Balancing dairy production and profits in northern Australia

QDAS

Queensland Dairy Accounting Scheme - 2016

Dairy Australia
Your Levy at Work

Queensland Government

Balancing dairy production and profits in northern Australia

QDAS Financial and production trends – 2016

Compiled by

Ray Murphy
Gordon Simpson

Department of Agriculture and Fisheries 2016

This publication has been compiled by Ray Murphy and Gordon Simpson of Animal Science, Department of Agriculture and Fisheries.

Data enquiries should be addressed to:
Ray Murphy
Department of Agriculture and Fisheries
203 Tor Street
PO Box 102
TOOWOOMBA QLD 4350
Australia
Phone +61 7 4529 4165
Email: ray.murphy@daf.qld.gov.au

Introduction

This report contains physical and financial data from 56 farms and includes data from the South East Coastal, Darling Downs, Central Queensland and North Queensland dairy regions (Figure 1).

Milk production in Queensland decreased by 6 million litres from 411 million litres in 2014-15 to 405 million litres in 2015-16. This decrease is in part caused by a 3% decrease in farm numbers from 443 in 2014-15 to 429 in 2015-16. Table 1 shows the trend in milk supply and farm numbers for Queensland over the last four years.

In 2015-16 Australian milk production was 9.5 billion litres with Queensland contributing 4.2% of this.

Figure 2 shows Queensland's monthly milk production for 2014-15 and 2015-16.

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 examines 10 years of cash income and costs.

Section 3 displays the distribution of the Queensland Dairy Accounting Scheme (QDAS) data for cow numbers, land area, labour, production, receipts, costs and profitability.

Section 4 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.

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. Dairy farm numbers and annual milk production for Queensland (2012-13 to 2015-16)

	Farms	Annual production
2012-13	510	457 m L
2013-14	485	433 m L
2014-15	443	411 m L
2015-16	429	405 m L

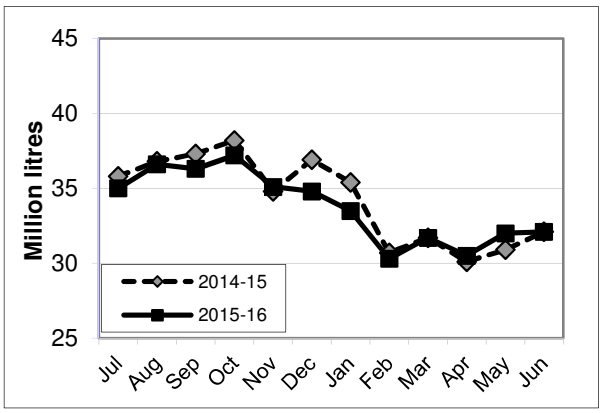


Figure 2. Queensland monthly milk production (2014-15 and 2015-16)

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 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 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 2016.

The authors also acknowledge the support and efforts of Howard Smith for his assistance with data collection.

QDAS is a project of the Department of Agriculture and Fisheries (DAF) and is co-funded by DAF and Dairy Australia.

Ray Murphy
Senior Scientist – Dairy Farm Business Management

Department of Agriculture and Fisheries
December 2016

Contents

Tables

Figures

1. 2015–16 Key findings

Fifteen Key Performance Indicators (KPI) are used to highlight the results for profitability, solvency and efficiency. Table 2 shows these results for 2015-16 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 dairy operating profit measured in dollars per cow.

Dairy operating profit 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 (2012-13 to 2015-16)

Business traits and indicators[1]	**Top 25%**	**QDAS average**	**Past QDAS averages**		
Profitability	**2015-16**	**2015-16**	**2014-15**	**2013-14**	**2012-13**
Return on assets managed (%)	7.6	4.4	3.4	1.2	1.4
Return on equity (%)	11.2	4.8	3.2	-0.3	-0.2
Operating profit margin (%)	28.6	18.9	15.4	6.1	7.7
Dairy operating profit ($/cow)	1,339	770	606	212	247
Solvency					
Equity (%)	70	76	80	81	81
Debt to equity ratio	0.42	0.32	0.25	0.23	0.23
Efficiency – Capital/Finance					
Asset turnover ratio	0.37	0.30	0.29	0.23	0.21
Total liabilities per cow ($)	3,701	3,242	2,762	2,773	2,856
Interest paid/cow ($)	192	178	174	186	206
Efficiency – Productivity					
Feed related costs (c/L)	27.6	28.9	31.8	30.8	26.8
Margin over feed related costs (c/L)	32.1	30.2	26.1	23.5	24.5
Margin over feed related costs ($/cow)	2,204	1,848	1,591	1,391	1,427
Operating cash surplus (c/L)	23.4	18.5	16.0	13.0	13.6
Efficiency – Physical					
Production per cow (L)	6,872	6,121	6,088	5,927	5,833
Litres per labour unit					
- On farms <1.0 m L	621,627	358,425	354,504	335,874	301,030
- On farms >1.0 m L	564,642	493,543	500,861	470,132	478,436

