

Balancing dairy production and profits in northern Australia



Queensland Dairy Accounting Scheme - 2021

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QDAS Financial and production trends – 2021

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

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Introduction

This report contains physical and financial data from 52 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).

The sharp decline in Queensland milk production has eased with production decreasing by 6 million litres from 315 million litres in 2019-20 to 309 million litres in 2020-21, see Table 1. Increased profitability as a result of favourable seasonal conditions in most areas of eastern Australia that have lowered demand for purchased feed and lowered feed prices, has stemmed the number of farmers ceasing dairying operations in Queensland.

In 2020-21 Australian milk production was 8.9 billion litres with Queensland contributing 3.5% of this volume.

Figure 2 shows Queensland’s monthly milk production for 2019-20 and 2020-21.

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.

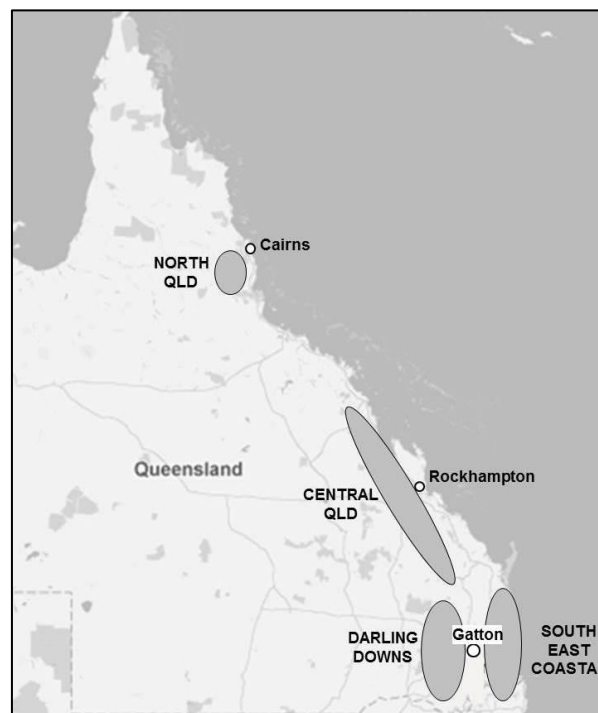


Figure 1. The location of dairy farms in Queensland

Table 1. Annual milk production for Queensland (2017-18 to 2020-21)

	Annual production
2017-18	399 m L
2018-19	358 m L
2019-20	315 m L
2020-21	309 m L

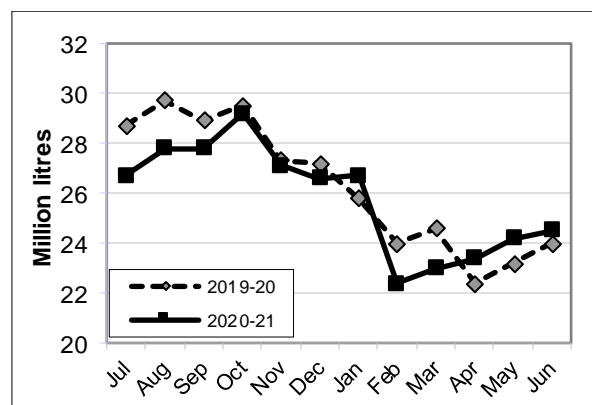


Figure 2. Queensland monthly milk production (2019-20 and 2020-21)

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. 2020-21 Key findings

Fifteen Key Performance Indicators (KPI) are used to highlight the results for profitability, solvency and efficiency. Table 2 shows these results for 2020-21 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 (2017-18 to 2020-21)

Business traits and indicators ⁽¹⁾	Top 25%	QDAS average	Past QDAS averages		
	2020-21	2020-21	2019-20	2018-19	2017-18
Profitability					
Return on assets managed (%)	7.0	4.1	1.3	0.6	2.3
Return on equity (%)	9.2	4.5	0.0	-1.0	1.5
EBIT margin (%)	25.0	15.8	5.3	2.7	9.6
EBIT (\$/cow)	1,460	787	246	113	400
Solvency					
Equity (%)	76	77	76	79	80
Debt to equity ratio	0.32	0.30	0.31	0.26	0.25
Efficiency – Capital/Finance					
Asset turnover ratio	0.34	0.32	0.30	0.27	0.28
Total liabilities per cow (\$)	4,095	3,638	3,555	3,255	2,847
Interest paid/cow (\$)	124	125	147	161	136
Efficiency – Productivity					
Feed related costs (c/L)	34.7	35.8	42.0	35.8	30.2
Margin over feed related costs (c/L)	36.5	34.3	26.2	25.8	28.4
Margin over feed related costs (\$/cow)	2,589	2,171	1,614	1,591	1,768
Farm operating cash surplus (c/L)	27.4	21.8	14.7	13.4	17.4
Efficiency – Physical					
Production per cow (L)	7,099	6,330	6,151	6,158	6,232
Litres per labour unit					
- On farms <1.5 m L	421,151	381,284	368,138	381,969	333,310
- On farms >1.5 m L	539,202	456,011	449,845	485,808	503,426

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

Profitability

An improvement in seasonal conditions, after three years of drought across eastern Australia, has resulted in an increase in profitability for Queensland dairy farms. Table 2 shows that Earnings Before Interest & Tax (EBIT) per cow was \$787, up from \$246 per cow in 2019-20. Return on assets managed has increased from 1.3% to 4.1%.

The increase in profitability is a combination of increased income and reduced feed costs. Milk income has increased by 1.9 c/L and cattle trading profit has increased by 1.9 c/L. The improved seasonal conditions have seen feed related costs decrease from 42.0 c/L in 2019-20 to be 35.8 c/L in 2020-21. Also adding to EBIT was a 1.0 c/L increase in feed inventories.

A reduced demand for purchased feed has contributed to the decrease in feed related costs. Table 9 shows that the intake of hay on south Queensland grazing farms was 0.4 kg DM per cow per day, down from 1.2 kg DM in the previous year. This reduction in hay use equates to a 39 tonne saving in hay used per farm. This was possible due to a 2.2 kg DM per cow per day increase in pasture intake.

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

Production per cow

Table 2 shows that production per cow has increased from 6,151 litres to be 6,330 in 2020-21, which is the highest result of the four years in this table. The top 25% farms (sorted by EBIT per cow) achieved a production per cow of 7,099 litres in 2020-21, 769 litres higher than the QDAS average.

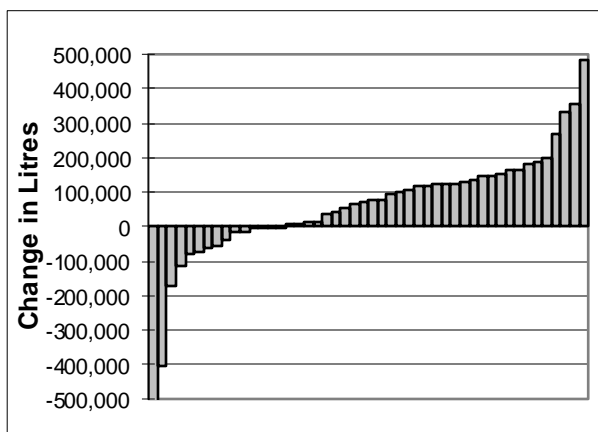


Figure 3. Change in milk production on individual farms between 2019-20 and 2020-21

Production and prices

The average production of the QDAS farms was 1,640,603 litres in 2020-21, a slight increase from the 2019-20 average of 1,603,400. Figure 3 shows the changes in milk production between 2019-20 and 2020-21 for individual QDAS farms.

While the average milk production on all 52 QDAS farms was 1,603,400 litres, the production of the top 25% farms (sorted by EBIT per cow) was higher at 2,060,992 litres. This is the result of milking 41 more cows and producing more milk per cow.

QDAS average milk income increased by 1.9 c/L to be 70.1 c/L. The biggest increase, 3.3 c/L, was recorded in North Queensland

Figure 4 shows the changes in average milk income per litre between 2019-20 and 2020-21 for individual QDAS farms. The farms with the large changes in milk income are the result of milk quality issues either worsening or resolving.

One good year in four

While the 2020-21 results are pleasing, it needs to be considered in the context of the last four years. The average EBIT per cow over the four years displayed in Table 2 is \$386, less than half the 2020-21 result.

Feed related costs were 35.8 c/L in 2020-21, the same as they were in 2018-19 when EBIT was as low as \$113 per cow. The difference is that milk income is 8.5 c/L higher and cattle trading profit is 1.4 c/L higher than in 2018-19.

One of the effects of the three years of low profitability is that equity has dropped from 80% in 2017-18 to 77% in 2020-21.

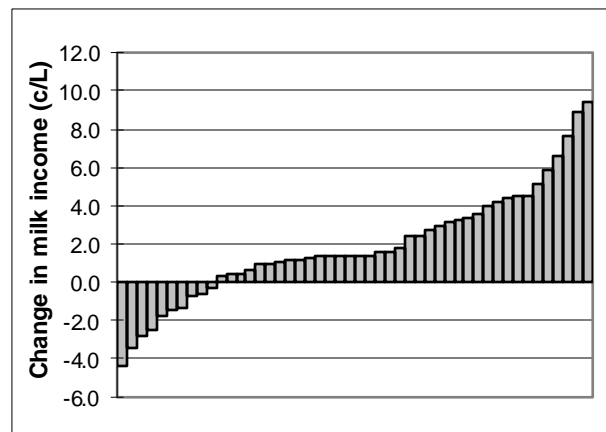


Figure 4. Change in average milk income on individual farms between 2019-20 and 2020-21

Production costs

Table 2 shows that feed related costs decreased by 6.2 c/L, from 42.0 c/L in 2019-20 to be 35.8 c/L in 2020-21. Purchased feed contributed the majority of this decrease with purchased grain and concentrates decreasing by 4.2 c/L. Purchased hay and silage decreased by 2.2 c/L.

The top 25% group (sorted by EBIT per cow) achieved feed related costs of 34.7 c/L. This is 1.1 c/L lower than the average of all farms. In 2020-21 feed costs consumed 51% of milk income, down from 61% in 2019-20.

The margin over feed related costs increased by 8.1 c/L, from 26.2 c/L to 34.3 c/L in 2020-21.

