

Balancing dairy production and profits in northern Australia



Queensland Dairy Accounting Scheme - 2019

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QDAS Financial and production trends – 2019

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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 60 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 41 million litres from 399 million litres in 2017-18 to 358 million litres in 2018-19, see Table 1.

Reduced 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 2018-19 Australian milk production was 8.8 billion litres with Queensland contributing 4.1% of this.

Figure 2 shows Queensland’s monthly milk production for 2017-18 and 2018-19.

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 (2015-16 to 2018-19)

	Annual production
2015-16	405 m L
2016-17	418 m L
2017-18	399 m L
2018-19	358 m L

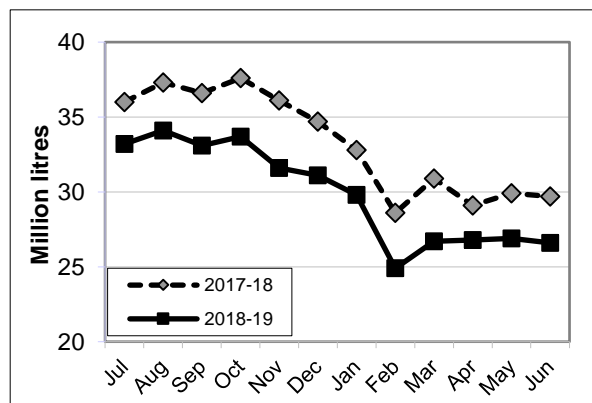


Figure 2. Queensland monthly milk production (2017-18 and 2018-19)

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 were 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 (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 2019.

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1. 2018–19 Key findings

Fifteen Key Performance Indicators (KPI) are used to highlight the results for profitability, solvency and efficiency. Table 2 shows these results for 2018-19 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 (2015-16 to 2018-19)

Business traits and indicators ⁽¹⁾	Top 25%	QDAS average	Past QDAS averages		
	2018-19	2018-19	2017-18	2016-17	2015-16
Profitability					
Return on assets managed (%)	3.4	0.6	2.3	4.4	4.4
Return on equity (%)	3.3	-1.0	1.5	4.9	4.8
Operating profit margin (%)	12.2	2.7	9.6	18.4	18.9
EBIT (\$/cow)	624	113	400	758	770
Solvency					
Equity (%)	78	79	80	78	76
Debt to equity ratio	0.29	0.26	0.25	0.28	0.32
Efficiency – Capital/Finance					
Asset turnover ratio	0.33	0.27	0.28	0.31	0.30
Total liabilities per cow (\$)	3,447	3,255	2,847	2,932	3,242
Interest paid/cow (\$)	144	161	136	141	178
Efficiency – Productivity					
Feed related costs (c/L)	36.4	35.8	30.2	27.1	28.9
Margin over feed related costs (c/L)	26.1	25.8	28.4	31.1	30.2
Margin over feed related costs (\$/cow)	1,889	1,591	1,768	1,951	1,848
Farm operating cash surplus (c/L)	18.2	13.4	17.4	20.0	18.5
Efficiency – Physical					
Production per cow (L)	7,232	6,158	6,232	6,266	6,121
Litres per labour unit					
- On farms <1.5 m L	434,532	381,969	333,310	384,182	410,364
- On farms >1.5 m L	533,801	485,808	503,426	511,572	518,815

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

Profitability

The dramatic decline in the profitability of Queensland dairy farms in 2017-18 has been exacerbated in 2018-19. Table 2 shows that Earnings Before Interest & Tax (EBIT) per cow has declined from \$400 in 2017-18 to now be \$113 in 2018-19. Return on assets managed has also decreased from 2.3% to 0.6%.

The most significant influence on this decline in profit is the drought in eastern Australia which has increased the price of purchased feed and also increased the amount of feed being purchased by Queensland dairy farmers. The result has been a 5.6 c/L increase in feed related costs between 2017-18 and 2018-19. Even more significant is the 8.7 c/L increase in feed related costs over two years, between 2016-17 and 2018-19.

Total cash overhead costs increased by 1.2 c/L. The increase in feed and overhead costs resulted in total farm working expenses increasing by 7.2c/L.

One positive is that milk income increased by 3.1 c/L. 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 slightly from 6,232 litres to be 6,158 litres in 2018-19. The top 25% farms achieved a production per cow of 7,232 litres in 2018-19, 1,074 litres higher than the QDAS average.

The biggest impact on production per cow was felt in North Queensland where four months of drought was followed by eight months of extreme rainfall with some farms receiving three metres of rain in that time.

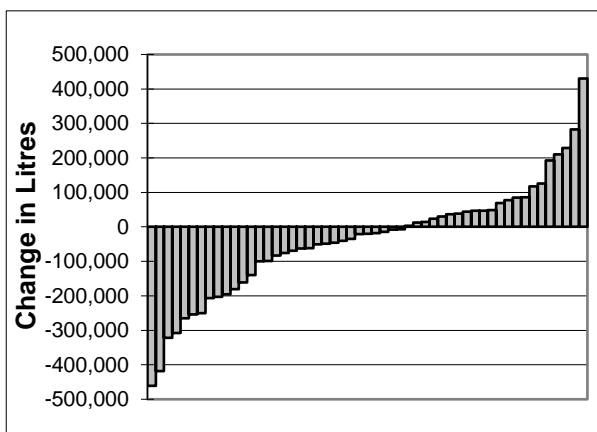


Figure 3. Change in milk production on individual farms between 2017-18 and 2018-19

Production and prices

While Queensland's milk production decreased by 10% in 2018-19, the average milk production of farms in the QDAS sample only decreased by 5,492 litres or less than 1%. This static average result hides the variation across the state. As outlined in the previous section, extreme climatic conditions in north Queensland resulted in all QDAS farms in that region having reduced milk production, with one farm decreasing production by 460,000 litres. In the south of the state, dry conditions resulted in low instances of mastitis in QDAS farms with intensive feeding systems. As a result, many of these farms increased their milk production, albeit with high feed related costs.

Figure 3 shows the changes in milk production between 2017-18 and 2018-19 for individual QDAS farms.

While the average milk production on all 60 QDAS farms was 1,580,774 litres, the production of the top 25% farms was much higher at 2,187,360 litres.

QDAS average milk income (milk price) increased by 3.1 c/L to be 61.6c/L in part due to revenue flowing to farmers from consumers being charged more for generic branded milk. The biggest increase, 4.7 c/L, was recorded in south Queensland TMR (Total Mixed Ration) farms where dry conditions and low instances of mastitis increased milk quality payments. North Queensland had the lowest increase in average milk income at 2.7 c/L.

Figure 4 shows the changes in average milk income per litre between 2017-18 and 2018-19 for individual QDAS farms. The farms with the large changes in milk income are the result of milk quality issues either worsening or resolving.

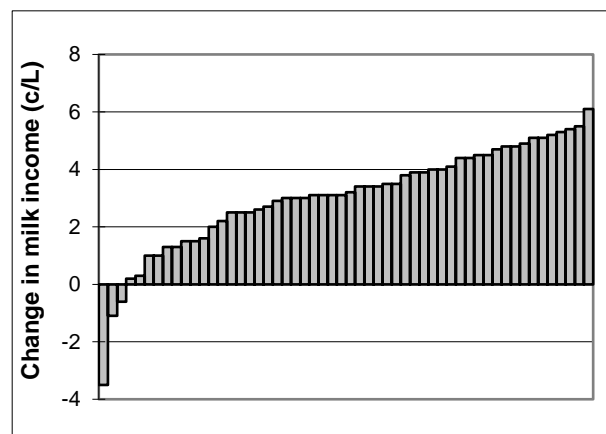


Figure 4. Change in average milk income on individual farms between 2017-18 and 2018-19

Production costs

Table 2 shows that feed related costs increased by 5.6 c/L, from 30.2 c/L in 2017-18 to be 35.8 c/L in 2018-19. Purchased feed contributed the majority of this increase with purchased grain and concentrates increasing by 3.0 c/L. Purchased hay and silage increased by 1.7 c/L to be 4.0 c/L. This is over twice the expenditure on purchased hay and silage recorded in 2016-17. 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 36.4 c/L. This is 0.6 c/L higher than the average of all farms. In 2018-19 feed costs consume 58% of milk income, up from 51% in 2017-18 and 46% in 2016-17.

The margin over feed related costs decreased by 2.6 c/L, from 28.4 c/L to 25.8 c/L.

