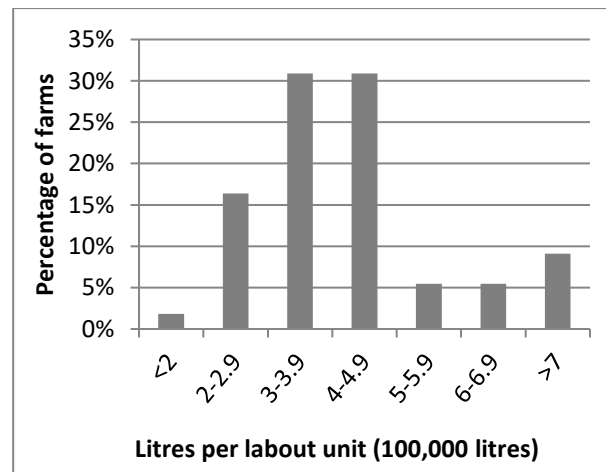


Figure 10. The distribution of QDAS farms by litres per labour unit

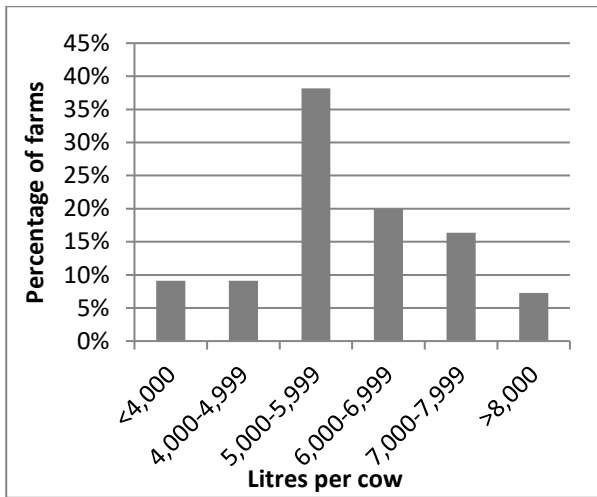


Figure 11. The distribution of QDAS farms by production per cow

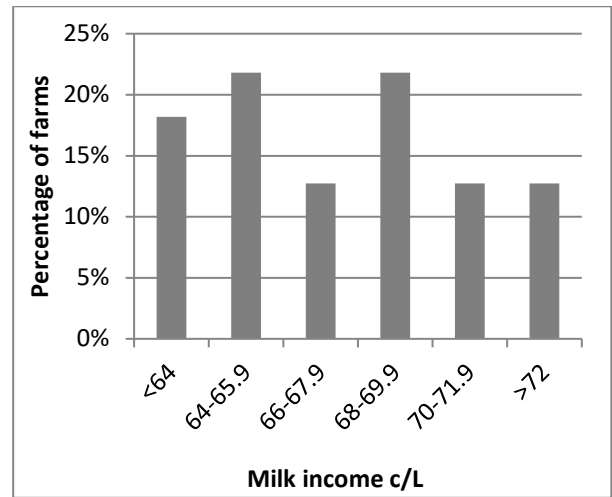


Figure 14. The distribution of QDAS farms by average milk income

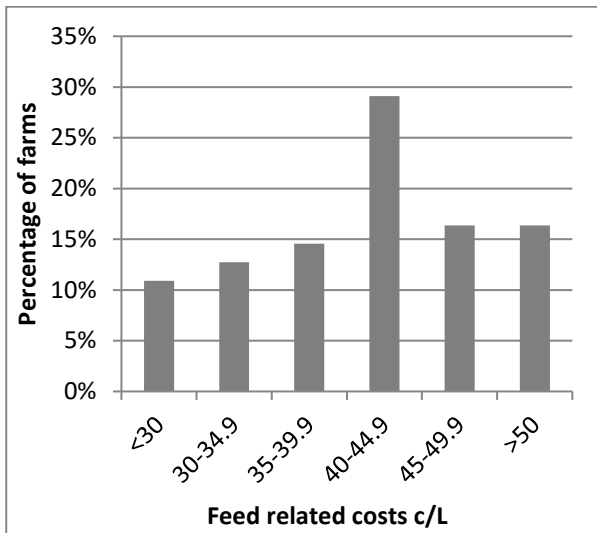


Figure 12. The distribution of QDAS farms by feed related costs

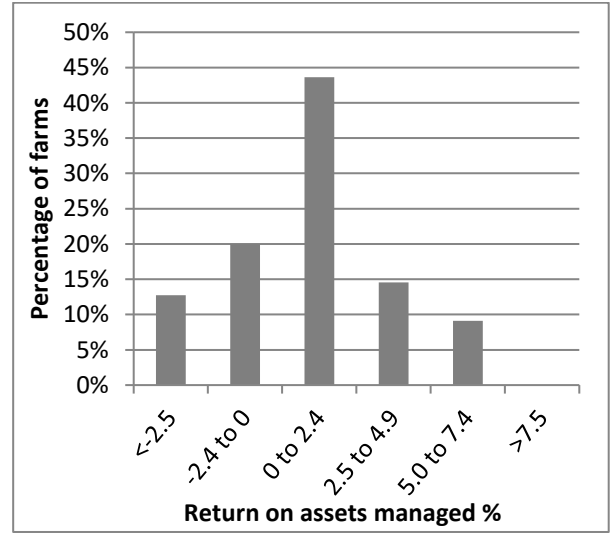


Figure 15. The distribution of QDAS farms by return on assets managed

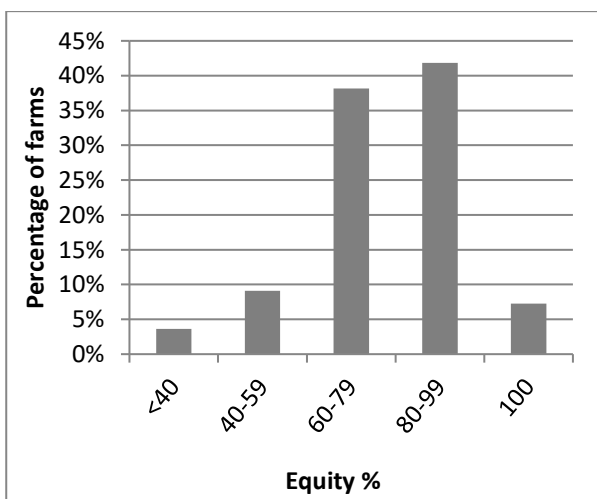


Figure 13. The distribution of QDAS farms by equity percentage

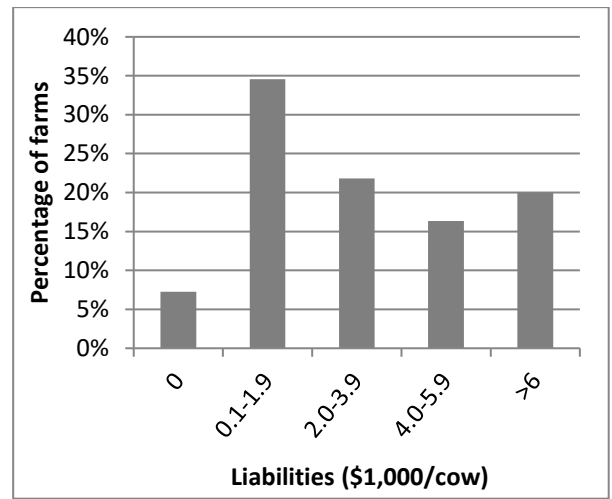


Figure 16. The distribution of QDAS farms by liabilities per cow

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 shows these results.

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 1,491 litres per cow more than the remaining 75% group.
- Selling more litres of milk. The top 25% group sold 1,093,280 more litres of milk than the remaining 75% group. This is driven by production per cow and by having 104 more cows (milkers and dry).
- Higher milk income. The top 25% group had milk income 2.0 c/L higher than the other group.
- Lower farm working expenses. The top 25% group had farm working expenses 1.6 c/L lower than the other group. Interestingly the top 25% group actually had higher feed related costs than the other group.
- Better labour efficiency. The top 25% group achieved 91,538 more litres per labour unit.