The farm operating cash surplus for the top 25% group is 27.4 c/L, which is 5.6 c/L higher than the average of all farms. This difference is a combination of higher milk income (1.1 c/L), higher livestock sales (2.4 c/L), lower feed related costs (1.1 c/L) and lower cash overhead costs (1.8 c/L).

With increased cashflow in 2020-21, there were “catch up” repairs undertaken on most farms, that increased repairs and maintenance costs by 0.4c/L. There was also a 2.3 c/L increase in unfinanced capital purchases.

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 2020-21. 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 2018 to June 2021)

	June 2018	June 2019	June 2020	June 2021
Concentrates				
Sorghum	\$380	\$370	\$360	\$300
Barley	\$420	\$430	\$360	\$325
Wheat	\$433	\$435	\$405	\$340
Soybean meal	\$685	\$645	\$650	\$778
Canola meal	\$570	\$535	\$550	\$540
14% dairy pellet	\$550	\$550	\$580	\$520
Fertiliser				
Urea	\$550	\$580	\$550	\$740
Diesel				
Bowser price	\$1.52	\$1.47	\$1.18	\$1.39



Table 4. Cash analysis of the costs of production (2020-21)

	c/L
Farm income	
Milk income (Net)	70.1
Other farm income	8.4
Total farm income	78.5
Production costs	
Purchased feed	26.6
Home grown feed	9.2
Total feed related costs	35.8
Herd costs	3.1
Shed costs	1.9
Employed labour	8.6
Repairs & maintenance	4.0
Other overheads	3.3
Farm working expenses	56.7
Farm operating cash surplus	21.8
Interest, principal, lease	7.7
Capital purchases (unfinanced)	4.1
Net cash flow before tax & drawings	10.0

Labour

Average employed labour costs for all QDAS farms are \$141,332 for 2.2 paid labour units. This equates to 8.6 c/L, which is 0.4 c/L higher than in 2019-20. 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 (116 cows) do so at 283,000 litres per labour unit, whereas farms producing more than 2.0 m L (483 cows) do so at 465,433 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 5.1 full time equivalents (FTE).

Repairs and other overheads

The QDAS average repairs and maintenance costs are \$65,295 (4.0 c/L). Table 5 shows that repairs and maintenance are 4.3 c/L for the farms that produce less than 0.75 m L and 3.6 c/L for the farms that produce more than 2.0 m L of milk.

The QDAS average for other overhead costs is \$54,087 (3.3 c/L). While overhead costs increase as production increases, the costs get proportionately lower per litre. Table 5 shows other overhead costs falling from 4.1 c/L to 2.7 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 (2020-21)

	<0.75 m L	0.75 – 1.25m L	1.25 – 2.0m L	>2.0m L
Milk production (L)	543,989	948,944	1,489,980	3,314,547
Cows (milkers + dry)	116	153	257	483
Overheads				
Repairs & Maintenance (\$)	23,424	42,312	65,046	120,334
Repairs & Maintenance (c/L)	4.3	4.5	4.4	3.6
Other overheads (\$)	22,359	40,255	55,559	90,019
Other overheads (c/L)	4.1	4.2	3.7	2.7
Labour				
Unpaid labour (FTE)	1.3	1.6	1.8	2.0
Paid labour (FTE)	0.6	0.8	1.8	5.1
Paid labour cost (\$)	33,441	53,466	118,318	337,111
Litres per labour unit	283,000	392,507	417,798	465,433



2. The distribution of QDAS cooperating farms

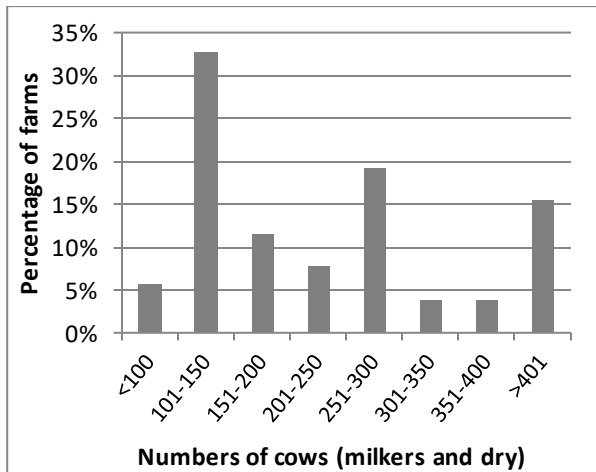


Figure 5. The distribution of QDAS farms by cow numbers

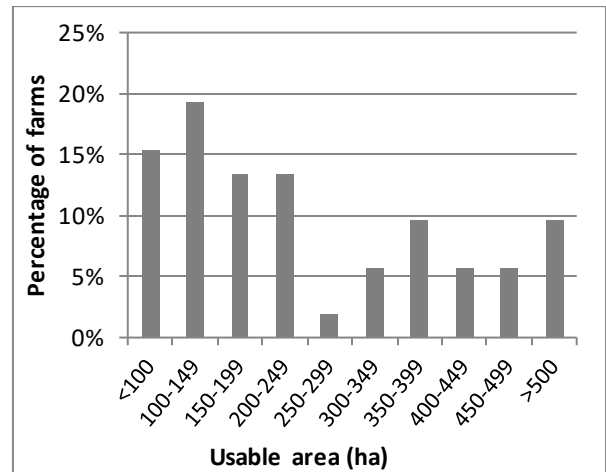


Figure 8. The distribution of QDAS farms by usable area

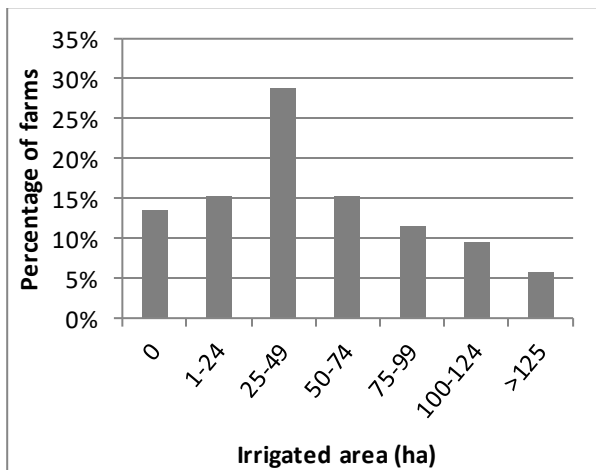


Figure 6. The distribution of QDAS farms by irrigated area

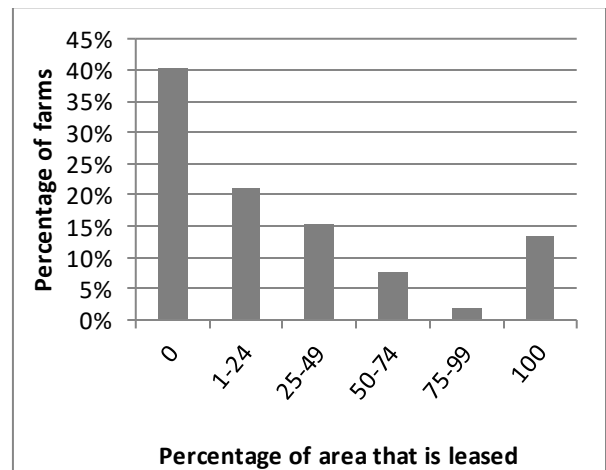


Figure 9. The distribution of QDAS farms by the percentage of total area that is leased