The farm operating cash surplus for the top 25% group is 18.2 c/L, which is 4.8 c/L higher than the average of all farms. This difference is combination of higher milk income (0.9 c/L), higher cattle sales (1.0 c/L), higher feed related costs (0.6 c/L) and lower overheads (2.5 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 2018-19. 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 2015 to June 2018)

	June 2016	June 2017	June 2018	June 2019
Concentrates				
Sorghum	\$235	\$285	\$380	\$370
Barley	\$260	\$290	\$420	\$430
Wheat	\$285	\$300	\$433	\$435
Soybean meal	\$660	\$580	\$685	\$645
Canola meal	\$480	\$480	\$570	\$535
14% dairy pellet	\$400	\$420	\$550	\$550
Fertiliser				
Urea	\$460	\$650	\$550	\$580
Diesel				
Bowser price	\$1.25	\$1.26	\$1.52	\$1.47



Table 4. Cash analysis of the costs of production (2018-19)

	c/L
Farm income	
Milk income (Net)	61.6
Other farm income	7.0
Total farm income	68.6
Production costs	
Purchased feed	27.3
Home grown feed	8.5
Total feed related costs	35.8
Herd costs	3.2
Shed costs	2.0
Employed labour	7.6
Repairs & maintenance	3.5
Other overheads	3.2
Farm working expenses	55.3
Farm operating cash surplus	13.4
Interest, principal, lease	7.0
Capital purchases (unfinanced)	2.1
Net cash flow before tax & drawings	4.2

Labour

Average employed labour costs for all QDAS farms are \$120,021 for 2.0 paid labour units. This equates to 7.6 c/L, which is 0.5 c/L higher than in 2017-18. 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 (117 cows) do so at 291,573 litres per labour unit, whereas farms producing more than 2.0 m L (463 cows) do so at 502,247 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 4.6 full time equivalents (FTE).

Repairs and other overheads

The QDAS average repairs and maintenance costs are \$55,246 (3.5 c/L). Table 5 shows that repairs and maintenance are 4.1 c/L for the farms that produce less than 0.75 m L and 2.9 c/L for the farms that produce more than 2.0 m L of milk.

The QDAS average for other overhead costs is \$50,294 (3.2 c/L). While overhead costs increase as production increases, the costs get proportionately lower per litre. Table 5 shows other overhead costs falling from 4.7 c/L to 2.5 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 (2018-19)

	<0.75 m L	0.75 – 1.25m L	1.25 – 2.0m L	>2.0m L
Milk production (L)	574,641	1,010,917	1,517,573	3,303,243
Cows (milkers + dry)	117	184	265	463
Overheads				
Repairs & Maintenance (\$)	23,810	37,277	62,045	96,442
Repairs & Maintenance (c/L)	4.1	3.7	4.1	2.9
Other overheads (\$)	27,055	38,281	53,907	81,249
Other overheads (c/L)	4.7	3.8	3.6	2.5
Labour				
Unpaid labour (FTE)	1.4	1.6	1.6	2.0
Paid labour (FTE)	0.6	1.1	1.8	4.6
Paid labour cost (c/L)	32,775	67,401	111,125	278,319
Litres per labour unit	291,573	379,687	449,827	502,247



2. The distribution of QDAS cooperating farms

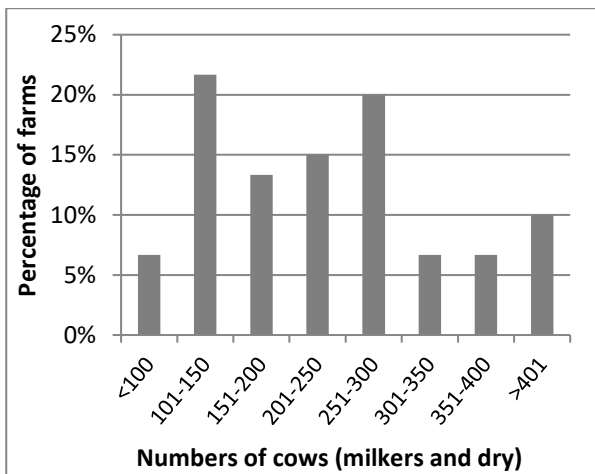


Figure 5. The distribution of QDAS farms by cow numbers

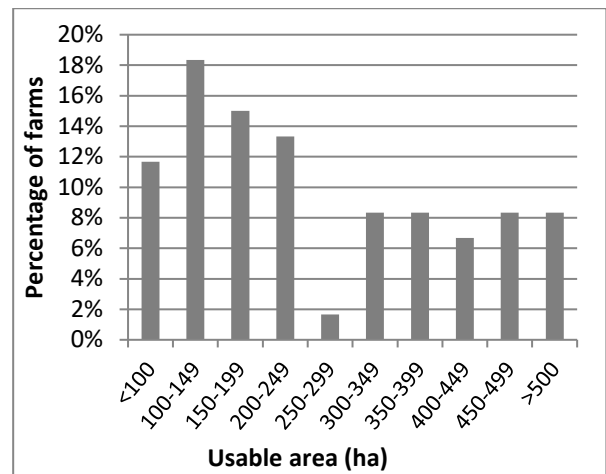


Figure 8. The distribution of QDAS farms by usable area

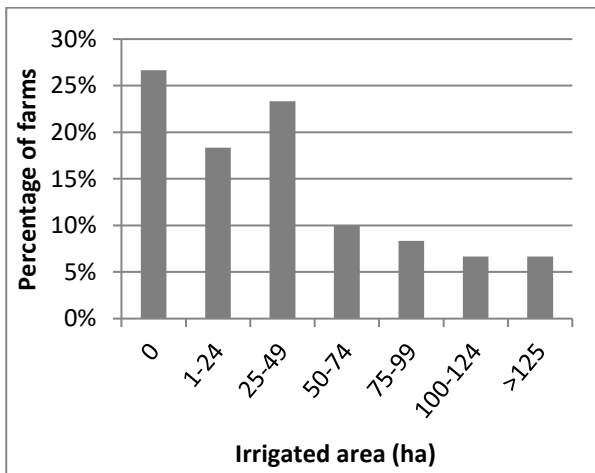


Figure 6. The distribution of QDAS farms by irrigated area

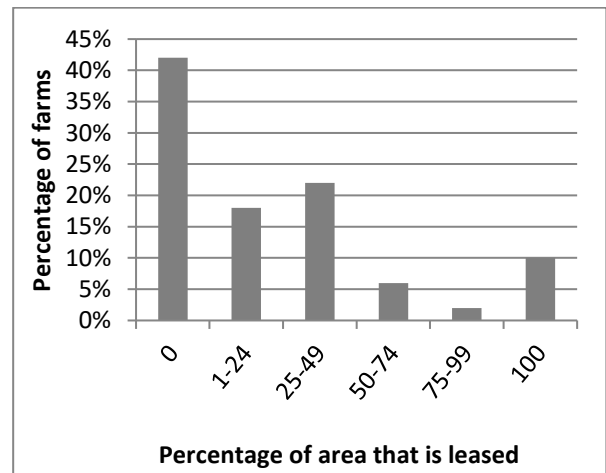


Figure 9. The distribution of QDAS farms by the percentage of total area that is leased