Table 6. KPI for top 25% and the remaining 75% of farms (2019-20)

	Top 25%	Remaining 75%
Physical traits		
Cows (milkers + dry)	338	234
Farm production (L)	2,418,390	1,325,110
Efficiency - Physical		
Production per cow (L)	7,149	5,658
Milk from home grown feed (L/day)	8.7	8.6
Litres per labour unit	477,538	386,000
Profit Analysis		
EBIT (\$/cow)	739	2
Average investment (\$/cow)	14,359	15,506
Cash Analysis		
Milk income (c/L)	69.5	67.5
Feed related costs (c/L)	42.7	41.6
Farm working expenses (c/L)	60.5	62.1
Margin over FRC (c/L)	26.8	25.9
Margin over FRC (\$/cow)	1,915	1,465



Production per cow

QDAS reports have always shown that farms with higher production per cow have higher profitability. Table 7 shows that as production per cow increases from below 5,000 litres to above 7,000 litres profits increase. Interestingly, it is the larger farms that are achieving the highest production per cow.

EBIT per cow increases from -\$113 to \$551 as production per cow increases.

The margin over feed related costs per litre is the highest in the <5,000 litres group, while the margin over feed related costs per cow is highest in the >7,000 litres group.

Table 7. KPI for four production groups (L per cow) in Queensland (2019-20)

	<5,000	5,000 - 6,000	6,000 - 7,000	>7,000
Farm milk production (L)	850,339	1,376,596	1,779,822	2,399,772
Cows (milkers + dry)	207	253	269	308
Production per cow (L)	4,110	5,450	6,619	7,786
Milk income (c/L)	66.4	68.3	68.5	68.5
Margin over FRC (c/L)	30.5	30.4	24.1	22.6
Margin over FRC (\$/cow)	1,471	1,655	1,597	1,756
EBIT (\$/cow)	-113	223	179	551

Herd size

An important profit driver is the scale of operation. Table 8 shows the effect that increasing herd size has on profitability indicators.

Increasing the scale of a farm's operation can lead to efficiencies in overheads and the use of labour. The farms with more than 300 cows (milkers and dry) had the highest production per cow at 6,436 litres, whereas the farms with less than 150 cows produced 5,530 litres per cow.

The larger herds have the highest margin over feed related costs per cow. This is an indicator of

their attention to detail and recognition of the need for efficient feeding systems.

Labour efficiency was similar, between 436,227 and 449,064 litres per labour unit, among the three groups with greater than 150 cows. Labour efficiency dropped to 315,200 litres per labour unit in the smaller herds.

With an EBIT of \$450 per cow, the farms with more than 300 cows had the highest EBIT per cow. The group with less than 150 cows recorded a negative EBIT per cow.

Table 8. KPI for four herd size groups (number of milking and dry cows) in Queensland (2019-20)

	< 150	150 - 240	240 - 300	> 300
Farm milk production (L)	672,952	1,203,492	1,627,126	3,094,784
Cows (milkers + dry)	122	201	268	481
Production per cow (L)	5,530	5,985	6,071	6,436
Margin over feed related costs (\$/cow)	1,193	1,642	1,673	1,725
Litres per labour unit	315,200	449,064	436,227	442,744
Return on assets managed (%)	-1.5	1.0	1.4	2.7
EBIT (\$/cow)	-339	188	272	450

4. Feed analysis

Feed related costs require significant attention by dairy farmers, especially in a subtropical environment. In 2019-20 feed related costs represented 61% of milk income on the QDAS average farm. On south Queensland total mixed ration (TMR) farms it represents 74% of milk income. This is a new record high in QDAS, the previous record being in 2013-14, where feed related costs represented 69% 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 amount of various feeds, fed to milking cows over the 2019-20 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 (kgDM/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 popular 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.

Molasses is a significant feed, especially in north Queensland.

The largest contribution to “other concentrates” is from brewer’s grain. Dough, bread and flour are also fed in significant amounts on some PMR and TMR farms.

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 (2019-20)

	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All	All Qld
Grazing (kgDM/cow/day)	9.2	6.0	0.1	9.7	6.0
Grain and pellets (kgDM/cow/day)	5.7	5.7	6.9	4.2	5.7
Protein (kgDM/cow/day)	0.2	1.1	3.5	0.2	1.3
Molasses (kgDM/cow/day)	0.0	0.1	0.6	1.6	0.5
Other concentrates (kgDM/cow/day)	1.2	0.9	2.0	0.0	1.0
Silage good quality (kgDM/cow/day)	0.1	4.5	3.0	2.0	2.9
Silage medium quality (kgDM/cow/day)	0.1	0.5	3.6	0.1	1.0
Hay good quality (kgDM/cow/day)	0.5	0.6	2.4	0.0	0.8
Hay medium quality & straw (kgDM/cow/day)	0.7	0.5	0.5	0.0	0.5
Total intake (kgDM/cow/day)	17.7	20.0	22.5	17.9	19.7
Production (L/cow/day)	17.4	21.2	25.0	17.0	20.5
Forage to concentrate ratio	60:40	61:39	43:57	67:33	57:43

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 10% 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 10% of dry matter intake is from hay or silage and at least 1% 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 1% of dry matter intake is from grazing.

Table 10 shows the distribution of the participating QDAS farms among the regional production systems. No reports are generated for a regional production system when less than five farms are surveyed in that system.

Table 10. The number of farms collected in each regional production system (2019-20)

Region	GRA	PMR	TMR	Total
North Queensland	4	3	0	7
Central Queensland	0	1	0	1
South Queensland	17	20	10	47
Total	21	24	10	55

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

- Milk income varies from 65.7 c/L in North Queensland farms to 70.8 c/L on South Queensland TMR farms.
- Production per cow increases as the feeding system intensifies. In south Queensland grazing farms averaged 5,225 L/cow, PMR farms averaged 6,353 L/cow and TMR farms averaged 7,514 L/cow. Conversely, margin over feed related costs decreased from 28.4 c/L for grazing farms to 18.1 c/L for TMR farms.
- South Queensland TMR farms achieved the highest EBIT of \$440/cow. TMR farms are experienced at buying large amounts of feed and buy the best quality available. Whereas grazing farms during this drought possibly bought the cheapest available hay that did not provide a good milk production response. The EBIT of the south Queensland grazing farms was the lowest at \$64/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 (2019-20)

	South Qld	South Qld	South Qld	North Qld
	Grazing	PMR	TMR	All farms
Cows (milkers + dry)	159	296	298	338
Farm production (L)	828,349	1,881,249	2,235,395	1,728,036
Production per cow (L)	5,225	6,353	7,514	5,113
Milk income (c/L)	67.8	67.5	70.8	65.7
Feed related costs (c/L)	39.4	39.8	52.7	31.7
Total variable costs (c/L)	44.6	44.2	56.4	37.7
Margin over feed related costs (c/L)	28.4	27.7	18.1	34.0
EBIT (\$/cow)	64	254	440	177
Return on assets managed (%)	0.3	1.3	2.6	1.1

6. South Queensland - Grazing

South Queensland grazing farms in the QDAS sample are found around Gympie, the Sunshine Coast, the Brisbane Valley and the 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 molasses are readily available as supplements, fed at milking time.

The farms in this group have invested \$15,007 per cow in their operation, of which 74% is in the land value. Equity levels are high, averaging at 83%, and a return on assets managed of 0.3% was achieved.

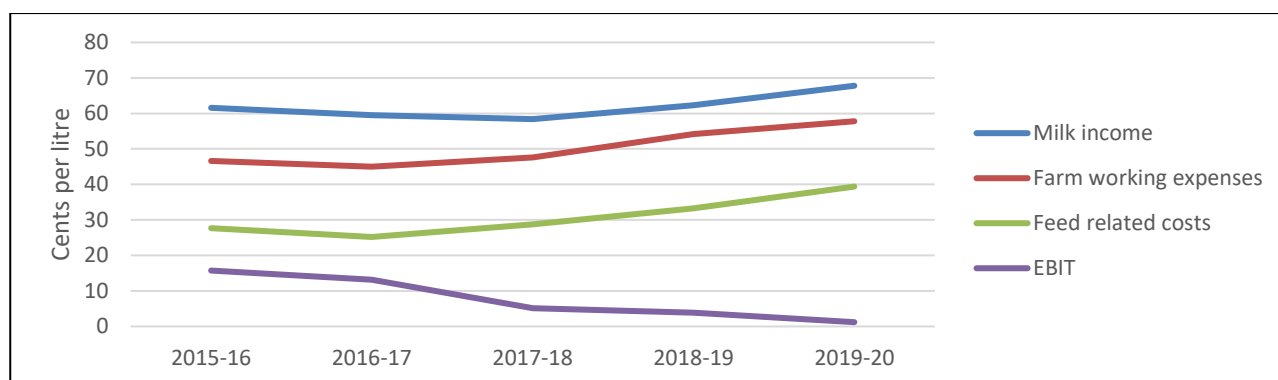
Figure 17 shows the data trends for south Queensland grazing farms between 2015-16 and 2019-20. There are several points of interest:

- Milk income has increased by 10% from 61.6 c/L in 2015-16 to be 67.8 c/L in 2019-20.
- Feed related costs have increased by 56% from a low of 25.2 c/L in 2016-17 to be 39.4 c/L in 2019-20.
- Farm working expenses have increased by 28% from a low of 45.0 c/L in 2016-17 to be 57.8 c/L in 2019-20.
- EBIT has decreased by 91% from 15.7 c/L in 2015-16 to be 1.2 c/L in 2019-20.