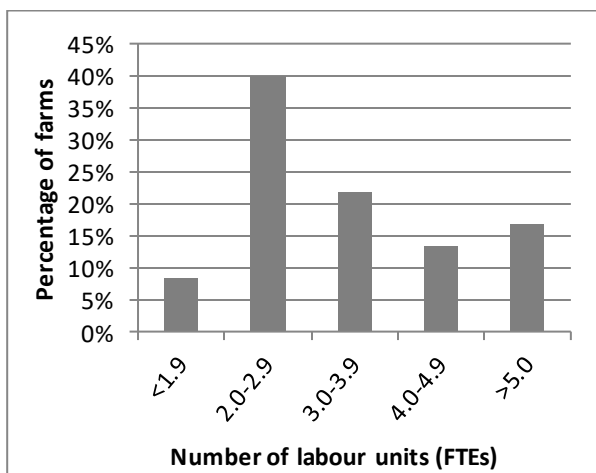


Figure 7. The distribution of QDAS farms by number of labour units

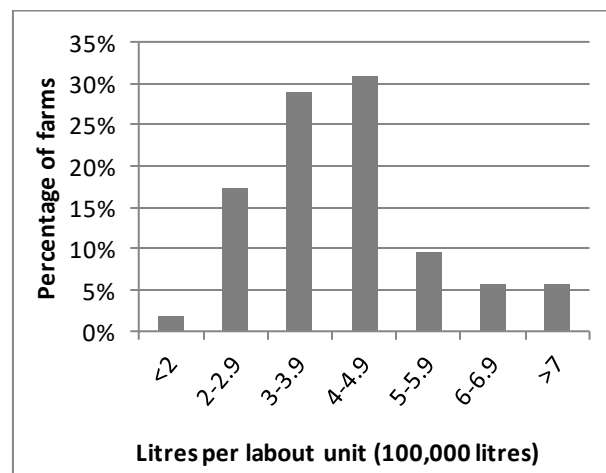


Figure 10. The distribution of QDAS farms by litres per labour unit

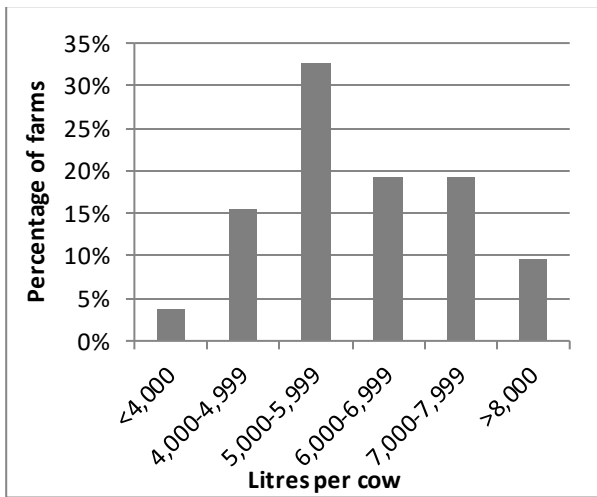


Figure 11. The distribution of QDAS farms by production per cow

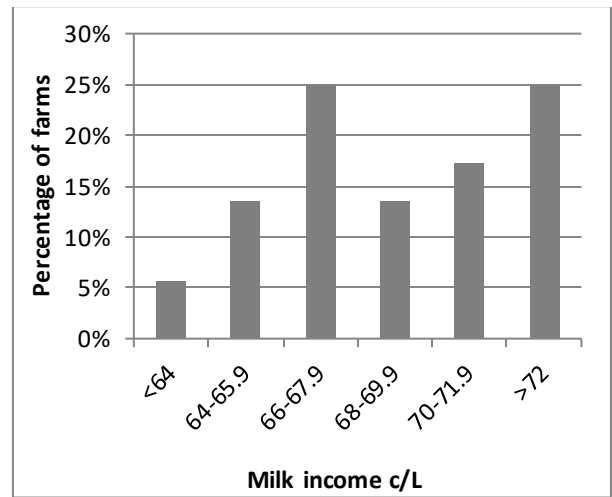


Figure 14. The distribution of QDAS farms by average milk income

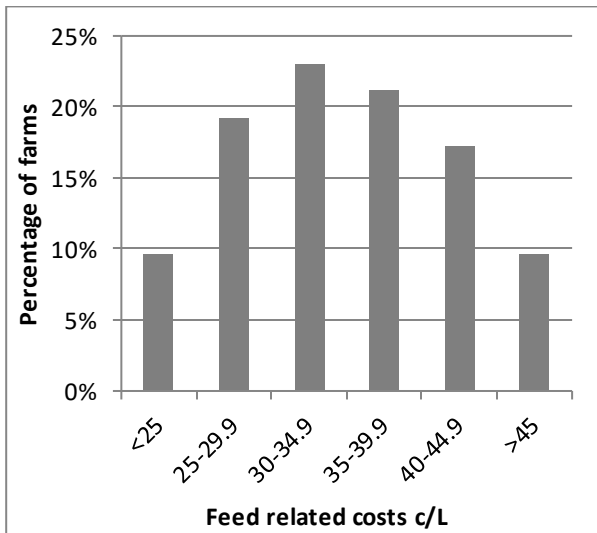


Figure 12. The distribution of QDAS farms by feed related costs



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

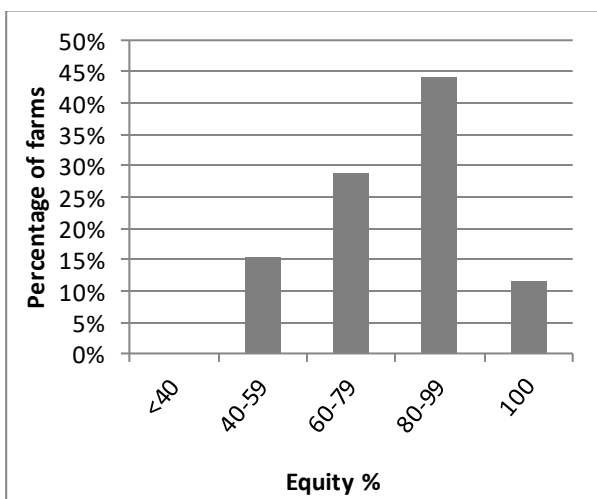


Figure 13. The distribution of QDAS farms by equity percentage

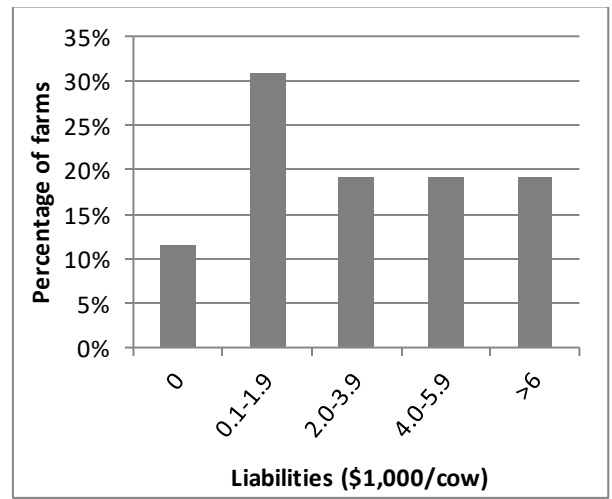


Figure 16. The distribution of QDAS farms by liabilities per cow

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 1,069 litres per cow more than the remaining 75% group.
- Selling more litres of milk. The top 25% group sold 560,519 more litres of milk than the remaining 75% group. This is driven by production per cow and by having 41 more cows (milkers and dry).
- Higher milk income. The top 25% group had milk income 1.6 c/L higher than the other group.
- Lower farm working expenses. The top 25% group had farm working expenses 4.2 c/L lower than the other group. Feed related costs were 1.6 c/L lower in the top 25% group.
- Better labour efficiency. The top 25% group runs 4 more cows per labour unit than the other group.

Table 6. KPI for top 25% and the remaining 75% of farms (2020-21)

	Top 25%	Remaining 75%
Physical traits		
Cows (milkers + dry)	290	249
Farm production (L)	2,060,992	1,500,473
Efficiency - Physical		
Production per cow (L)	7,099	6,030
Milk from home grown feed (L/day)	10.8	8.7
Cows per labour unit	70	66
Profit Analysis		
EBIT (\$/cow)	1,460	525
Average investment (\$/cow)	17,039	15,127
Cash Analysis		
Milk income (c/L)	71.2	69.6
Feed related costs (c/L)	34.7	36.3
Farm working expenses (c/L)	53.8	58.0
Margin over FRC (c/L)	36.5	33.3
Margin over FRC (\$/cow)	2,589	2,009



Production per cow

QDAS reports have always shown that farms with higher production per cow have higher profitability. Table 7 shows that EBIT per cow is highest in the 7,000 litres group. The other three groups have similar EBIT per cow results. Interestingly, it is the larger farms that are achieving the highest production per cow.

The margin over feed related costs per litre is the highest in the <5,000 litres group at 39.7 c/L and decreases to 31.2 c/L in the >7,000 litres group. The margin over feed related costs per cow is highest in the >7,000 litres group at \$2,455/cow and decreases to \$1,798/cow in the <5,000 litres group.

Table 7. KPI for four production groups (L per cow) in Queensland (2020-21)

	<5,000	5,000 - 6,000	6,000 - 7,000	>7,000
Farm milk production (L)	892,341	1,474,255	1,400,304	2,488,172
Cows (milkers + dry)	197	271	216	316
Production per cow (L)	4,530	5,434	6,495	7,874
Milk income (c/L)	68.5	70.5	70.9	69.9
Margin over FRC (c/L)	39.7	37.6	33.3	31.2
Margin over FRC (\$/cow)	1,798	2,042	2,165	2,455
EBIT (\$/cow)	516	649	501	1,164

Herd size

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

In previous years QDAS reports have shown a steady increase in EBIT per cow as the herd size increases. However, this year the 150 to 240 cow group has the highest EBIT per cow at \$1,201.

The three groups with more than 150 cows have significantly higher margin over feed related costs per cow than the less than 150 cows group. This is an indicator of their attention to detail and

recognition of the need for efficient feeding systems.

Labour efficiency increases as the herd size increases but decreases from 71 cows per labour unit for the 240 to 300 cows group down to 68 cows per labour unit for the greater than 300 cows group.

The farms with more than 300 cows (milkers and dry) had the highest production per cow at 6,754 litres, whereas the farms with less than 150 cows produced 5,851 litres per cow.

Table 8. KPI for four herd size groups (number of milking and dry cows) in Queensland (2020-21)

	< 150	150 - 240	240 - 300	> 300
Farm milk production (L)	741,025	1,133,566	1,592,488	3,487,795
Cows (milkers + dry)	127	180	268	516
Production per cow (L)	5,851	6,288	5,939	6,754
Margin over feed related costs (\$/cow)	1,193	2,322	2,135	2,260
Cows per labour unit	62	64	71	68
Return on assets managed (%)	2.0	4.9	3.1	5.5
EBIT (\$/cow)	433	1,201	637	931

4. Feed analysis

Feed related costs require significant attention by dairy farmers, especially in a subtropical environment. In 2020-21 feed related costs represented 51% of milk income on the QDAS average farm. On south Queensland total mixed ration (TMR) farms it represents 57% of milk income. This is a large decrease from 2019-20 where feed related costs represented 74% of milk income on south Queensland TMR farms.

QDAS allows farmers to investigate their feeding system and compare their feed inputs and milk responses with other farmers from the same regional production system. Table 9 shows the amount of various feeds fed to milking cows over the 2020-21 year. This information is displayed as pie charts in Appendix 10.9.

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

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

Grain used on-farm is predominately wheat, barley and maize. Custom made pellets are 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 when it is available at a reasonable price.

Molasses is a significant feed, especially in north Queensland.

Other concentrates include brewer's grain, bread, dough and flour.

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 (2020-21)

	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All	All Qld
Grazing (kg DM/cow/day)	11.4	6.0	0.8	8.8	6.4
Grain and pellets (kg DM/cow/day)	5.6	6.4	6.8	5.7	6.1
Protein (kg DM/cow/day)	0.3	0.8	2.6	0.1	1.1
Molasses (kg DM/cow/day)	0.0	0.0	0.1	1.2	0.3
Other concentrates (kg DM/cow/day)	0.6	1.1	2.2	0.0	1.1
Silage good quality (kg DM/cow/day)	0.5	4.0	4.2	2.0	2.7
Silage medium quality (kg DM/cow/day)	0.1	0.7	3.9	0.0	1.4
Hay good quality (kg DM/cow/day)	0.2	0.3	1.5	0.0	0.6
Hay medium quality & straw (kg DM/cow/day)	0.2	0.3	0.5	0.0	0.3
Total intake (kg DM/cow/day)	18.8	19.7	22.5	17.9	20.0
Production (L/cow/day)	18.9	20.4	26.0	17.1	21.1
Forage to concentrate ratio	66:34	58:42	48:52	61:39	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 15% of dry matter intake is from hay or silage.