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

Profitability

The profitability of Queensland dairy farms has increased for the second consecutive year. Dairy operating profit per cow has increased from $606 to $770 and dairy operating profit per litre increased from 10.0c/L to 12.6c/L. While this is positive news, the average return on assets managed on QDAS farms is still only 4.4%, in a year that provided favourable rainfall on most farms.

The most significant change in the 2015-16 QDAS results is a 2.2c/L reduction in variable costs. This is the net effect of a 2.9c/L reduction in feed related costs but a 0.7c/L increase in herd costs. QDAS procedures have changed and purchased feed for calves is now allocated to herd costs rather than purchased feed costs as it was in 2014-15.

Therefore, the 2.2c/L reduction in variable costs is a 2.2c/L reduction in feed related costs under the 2014-15 QDAS standard. The lower feed costs are a result of lower grain and protein prices and lower demand by dairy farmers for purchased silage and hay. Table 3 shows the trend in some feed prices.

Debt levels

For the first time in many years the average equity percentage of QDAS farms has decreased, as some farmers take on more debt to invest on-farm. These investments include purchasing more cows, improving feeding systems and building shade structures to reduce the heat load on cows. The equity percentage has decreased from 80 to 76% and the average debt per cow has increased from $2,762 to $3,236.

Production and prices

While Queensland's milk production decreased by 6 million litres in 2015-16, in part due to farm numbers decreasing by 14, the average milk production of QDAS farms has increased by 72,396 litres to 1,557,860 litres. This was due to an increase in cow numbers from 244 to 255.

The milk production changes on individual farms are varied, with four QDAS farms increasing production by more than 300,000 litres and one farm decreasing production by 200,000 litres. Figure 3 shows the changes in milk production between 2014-15 and 2015-16 for individual QDAS farms.

QDAS average milk receipts (milk price) increased by 1.1c/L. The majority of this increase was achieved by farmers increasing butterfat and protein percentages and exceeding milk quality targets. South East coastal grazing farms received the largest increase, with milk receipts increasing by 2.0c/L from 59.6 c/L to 61.6c/L. Figure 4 shows the changes in average milk receipts per litre between 2014-15 and 2015-16 for individual QDAS farms.

Production per cow

Production per cow increased slightly from 6,088 litres in 2014-15 to 6,121 litres in 2015-16. North Queensland grazing farms recorded a 241 litre increase in production per cow due to good growing conditions and excellent extension activities that improved grazing management.

Table 2 shows that the top 25% farms (by dairy operating profit per cow) achieved a production per cow 751 litres higher than the QDAS average.

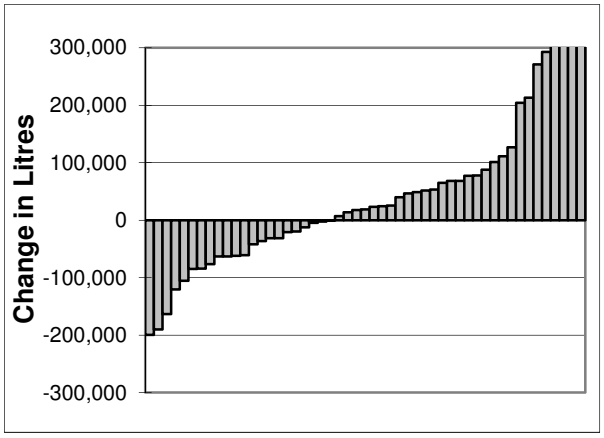


Figure 3. Change in milk production on individual farms between 2014-15 and 2015-16