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

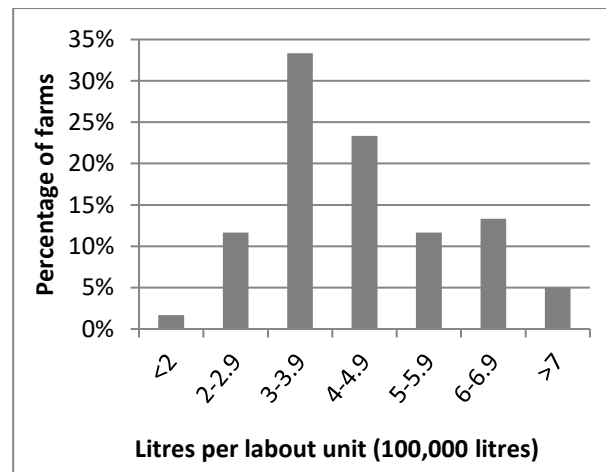


Figure 10. The distribution of QDAS farms by litres per labour unit

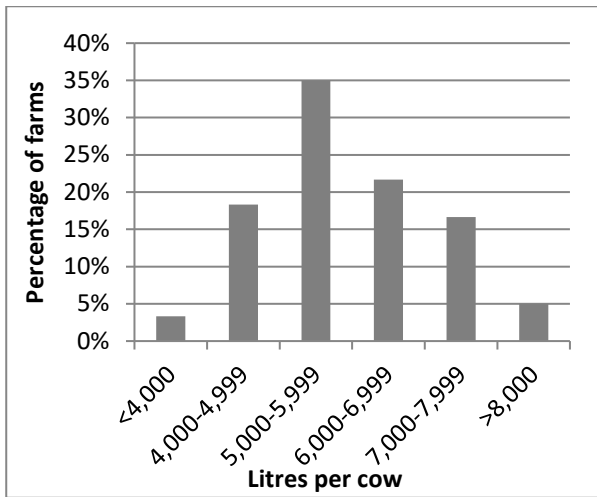


Figure 11. The distribution of QDAS farms by production per cow

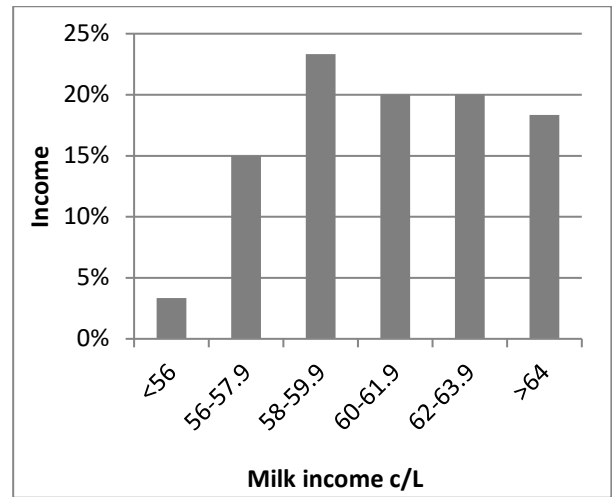


Figure 14. The distribution of QDAS farms by average milk income

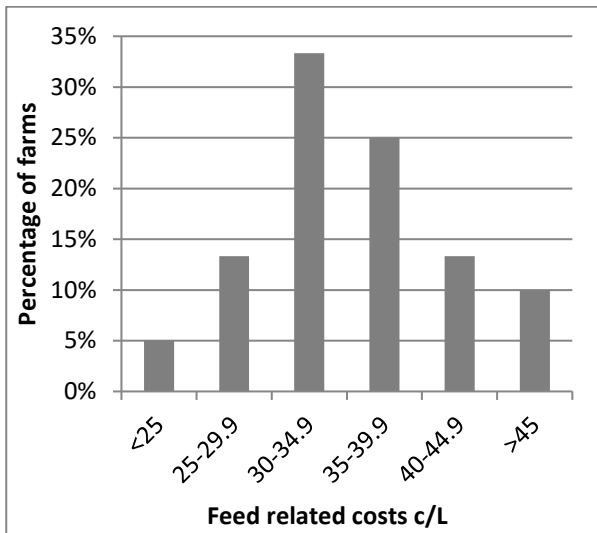


Figure 12. The distribution of QDAS farms by feed related costs

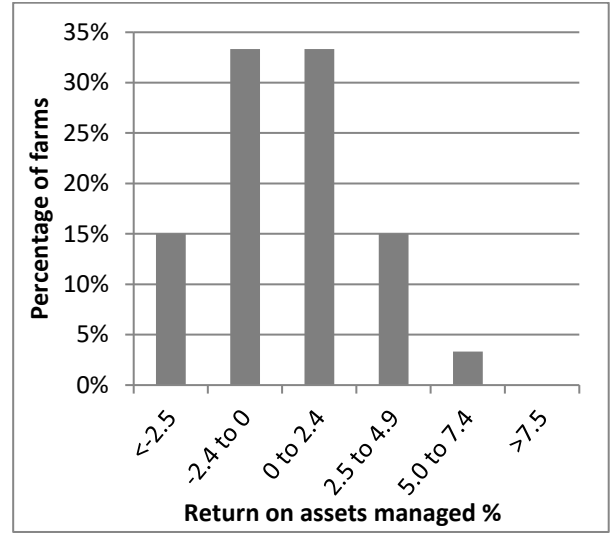


Figure 15. The distribution of QDAS farms by return on assets managed

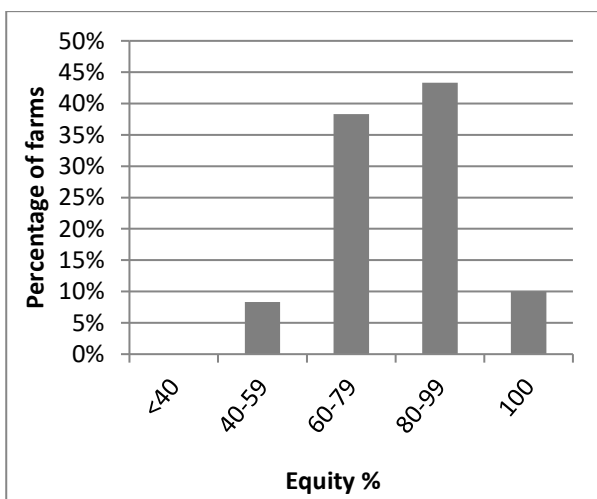


Figure 13. The distribution of QDAS farms by equity percentage

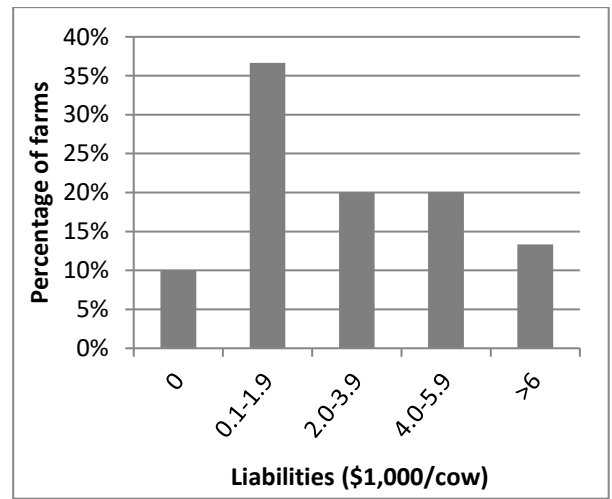


Figure 16. The distribution of QDAS farms by liabilities per cow

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 1,523 litres per cow more than the remaining 75% group.
- Selling more litres of milk. The top 25% group sold 808,782 more litres of milk than the remaining 75% group. This is driven by production per cow and by having 61 more cows (milkers and dry).
- Higher milk income. The top 25% group had milk income 1.2 c/L higher than the other group.
- Lower farm working expenses. The top 25% group had farm working expenses 4.5 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 90,915 more litres per labour unit.

Table 6. KPI for top 25% and the remaining 75% of farms (2018-19)

	Top 25%	Remaining 75%
Physical traits		
Cows (milkers + dry)	302	241
Farm production (L)	2,187,360	1,378,578
Efficiency - Physical		
Production per cow (L)	7,232	5,709
Milk from home grown feed (L/day)	11.4	9.4
Litres per labour unit	502,841	411,926
Profit Analysis		
EBIT (\$/cow)	624	-99
Average investment (\$/cow)	15,499	15,792
Cash Analysis		
Milk income (c/L)	62.5	61.3
Feed related costs (c/L)	36.4	35.9
Farm working expenses (c/L)	52.4	56.9
Margin over FRC (c/L)	26.1	25.4
Margin over FRC (\$/cow)	1,889	1,466



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 -\$91 to \$372 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 (2018-19)

	<5,000	5,000 - 6,000	6,000 - 7,000	>7,000
Farm milk production (L)	1,287,029	1,142,301	1,547,746	2,615,847
Cows (milkers + dry)	287	206	232	333
Production per cow (L)	4,482	5,544	6,680	7,852
Milk income (c/L)	61.9	60.4	62.7	61.7
Margin over FRC (c/L)	29.1	26.1	25.3	24.3
Margin over FRC (\$/cow)	1,303	1,449	1,693	1,909
EBIT (\$/cow)	-91	-118	327	372

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 6,540 litres, whereas the farms with less than 150 cows produced 5,729 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 usage was excellent in the larger herds with 477,935 litres produced per labour unit. Labour efficiency dropped to 337,235 litres per labour unit in the smaller herds.

With an EBIT of \$312 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 (2018-19)

	< 150	150 - 240	240 - 300	> 300
Farm milk production (L)	697,283	1,110,125	1,648,231	3,051,956
Cows (milkers + dry)	122	198	369	467
Production per cow (L)	5,729	5,617	6,129	6,540
Margin over feed related costs (\$/cow)	1,393	1,558	1,540	1,698
Litres per labour unit	337,235	406,852	465,602	477,935
Return on assets managed (%)	-0.8	0.2	0.0	1.8
EBIT (\$/cow)	-181	37	-6	312

4. Feed analysis

Feed related costs require significant attention by dairy farmers, especially in a subtropical environment. In 2018-19 feed related costs represented 58% of milk income on the QDAS average farm. On south Queensland total mixed ration (TMR) farms it represents 65% of milk income. In 2013-14, a year affected by drought, 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 2018-19 year.

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. Distillers Syrup is used on several TMR farms on the Darling Downs.