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

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

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

Table 10. The number of farms collected in each regional production system (2020-21)

Region	GRA	PMR	TMR	Total
North Queensland	5	2	0	7
Central Queensland	0	1	0	1
South Queensland	20	11	13	44
Total	25	14	13	52

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

- Milk income varies from 68.9 c/L on south Queensland PMR farms to 71.0 c/L on south Queensland grazing farms.
- Production per cow increases as the feeding system intensifies. In south Queensland grazing farms averaged 5,671 L/cow, PMR farms averaged 6,113 L/cow and TMR farms averaged 7,800 L/cow. Conversely, margin over feed related costs decreased from 39.2 c/L for grazing farms to 30.0 c/L for TMR farms.
- South Queensland TMR farms achieved the highest EBIT of \$1,107/cow. All other regional production systems achieved an EBIT of at least \$500/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 (2020-21)

	South Qld Grazing	South Qld PMR	South Qld TMR	North Qld All farms
Cows (milkers + dry)	177	297	308	329
Farm production (L)	1,004,870	1,814,573	2,403,132	1,690,247
Production per cow (L)	5,671	6,113	7,800	5,135
Milk income (c/L)	71.0	68.9	70.5	69.0
Feed related costs (c/L)	31.8	35.0	40.4	30.7
Total variable costs (c/L)	37.8	39.5	44.8	36.3
Margin over feed related costs (c/L)	39.2	33.9	30.0	38.3
EBIT (\$/cow)	879	529	1,107	520
Return on assets managed (%)	4.3	2.7	5.3	3.2

6. South Queensland - Grazing

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

The farms in this group have invested \$14,506 per cow in their operation, of which 73% is in the land value. Equity levels are high, averaging at 80%, and a return on assets managed of 4.3% was achieved.

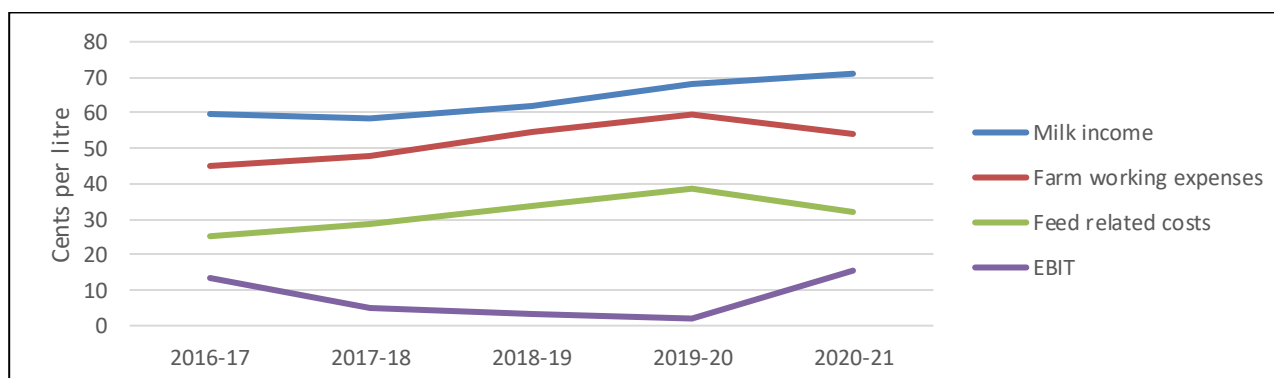
Figure 17 shows the data trends for south Queensland grazing farms between 2016-17 and 2020-21. There are several points of interest:

- Milk income has increased by 19% from 59.5 c/L in 2016-17 to be 71.0 c/L in 2020-21.
- Feed related costs have increased by 20% from a low of 25.2 c/L in 2016-17 to be 31.8 c/L in 2020-21 and as high as 39.4 c/L in 2019-20.
- Farm working expenses have increased by 26% from a low of 45.0 c/L in 2016-17 to be 54.0 c/L in 2020-21 and as high as 57.8 c/L in 2019-20.
- EBIT has increased by 17% from 13.2 c/L in 2016-17 to be 15.5 c/L in 2020-21 but was as low as 2.0 c/L in 2019-20.

Table 12. Statistics for South Queensland grazing farms – 17 farms (2020-21)

Resources	
Cows (milkers + dry)	177
Heifers >1 year old	70
Heifers <1 year old	61
Total dairy herd	311
Milking cow area (ha)	70
Usable area (ha)	172
Labour units	2.7
Assets and Liabilities	
Land, buildings, irrigation (\$)	1,886,273
Livestock (\$)	386,174
Machinery (\$)	198,095
Other (\$)	99,962
TOTAL (\$)	2,570,504
Liabilities (\$)	526,004
Equity (%)	80
Investment per cow (\$)	14,506
Debt per cow (\$)	2,968
Productivity	
Milk production (L)	1,004,870
Production per cow (L)	5,671
Financial	
Milk income (c/L)	71.0
Feed related costs (c/L)	31.8
Total variable costs (c/L)	37.8
Margin over feed related costs (c/L)	39.2
EBIT (\$/cow)	879
Return on assets managed (%)	4.3

Figure 17. Trends for South Queensland grazing farms (2016-17 to 2020-21)



7. South Queensland - PMR

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

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

The farms in this group have invested \$14,669 per cow in their operation with 68% tied to the land. Equity levels are high, averaging at 85% and a return on assets managed of 2.7% was achieved.

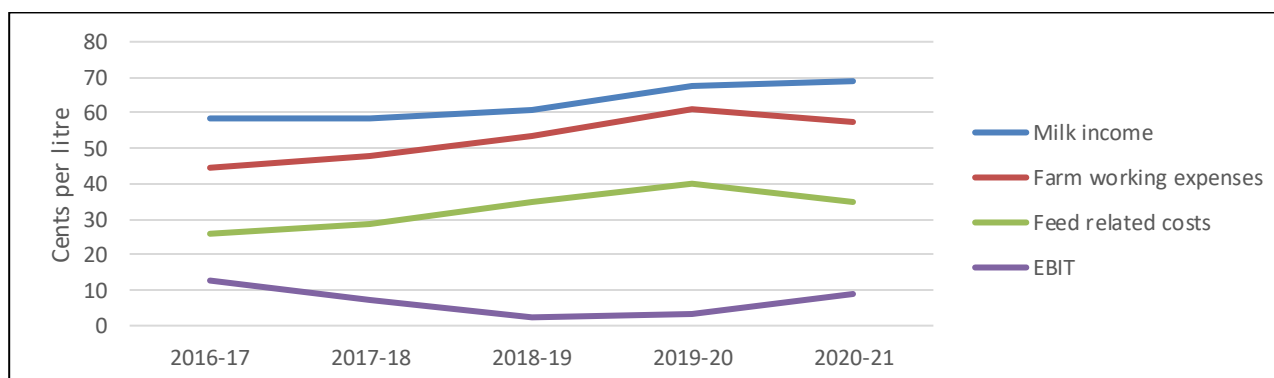
Figure 18 shows the data trends for south Queensland PMR farms between 2016-17 and 2020-21. There are several points of interest:

- Milk income has increased by 18% from 58.4 c/L in 2016-17 to be 68.9 c/L in 2020-21.
- Feed related costs have increased by 35% from a low of 25.9 c/L in 2016-17 to be 35.0 c/L in 2020-21 and as high as 40.0 c/L in 2019-20.
- Farm working expenses have increased by 29% from a low of 44.5 c/L in 2016-17 to be 57.3 c/L in 2020-21 and as high as 61.0 c/L in 2019-20.
- EBIT has decreased by 32% from 12.7 c/L in 2016-17 to be 8.7 c/L in 2020-21 but was as low as 2.3 c/L in 2018-19.

Table 13. Statistics for South Queensland PMR farms – 20 farms (2020-21)

Resources	
Cows (milkers + dry)	297
Heifers >1 year old	116
Heifers <1 year old	93
Total dairy herd	510
Milking cow area (ha)	120
Usable area (ha)	250
Labour units	4.7
Assets and Liabilities	
Land & buildings (\$)	2,971,464
Livestock (\$)	604,145
Machinery (\$)	505,092
Other (\$)	273,319
TOTAL (\$)	4,354,019
Liabilities (\$)	654,938
Equity (%)	85
Investment per cow (\$)	14,669
Debt per cow (\$)	2,207
Productivity	
Milk production (L)	1,814,573
Production per cow (L)	6,113
Financial	
Milk income (c/L)	68.9
Feed related costs (c/L)	35.0
Total variable costs (c/L)	39.5
Margin over feed related costs (c/L)	33.9
EBIT (\$/cow)	529
Return on assets managed (%)	2.7

Figure 18. Trends for South Queensland PMR farms (2016-17 to 2020-21)



8. South Queensland - TMR

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

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

They have invested \$18,789 per cow in their operation with 65% tied to the land. With the large investment in infrastructure that is required, they have a high debt per cow of \$5,102 and equity of 73%, the lowest equity of all groups. A return on assets managed of 5.3% was achieved.

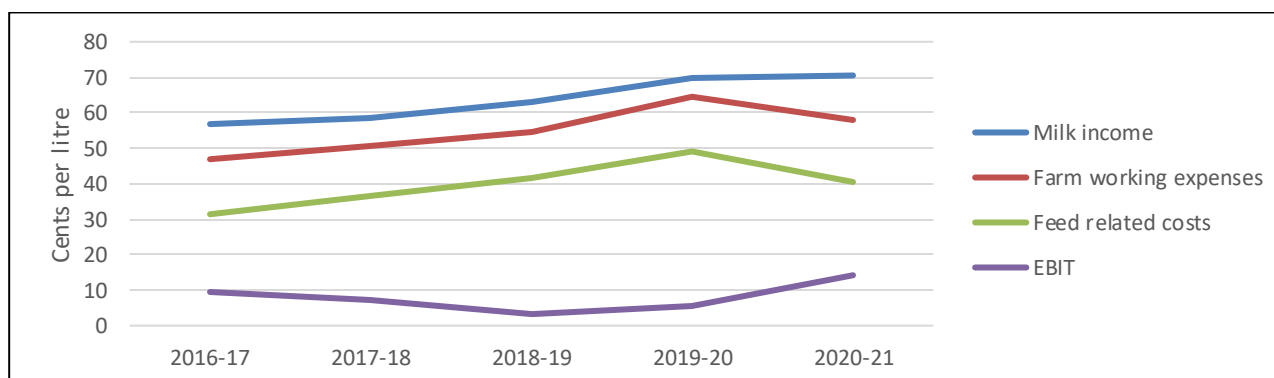
Figure 19 shows the data trends for south Queensland TMR between 2016-17 and 2020-21. There are several points of interest:

- Milk income has increased by 24% from 56.8 c/L in 2016-17 to be 70.5 c/L in 2020-21.
- Feed related costs have increased by 29% from 31.4 c/L in 2016-17 to be 40.4 c/L in 2020-21 and were as high as 49.1 c/L in 2019-20.
- Farm working expenses have increased by 23% from 46.9c/L in 2016-17 to be 57.8 c/L in 2020-21 and were as high as 64.5 c/L in 2019-20.
- EBIT has increased by 49% from 9.5 c/L in 2016-17 to be 14.2 c/L in 2020-21 but was as low as 3.3 c/L in 2018-19.