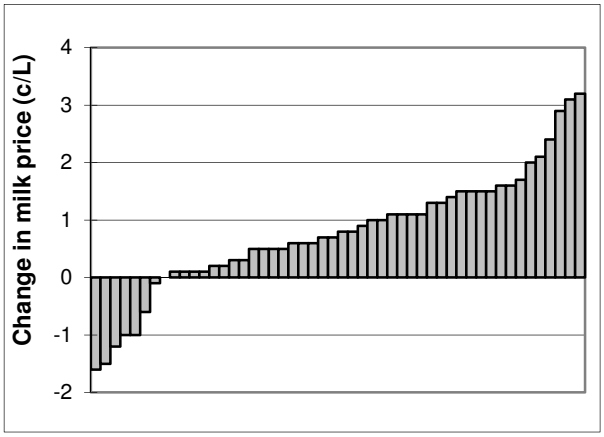


Figure 4. Change in average milk receipts on individual farms between 2014-15 and 2015-16

Production costs

Total variable costs decreased by 2.2 c/L, from 35.9 c/L in 2014-15 to 33.7 c/L in 2015-16. This change is primarily due to a decrease in the cost of purchased feeds, with the price of grain reducing through the year. Table 3 shows the prices of major farm inputs. These prices are sourced in southern Queensland and vary depending on contractual arrangements.

Home grown feed costs increased by 0.4 c/L. Good seasonal conditions saw farmers increase their expenditure on seed and fertiliser (even though the price of fertiliser decreased over the year).

The margin over feed related costs increased by 4.1 c/L, from 26.1c/L to 30.2 c/L. The margin over feed related costs per cow increased from $1,592 to $1,848.

The top 25% group (sorted by dairy operating profit per cow) achieved feed related costs of 27.6 c/L. This is 1.3c/L lower than the average of all farms. This underlines the importance of feed costs, which consume 49% of milk income.

The margin over feed related costs for the top 25% group was 32.1 c/L, which is 1.5 c/L higher than the average of all farms. On individual farms in the top 25% group, the margin over feed costs ranges from 26.5c/L to 37.2 c/L.

Table 4 shows the cash receipts and cash costs of production for QDAS farms for 2015-16. Tables 7 and 8 show the trends in cash receipts and cash costs for the last ten years.

Table 3. Indicative prices per tonne of major farm inputs (June 2013 to June 2016)

	June 2013	June 2014	June 2015	June 2016
Concentrates				
Sorghum	$325	$300	$340	$235
Barley	$365	$340	$345	$260
Wheat	$365	$345	$350	$285
Soybean meal	$746	$720	$620	$660
Canola meal	$545	$550	$510	$480
14% dairy pellet	$375	$430	$410	$400
Fertiliser				
Urea	$615	$565	$535	$460
Diesel				
Bowser price	$1.52	$1.60	$1.39	$1.25

Table 4. Cash analysis of the costs of production (2015-16)

	c/L
Farm receipts	
Milk receipts (Net)	59.1
Other farm receipts	5.7
Total farm receipts	**64.8**
Production costs	
Purchased feed	20.9
Home grown feed	8.0
Total feed related costs	28.9
Herd costs	3.0
Shed costs	1.9
Employed labour	6.4
Repairs & maintenance	3.5
Other overheads	2.6
Farm working expenses	**46.3**
Interest, principal, lease	7.6
Owners labour	5.3
Total cash costs	**59.2**
Surplus / Deficit	5.6

Home grown feed

In 2015-16, 50.3% of the milk produced on QDAS farms, or 10.3 litres per cow per day, came from home grown feed. Of this, 6.7 L/cow/day came from grazing and 3.4 L/cow/day from home grown hay and silage.

Table 5 shows a summary of feed source of milk produced across the QDAS production systems. More detail of this can be found in Appendix 10.9.

Table 5. Litres produced per cow per day from various feed sources (2015-16)

	NQ Graze	SE Graze	SE PMR	DD TMR
Milk produced from:				
Grazing	10.3	10.0	5.8	0.0
Hay & silage	0.3	0.6	6.1	11.7
Concentrates	7.8	7.9	8.4	12.0
Total	18.5	18.5	20.2	23.7

Labour

Average paid labour costs are $100,201 for 1.6 labour units. This equates to 6.4 c/L, which is 0.3 c/L higher than in 2014-15. As farms milk more cows there are opportunities to utilise labour more effectively. Table 6 shows that farms producing less than 0.75 m L (124 cows) do so at 341,336 litres per labour unit, whereas farms producing more than 1.75 m L (439 cows) do so at 514,228 litres per labour unit.

Table 6 also shows the increase in labour used, both paid and unpaid (family), as production increases. It is not surprising that the greater than 1.75 m L group has the largest use of paid labour at 4.0 full time equivalents (FTE). This is more than double the paid labour use of the 1.25 m L to 1.75 m L group.