Table 12. Statistics for South Queensland grazing farms – 17 farms (2019-1920)

Resources	
Cows (milkers + dry)	159
Heifers >1 year old	68
Heifers <1 year old	60
Total dairy herd	290
Milking cow area (ha)	83
Usable area (ha)	176
Labour units	2.4
Assets and Liabilities	
Land, buildings, irrigation (\$)	1,772,647
Livestock (\$)	357,805
Machinery (\$)	167,018
Other (\$)	92,691
TOTAL (\$)	2,390,162
Liabilities (\$)	403,201
Equity (%)	83
Investment per cow (\$)	15,077
Debt per cow (\$)	2,543
Productivity	
Milk production (L)	828,349
Production per cow (L)	5,225
Financial	
Milk income (c/L)	67.8
Feed related costs (c/L)	39.4
Total variable costs (c/L)	44.6
Margin over feed related costs (c/L)	28.4
EBIT (\$/cow)	64
Return on assets managed (%)	0.3

Figure 17. Trends for South Queensland grazing farms (2015-16 to 2019-20)



7. South Queensland - PMR

South Queensland PMR farms in the QDAS sample are found around Gympie, the Sunshine Coast, Beaudesert, Moreton, the Brisbane Valley and the 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 \$15,832 per cow in their operation with 70% tied to the land. Equity levels are high, averaging at 80% and a return on assets managed of 1.3% was achieved.

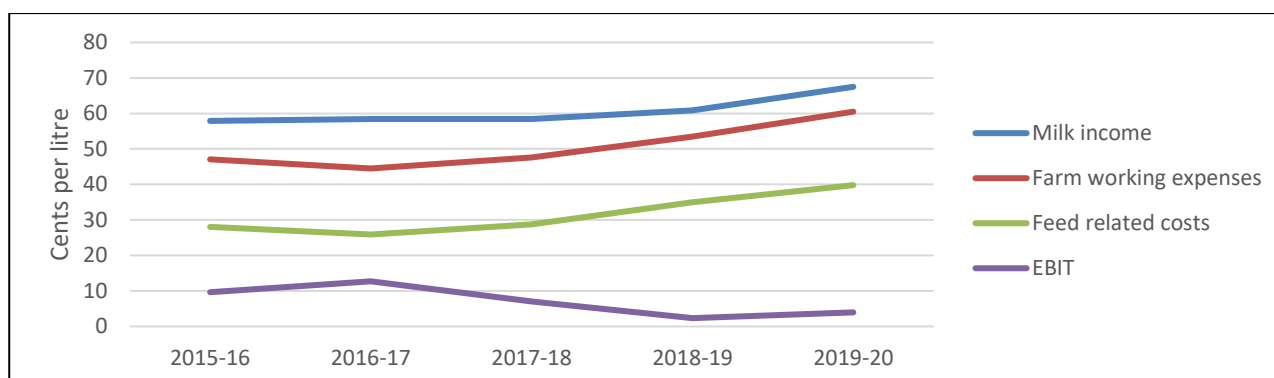
Figure 18 shows the data trends for south Queensland PMR farms between 2015-16 and 2019-20. There are several points of interest:

- Milk income has increased by 17% from 57.9 c/L in 2015-16 to be 67.5 c/L in 2019-20.
- Feed related costs have increased by 54% from a low of 25.9 c/L in 2016-17 to be 39.8 c/L in 2019-20.
- Farm working expenses have increased by 36% from a low of 44.5 c/L in 2016-17 to be 60.5 c/L in 2019-20.
- EBIT has decreased by 69% from 12.7 c/L in 2016-17 to be 4.0 c/L in 2019-20. EBIT was even lower in 2018-19 at 2.3 c/L.

Table 13. Statistics for South Queensland PMR farms – 20 farms (2019-20)

Resources	
Cows (milkers + dry)	296
Heifers >1 year old	117
Heifers <1 year old	103
Total dairy herd	520
Milking cow area (ha)	119
Usable area (ha)	279
Labour units	4.5
Assets and Liabilities	
Land & buildings (\$)	3,294,545
Livestock (\$)	657,623
Machinery (\$)	477,180
Other (\$)	258,527
TOTAL (\$)	4,687,875
Liabilities (\$)	941,956
Equity (%)	80
Investment per cow (\$)	15,832
Debt per cow (\$)	3,181
Productivity	
Milk production (L)	1,881,249
Production per cow (L)	6,353
Financial	
Milk income (c/L)	67.5
Feed related costs (c/L)	39.8
Total variable costs (c/L)	44.2
Margin over feed related costs (c/L)	27.7
EBIT (\$/cow)	254
Return on assets managed (%)	1.3

Figure 18. Trends for South Queensland PMR farms (2015-16 to 2019-20)



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 on grain.

They have invested \$16,381 per cow in their operation with 61% tied to the land. With the large investment in infrastructure that is required, they have a high debt per cow of \$4,780 and equity of 71%, the lowest equity of all groups. A return on assets managed of 2.6% was achieved.

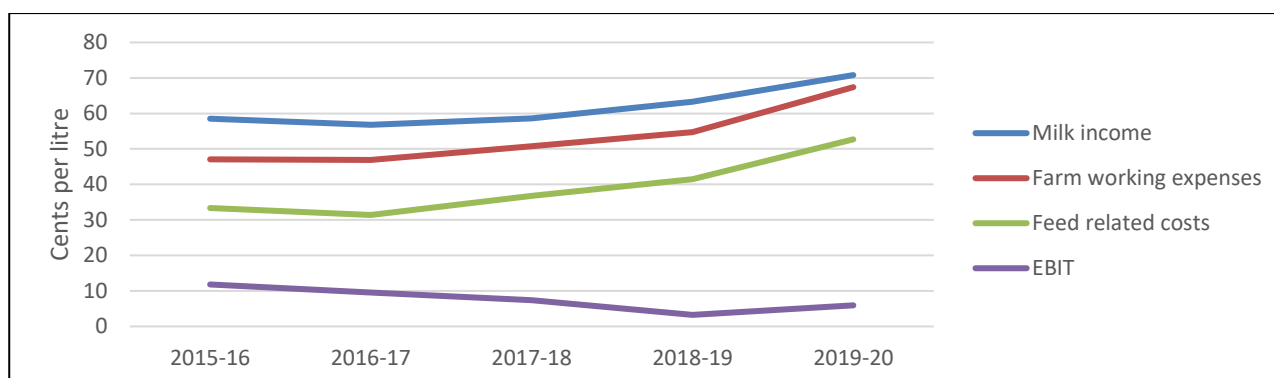
Figure 19 shows the data trends for south Queensland TMR farms between 2015-16 and 2019-20. There are several points of interest:

- Milk income has increased by 21% from 58.5 c/L in 2015-16 to be 70.8 c/L in 2019-20.
- Feed related costs have increased by 68% from a low of 31.4c/L in 2016-17 to be 52.7 c/L in 2019-20.
- Farm working expenses have increased by 44% from a low of 46.9c/L in 2016-17 to be 67.4 c/L in 2019-20.
- EBIT has decreased by 50% from 11.8 c/L in 2015-16 to be 5.9 c/L in 2019-20. EBIT was even lower in 2018-19 at 3.3 c/L.