Table 14. Statistics for South Queensland TMR farms – 10 farms (2020-21)

Resources	
Cows (milkers + dry)	308
Heifers >1 year old	127
Heifers <1 year old	137
Total dairy herd	582
Milking cow area (ha)	49
Usable area (ha)	439
Labour units	4.5
Assets and Liabilities	
Land & buildings (\$)	3,773,604
Livestock (\$)	811,527
Machinery (\$)	752,642
Other (\$)	450,802
TOTAL (\$)	5,788,575
Liabilities (\$)	1,571,900
Equity (%)	73
Investment per cow (\$)	18,789
Debt per cow (\$)	5,102
Productivity	
Milk production (L)	2,403,132
Production per cow (L)	7,800
Financial	
Milk income (c/L)	70.5
Feed related costs (c/L)	40.4
Total variable costs (c/L)	44.8
Margin over feed related costs (c/L)	30.0
EBIT (\$/cow)	1,107
Return on assets managed (%)	5.3

Figure 19. Trends for South Queensland TMR farms (2016-17 to 2020-21)



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 \$13,856 per cow in their operation, of which 70% is in the land value. Equity levels varied across the sample, with the average being 71%, and a return on assets managed of 3.2% was recorded.

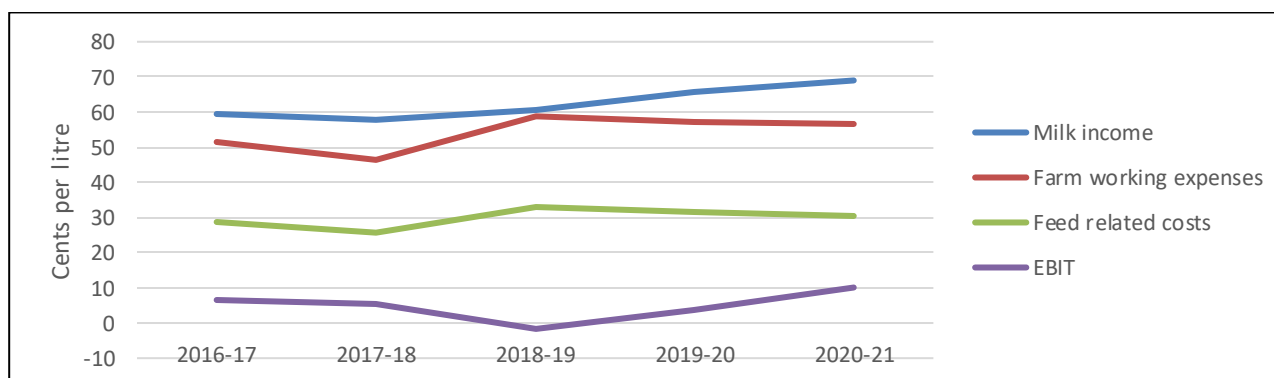
Figure 20 shows the data trends for north Queensland farms between 2016-17 and 2020-21. There are several points of interest:

- Milk income has increased by 17% from 59.2 c/L in 2016-17 to be 69.0 c/L in 2020-21.
- Feed related costs have increased by 7% from of 28.6 c/L in 2016-17 to be 30.7 c/L in 2020-21 and were as high as 33.0 c/L in 2018-19.
- Farm working expenses have increased by 10% from 51.3 c/L in 2017-18 to be 56.6 c/L in 2020-21.
- EBIT has increased by 54% from 6.6 c/L in 2016-17 to be 10.1 c/L in 2020-21 but was as low as -1.7 c/L in 2018-19.

Table 15. Statistics for North Queensland grazing and PMR farms – 7 farms (2020-21)

Resources	
Cows (milkers + dry)	329
Heifers >1 year old	79
Heifers <1 year old	86
Total dairy herd	499
Milking cow area (ha)	116
Usable area (ha)	275
Labour units	4.7
Assets and Liabilities	
Land & buildings (\$)	3,208,286
Livestock (\$)	740,554
Machinery (\$)	378,571
Other (\$)	233,060
TOTAL (\$)	4,560,471
Liabilities (\$)	1,338,504
Equity (%)	71
Investment per cow (\$)	13,856
Debt per cow (\$)	4,067
Productivity	
Milk production (L)	1,690,247
Production per cow (L)	5,135
Financial	
Milk income (c/L)	69.0
Feed related costs (c/L)	30.7
Total variable costs (c/L)	36.3
Margin over feed related costs (c/L)	38.3
EBIT (\$/cow)	520
Return on assets managed (%)	3.2

Figure 20. Trends for North Queensland farms (2016-17 to 2020-21)



10. Appendices

10.1 Group cash flow – All 52 QDAS farms (2020-21)

Group cash flow					
All farms					2020/2021
Farm Cash Income	c/L	\$/cow	\$/kg MS	Total \$ Eamed	
-Milk Income (net)	70.1	4,435.9	9.46	1,149,751	
-Livestock sales less purchases (dairy)	6.5	409.5	0.87	106,150	
-Feed sales	0.4	27.8	0.06	7,218	
-Other farm cash income	1.5	96.1	0.21	24,917	
Total Farm Cash Income	78.5	4,969.4	10.60	1,288,035	
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
-Purchased grain, concentrates	20.5	1,298.0	2.77	29.3	336,434
-Purchased fodder, silage, hay	3.9	249.2	0.53	5.6	64,596
-Other purchased feed	2.2	137.6	0.29	3.1	35,656
Total Purchased Feed	26.6	1,684.8	3.59	38.0	436,686
-Fertiliser	2.8	176.3	0.38	4.0	45,694
-Fuel & oil	1.3	81.6	0.17	1.8	21,149
-Pasture & crop costs	1.9	117.5	0.25	2.6	30,445
-Irrigation costs	1.1	70.6	0.15	1.6	18,303
-Hay and silage making costs	1.6	101.0	0.22	2.3	26,173
-Agistment	0.3	16.5	0.04	0.4	4,268
-Other feed costs	0.3	16.2	0.03	0.4	4,197
Feed Related Costs	35.8	2,264.4	4.83	51.0	586,915
Margin Over Feed Related Costs	34.3	2,171.5	4.63	49.0	562,836
-Animal health	1.7	108.9	0.23	2.5	28,218
-Herd improvement	0.8	48.4	0.10	1.1	12,533
-Calf rearing	0.7	41.3	0.09	0.9	10,692
Herd Costs	3.1	198.5	0.42	4.5	51,444
-Dairy shed - power	1.0	65.5	0.14	1.5	16,978
-Dairy shed - supplies	0.9	54.2	0.12	1.2	14,041
Shed Costs	1.9	119.7	0.26	2.7	31,019
Total Variable Costs	40.8	2,582.6	5.51	58.2	669,377
-Employed labour costs	8.6	545.3	1.16	12.3	141,332
-Repairs & maintenance	4.0	251.9	0.54	5.7	65,295
-Other overhead costs	3.3	208.7	0.45	4.7	54,087
Total Cash Overhead Costs	15.9	1,005.9	2.15	22.7	260,714
Total Farm Working Expenses	56.7	3,588.4	7.65	80.9	930,092
Farm Operating Cash Surplus	21.8	1,381.0	2.95	31.1	357,943
-Interest costs	2.0	125.1	0.27	2.8	32,431
-Loan principal repayments	3.8	242.2	0.52	5.5	62,786
-Land lease costs	1.9	119.6	0.26	2.7	30,990
-Other capital purchases (unfinanced)	4.1	259.3	0.55	5.8	67,211
Net Cashflow Before Tax & Drawings	10.0	634.8	1.35	14.3	164,525

Labour inputs	Stock	Production
Paid labour	2.2 Cows (milking and dry)	259 Total litres sold 1,640,603
Unpaid labour	1.7 Total herd	480 Litres / cow 6,330
Total labour units	3.9 Areas	Butterfat (kg) 4.05% 66,456
Litres / Labour unit	424,656 Useable area (ha)	273 Protein (kg) 3.36% 55,061
Cows / labour unit	67 Irrigation area (ha)	55 Milk solids / cow (kg) 469