Repairs and other overhead

The QDAS average repairs and maintenance is $55,113 (3.5 c/L). Table 6 shows that repairs and maintenance is 4.4 c/L for the farms that produce less than 0.75 m L and 3.1 c/L for the farms that produce more than 1.75 m L of milk.

The QDAS average for other overhead costs is $39,999 (2.6 c/L). While overhead costs increase as production increases, the costs get proportionately lower per litre. Table 6 shows other overhead costs falling from 3.5 c/L to 2.2 c/L as production increases. Table 7 shows other overhead costs increasing from 1.8 c/L to 2.6 c/L over the past ten years. Other overhead costs include rates, insurance, registration, office expenses, accounting, industry levies and telephone.

Table 6. Analysis of overhead costs (2015-16)

	<0.75 m L	0.75 – 1.25m L	1.25 – 1.75m L	>1.75m L
Milk production (L)	614,405	962,158	1,484,043	3,006,257
Cows (milkers + dry)	124	182	247	439
Overheads				
Repairs & Maintenance ($)	27,321	42,038	53,036	92,478
Repairs & Maintenance (c/L)	4.4	4.4	3.6	3.1
Other overheads ($)	21,386	26,642	41,384	66,274
Other overheads (c/L)	3.5	2.8	2.8	2.2
Labour				
Unpaid labour (FTE)	1.3	1.6	1.5	1.9
Paid labour (FTE)	0.5	0.8	1.5	4.0
Paid labour cost (c/L)	3.0	4.3	6.5	7.6
Litres per labour unit	341,336	411,765	486,152	514,228

2. Farm cash flow over the years

This page shows time series data to calculate operating cash surplus and a cash surplus/deficit from 2006-07 to 2015-16. Milk receipts are highest in 2015-16 at 59.1 c/L. Feed related costs fluctuate with commodity, fuel and fertiliser prices. They spiked in 2008-09 and 2014-15 with drought conditions and increased demand for available fodder. Herd, shed, administration, repairs and labour costs have all increased over this period.

Since 2006-07 there have been the following increases.

- Purchased feed up 29%.
- Shed costs up 90%
- Employed labour up 77%.

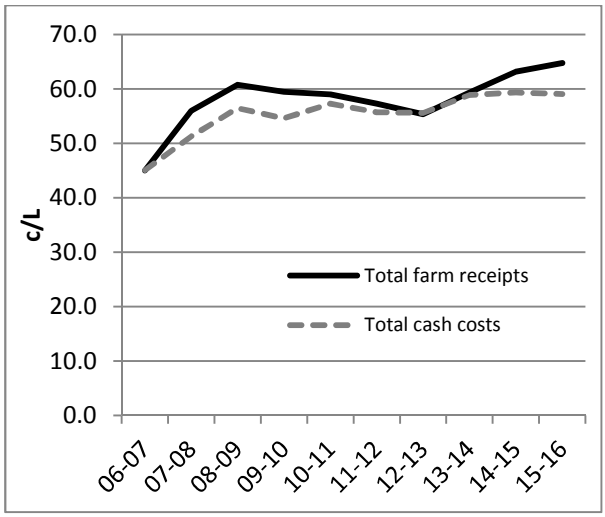


Figure 5. Total farm receipts and total cash costs from 2006-07 to 2015-16

Table 7. Operating cash surplus (c/L) (2006-07 to 2015-16)

	2006 -07	2007 -08	2008 -09	2009 -10	2010 -11	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16
Milk receipts (Net)	37.6	51.0	55.9	55.7	53.5	53.4	51.3	54.2	58.0	59.1
Total farm receipts	**45.0**	**56.0**	**60.8**	**59.5**	**59.0**	**57.3**	**55.4**	**59.4**	**63.2**	**64.8**
Production costs										
Purchased feed	16.2	17.9	19.7	20.0	19.1	18.2	19.4	22.8	24.2	20.9
Home grown feed	6.8	9.3	9.4	7.2	7.4	8.0	7.4	8.0	7.6	8.0
Feed related costs	**23.0**	**27.2**	**29.1**	**27.2**	**26.5**	**26.2**	**26.8**	**30.8**	**31.8**	**28.9**
Herd costs	1.5	1.7	1.9	1.9	2.2	2.1	2.2	2.1	2.2	3.0
Shed costs	1.0	1.1	1.2	1.3	1.6	1.6	1.7	1.8	1.9	1.9
Employed labour	3.6	4.0	5.1	5.6	6.0	5.4	5.4	5.9	6.1	6.4
Repairs & maintenance	2.4	2.7	3.3	3.7	3.6	3.3	3.2	3.4	2.9	3.5
Other overheads	1.8	2.0	2.2	2.1	2.3	2.4	2.4	2.5	2.3	2.6
Farm working expenses	**33.3**	**38.7**	**42.8**	**41.8**	**42.2**	**41.0**	**41.7**	**46.4**	**47.2**	**46.3**
Operating cash surplus	**11.7**	**17.3**	**18.0**	**17.7**	**16.8**	**16.3**	**13.7**	**13.0**	**16.0**	**18.5**