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 (2018-19)

	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All	All Qld
Grazing (kgDM/cow/day)	10.1	5.8	0.0	7.1	6.0
Grain and pellets (kgDM/cow/day)	5.6	5.6	6.3	4.3	5.4
Protein (kgDM/cow/day)	0.2	1.6	3.7	0.9	1.5
Molasses & syrup (kgDM/cow/day)	0.0	0.1	0.7	2.1	0.7
Other concentrates (kgDM/cow/day)	0.9	0.7	0.7	0.0	0.5
Silage good quality (kgDM/cow/day)	0.2	5.1	3.5	2.6	3.1
Silage medium quality (kgDM/cow/day)	0.1	1.0	5.8	0.0	1.4
Hay good quality (kgDM/cow/day)	0.2	0.7	1.4	0.0	0.5
Hay medium quality & straw (kgDM/cow/day)	0.2	0.4	0.8	0.2	0.4
Total intake (kgDM/cow/day)	17.6	21.0	23.0	17.2	19.5
Production (L/cow/day)	18.4	22.3	24.7	17.5	20.5
Forage to concentrate ratio	62:38	62:38	50:50	59:41	59:41

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 (2018-19)

Region	GRA	PMR	TMR	Total
North Queensland	9	5	0	14
Central Queensland	0	1	0	1
South Queensland	19	18	8	45
Total	28	24	8	60

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

- Milk income varies from 60.5 c/L in North Queensland farms to 63.3 c/L on South Queensland TMR farms.
- Production per cow increases as the feeding system intensifies. In south Queensland grazing farms averaged 5,519 L/cow, PMR farms averaged 6,676 L/cow and TMR farms averaged 7,419 L/cow. Conversely, margin over feed related costs decreased from 28.9 c/L for grazing farms to 21.8 c/L for TMR farms.
- South Queensland TMR farms achieved the highest EBIT of \$241/cow. This is surprising since most south Queensland grazing farms are in the Sunshine Coast and Gympie districts which received much more favourable climatic conditions. The EBIT of the north Queensland farms was the lowest at -\$88/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 (2018-19)

	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All farms
Cows (milkers + dry)	191	258	320	284
Farm production (L)	1,053,348	1,724,976	2,372,144	1,490,095
Production per cow (L)	5,519	6,676	7,419	5,255
Milk income (c/L)	62.3	60.9	63.3	60.5
Feed related costs (c/L)	33.3	35.0	41.5	33.0
Total variable costs (c/L)	39.1	39.2	45.0	40.8
Margin over feed related costs (c/L)	28.9	25.9	21.8	27.5
EBIT (\$/cow)	213	156	241	-88
Return on assets managed (%)	1.1	0.7	1.5	-0.5

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 \$14,690 per cow in their operation, of which 71% is in the land value. Equity levels are high, averaging at 80%, and a return on assets managed of 1.1% was achieved.

Table 13 shows the data trends for farms with continuous participation in QDAS over the last four years (2015-16 to the present). This sample of farms is slightly smaller than the sample used in Table 12. There are several points of interest:

- Milk income was highest in 2018-19 at 62.5 c/L.
- Cow numbers gradually increased from 207 to 216 over the first three years but have decreased to 205 in 2018-19.
- Production per cow has been very consistent, staying between 5,616 and 5,673 over these four years.
- Feed related costs have spiked to be 33.3 c/L in 2018-19.
- Over these four years EBIT has decreased from \$1,077 to be \$256 per cow in 2018-19.

Table 12. Statistics for South Queensland grazing farms – 16 farms (2018-19)

Resources	
Cows (milkers + dry)	191
Heifers >1 year old	85
Heifers <1 year old	68
Total dairy herd	348
Milking cow area (ha)	75
Usable area (ha)	190
Labour units	2.9
Assets and Liabilities	
Land, buildings, irrigation (\$)	1,997,406
Livestock (\$)	431,388
Machinery (\$)	222,819
Other (\$)	152,423
TOTAL (\$)	2,804,036
Liabilities (\$)	566,069
Equity (%)	80
Investment per cow (\$)	14,690
Debt per cow (\$)	2,966
Productivity	
Milk production (L)	1,053,348
Production per cow (L)	5,519
Financial	
Milk income (c/L)	62.3
Feed related costs (c/L)	33.3
Total variable costs (c/L)	39.1
Margin over feed related costs (c/L)	28.9
EBIT (\$/cow)	213
Return on assets managed (%)	1.1

Table 13. Trends for 13 South Queensland grazing farms with continuous data (2015-16 to 2018-19)

	2015-16	2016-17	2017-18	2018-19
Milk income (c/L)	60.6	59.9	60.4	62.5
Cows (milkers and dry)	207	215	216	205
Production per cow (L)	5,660	5,638	5,673	5,616
Feed related costs (c/L)	26.5	25.4	28.1	33.3
Margin over feed related costs (c/L)	34.0	34.5	32.4	29.2
Total variable costs (c/L)	31.5	30.7	33.6	39.3
EBIT (\$/cow)	1,077	820	423	256

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 \$17,894 per cow in their operation with 71% tied to the land. Equity levels are high, averaging at 83% and a return on assets managed of 0.7% was achieved.

Table 15 shows the data trends for farms with continuous participation in QDAS over the last four years (2015-16 to the present). This sample of farms is slightly smaller than the sample used in Table 14. There are several points of interest:

- Milk income was highest in 2018-19 at 61.2 c/L.
- Cow numbers have increased from 290 in 2015-16 to 301 in 2018-19.
- Production per cow peaked in 2016-17 and is now 6,718 litres in 2018-19.
- Feed related costs have spiked to be 34.3 c/L in 2018-19.
- EBIT per cow peaked at \$963 in 2016-17 and is now only \$155 per cow in 2018-19.

Table 14. Statistics for South Queensland PMR farms – 21 farms (2018-19)

Resources	
Cows (milkers + dry)	258
Heifers >1 year old	94
Heifers <1 year old	88
Total dairy herd	445
Milking cow area (ha)	106
Usable area (ha)	268
Labour units	3.9
Assets and Liabilities	
Land & buildings (\$)	3,303,382
Livestock (\$)	575,257
Machinery (\$)	493,010
Other (\$)	251,707
TOTAL (\$)	4,623,357
Liabilities (\$)	770,580
Equity (%)	83
Investment per cow (\$)	17,894
Debt per cow (\$)	2,982
Productivity	
Milk production (L)	1,724,976
Production per cow (L)	6,676
Financial	
Milk income (c/L)	60.9
Feed related costs (c/L)	35.0
Total variable costs (c/L)	39.2
Margin over feed related costs (c/L)	25.9
EBIT (\$/cow)	156
Return on assets managed (%)	0.7

Table 15. Trends for 14 South Queensland PMR farms with continuous data (2015-16 to 2018-19)

	2015-16	2016-17	2017-18	2018-19
Milk income (c/L)	59.0	57.4	57.8	61.2
Cows (milkers and dry)	290	298	297	301
Production per cow (L)	6,525	6,886	6,857	6,718
Feed related costs (c/L)	26.8	23.3	27.7	34.3
Margin over feed related costs (c/L)	32.3	34.1	30.1	26.9
Total variable costs (c/L)	30.5	27.0	31.5	38.2
EBIT (\$/cow)	799	963	467	155

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 \$15,065 per cow in their operation with 58% tied to the land. With the large investment in infrastructure that is required, they have a high debt per cow of \$4,861 and equity of 68%, the lowest equity of all groups. A return on assets managed of 1.5% was achieved.

Table 17 shows the data trends for farms with continuous participation in QDAS over the last four years (2015-16 to the present). This sample of farms is slightly smaller than the sample used in Table 16. There are several points of interest:

- Milk income was highest in 2018-19 at 63.6 c/L.
- Cow numbers have increased from 311 to 344 over these four years.
- Production per cow has increased each year to be 7,502 litres in 2018-19.
- Feed related costs have spiked to be 42.0 c/L in 2018-19.
- EBIT has declined each year to be \$197 per cow in 2018-19.

Table 16. Statistics for South Queensland TMR farms – 8 farms (2018-19)

Resources	
Cows (milkers + dry)	320
Heifers >1 year old	138
Heifers <1 year old	128
Total dairy herd	593
Milking cow area (ha)	1
Usable area (ha)	496
Labour units	3.9
Assets and Liabilities	
Land & buildings (\$)	2,796,450
Livestock (\$)	785,194
Machinery (\$)	797,113
Other (\$)	438,390
TOTAL (\$)	4,817,147
Liabilities (\$)	\$1,554,396
Equity (%)	68
Investment per cow (\$)	15,065
Debt per cow (\$)	4,861
Productivity	
Milk production (L)	2,372,144
Production per cow (L)	7,419
Financial	
Milk income (c/L)	63.3
Feed related costs (c/L)	41.5
Total variable costs (c/L)	45.0
Margin over feed related costs (c/L)	21.8
EBIT (\$/cow)	241
Return on assets managed (%)	1.5

Table 17. Trends for 7 South Queensland TMR farms with continuous data (2015-16 to 2018-19)

	2015-16	2016-17	2017-18	2018-19
Milk income (c/L)	58.7	57.4	58.6	63.6
Cows (milkers and dry)	311	322	337	344
Production per cow (L)	7,115	7,156	7,456	7,502
Feed related costs (c/L)	34.5	32.7	35.1	42.0
Margin over feed related costs (c/L)	24.2	24.8	23.6	21.7
Total variable costs (c/L)	38.3	36.4	38.7	45.5
EBIT (\$/cow)	766	713	594	197

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 \$14,311 per cow in their operation, of which 71% is in the land value. Equity levels are high, averaging 81%, and a return on assets managed of -0.5% was recorded.