Farms in this report: 52

10.2 Group cash flow – Top 25% of farms (2020-21)

Group cash flow



Top 25%

2020/2021

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Eamed
Milk Income (net)	71.2	5,053.9	9.72		1,467,181
-Livestock sales less purchases (dairy)	8.9	629.4	1.21		182,708
Feed sales	0.0	0.1	0.00		37
Other farm cash income	1.1	75.7	0.15		21,963
Total Farm Cash Income	81.1	5,759.0	11.08		1,671,888
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
-Purchased grain, concentrates	20.0	1,421.1	2.73	28.1	412,549
-Purchased fodder, silage, hay	3.0	212.7	0.41	4.2	61,745
-Other purchased feed	3.2	224.9	0.43	4.4	65,285
Total Purchased Feed	26.2	1,858.6	3.58	36.8	539,578
-Fertiliser	2.6	181.1	0.35	3.6	52,567
-Fuel & oil	1.4	99.9	0.19	2.0	28,993
-Pasture & crop costs	1.7	119.0	0.23	2.4	34,536
-Irrigation costs	0.8	56.6	0.11	1.1	16,446
-Hay and silage making costs	1.9	134.9	0.26	2.7	39,163
-Agistment	0.2	13.6	0.03	0.3	3,937
-Other feed costs	0.0	1.3	0.00	0.0	392
Feed Related Costs	34.7	2,465.0	4.74	48.8	715,612
Margin Over Feed Related Costs	36.5	2,588.9	4.98	51.2	751,568
-Animal health	1.7	117.4	0.23	2.3	34,078
-Herd improvement	0.8	59.7	0.11	1.2	17,344
-Calf rearing	0.5	37.8	0.07	0.7	10,968
Herd Costs	3.0	214.9	0.41	4.3	62,390
-Dairy shed - power	1.0	72.9	0.14	1.4	21,168
-Dairy shed - supplies	0.9	66.0	0.13	1.3	19,166
Shed Costs	2.0	138.9	0.27	2.7	40,335
Total Variable Costs	39.7	2,818.9	5.42	55.8	818,337
-Employed labour costs	7.6	538.5	1.04	10.7	156,332
-Repairs & maintenance	3.6	257.6	0.50	5.1	74,795
-Other overhead costs	2.8	201.3	0.39	4.0	58,442
Total Cash Overhead Costs	14.1	997.5	1.92	19.7	289,570
Total Farm Working Expenses	53.8	3,816.3	7.34	75.5	1,107,907
Farm Operating Cash Surplus	27.4	1,942.7	3.74	38.4	563,981
-Interest costs	1.7	123.9	0.24	2.5	35,957
-Loan principal repayments	4.8	343.3	0.66	6.8	99,650
-Land lease costs	2.0	141.1	0.27	2.8	40,968
-Other capital purchases (unfinanced)	7.2	513.9	0.99	10.2	149,181
Net Cashflow Before Tax & Drawings	11.6	820.6	1.58	16.2	238,226

Labour inputs		Stock		Production	
Paid labour	2.4	Cows (milking and dry)	290	Total litres sold	2,060,992
Unpaid labour	1.8	Total herd	591	Litres / cow	7,099
Total labour units	4.2	Areas		Butterfat (kg)	3.97%
Litres / Labour unit	494,334	Useable area (ha)	345	Protein (kg)	3.35%
Cows / labour unit	70	Irrigation area (ha)	57	Milk solids / cow (kg)	520

Farms in this report: 13

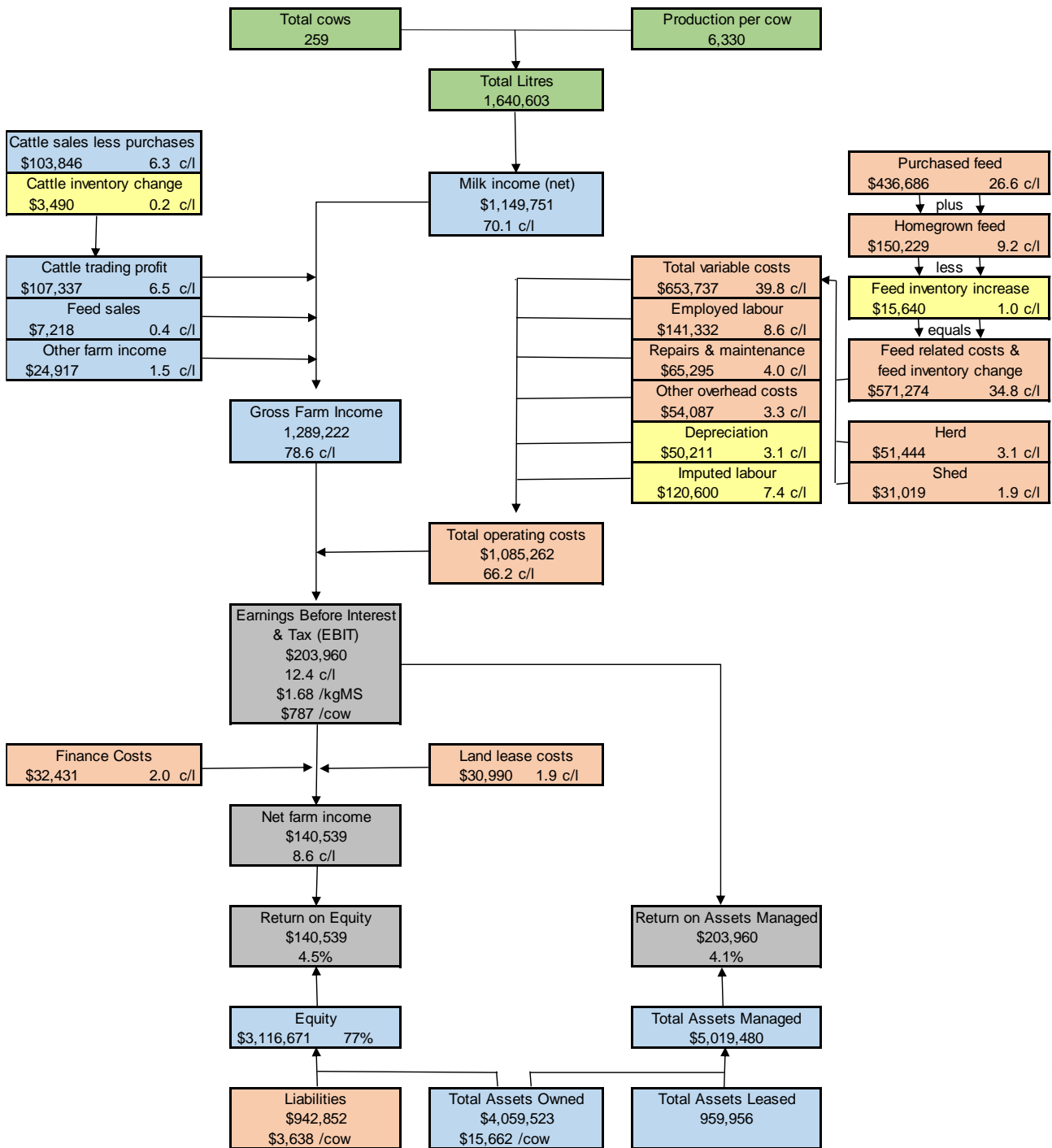
10.3 Group dairy farm profit map – All 52 QDAS farms (2020-21)

Group dairy farm profit map



All farms

2020/2021



Farms in this report: 52

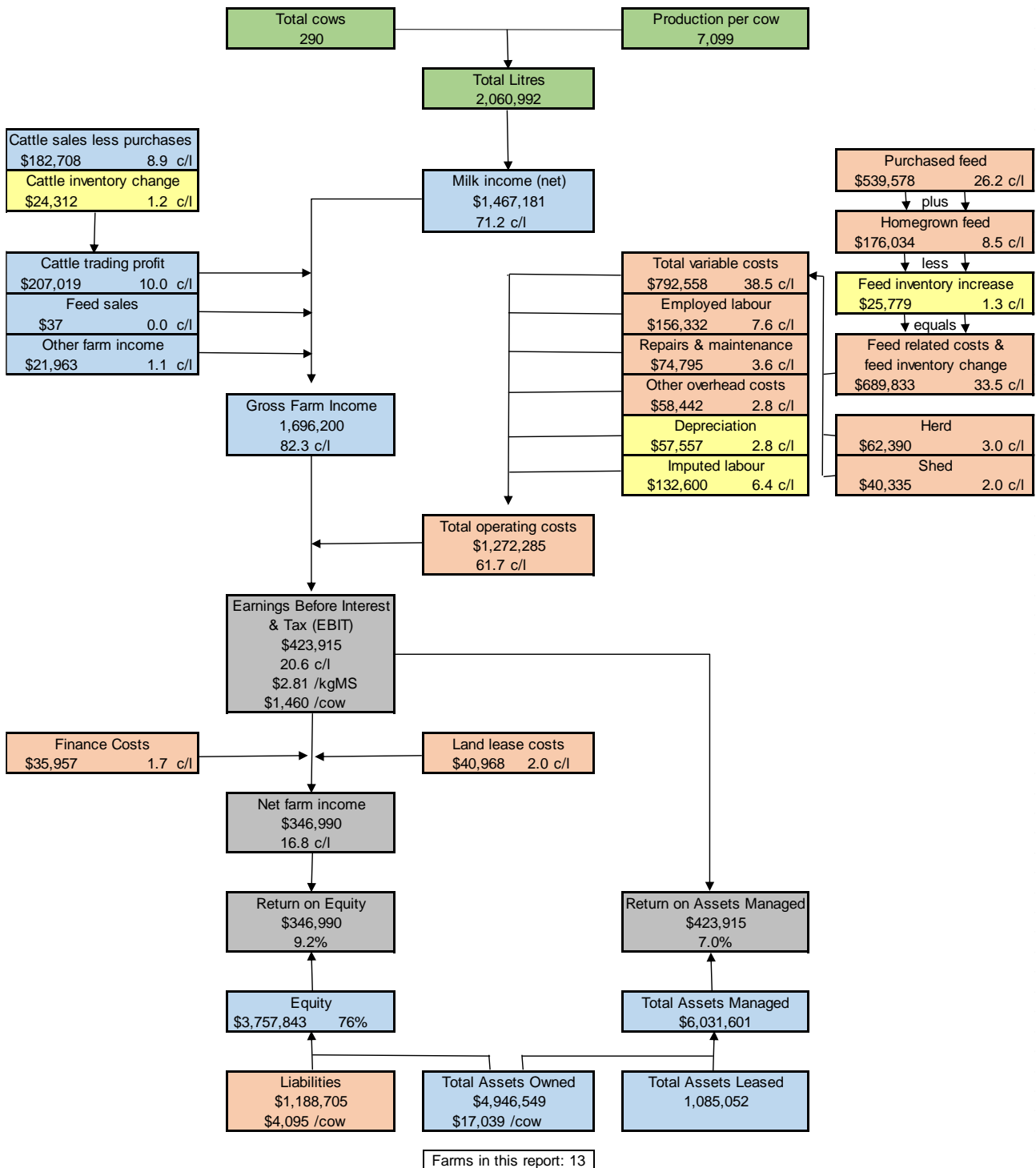
10.4 Group dairy farm profit map – Top 25% of farms (2020-21)