Table 8. Cash surplus / deficit (c/L) (2006-07 to 2015-16)

	2006 -07	2007 -08	2008 -09	2009 -10	2010 -11	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16
Total Farm Receipts	**45.0**	**56.0**	**60.8**	**59.5**	**59.0**	**57.3**	**55.4**	**59.4**	**63.2**	**64.8**
Farm working expenses	33.3	38.7	42.8	41.8	42.2	41.0	41.7	46.4	47.2	46.3
Interest, principal	5.6	6.3	7.2	6.2	8.3	7.8	7.3	7.0	6.8	7.6
Owners' labour	6.2	6.3	6.5	6.6	6.8	6.9	6.6	5.9	5.4	5.3
Total cash costs	**45.1**	**51.3**	**56.5**	**54.6**	**57.3**	**55.7**	**55.6**	**59.3**	**59.4**	**59.2**
Cash surplus / deficit	**-0.1**	**4.7**	**4.3**	**4.9**	**1.7**	**1.6**	**-0.2**	**0.1**	**3.8**	**5.6**

3. The distribution of QDAS cooperating farms

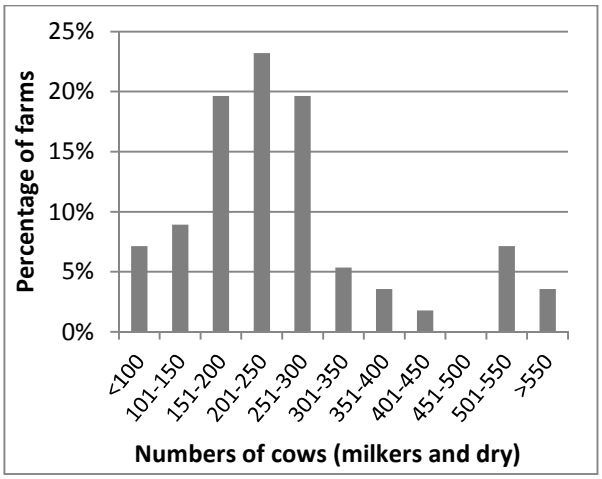


Figure 6. The distribution of QDAS farms by cow numbers

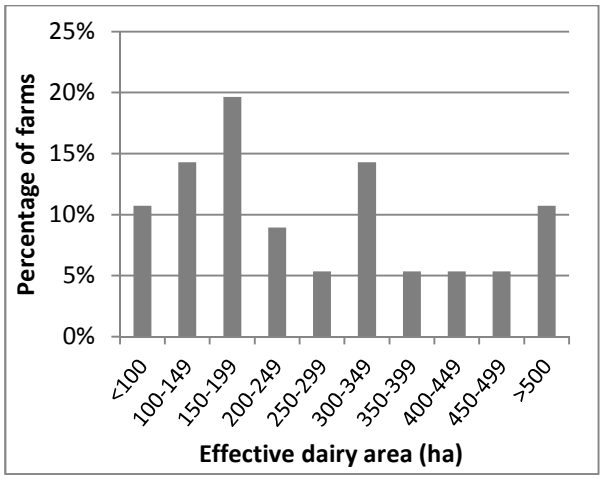


Figure 9. The distribution of QDAS farms by effective dairy area

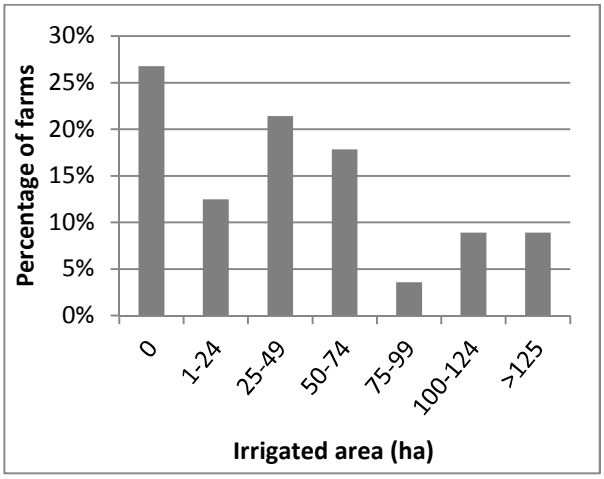


Figure 7. The distribution of QDAS farms by irrigated area

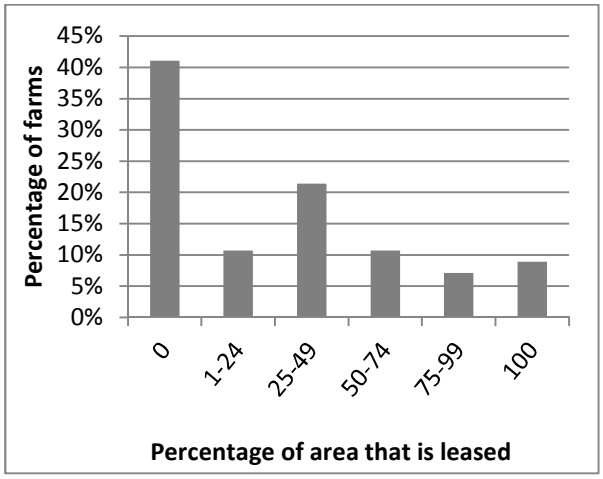


Figure 10. The distribution of QDAS farms by the percentage of effective area that is leased