Table 19 shows the data trends for farms with continuous participation in QDAS over the last four years (2015-16 to the present). This sample of farms is slightly smaller than the sample used in Table 18. There are several points of interest:

- Milk income was highest in 2018-19 at 60.7 c/L.
- Cow numbers have varied between 213 and 218 over these four years.
- Production per cow has increased from 5,711 litres in 2015-16 to 5,937 litres in 2017-18 but decreased sharply to be 5,222 in 2018-19.
- Feed related costs have spiked to be 31.1 c/L in 2018-19.
- EBIT per cow was highest in 2015-16 and is a loss of \$77 per cow in 2018-19.

Table 18. Statistics for North Queensland grazing and PMR farms – 14 farms (2018-19)

Resources	
Cows (milkers + dry)	284
Heifers >1 year old	105
Heifers <1 year old	74
Total dairy herd	466
Milking cow area (ha)	111
Usable area (ha)	266
Labour units	3.9
Assets and Liabilities	
Land & buildings (\$)	2,900,273
Livestock (\$)	682,133
Machinery (\$)	304,893
Other (\$)	170,928
TOTAL (\$)	4,058,227
Liabilities (\$)	778,757
Equity (%)	81
Investment per cow (\$)	14,311
Debt per cow (\$)	2,746
Productivity	
Milk production (L)	1,490,095
Production per cow (L)	5,255
Financial	
Milk income (c/L)	60.5
Feed related costs (c/L)	33.0
Total variable costs (c/L)	40.8
Margin over feed related costs (c/L)	27.5
EBIT (\$/cow)	-88
Return on assets managed (%)	-0.5

Table 19. Trends for 8 North Queensland grazing farms with continuous data (2015-16 to 2018-19)

	2015-16	2016-17	2017-18	2018-19
Milk income (c/L)	59.8	59.7	58.2	60.7
Cows (milkers and dry)	213	215	218	214
Production per cow (L)	5,711	5,857	5,937	5,222
Feed related costs (c/L)	28.1	28.2	26.0	31.1
Margin over feed related costs (c/L)	31.8	31.5	32.2	29.5
Total variable costs (c/L)	37.4	36.4	33.5	39.6
EBIT (\$/cow)	663	430	397	-77

10. Appendices

10.1 Group cash flow – All 60 QDAS farms (2018–19)

Group cash flow



All farms

2018/2019

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	61.6	3,795.3	8.41		974,311
Livestock sales less purchases (dairy)	5.2	318.1	0.71		81,668
Feed sales	0.4	27.1	0.06		6,957
Other farm cash income	1.4	83.9	0.19		21,534
Total Farm Cash Income	68.6	4,224.4	9.37		1,084,470
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
Purchased grain, concentrates	21.4	1,319.4	2.93	34.8	338,724
Purchased fodder, silage, hay	4.0	247.8	0.55	6.5	63,615
Other purchased feed	1.9	115.9	0.26	3.1	29,744
Total Purchased Feed	27.3	1,683.1	3.73	44.3	432,082
Fertiliser	2.7	166.1	0.37	4.4	42,638
Fuel & oil	1.5	89.4	0.20	2.4	22,959
Pasture & crop costs	1.5	94.0	0.21	2.5	24,120
Irrigation costs	1.3	82.7	0.18	2.2	21,225
Hay and silage making costs	1.3	80.7	0.18	2.1	20,719
Agistment	0.1	5.2	0.01	0.1	1,337
Other feed costs	0.1	3.2	0.01	0.1	826
Feed Related Costs	35.8	2,204.4	4.89	58.1	565,907
Margin Over Feed Related Costs	25.8	1,590.9	3.53	41.9	408,404
Animal health	1.7	107.7	0.24	2.8	27,643
Herd improvement	0.7	42.7	0.09	1.1	10,956
Calf rearing	0.8	46.8	0.10	1.2	12,024
Herd Costs	3.2	197.2	0.44	5.2	50,622
Dairy shed - power	1.2	75.2	0.17	2.0	19,300
Dairy shed - supplies	0.8	46.9	0.10	1.2	12,033
Shed Costs	2.0	122.1	0.27	3.2	31,332
Total Variable Costs	41.0	2,523.6	5.59	66.5	647,862
Employed labour costs	7.6	467.5	1.04	12.3	120,021
Repairs & maintenance	3.5	215.2	0.48	5.7	55,246
Other overhead costs	3.2	195.9	0.43	5.2	50,294
Total Cash Overhead Costs	14.3	878.6	1.95	23.2	225,560
Total Farm Working Expenses	55.3	3,402.3	7.54	89.6	873,422
Farm Operating Cash Surplus	13.4	822.1	1.82	21.7	211,047
Interest costs	2.6	160.9	0.36	4.2	41,294
Loan principal repayments	3.1	187.9	0.42	5.0	48,246
Land lease costs	1.3	83.1	0.18	2.2	21,330
Other capital purchases (unfinanced)	2.1	129.7	0.29	3.4	33,307
Net Cashflow Before Tax & Drawings	4.2	260.5	0.58	6.9	66,871

Labour inputs		Stock		Production	
Paid labour	2.0	Cows (milking and dry)	257	Total litres sold	1,580,774
Unpaid labour	1.6	Total herd	479	Litres / cow	6,158
Total labour units	3.6	Areas		Butterfat (kg)	4.04% 63,788
Litres / Labour unit	439,409	Useable area (ha)	279	Protein (kg)	3.29% 52,011
Cows / labour unit	71	Irrigation area (ha)	50	Milk solids / cow (kg)	451

Farms in this report: 60

10.2 Group cash flow – Top 25% of farms (2018–19)

Group cash flow



Top 25%

2018/2019

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	62.5	4,518.5	8.62		1,366,704
↳ Livestock sales less purchases (dairy)	6.2	449.1	0.86		135,834
↳ Feed sales	0.2	14.8	0.03		4,478
↳ Other farm cash income	1.6	117.9	0.23		35,675
Total Farm Cash Income	70.5	5,100.4	9.73		1,542,692
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
↳ Purchased grain, concentrates	24.0	1,737.7	3.32	38.5	525,603
↳ Purchased fodder, silage, hay	2.9	206.5	0.39	4.6	62,453
↳ Other purchased feed	2.3	164.0	0.31	3.6	49,618
Total Purchased Feed	29.2	2,108.2	4.02	46.7	637,674
↳ Fertiliser	2.4	173.5	0.33	3.8	52,476
↳ Fuel & oil	1.3	93.6	0.18	2.1	28,325
↳ Pasture & crop costs	1.4	101.1	0.19	2.2	30,575
↳ Irrigation costs	0.9	65.1	0.12	1.4	19,697
↳ Hay and silage making costs	1.2	87.0	0.17	1.9	26,314
↳ Agistment	0.0	0.0	0.00	0.0	0
↳ Other feed costs	0.0	0.5	0.00	0.0	139
Feed Related Costs	36.4	2,629.1	5.02	58.2	795,201
Margin Over Feed Related Costs	26.1	1,889.5	3.61	41.8	571,504
↳ Animal health	1.7	124.4	0.24	2.8	37,625
↳ Herd improvement	0.5	37.4	0.07	0.8	11,320
↳ Calf rearing	0.3	18.6	0.04	0.4	5,625
Herd Costs	2.5	180.4	0.34	4.0	54,570
↳ Dairy shed - power	1.1	78.8	0.15	1.7	23,832
↳ Dairy shed - supplies	0.7	48.7	0.09	1.1	14,715
Shed Costs	1.8	127.4	0.24	2.8	38,547
Total Variable Costs	40.6	2,936.9	5.60	65.0	888,318
↳ Employed labour costs	6.5	466.8	0.89	10.3	141,183
↳ Repairs & maintenance	3.0	216.2	0.41	4.8	65,398
↳ Other overhead costs	2.3	167.0	0.32	3.7	50,505
Total Cash Overhead Costs	11.8	850.0	1.62	18.8	257,085
Total Farm Working Expenses	52.4	3,786.9	7.23	83.8	1,145,403
Farm Operating Cash Surplus	18.2	1,313.5	2.51	29.1	397,289
↳ Interest costs	2.0	143.8	0.27	3.2	43,495
↳ Loan principal repayments	3.6	257.1	0.49	5.7	77,771
↳ Land lease costs	1.2	86.1	0.16	1.9	26,031
↳ Other capital purchases (unfinanced)	4.0	286.8	0.55	6.3	86,744
Net Cashflow Before Tax & Drawings	7.5	539.7	1.03	11.9	163,247