Table 14. Statistics for South Queensland TMR farms – 10 farms (2019-20)

Resources	
Cows (milkers + dry)	298
Heifers >1 year old	136
Heifers <1 year old	124
Total dairy herd	568
Milking cow area (ha)	3
Usable area (ha)	457
Labour units	3.9
Assets and Liabilities	
Land & buildings (\$)	2,984,410
Livestock (\$)	761,238
Machinery (\$)	693,000
Other (\$)	434,660
TOTAL (\$)	4,873,308
Liabilities (\$)	1,422,109
Equity (%)	71
Investment per cow (\$)	16,381
Debt per cow (\$)	4,780
Productivity	
Milk production (L)	2,235,395
Production per cow (L)	7,514
Financial	
Milk income (c/L)	70.8
Feed related costs (c/L)	52.7
Total variable costs (c/L)	56.4
Margin over feed related costs (c/L)	18.1
EBIT (\$/cow)	440
Return on assets managed (%)	2.6

Figure 19. Trends for South Queensland TMR farms (2015-16 to 2019-20)



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 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 \$12,337 per cow in their operation, of which 68% is in the land value. Equity levels varied across the sample, with the average being 67%, and a return on assets managed of 1.1% was recorded.

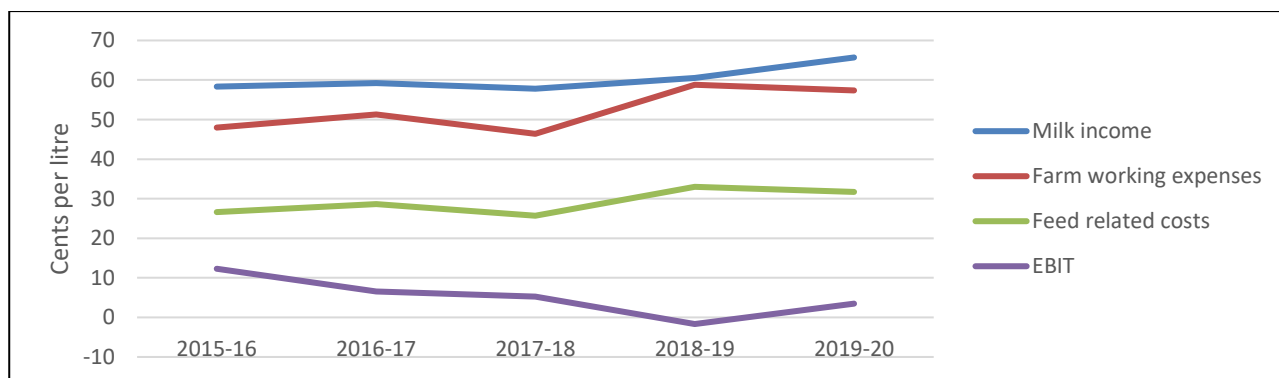
Figure 20 shows the data trends for north Queensland farms between 2015-16 and 2019-20. There are several points of interest:

- Milk income has increased by 13% from 58.3 c/L in 2015-16 to be 65.7 c/L in 2019-20.
- Feed related costs have increased by 19% from of 26.6 c/L in 2015-16 to be 31.7 c/L in 2019-20. Feed related costs were as low as 25.7 c/L in 2017-18.
- Farm working expenses have increased by 24% from a low of 46.4 c/L in 2017-18 to be 57.4 c/L in 2019-20.
- EBIT has decreased by 72% from 12.3 c/L in 2015-16 to be 3.5 c/L in 2019-20. EBIT was as low as -1.7 c/L in 2018-19.

Table 15. Statistics for North Queensland grazing and PMR farms – 7 farms (2019-20)

Resources	
Cows (milkers + dry)	338
Heifers >1 year old	106
Heifers <1 year old	91
Total dairy herd	540
Milking cow area (ha)	124
Usable area (ha)	312
Labour units	5.6
Assets and Liabilities	
Land & buildings (\$)	2,827,929
Livestock (\$)	784,629
Machinery (\$)	352,500
Other (\$)	204,932
TOTAL (\$)	4,169,990
Liabilities (\$)	1,358,849
Equity (%)	67
Investment per cow (\$)	12,337
Debt per cow (\$)	4,020
Productivity	
Milk production (L)	1,728,036
Production per cow (L)	5,113
Financial	
Milk income (c/L)	65.7
Feed related costs (c/L)	31.7
Total variable costs (c/L)	37.7
Margin over feed related costs (c/L)	34.0
EBIT (\$/cow)	177
Return on assets managed (%)	1.1

Figure 20. Trends for North Queensland farms (2015-16 to 2019-20)



10. Appendices

10.1 Group cash flow – All 55 QDAS farms (2019–20)

Group cash flow



All farms

2019/2020

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	68.2	4,196.3	9.31		1,093,928
– Livestock sales less purchases (dairy)	5.8	358.4	0.79		93,422
– Feed sales	0.5	29.3	0.07		7,643
– Other farm cash income	1.6	100.7	0.22		26,239
Total Farm Cash Income	76.2	4,684.6	10.39		1,221,233
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
– Purchased grain, concentrates	24.7	1,517.6	3.37	36.2	395,637
– Purchased fodder, silage, hay	6.1	375.2	0.83	8.9	97,815
– Other purchased feed	2.1	127.4	0.28	3.0	33,210
Total Purchased Feed	32.8	2,020.3	4.48	48.1	526,662
– Fertiliser	2.6	158.8	0.35	3.8	41,390
– Fuel & oil	1.5	93.7	0.21	2.2	24,432
– Pasture & crop costs	1.6	95.5	0.21	2.3	24,891
– Irrigation costs	1.5	92.3	0.20	2.2	24,053
– Hay and silage making costs	1.4	83.2	0.18	2.0	21,683
– Agistment	0.4	24.6	0.05	0.6	6,419
– Other feed costs	0.2	14.1	0.03	0.3	3,683
Feed Related Costs	42.0	2,582.4	5.73	61.5	673,213
Margin Over Feed Related Costs	26.2	1,613.8	3.58	38.5	420,715
– Animal health	1.6	97.2	0.22	2.3	25,349
– Herd improvement	0.6	36.9	0.08	0.9	9,611
– Calf rearing	0.5	30.4	0.07	0.7	7,933
Herd Costs	2.7	164.5	0.36	3.9	42,892
– Dairy shed - power	1.1	68.3	0.15	1.6	17,793
– Dairy shed - supplies	0.8	49.5	0.11	1.2	12,897
Shed Costs	1.9	117.7	0.26	2.8	30,690
Total Variable Costs	46.6	2,864.7	6.35	68.3	746,795
– Employed labour costs	8.2	502.6	1.11	12.0	131,035
– Repairs & maintenance	3.6	222.6	0.49	5.3	58,036
– Other overhead costs	3.1	191.3	0.42	4.6	49,872
Total Cash Overhead Costs	14.9	916.6	2.03	21.8	238,944
Total Farm Working Expenses	61.5	3,781.3	8.38	90.1	985,739
Farm Operating Cash Surplus	14.7	903.3	2.00	21.5	235,494
– Interest costs	2.4	146.8	0.33	3.5	38,278
– Loan principal repayments	3.8	231.0	0.51	5.5	60,211
– Land lease costs	1.6	97.9	0.22	2.3	25,512
– Other capital purchases (unfinanced)	1.8	107.9	0.24	2.6	28,119
Net Cashflow Before Tax & Drawings	5.2	319.8	0.71	7.6	83,374

Labour inputs		Stock		Production	
Paid labour	2.2	Cows (milking and dry)	261	Total litres sold	1,603,400
Unpaid labour	1.7	Total herd	494	Litres / cow	6,151
Total labour units	3.8	Areas		Butterfat (kg)	4.01% 64,269
Litres / Labour unit	416,664	Useable area (ha)	286	Protein (kg)	3.32% 53,293
Cows / labour unit	68	Irrigation area (ha)	51	Milk solids / cow (kg)	451