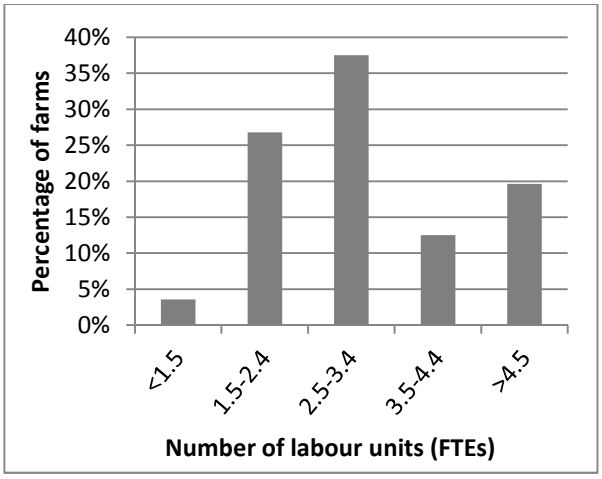


Figure 8. The distribution of QDAS farms by number of labour units

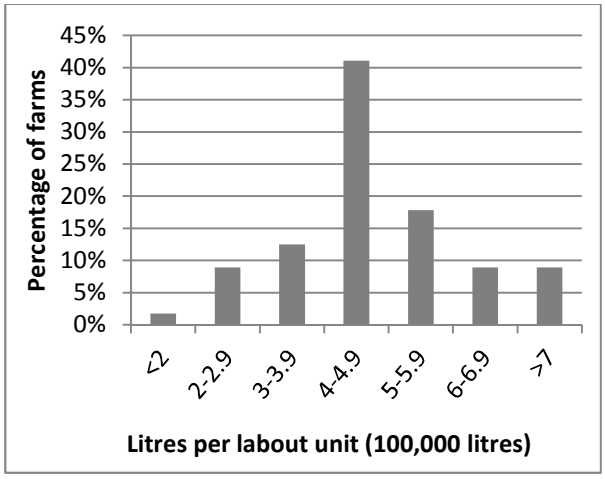


Figure 11. The distribution of QDAS farms by litres per labour unit

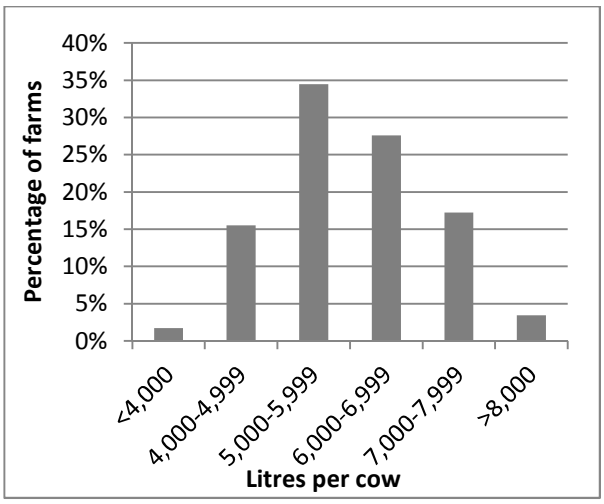


Figure 12. The distribution of QDAS farms by production per cow

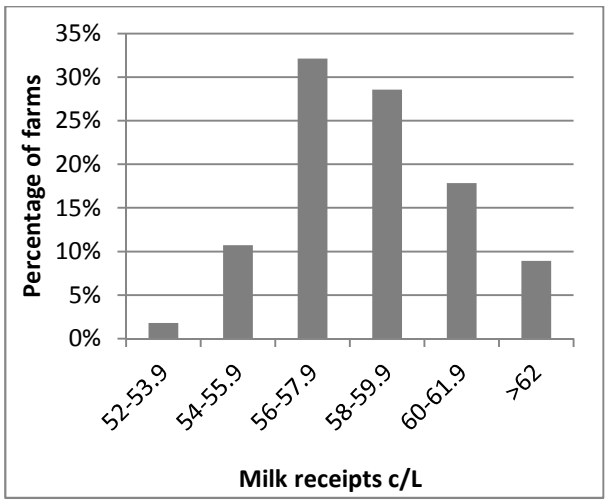


Figure 15. The distribution of QDAS farms by average milk receipts

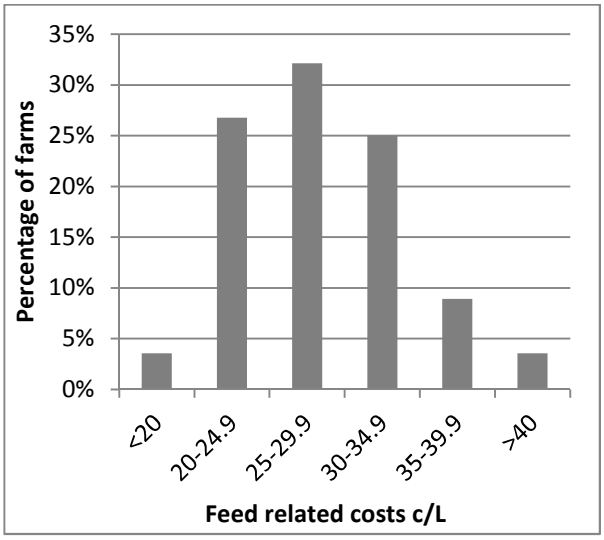


Figure 13. The distribution of QDAS farms by feed related costs

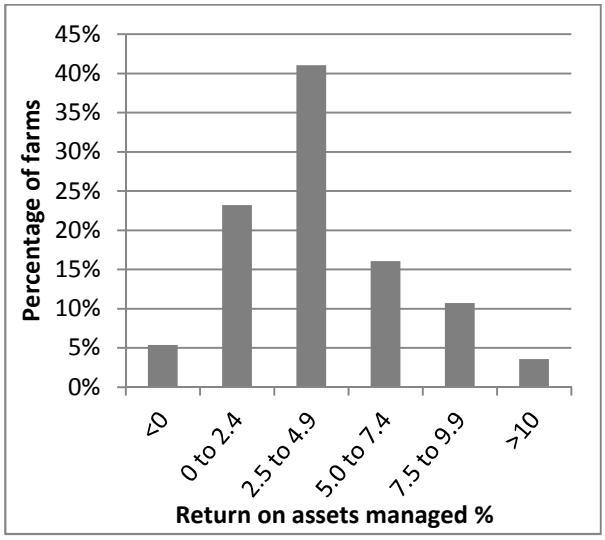


Figure 16. The distribution of QDAS farms by return on assets managed

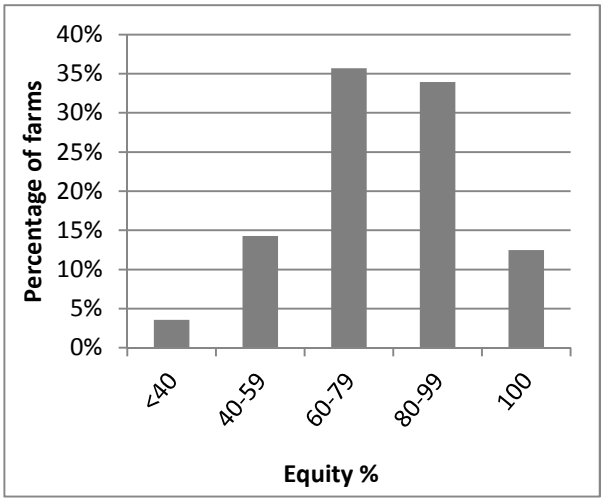


Figure 14. The distribution of QDAS farms by equity percentage

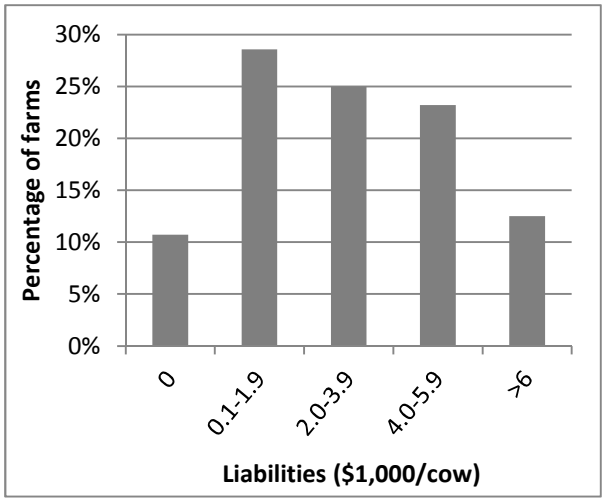


Figure 17. The distribution of QDAS farms by liabilities per cow

4. Factors affecting profitability

To investigate the factors affecting profitability, the QDAS results of the top 25% group (sorted by dairy operating profit per cow) are compared with the results of the remaining 75% of farms. Table 9 shows these results.

The higher dairy operating profit 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 1,080 litres per cow more than the remaining 75% group.
- Selling more litres of milk. The top 25% group sold 763,975 more litres of milk than the remaining 75% group. This is driven by production per cow and by having 74 more cows (milkers and dry).