Group dairy farm profit map



Top 25%

2020/2021



10.5 Group cash flow – South Queensland Grazing (2020-21)

Group cash flow

South Queensland Grazing



2020/2021

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Eamed
Milk Income (net)	71.0	4,029.1	9.56		713,949
-Livestock sales less purchases (dairy)	7.1	403.6	0.96		71,523
-Feed sales	0.1	7.2	0.02		1,281
-Other farm cash income	1.8	103.2	0.24		18,287
Total Farm Cash Income	80.1	4,543.1	10.78		805,040
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
-Purchased grain, concentrates	19.5	1,103.5	2.62	27.4	195,549
-Purchased fodder, silage, hay	1.5	87.1	0.21	2.2	15,439
-Other purchased feed	1.6	88.7	0.21	2.2	15,714
Total Purchased Feed	22.6	1,279.4	3.04	31.8	226,701
-Fertiliser	4.2	237.8	0.56	5.9	42,145
-Fuel & oil	1.0	58.6	0.14	1.5	10,392
-Pasture & crop costs	1.8	103.6	0.25	2.6	18,349
-Irrigation costs	1.4	77.9	0.18	1.9	13,806
-Hay and silage making costs	0.7	41.8	0.10	1.0	7,413
-Agistment	0.1	3.0	0.01	0.1	533
-Other feed costs	0.1	3.2	0.01	0.1	573
Feed Related Costs	31.8	1,805.4	4.29	44.8	319,912
Margin Over Feed Related Costs	39.2	2,223.7	5.28	55.2	394,037
-Animal health	2.1	119.7	0.28	3.0	21,204
-Herd improvement	1.0	54.7	0.13	1.4	9,699
-Calf rearing	0.8	45.5	0.11	1.1	8,068
Herd Costs	3.9	219.9	0.52	5.5	38,971
-Dairy shed - power	1.0	55.6	0.13	1.4	9,853
-Dairy shed - supplies	1.2	65.3	0.16	1.6	11,575
Shed Costs	2.1	120.9	0.29	3.0	21,429
Total Variable Costs	37.8	2,146.2	5.09	53.3	380,312
-Employed labour costs	7.8	441.9	1.05	11.0	78,309
-Repairs & maintenance	4.5	256.8	0.61	6.4	45,504
-Other overhead costs	3.8	217.4	0.52	5.4	38,515
Total Cash Overhead Costs	16.2	916.1	2.17	22.7	162,328
Total Farm Working Expenses	54.0	3,062.3	7.27	76.0	542,640
Farm Operating Cash Surplus	26.1	1,480.8	3.52	36.8	262,400
-Interest costs	1.8	103.4	0.25	2.6	18,325
-Loan principal repayments	4.3	244.9	0.58	6.1	43,390
-Land lease costs	3.4	195.6	0.46	4.9	34,653
-Other capital purchases (unfinanced)	5.6	315.1	0.75	7.8	55,830
Net Cashflow Before Tax & Drawings	11.0	621.9	1.48	15.4	110,203

Labour inputs		Stock		Production	
Paid labour	1.2	Cows (milking and dry)	177	Total litres sold	1,004,870
Unpaid labour	1.5	Total herd	340	Litres / cow	5,671
Total labour units	2.7	Areas		Butterfat (kg)	40,887
Litres / Labour unit	370,801	Useable area (ha)	172	Protein (kg)	33,762
Cows / labour unit	65	Irrigation area (ha)	41	Milk solids / cow (kg)	421

Farms in this report: 20

10.6 Group cash flow – South Queensland PMR (2020-21)

Group cash flow

South Queensland PMR



2020/2021

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Eamed
Milk Income (net)	68.9	4,211.3	9.22		1,249,995
-Livestock sales less purchases (dairy)	4.2	254.9	0.56		75,663
-Feed sales	1.4	82.8	0.18		24,571
-Other farm cash income	1.6	98.8	0.22		29,326
Total Farm Cash Income	76.0	4,647.8	10.18		1,379,556
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
-Purchased grain, concentrates	18.9	1,153.4	2.53	27.4	342,343
-Purchased fodder, silage, hay	3.8	230.6	0.50	5.5	68,436
-Other purchased feed	1.8	108.1	0.24	2.6	32,078
Total Purchased Feed	24.4	1,492.0	3.27	35.4	442,857
-Fertiliser	3.2	195.9	0.43	4.7	58,150
-Fuel & oil	1.5	91.7	0.20	2.2	27,206
-Pasture & crop costs	2.4	148.5	0.33	3.5	44,070
-Irrigation costs	1.6	98.6	0.22	2.3	29,277
-Hay and silage making costs	1.4	86.0	0.19	2.0	25,517
-Agistment	0.0	1.9	0.00	0.0	556
-Other feed costs	0.4	24.3	0.05	0.6	7,215
Feed Related Costs	35.0	2,138.8	4.68	50.8	634,848
Margin Over Feed Related Costs	33.9	2,072.5	4.54	49.2	615,147
-Animal health	1.7	103.3	0.23	2.5	30,662
-Herd improvement	0.5	30.3	0.07	0.7	8,988
-Calf rearing	0.7	44.9	0.10	1.1	13,316
Herd Costs	2.9	178.4	0.39	4.2	52,965
-Dairy shed - power	0.9	54.1	0.12	1.3	16,047
-Dairy shed - supplies	0.8	45.9	0.10	1.1	13,622
Shed Costs	1.6	100.0	0.22	2.4	29,669
Total Variable Costs	39.5	2,417.2	5.29	57.4	717,482
-Employed labour costs	10.5	643.2	1.41	15.3	190,904
-Repairs & maintenance	4.0	246.2	0.54	5.8	73,079
-Other overhead costs	3.2	196.1	0.43	4.7	58,220
Total Cash Overhead Costs	17.8	1,085.5	2.38	25.8	322,204
Total Farm Working Expenses	57.3	3,502.8	7.67	83.2	1,039,685
Farm Operating Cash Surplus	18.7	1,145.0	2.51	27.2	339,870
-Interest costs	1.6	97.5	0.21	2.3	28,926
-Loan principal repayments	4.3	265.1	0.58	6.3	78,690
-Land lease costs	2.0	120.0	0.26	2.8	35,621
-Other capital purchases (unfinanced)	2.7	162.1	0.35	3.8	48,115
Net Cashflow Before Tax & Drawings	8.2	500.4	1.10	11.9	148,519

Labour inputs		Stock		Production	
Paid labour	3.0	Cows (milking and dry)	297	Total litres sold	1,814,573
Unpaid labour	1.8	Total herd	517	Litres / cow	6,113
Total labour units	4.7	Areas		Butterfat (kg)	4.09%
Litres / Labour unit	383,115	Useable area (ha)	250	Protein (kg)	3.38%
Cows / labour unit	63	Irrigation area (ha)	88	Milk solids / cow (kg)	457

Farms in this report: 11

10.7 Group cash flow – South Queensland TMR (2020-21)

Group cash flow

South Queensland TMR



2020/2021

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Eamed
Milk Income (net)	70.5	5,496.9	9.54		1,693,458
-Livestock sales less purchases (dairy)	7.9	616.7	1.07		189,989
-Feed sales	0.1	5.9	0.01		1,804
-Other farm cash income	1.4	112.8	0.20		34,753
Total Farm Cash Income	79.9	6,232.2	10.82		1,920,004
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
-Purchased grain, concentrates	22.4	1,746.5	3.03	31.8	538,056
-Purchased fodder, silage, hay	5.7	442.8	0.77	8.1	136,418
-Other purchased feed	3.2	252.0	0.44	4.6	77,637
Total Purchased Feed	31.3	2,441.3	4.24	44.4	752,112
-Fertiliser	1.7	131.4	0.23	2.4	40,493
-Fuel & oil	1.5	114.6	0.20	2.1	35,309
-Pasture & crop costs	1.8	142.2	0.25	2.6	43,805
-Irrigation costs	0.8	65.0	0.11	1.2	20,028
-Hay and silage making costs	2.9	225.8	0.39	4.1	69,548
-Agistment	0.1	4.1	0.01	0.1	1,261
-Other feed costs	0.4	28.5	0.05	0.5	8,777
Feed Related Costs	40.4	3,152.9	5.47	57.4	971,332
Margin Over Feed Related Costs	30.0	2,344.0	4.07	42.6	722,126
-Animal health	1.3	101.3	0.18	1.8	31,223
-Herd improvement	0.7	52.8	0.09	1.0	16,271
-Calf rearing	0.5	40.1	0.07	0.7	12,350
Herd Costs	2.5	194.2	0.34	3.5	59,843
-Dairy shed - power	1.1	87.1	0.15	1.6	26,838
-Dairy shed - supplies	0.8	58.9	0.10	1.1	18,139
Shed Costs	1.9	146.0	0.25	2.7	44,977
Total Variable Costs	44.8	3,493.1	6.06	63.5	1,076,152
-Employed labour costs	6.7	520.6	0.90	9.5	160,392
-Repairs & maintenance	3.3	256.9	0.45	4.7	79,154
-Other overhead costs	3.0	236.4	0.41	4.3	72,819
Total Cash Overhead Costs	13.0	1,013.9	1.76	18.4	312,365
Total Farm Working Expenses	57.8	4,507.0	7.82	82.0	1,388,518
Farm Operating Cash Surplus	22.1	1,725.2	2.99	31.4	531,486
-Interest costs	2.0	155.8	0.27	2.8	48,009
-Loan principal repayments	3.4	265.6	0.46	4.8	81,828
-Land lease costs	1.0	77.1	0.13	1.4	23,754
-Other capital purchases (unfinanced)	5.3	411.2	0.71	7.5	126,684
Net Cashflow Before Tax & Drawings	10.5	815.4	1.42	14.8	251,211

Labour inputs		Stock		Production	
Paid labour	2.4	Cows (milking and dry)	308	Total litres sold	2,403,132
Unpaid labour	2.1	Total herd	625	Litres / cow	7,800
Total labour units	4.5	Areas		Butterfat (kg)	4.01% 96,398
Litres / Labour unit	536,782	Useable area (ha)	439	Protein (kg)	3.38% 81,110
Cows / labour unit	69	Irrigation area (ha)	58	Milk solids / cow (kg)	576