Farms in this report: 55

10.2 Group cash flow – Top 25% of farms (2019–20)

Group cash flow



Top 25%

2019/2020

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	69.5	4,966.3	9.50		1,680,031
└ Livestock sales less purchases (dairy)	5.6	402.0	0.77		135,974
└ Feed sales	0.7	52.5	0.10		17,756
└ Other farm cash income	1.7	120.2	0.23		40,667
Total Farm Cash Income	77.5	5,541.0	10.60		1,874,428
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
└ Purchased grain, concentrates	25.6	1,826.6	3.49	36.8	617,924
└ Purchased fodder, silage, hay	5.3	378.8	0.72	7.6	128,148
└ Other purchased feed	2.5	181.4	0.35	3.7	61,363
Total Purchased Feed	33.4	2,386.8	4.57	48.1	807,435
└ Fertiliser	2.6	184.4	0.35	3.7	62,371
└ Fuel & oil	1.6	115.4	0.22	2.3	39,034
└ Pasture & crop costs	1.4	97.5	0.19	2.0	32,971
└ Irrigation costs	1.2	85.6	0.16	1.7	28,964
└ Hay and silage making costs	2.1	150.0	0.29	3.0	50,753
└ Agistment	0.0	1.0	0.00	0.0	335
└ Other feed costs	0.4	30.1	0.06	0.6	10,189
Feed Related Costs	42.7	3,050.8	5.84	61.4	1,032,051
Margin Over Feed Related Costs	26.8	1,915.5	3.66	38.6	647,980
└ Animal health	1.3	89.9	0.17	1.8	30,416
└ Herd improvement	0.5	39.3	0.08	0.8	13,296
└ Calf rearing	0.4	27.9	0.05	0.6	9,447
Herd Costs	2.2	157.1	0.30	3.2	53,158
└ Dairy shed - power	1.0	74.5	0.14	1.5	25,213
└ Dairy shed - supplies	0.7	49.4	0.09	1.0	16,710
Shed Costs	1.7	123.9	0.24	2.5	41,922
Total Variable Costs	46.6	3,331.9	6.38	67.1	1,127,132
└ Employed labour costs	8.2	587.1	1.12	11.8	198,614
└ Repairs & maintenance	3.2	225.9	0.43	4.5	76,416
└ Other overhead costs	2.5	180.3	0.34	3.6	60,993
Total Cash Overhead Costs	13.9	993.3	1.90	20.0	336,024
Total Farm Working Expenses	60.5	4,325.2	8.28	87.1	1,463,156
Farm Operating Cash Surplus	17.0	1,215.8	2.33	24.5	411,273
└ Interest costs	1.5	105.0	0.20	2.1	35,537
└ Loan principal repayments	3.7	262.7	0.50	5.3	88,882
└ Land lease costs	1.8	129.5	0.25	2.6	43,821
└ Other capital purchases (unfinanced)	1.8	128.7	0.25	2.6	43,533
Net Cashflow Before Tax & Drawings	8.2	589.7	1.13	11.9	199,499

Labour inputs		Stock		Production	
Paid labour	3.1	Cows (milking and dry)	338	Total litres sold	2,418,390
Unpaid labour	2.0	Total herd	663	Litres / cow	7,149
Total labour units	5.1	Areas		Butterfat (kg)	3.98% 96,208
Litres / Labour unit	477,538	Useable area (ha)	398	Protein (kg)	3.33% 80,595
Cows / labour unit	67	Irrigation area (ha)	55	Milk solids / cow (kg)	523

Farms in this report: 14

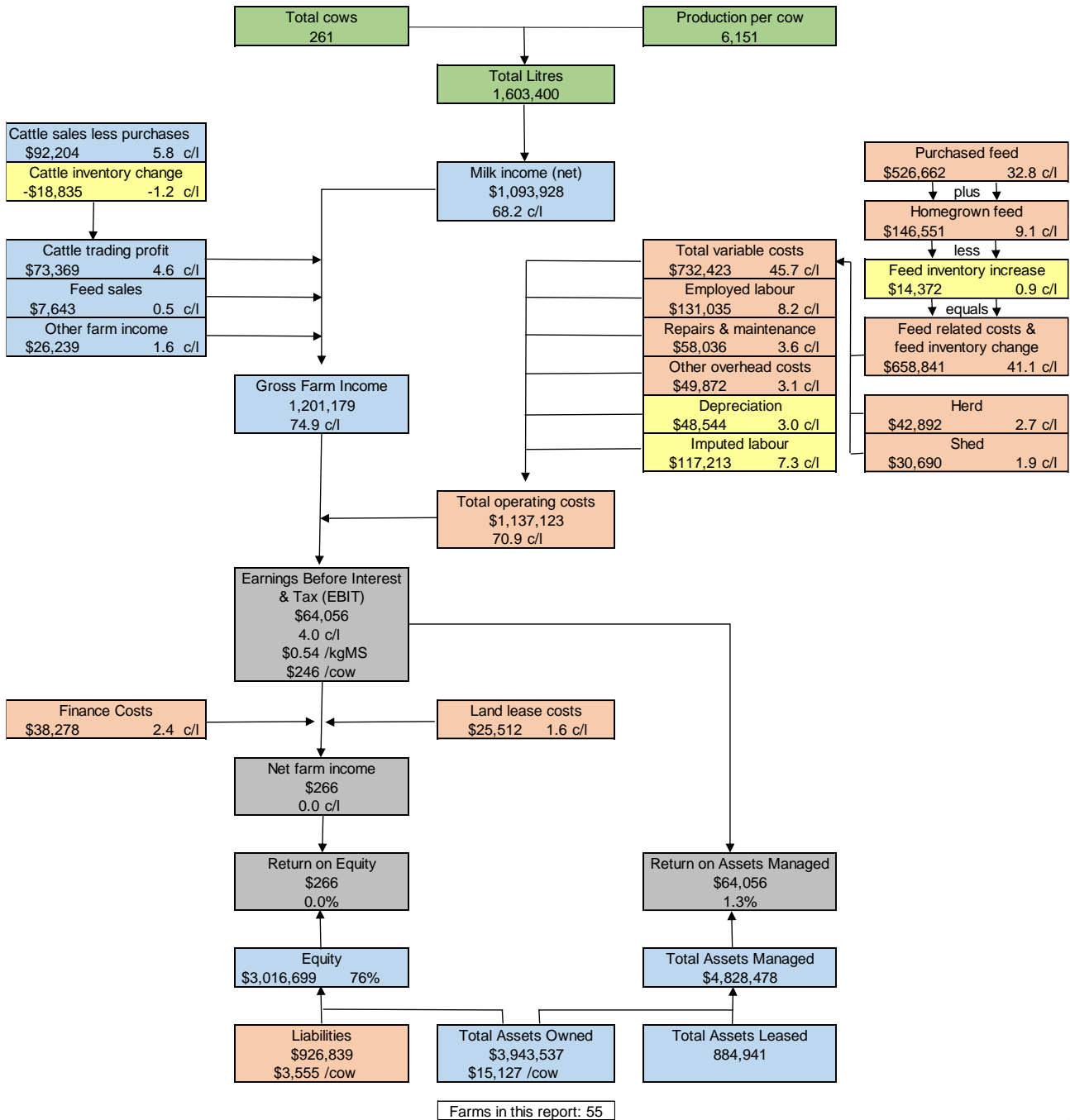
10.3 Group dairy farm profit map – All 55 QDAS farms (2019–20)