Labour inputs		Stock		Production	
Paid labour	2.4	Cows (milking and dry)	302	Total litres sold	2,187,360
Unpaid labour	2.0	Total herd	626	Litres / cow	7,232
Total labour units	4.4	Areas		Butterfat (kg)	3.95% 86,476
Litres / Labour unit	502,841	Useable area (ha)	345	Protein (kg)	3.29% 72,012
Cows / labour unit	70	Irrigation area (ha)	50	Milk solids / cow (kg)	524

Farms in this report: 15

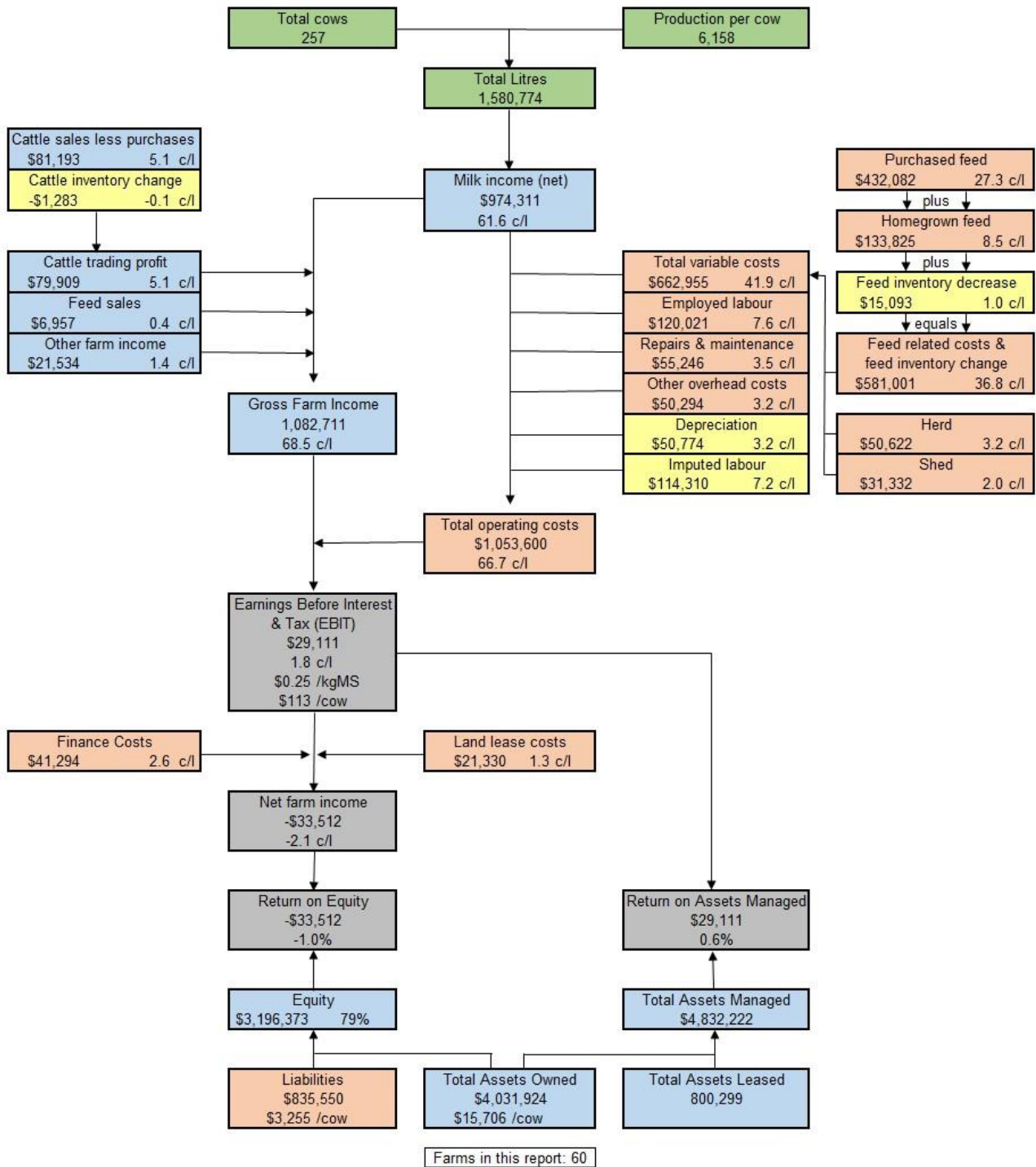
10.3 Group dairy farm profit map – All 60 QDAS farms (2018–19)

Group dairy farm profit map



All farms

2018/2019



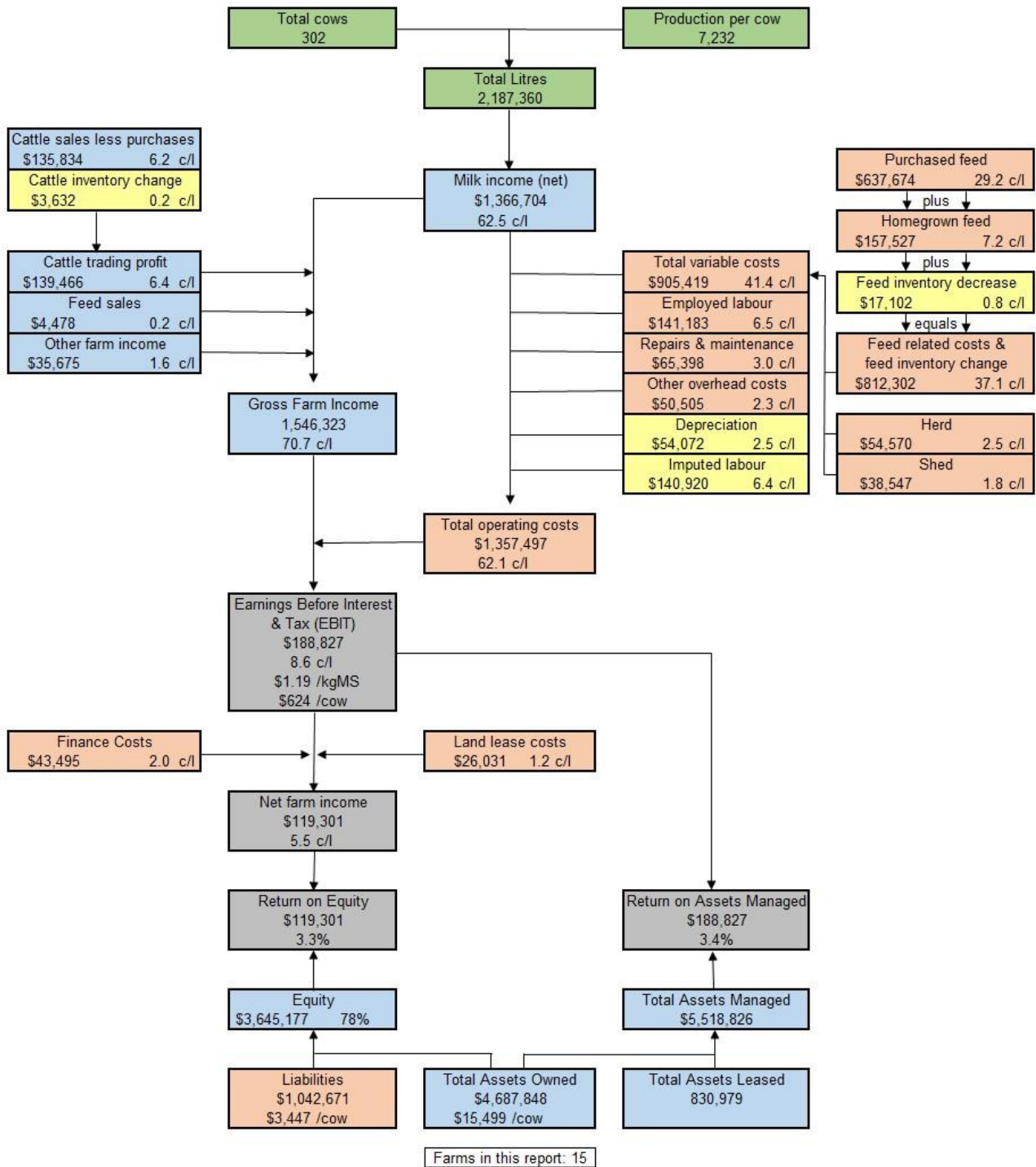
10.4 Group dairy farm profit map – Top 25% of farms (2018–19)