- Higher milk receipts. The top 25% group received 1.0 c/L more for their milk which was due to processor payment structures and rewards for quality and volume.
- Lower feed related costs. The top 25% group had feed related costs 1.9 c/L lower than the other group. The margin over feed related costs is 2.9 c/L higher.
- Better labour efficiency. The top 25% group achieved 135,769 more litres per labour unit, which is a 31% advantage over the other group.

Table 9. KPI for top 25% and the remaining 75% of farms (2015-16)

	Top 25%	Remaining 75%
Physical traits		
Cows (milkers + dry)	310	236
Farm production (L)	2,130,841	1,366,866
Efficiency - Physical		
Production per cow (L)	6,872	5,792
Milk from home grown feed (L/day)	11.2	9.8
Litres per labour unit	568,224	432,455
Profit Analysis		
Dairy operating profit ($/cow)	1,339	521
Average investment ($/cow)	12,477	13,836
Cash Analysis		
Milk receipts (c/L)	59.7	58.7
Feed related costs (c/L)	27.6	29.5
Total variable costs (c/L)	31.8	34.8
Margin over FRC (c/L)	32.1	29.2
Margin over FRC ($/cow)	2,204	1,693

Production per cow

QDAS reports have always shown that farms with higher production per cow have higher profitability. Table 10 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.

Dairy operating profit per cow increased from $499 to $1,085 as production per cow increased.

The margin over feed related costs per litre is the highest in the two groups producing less than 6,000 litres, while the margin over feed related costs per cow is highest in the >7,000 litres group.