Group dairy farm profit map

All farms



2019/2020

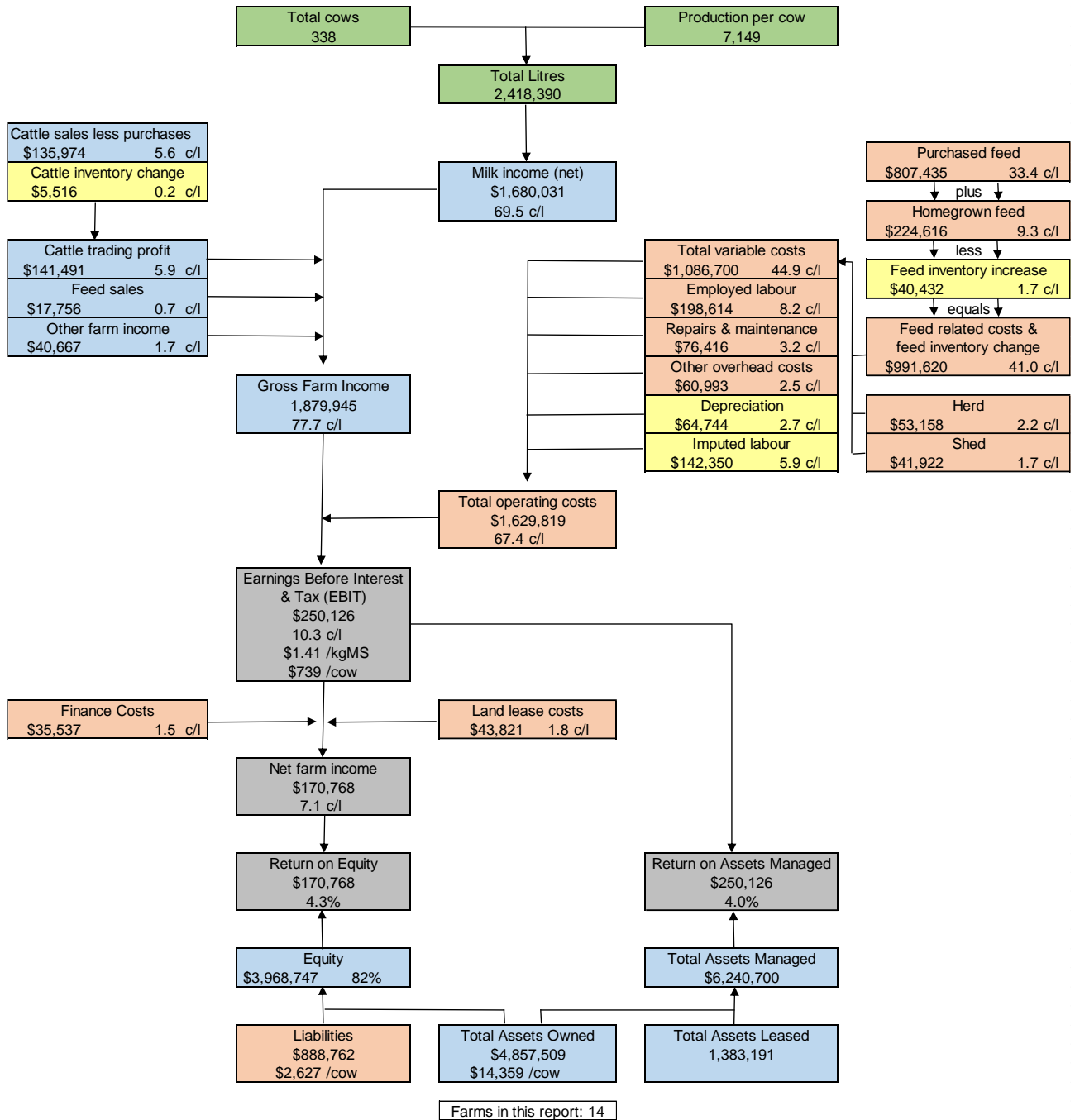


10.4 Group dairy farm profit map – Top 25% of farms (2019–20)

Group dairy farm profit map



Top 25%



10.5 Group cash flow – South Queensland Grazing (2019–20)

Group cash flow

South Queensland Grazing



2019/2020

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	67.8	3,540.1	9.16		561,207
└ Livestock sales less purchases (dairy)	4.4	231.9	0.60		36,765
└ Feed sales	0.0	0.0	0.00		0
└ Other farm cash income	2.5	130.8	0.34		20,738
Total Farm Cash Income	74.7	3,902.8	10.10		618,711
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
└ Purchased grain, concentrates	25.9	1,351.7	3.50	38.2	214,284
└ Purchased fodder, silage, hay	4.8	250.4	0.65	7.1	39,696
└ Other purchased feed	0.8	40.4	0.10	1.1	6,407
Total Purchased Feed	31.4	1,642.5	4.25	46.4	260,387
└ Fertiliser	3.1	159.6	0.41	4.5	25,308
└ Fuel & oil	1.0	53.5	0.14	1.5	8,480
└ Pasture & crop costs	1.8	95.5	0.25	2.7	15,138
└ Irrigation costs	1.6	84.5	0.22	2.4	13,403
└ Hay and silage making costs	0.3	17.1	0.04	0.5	2,712
└ Agistment	0.1	4.0	0.01	0.1	634
└ Other feed costs	0.0	0.7	0.00	0.0	107
Feed Related Costs	39.4	2,057.5	5.32	58.1	326,168
Margin Over Feed Related Costs	28.4	1,482.6	3.84	41.9	235,039
└ Animal health	2.0	105.8	0.27	3.0	16,777
└ Herd improvement	0.9	44.9	0.12	1.3	7,113
└ Calf rearing	0.4	22.7	0.06	0.6	3,601
Herd Costs	3.3	173.4	0.45	4.9	27,491
└ Dairy shed - power	1.0	53.4	0.14	1.5	8,468
└ Dairy shed - supplies	0.9	48.5	0.13	1.4	7,692
Shed Costs	2.0	101.9	0.26	2.9	16,160
Total Variable Costs	44.6	2,332.8	6.04	65.9	369,820
└ Employed labour costs	6.0	314.2	0.81	8.9	49,811
└ Repairs & maintenance	3.6	187.7	0.49	5.3	29,762
└ Other overhead costs	3.5	184.5	0.48	5.2	29,248
Total Cash Overhead Costs	13.1	686.4	1.78	19.4	108,821
Total Farm Working Expenses	57.8	3,019.3	7.81	85.3	478,641
Farm Operating Cash Surplus	16.9	883.6	2.29	25.0	140,069
└ Interest costs	2.0	106.1	0.27	3.0	16,824
└ Loan principal repayments	3.4	178.0	0.46	5.0	28,224
└ Land lease costs	3.2	169.7	0.44	4.8	26,907
└ Other capital purchases (unfinanced)	2.0	103.8	0.27	2.9	16,449
Net Cashflow Before Tax & Drawings	6.2	325.9	0.84	9.2	51,665

Labour inputs		Stock		Production	
Paid labour	0.9	Cows (milking and dry)	159	Total litres sold	828,349
Unpaid labour	1.5	Total herd	323	Litres / cow	5,225
Total labour units	2.4	Areas		Butterfat (kg)	4.08% 33,813
Litres / Labour unit	352,048	Useable area (ha)	176	Protein (kg)	3.31% 27,456
Cows / labour unit	67	Irrigation area (ha)	32	Milk solids / cow (kg)	386

Farms in this report: 17

10.6 Group cash flow – South Queensland PMR (2019–20)

Group cash flow

South Queensland PMR



2019/2020

Farm Cash Income	c/L	\$/cow	\$/kg MS	Total \$ Earned	
Milk Income (net)	67.5	4,291.5	9.29		1,270,711
└ Livestock sales less purchases (dairy)	5.1	324.9	0.70		96,210
└ Feed sales	1.0	65.7	0.14		19,448
└ Other farm cash income	1.2	78.2	0.17		23,146
Total Farm Cash Income	74.9	4,760.3	10.30		1,409,515
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
└ Purchased grain, concentrates	21.4	1,361.3	2.95	31.7	403,074
└ Purchased fodder, silage, hay	5.5	349.1	0.76	8.1	103,355
└ Other purchased feed	1.9	119.4	0.26	2.8	35,357
Total Purchased Feed	28.8	1,829.7	3.96	42.6	541,786
└ Fertiliser	2.8	176.2	0.38	4.1	52,173
└ Fuel & oil	1.6	100.3	0.22	2.3	29,684
└ Pasture & crop costs	2.0	124.6	0.27	2.9	36,900
└ Irrigation costs	2.4	149.9	0.32	3.5	44,375
└ Hay and silage making costs	1.8	115.0	0.25	2.7	34,064
└ Agistment	0.1	3.3	0.01	0.1	971
└ Other feed costs	0.5	32.3	0.07	0.8	9,574
Feed Related Costs	39.8	2,531.3	5.48	59.0	749,527
Margin Over Feed Related Costs	27.7	1,760.2	3.81	41.0	521,184
└ Animal health	1.5	97.8	0.21	2.3	28,957
└ Herd improvement	0.6	36.9	0.08	0.9	10,913
└ Calf rearing	0.4	24.2	0.05	0.6	7,154
Herd Costs	2.5	158.8	0.34	3.7	47,024
└ Dairy shed - power	1.0	64.8	0.14	1.5	19,193
└ Dairy shed - supplies	0.8	52.1	0.11	1.2	15,420
Shed Costs	1.8	116.9	0.25	2.7	34,612
Total Variable Costs	44.2	2,807.0	6.08	65.4	831,162
└ Employed labour costs	9.4	595.0	1.29	13.9	176,178
└ Repairs & maintenance	3.9	248.4	0.54	5.8	73,549
└ Other overhead costs	3.1	195.6	0.42	4.6	57,926
Total Cash Overhead Costs	16.4	1,039.0	2.25	24.2	307,653
Total Farm Working Expenses	60.5	3,846.1	8.33	89.6	1,138,816
Farm Operating Cash Surplus	14.4	914.2	1.98	21.3	270,699
└ Interest costs	1.9	121.3	0.26	2.8	35,928
└ Loan principal repayments	3.9	250.4	0.54	5.8	74,132
└ Land lease costs	1.5	96.5	0.21	2.2	28,576
└ Other capital purchases (unfinanced)	2.4	149.8	0.32	3.5	44,355
Net Cashflow Before Tax & Drawings	4.7	296.2	0.64	6.9	87,708