Group dairy farm profit map



Top 25%

2018/2019



10.5 Group cash flow – South Queensland Grazing (2018–19)

Group cash flow

South Queensland Grazing



2018/2019

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	62.3	3,436.5	8.40		655,939
↳ Livestock sales less purchases (dairy)	6.2	344.4	0.84		65,731
↳ Feed sales	0.0	0.0	0.00		0
↳ Other farm cash income	1.9	104.0	0.25		19,847
Total Farm Cash Income	70.4	3,884.8	9.49		741,516
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
↳ Purchased grain, concentrates	22.5	1,243.5	3.04	36.2	237,351
↳ Purchased fodder, silage, hay	1.3	70.9	0.17	2.1	13,526
↳ Other purchased feed	0.8	41.5	0.10	1.2	7,922
Total Purchased Feed	24.6	1,355.9	3.31	39.5	258,799
↳ Fertiliser	3.6	200.5	0.49	5.8	38,280
↳ Fuel & oil	1.1	62.9	0.15	1.8	12,010
↳ Pasture & crop costs	1.7	95.7	0.23	2.8	18,265
↳ Irrigation costs	1.6	90.0	0.22	2.6	17,183
↳ Hay and silage making costs	0.6	31.6	0.08	0.9	6,040
↳ Agistment	0.1	3.1	0.01	0.1	595
↳ Other feed costs	0.0	0.4	0.00	0.0	85
Feed Related Costs	33.3	1,840.2	4.50	53.6	351,257
Margin Over Feed Related Costs	28.9	1,596.2	3.90	46.4	304,681
↳ Animal health	2.6	142.4	0.35	4.1	27,175
↳ Herd improvement	0.7	40.9	0.10	1.2	7,806
↳ Calf rearing	0.5	26.1	0.06	0.8	4,983
Herd Costs	3.8	209.4	0.51	6.1	39,963
↳ Dairy shed - power	1.2	65.0	0.16	1.9	12,407
↳ Dairy shed - supplies	0.8	44.4	0.11	1.3	8,475
Shed Costs	2.0	109.4	0.27	3.2	20,882
Total Variable Costs	39.1	2,159.0	5.27	62.8	412,102
↳ Employed labour costs	7.7	427.5	1.04	12.4	81,590
↳ Repairs & maintenance	4.0	218.7	0.53	6.4	41,752
↳ Other overhead costs	3.3	183.6	0.45	5.3	35,052
Total Cash Overhead Costs	15.0	829.8	2.03	24.1	158,394
Total Farm Working Expenses	54.2	2,988.8	7.30	87.0	570,496
Farm Operating Cash Surplus	16.2	896.0	2.19	26.1	171,020
↳ Interest costs	1.7	94.9	0.23	2.8	18,105
↳ Loan principal repayments	3.5	194.6	0.48	5.7	37,147
↳ Land lease costs	2.6	142.0	0.35	4.1	27,112
↳ Other capital purchases (unfinanced)	2.6	143.2	0.35	4.2	27,336
Net Cashflow Before Tax & Drawings	5.8	321.3	0.78	9.3	61,319

Labour inputs		Stock		Production	
Paid labour	1.4	Cows (milking and dry)	191	Total litres sold	1,053,348
Unpaid labour	1.5	Total herd	379	Litres / cow	5,519
Total labour units	2.9	Areas		Butterfat (kg)	4.10% 43,152
Litres / Labour unit	366,382	Useable area (ha)	190	Protein (kg)	3.32% 34,973
Cows / labour unit	66	Irrigation area (ha)	42	Milk solids / cow (kg)	409

Farms in this report: 16

10.6 Group cash flow – South Queensland PMR (2018–19)

Group cash flow



South Queensland PMR

2018/2019

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	60.9	4,066.1	8.36		1,050,614
↳ Livestock sales less purchases (dairy)	4.2	282.3	0.58		72,946
↳ Feed sales	0.9	58.7	0.12		15,175
↳ Other farm cash income	1.3	84.0	0.17		21,707
Total Farm Cash Income	67.3	4,491.2	9.23		1,160,443
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
↳ Purchased grain, concentrates	19.2	1,281.9	2.63	31.5	331,231
↳ Purchased fodder, silage, hay	4.1	276.8	0.57	6.8	71,520
↳ Other purchased feed	2.0	134.7	0.28	3.3	34,815
Total Purchased Feed	25.4	1,693.5	3.48	41.6	437,566
↳ Fertiliser	2.5	164.8	0.34	4.1	42,589
↳ Fuel & oil	1.3	88.0	0.18	2.2	22,732
↳ Pasture & crop costs	1.8	121.9	0.25	3.0	31,486
↳ Irrigation costs	2.1	138.8	0.29	3.4	35,867
↳ Hay and silage making costs	1.9	124.8	0.26	3.1	32,245
↳ Agistment	0.0	2.8	0.01	0.1	731
↳ Other feed costs	0.1	4.4	0.01	0.1	1,134
Feed Related Costs	35.0	2,339.0	4.81	57.5	604,349
Margin Over Feed Related Costs	25.9	1,727.2	3.55	42.5	446,265
↳ Animal health	1.4	95.2	0.20	2.3	24,585
↳ Herd improvement	0.7	46.1	0.09	1.1	11,906
↳ Calf rearing	0.3	22.7	0.05	0.6	5,859
Herd Costs	2.5	163.9	0.34	4.0	42,351
↳ Dairy shed - power	1.0	67.5	0.14	1.7	17,442
↳ Dairy shed - supplies	0.7	48.4	0.10	1.2	12,506
Shed Costs	1.7	115.9	0.24	2.9	29,948
Total Variable Costs	39.2	2,618.8	5.38	64.4	676,648
↳ Employed labour costs	7.8	520.9	1.07	12.8	134,598
↳ Repairs & maintenance	3.1	208.3	0.43	5.1	53,813
↳ Other overhead costs	3.3	222.5	0.46	5.5	57,496
Total Cash Overhead Costs	14.3	951.7	1.96	23.4	245,906
Total Farm Working Expenses	53.5	3,570.5	7.34	87.8	922,554
Farm Operating Cash Surplus	13.8	920.7	1.89	22.6	237,889
↳ Interest costs	2.2	145.4	0.30	3.6	37,561
↳ Loan principal repayments	3.1	205.4	0.42	5.1	53,066
↳ Land lease costs	1.2	78.0	0.16	1.9	20,146
↳ Other capital purchases (unfinanced)	2.6	173.9	0.36	4.3	44,929
Net Cashflow Before Tax & Drawings	4.8	318.1	0.65	7.8	82,187

Labour inputs		Stock		Production	
Paid labour	2.2	Cows (milking and dry)	258	Total litres sold	1,724,976
Unpaid labour	1.7	Total herd	461	Litres / cow	6,676
Total labour units	3.9	Areas		Butterfat (kg)	3.99% 68,744
Litres / Labour unit	446,665	Useable area (ha)	268	Protein (kg)	3.30% 56,962
Cows / labour unit	67	Irrigation area (ha)	81	Milk solids / cow (kg)	487

Farms in this report: 21

10.7 Group cash flow – South Queensland TMR (2018–19)

Group cash flow



South Queensland TMR

2018/2019

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	63.3	4,695.9	8.48		1,501,507
↳ Livestock sales less purchases (dairy)	5.6	414.6	0.75		132,557
↳ Feed sales	0.5	36.1	0.07		11,538
↳ Other farm cash income	1.8	133.2	0.24		42,601
Total Farm Cash Income	71.2	5,279.8	9.54		1,688,202
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
↳ Purchased grain, concentrates	25.2	1,866.9	3.37	39.8	596,955
↳ Purchased fodder, silage, hay	5.3	389.6	0.70	8.3	124,589
↳ Other purchased feed	3.6	267.9	0.48	5.7	85,656
Total Purchased Feed	34.0	2,524.5	4.56	53.8	807,200
↳ Fertiliser	1.7	126.7	0.23	2.7	40,499
↳ Fuel & oil	2.1	153.9	0.28	3.3	49,211
↳ Pasture & crop costs	1.2	92.5	0.17	2.0	29,580
↳ Irrigation costs	0.3	24.2	0.04	0.5	7,734
↳ Hay and silage making costs	2.1	153.4	0.28	3.3	49,047
↳ Agistment	0.0	0.6	0.00	0.0	192
↳ Other feed costs	0.0	0.1	0.00	0.0	38
Feed Related Costs	41.5	3,075.8	5.56	65.5	983,501
Margin Over Feed Related Costs	21.8	1,620.0	2.93	34.5	518,006
↳ Animal health	0.9	66.4	0.12	1.4	21,233
↳ Herd improvement	0.2	16.3	0.03	0.3	5,211
↳ Calf rearing	0.2	13.8	0.03	0.3	4,426
Herd Costs	1.3	96.5	0.17	2.1	30,870
↳ Dairy shed - power	1.3	96.9	0.18	2.1	30,990
↳ Dairy shed - supplies	0.9	68.3	0.12	1.5	21,852
Shed Costs	2.2	165.3	0.30	3.5	52,842
Total Variable Costs	45.0	3,337.6	6.03	71.1	1,067,213
↳ Employed labour costs	4.2	315.2	0.57	6.7	100,786
↳ Repairs & maintenance	3.0	225.4	0.41	4.8	72,068
↳ Other overhead costs	2.4	180.4	0.33	3.8	57,668
Total Cash Overhead Costs	9.7	720.9	1.30	15.4	230,522
Total Farm Working Expenses	54.7	4,058.6	7.33	86.4	1,297,735
Farm Operating Cash Surplus	16.5	1,221.2	2.21	26.0	390,467
↳ Interest costs	3.4	254.8	0.46	5.4	81,482
↳ Loan principal repayments	4.5	330.5	0.60	7.0	105,689
↳ Land lease costs	0.7	48.6	0.09	1.0	15,549
↳ Other capital purchases (unfinanced)	1.6	115.2	0.21	2.5	36,826
Net Cashflow Before Tax & Drawings	6.4	472.0	0.85	10.1	150,920