Farms in this report: 13

10.8 Group cash flow – North Queensland all farms (2020-21)

Group cash flow

North Queensland All Farms



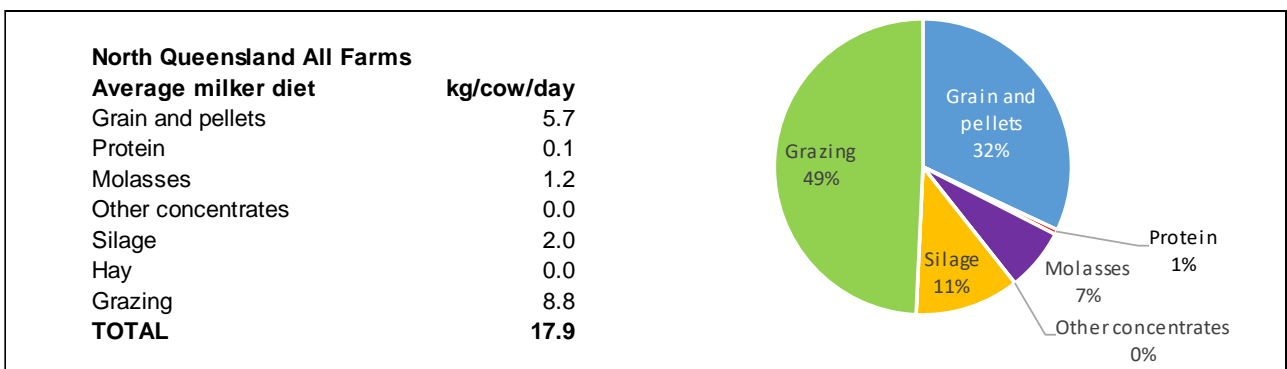
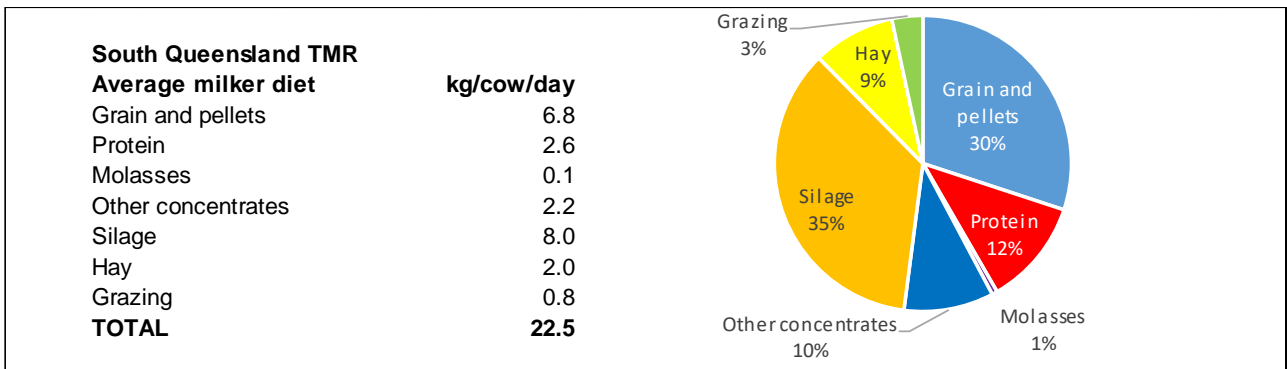
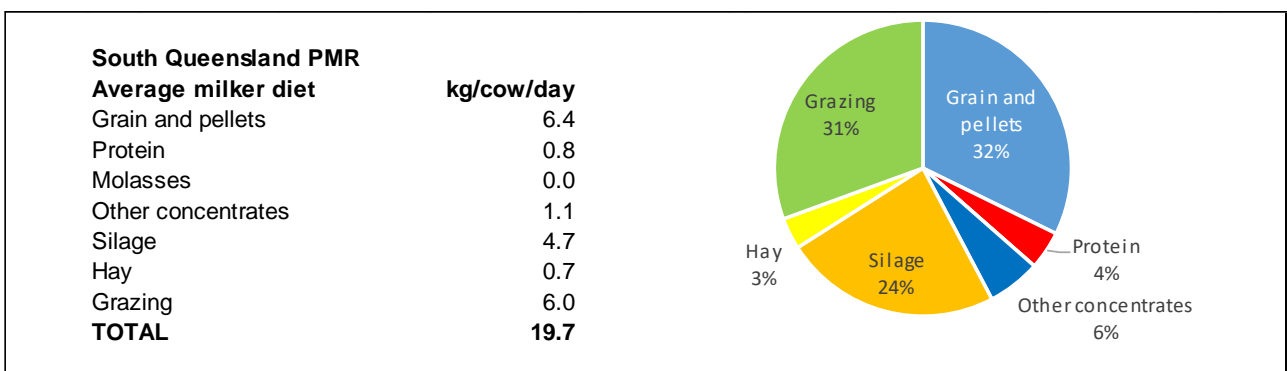
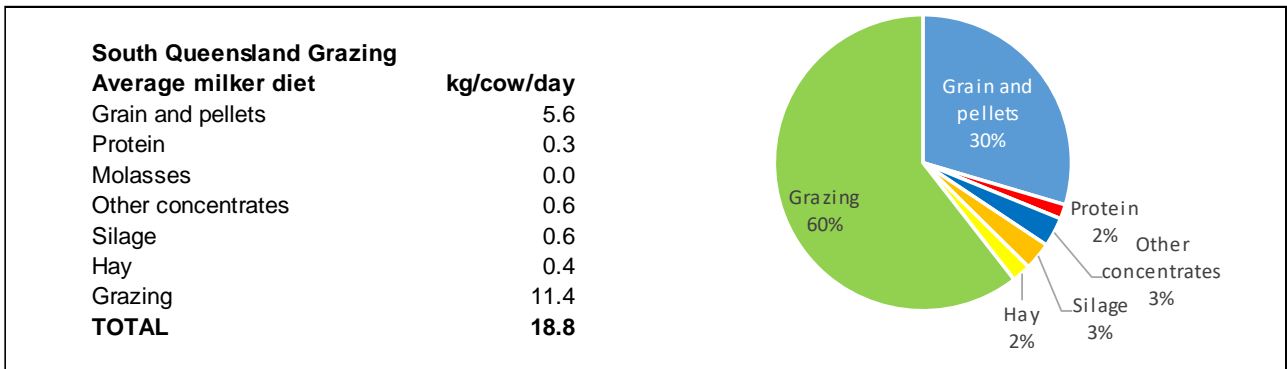
2020/2021

Farm Cash Income	c/L	\$/cow	\$/kg MS		Total \$ Eamed
Milk Income (net)	69.0	3,545.8	9.47		1,167,083
-Livestock sales less purchases (dairy)	4.9	249.1	0.67		81,979
-Feed sales	0.5	24.3	0.06		7,995
-Other farm cash income	1.3	65.0	0.17		21,391
Total Farm Cash Income	75.6	3,884.2	10.38		1,278,448
Farm Cash Costs	c/L	\$/cow	\$/kg MS	% Milk receipts	Total \$ Spent
-Purchased grain, concentrates	20.1	1,033.4	2.76	29.1	340,137
-Purchased fodder, silage, hay	4.1	208.2	0.56	5.9	68,528
-Other purchased feed	0.3	13.5	0.04	0.4	4,445
Total Purchased Feed	24.4	1,255.1	3.35	35.4	413,110
-Fertiliser	2.3	118.9	0.32	3.4	39,145
-Fuel & oil	0.9	46.3	0.12	1.3	15,249
-Pasture & crop costs	1.0	49.0	0.13	1.4	16,129
-Irrigation costs	0.4	19.1	0.05	0.5	6,279
-Hay and silage making costs	0.0	0.7	0.00	0.0	233
-Agistment	1.6	81.9	0.22	2.3	26,965
-Other feed costs	0.1	5.8	0.02	0.2	1,900
Feed Related Costs	30.7	1,576.9	4.21	44.5	519,012
Margin Over Feed Related Costs	38.3	1,969.0	5.26	55.5	648,071
-Animal health	2.2	112.4	0.30	3.2	37,010
-Herd improvement	1.0	52.8	0.14	1.5	17,387
-Calf rearing	0.5	23.8	0.06	0.7	7,842
Herd Costs	3.7	189.1	0.51	5.3	62,239
-Dairy shed - power	1.2	60.7	0.16	1.7	19,993
-Dairy shed - supplies	0.8	38.7	0.10	1.1	12,724
Shed Costs	1.9	99.4	0.27	2.8	32,716
Total Variable Costs	36.3	1,865.4	4.98	52.6	613,967
-Employed labour costs	12.7	651.9	1.74	18.4	214,555
-Repairs & maintenance	4.5	228.8	0.61	6.5	75,315
-Other overhead costs	3.1	160.8	0.43	4.5	52,917
Total Cash Overhead Costs	20.3	1,041.5	2.78	29.4	342,787
Total Farm Working Expenses	56.6	2,906.8	7.77	82.0	956,754
Farm Operating Cash Surplus	19.0	977.4	2.61	27.6	321,694
-Interest costs	2.8	142.7	0.38	4.0	46,978
-Loan principal repayments	2.6	131.4	0.35	3.7	43,263
-Land lease costs	1.7	88.8	0.24	2.5	29,227
-Other capital purchases (unfinanced)	1.3	66.1	0.18	1.9	21,755
Net Cashflow Before Tax & Drawings	10.7	548.3	1.47	15.5	180,471

Labour inputs		Stock		Production	
Paid labour	3.2	Cows (milking and dry)	329	Total litres sold	1,690,247
Unpaid labour	1.5	Total herd	528	Litres / cow	5,135
Total labour units	4.7	Areas		Butterfat (kg)	4.04%
Litres / Labour unit	359,679	Useable area (ha)	275	Protein (kg)	3.24%
Cows / labour unit	70	Irrigation area (ha)	36	Milk solids / cow (kg)	374

Farms in this report: 7

10.9 Average milker diets (kg DM/cow/day) for regional production systems (2020-21)



10.10 Business traits, key performance indicators and definitions

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

- Solvency
- Profitability
- Efficiency

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

Why use KPI

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

Table 16. Key performance indicators used in QDAS

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

Calculation

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

(Milk income – Feed related costs) / Milk sold

Total variable cost per litre

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

Calculation

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

Efficiency - Physical

Litres of milk from home grown feed

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

Calculation

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

Production per cow

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

Calculation

Milk sold / Number of cows

Litres per labour unit

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

Calculation

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

General comments

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

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

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