Labour inputs		Stock		Production	
Paid labour	2.8	Cows (milking and dry)	296	Total litres sold	1,881,249
Unpaid labour	1.7	Total herd	535	Litres / cow	6,353
Total labour units	4.5	Areas		Butterfat (kg)	3.96% 74,511
Litres / Labour unit	416,666	Useable area (ha)	279	Protein (kg)	3.31% 62,279
Cows / labour unit	66	Irrigation area (ha)	88	Milk solids / cow (kg)	462

Farms in this report: 20

10.7 Group cash flow – South Queensland TMR (2019–20)

Group cash flow



South Queensland TMR

2019/2020

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	70.8	5,320.4	9.55		1,582,817
└ Livestock sales less purchases (dairy)	8.0	599.1	1.08		178,230
└ Feed sales	0.1	10.6	0.02		3,141
└ Other farm cash income	1.9	142.4	0.26		42,356
Total Farm Cash Income	80.8	6,072.4	10.90		1,806,544
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
└ Purchased grain, concentrates	32.0	2,404.3	4.32	45.2	715,285
└ Purchased fodder, silage, hay	9.8	736.9	1.32	13.9	219,235
└ Other purchased feed	3.9	291.4	0.52	5.5	86,685
Total Purchased Feed	45.7	3,432.6	6.16	64.5	1,021,205
└ Fertiliser	1.8	136.0	0.24	2.6	40,474
└ Fuel & oil	1.8	136.8	0.25	2.6	40,694
└ Pasture & crop costs	1.1	81.0	0.15	1.5	24,083
└ Irrigation costs	0.5	34.9	0.06	0.7	10,389
└ Hay and silage making costs	1.8	135.5	0.24	2.5	40,318
└ Agistment	0.0	1.3	0.00	0.0	387
└ Other feed costs	0.0	0.5	0.00	0.0	157
Feed Related Costs	52.7	3,958.7	7.10	74.4	1,177,708
Margin Over Feed Related Costs	18.1	1,361.7	2.44	25.6	405,108
└ Animal health	1.0	74.2	0.13	1.4	22,080
└ Herd improvement	0.4	28.0	0.05	0.5	8,328
└ Calf rearing	0.3	26.3	0.05	0.5	7,809
Herd Costs	1.7	128.5	0.23	2.4	38,217
└ Dairy shed - power	1.2	87.3	0.16	1.6	25,972
└ Dairy shed - supplies	0.8	59.7	0.11	1.1	17,756
Shed Costs	2.0	147.0	0.26	2.8	43,727
Total Variable Costs	56.4	4,234.1	7.60	79.6	1,259,653
└ Employed labour costs	5.4	404.8	0.73	7.6	120,432
└ Repairs & maintenance	2.9	219.6	0.39	4.1	65,318
└ Other overhead costs	2.7	203.6	0.37	3.8	60,568
Total Cash Overhead Costs	11.0	828.0	1.49	15.6	246,318
Total Farm Working Expenses	67.4	5,062.1	9.09	95.1	1,505,971
Farm Operating Cash Surplus	13.4	1,010.3	1.81	19.0	300,573
└ Interest costs	2.6	197.0	0.35	3.7	58,618
└ Loan principal repayments	3.5	259.3	0.47	4.9	77,144
└ Land lease costs	0.5	39.3	0.07	0.7	11,686
└ Other capital purchases (unfinanced)	1.3	97.1	0.17	1.8	28,900
Net Cashflow Before Tax & Drawings	5.6	417.6	0.75	7.8	124,225

Labour inputs		Stock		Production	
Paid labour	2.0	Cows (milking and dry)	298	Total litres sold	2,235,395
Unpaid labour	2.0	Total herd	628	Litres / cow	7,514
Total labour units	3.9	Areas		Butterfat (kg)	4.04% 90,302
Litres / Labour unit	568,803	Useable area (ha)	457	Protein (kg)	3.38% 75,457
Cows / labour unit	76	Irrigation area (ha)	23	Milk solids / cow (kg)	557

Farms in this report: 10

10.8 Group cash flow – North Queensland all farms (2019–20)

Group cash flow

North Queensland All Farms



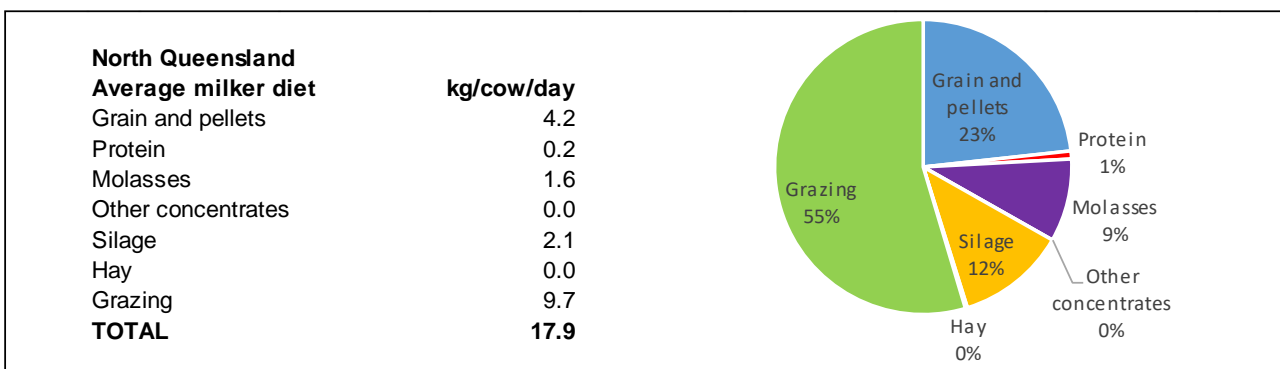
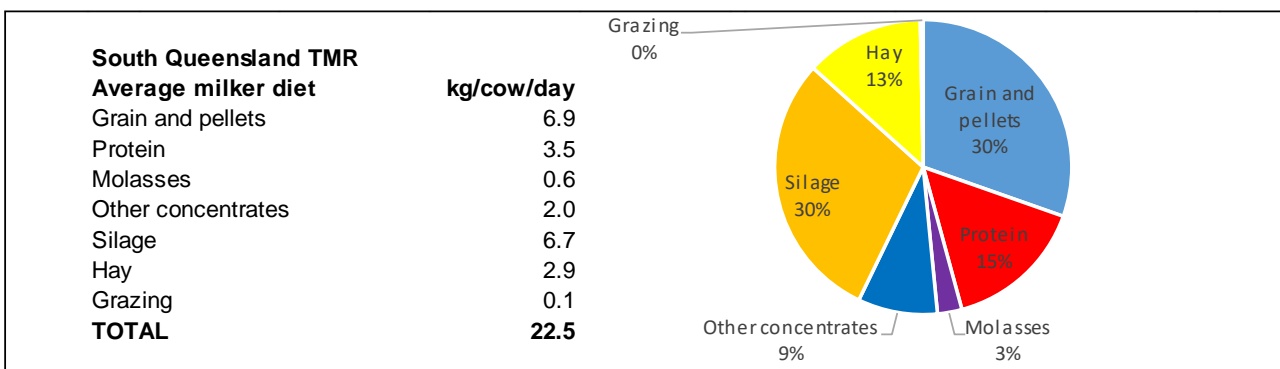
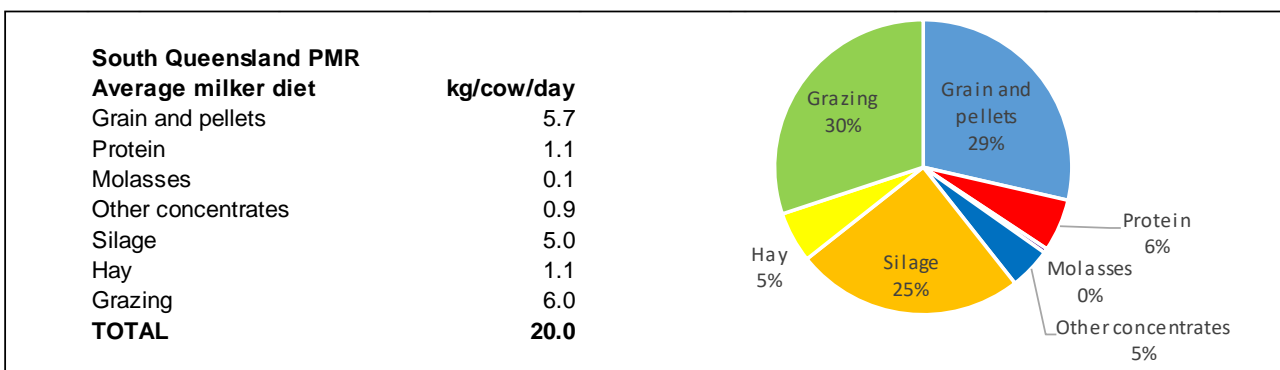
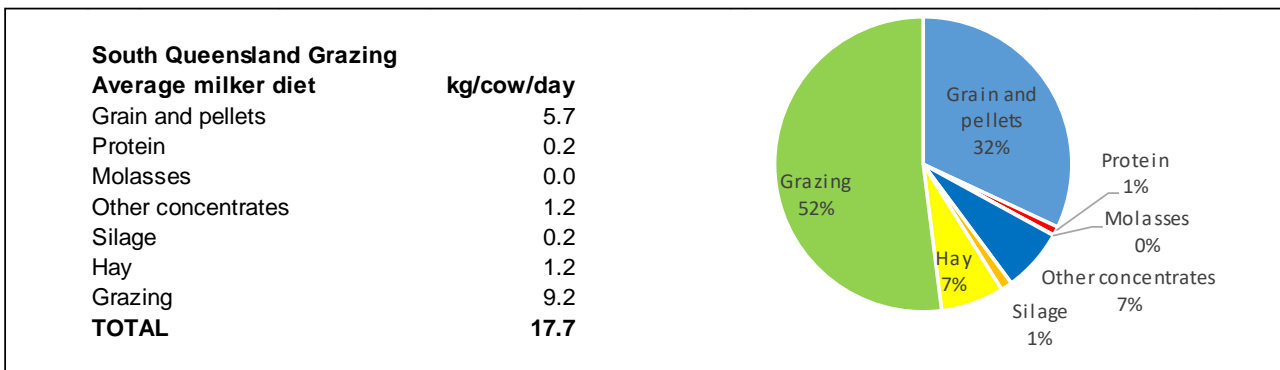
2019/2020