Labour inputs		Stock		Production	
Paid labour	1.8	Cows (milking and dry)	320	Total litres sold	2,372,144
Unpaid labour	2.0	Total herd	646	Litres / cow	7,419
Total labour units	3.9	Areas		Butterfat (kg)	4.14% 98,243
Litres / Labour unit	616,141	Useable area (ha)	496	Protein (kg)	3.32% 78,723
Cows / labour unit	83	Irrigation area (ha)	20	Milk solids / cow (kg)	553

Farms in this report: 8

10.8 Group cash flow – North Queensland all farms (2018–19)

Group cash flow



North Queensland All Farms

2018/2019

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Earned
Milk Income (net)	60.5	3,179.5	8.45		901,628
↳ Livestock sales less purchases (dairy)	5.0	261.9	0.70		74,265
↳ Feed sales	0.0	1.6	0.00		461
↳ Other farm cash income	0.8	44.6	0.12		12,644
Total Farm Cash Income	66.4	3,487.7	9.27		988,998
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
↳ Purchased grain, concentrates	20.7	1,085.1	2.88	34.1	307,715
↳ Purchased fodder, silage, hay	5.1	266.6	0.71	8.4	75,608
↳ Other purchased feed	0.8	39.9	0.11	1.3	11,327
Total Purchased Feed	26.5	1,391.7	3.70	43.8	394,650
↳ Fertiliser	3.1	164.6	0.44	5.2	46,678
↳ Fuel & oil	1.1	60.2	0.16	1.9	17,068
↳ Pasture & crop costs	1.0	50.8	0.14	1.6	14,410
↳ Irrigation costs	0.6	33.2	0.09	1.0	9,413
↳ Hay and silage making costs	0.2	13.0	0.03	0.4	3,691
↳ Agistment	0.3	13.6	0.04	0.4	3,844
↳ Other feed costs	0.1	6.1	0.02	0.2	1,721
Feed Related Costs	33.0	1,733.2	4.60	54.5	491,476
Margin Over Feed Related Costs	27.5	1,446.4	3.84	45.5	410,152
↳ Animal health	2.3	123.1	0.33	3.9	34,911
↳ Herd improvement	1.1	56.5	0.15	1.8	16,023
↳ Calf rearing	2.1	111.9	0.30	3.5	31,729
Herd Costs	5.5	291.5	0.77	9.2	82,663
↳ Dairy shed - power	1.6	82.6	0.22	2.6	23,418
↳ Dairy shed - supplies	0.7	34.5	0.09	1.1	9,797
Shed Costs	2.2	117.1	0.31	3.7	33,215
Total Variable Costs	40.8	2,141.8	5.69	67.4	607,354
↳ Employed labour costs	10.7	559.7	1.49	17.6	158,715
↳ Repairs & maintenance	4.0	209.4	0.56	6.6	59,373
↳ Other overhead costs	3.4	180.9	0.48	5.7	51,304
Total Cash Overhead Costs	18.1	950.0	2.52	29.9	269,392
Total Farm Working Expenses	58.8	3,091.8	8.21	97.2	876,746
Farm Operating Cash Surplus	7.5	395.9	1.05	12.4	112,252
↳ Interest costs	3.2	169.0	0.45	5.3	47,923
↳ Loan principal repayments	1.0	51.3	0.14	1.6	14,554
↳ Land lease costs	1.3	69.6	0.18	2.2	19,738
↳ Other capital purchases (unfinanced)	1.2	65.3	0.17	2.1	18,528
Net Cashflow Before Tax & Drawings	0.8	40.6	0.11	1.3	11,509

Labour inputs		Stock		Production	
Paid labour	2.5	Cows (milking and dry)	284	Total litres sold	1,490,095
Unpaid labour	1.4	Total herd	506	Litres / cow	5,255
Total labour units	3.9	Areas		Butterfat (kg)	3.97% 59,105
Litres / Labour unit	378,265	Useable area (ha)	266	Protein (kg)	3.20% 47,629
Cows / labour unit	72	Irrigation area (ha)	27	Milk solids / cow (kg)	376

Farms in this report: 14

10.9 Milk from feed – All 60 QDAS farms (2018–19)

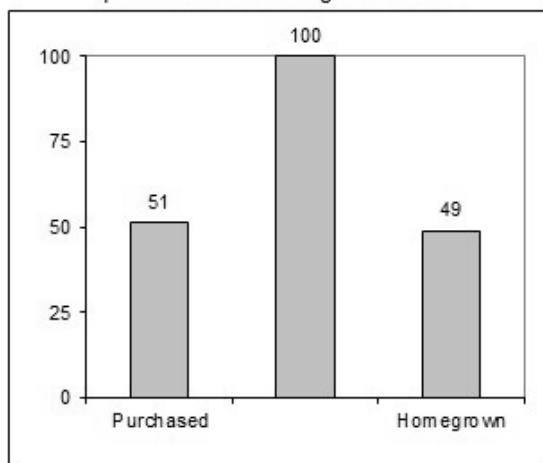
Milk from Feed



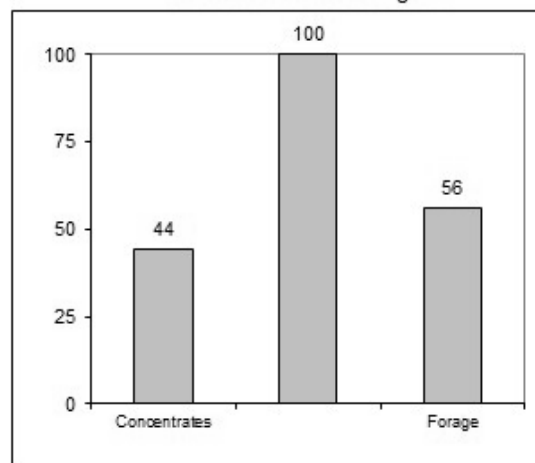
All farms

2018/2019

Proportions attributed to purchased and homegrown feeds



Proportions attributed to concentrates and forages



	Homegrown	Purchased	Total
Forage	271,230 litres		
	17.2 %		
Conserved	3.5 l/cow	131,546 litres	883,081 litres
Grazed	480,305 litres	8.3 %	55.9 %
	30.4 %	1.7 l/cow	11.5 l/cow
	6.2 l/cow		
Concentrates	20,086 litres	677,606 litres	697,693 litres
	1.3 %	42.9 %	44.1 %
	0.3 l/cow	8.8 l/cow	9.1 l/cow
Total	771,621 litres	809,152 litres	1,580,774 litres
	48.8 %	51.2 %	100% %
	10.0 l/cow	10.5 l/cow	20.5 l/cow

	Amount fed to milkers		Milk from this feed
	Tonnes DM	kg DM/cow/day	L/cow/day
Grain and pellets	412	5.4	
Protein	118	1.5	
Molasses & syrup	56	0.7	
Other concentrates	42	0.5	
Total concentrates	628	8.2	9.1
Silage good quality	238	3.1	
Silage medium quality	104	1.4	
Hay good quality	41	0.5	
Hay medium and straw	30	0.4	
Total conserved forage	413	5.4	5.2
Grazing	480	6.0	6.2
Total	1,522	19.5	20.5

Forage to concentrate ratio 59 : 41

Production (kgMS/cow)	451
Average cow weight (kg)	570
kgMS production / kg cow liveweight	0.79

Farms in this report 60

10.10 Business traits, key performance indicators and definitions

Key performance indicators (KPI) are used in QDAS to monitor farm performance. Table 20 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 20. 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.