Farm Cash Income	c/L	\$/cow	\$/kg MS	Total \$ Earned	
Milk Income (net)	65.7	3,358.8	9.05		1,135,275
└ Livestock sales less purchases (dairy)	4.8	245.6	0.66		83,029
└ Feed sales	0.0	0.0	0.00		0
└ Other farm cash income	1.7	86.3	0.23		29,161
Total Farm Cash Income	72.2	3,690.7	9.94		1,247,465
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
└ Purchased grain, concentrates	20.2	1,031.5	2.78	30.7	348,633
└ Purchased fodder, silage, hay	3.6	182.6	0.49	5.4	61,718
└ Other purchased feed	0.2	12.0	0.03	0.4	4,054
Total Purchased Feed	24.0	1,226.1	3.30	36.5	414,406
└ Fertiliser	2.5	125.7	0.34	3.7	42,486
└ Fuel & oil	1.1	58.1	0.16	1.7	19,636
└ Pasture & crop costs	0.9	46.3	0.12	1.4	15,662
└ Irrigation costs	0.4	21.3	0.06	0.6	7,190
└ Hay and silage making costs	0.1	3.7	0.01	0.1	1,260
└ Agistment	2.6	134.8	0.36	4.0	45,569
└ Other feed costs	0.1	3.2	0.01	0.1	1,098
Feed Related Costs	31.7	1,619.3	4.36	48.2	547,308
Margin Over Feed Related Costs	34.0	1,739.5	4.69	51.8	587,967
└ Animal health	2.1	108.7	0.29	3.2	36,747
└ Herd improvement	0.9	44.9	0.12	1.3	15,160
└ Calf rearing	0.9	48.3	0.13	1.4	16,342
Herd Costs	3.9	201.9	0.54	6.0	68,249
└ Dairy shed - power	1.4	73.0	0.20	2.2	24,662
└ Dairy shed - supplies	0.6	32.5	0.09	1.0	10,979
Shed Costs	2.1	105.4	0.28	3.1	35,642
Total Variable Costs	37.7	1,926.6	5.19	57.4	651,199
└ Employed labour costs	13.0	664.5	1.79	19.8	224,613
└ Repairs & maintenance	3.4	172.3	0.46	5.1	58,227
└ Other overhead costs	3.3	168.7	0.45	5.0	57,033
Total Cash Overhead Costs	19.7	1,005.5	2.71	29.9	339,873
Total Farm Working Expenses	57.4	2,932.2	7.90	87.3	991,071
Farm Operating Cash Surplus	14.8	758.6	2.04	22.6	256,393
└ Interest costs	3.8	196.3	0.53	5.8	66,350
└ Loan principal repayments	3.5	177.8	0.48	5.3	60,106
└ Land lease costs	1.8	93.7	0.25	2.8	31,663
└ Other capital purchases (unfinanced)	0.5	24.7	0.07	0.7	8,365
Net Cashflow Before Tax & Drawings	5.2	266.0	0.72	7.9	89,910

Labour inputs		Stock		Production	
Paid labour	4.1	Cows (milking and dry)	338	Total litres sold	1,728,036
Unpaid labour	1.5	Total herd	576	Litres / cow	5,113
Total labour units	5.6	Areas		Butterfat (kg)	4.00% 69,175
Litres / Labour unit	308,185	Useable area (ha)	312	Protein (kg)	3.26% 56,274
Cows / labour unit	60	Irrigation area (ha)	31	Milk solids / cow (kg)	371

Farms in this report: 7

10.9 Average milker diets for regional production systems (2019–20)



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 its efforts 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

<p>Profitability</p> <ul style="list-style-type: none"> • Return on asset managed – % • Return on equity – % • EBIT – \$/cow • EBIT margin – % <p>Solvency</p> <ul style="list-style-type: none"> • Equity% – % • Debt to equity ratio <p>Efficiency - Capital</p> <ul style="list-style-type: none"> • Asset turnover ratio • Total liabilities per cow – \$/cow • Interest per cow – \$/cow <p>Efficiency - Production</p> <ul style="list-style-type: none"> • Feed related cost – c/L • Margin over feed related costs – \$/cow • Total variable cost – c/L • Gross margin milk – \$/cow <p>Efficiency – Physical</p> <ul style="list-style-type: none"> • Litres of milk from home grown feed • Production per cow – Litres • Litres per labour unit
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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

$$(\text{EBIT} / \text{Total assets managed}) * 100$$

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

$$(\text{Net farm income} / \text{Equity}) * 100$$

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

$$\text{EBIT} / \text{Number of cows}$$

EBIT margin

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

Calculation

$$(\text{EBIT} / \text{Total gross farm income}) * 100$$

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

$((\text{Assets} - \text{Liabilities}) / \text{Assets}) * 100$

Debt to equity ratio

This is another way of expressing equity.

Calculation

$\text{Liabilities} / (\text{Assets} - \text{Liabilities})$

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

$\text{Total gross farm income} / \text{Assets}$

Total liabilities per cow

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

Calculation

$\text{Liabilities} / \text{Number of cows}$

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

$\text{Total interest payments} / \text{Number of cows}$

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 are 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 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.