Table 10. KPI for four production (L) per cow groups in Queensland (2015-16)

	<5,000	5,000 - 6,000	6,000 - 7,000	>7,000
Farm milk production (L)	898,798	1,321,827	1,633,669	2,482,783
Cows (milkers + dry)	202	242	252	330
Production per cow (L)	4,458	5,472	6,481	7,534
Milk receipts (c/L)	58.7	59.5	59.2	58.7
Margin over FRC (c/L)	32.0	32.0	30.4	27.7
Margin over FRC ($/cow)	1,426	1,751	1,971	2,086
Dairy operating profit ($/cow)	499	582	827	1,085

Herd size

An important profit driver is the scale of operation. Table 11 shows the effect that increasing milk production 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 producing more than 2 million litres had the highest production per cow at 6,806 litres, whereas the farms producing less than 750,000 litres produced 4,950 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 511,531 litres produced per labour unit. Labour efficiency dropped to 341,336 litres per labour unit in the smaller herds.

With a dairy operating profit of $1,012 per cow, the farms that produced more than 2.0 million litres had the highest dairy operating profit per cow. The group producing between 0.75 and 1.25 million litres recorded the lowest dairy operating profit per cow.

Table 11. KPI for farms with increasing annual production (2015-16)

	<0.75 m L	0.75 – 1.25 m L	1.25 – 2.0 m L	>2.0 m L
Farm milk production (L)	614,405	962,158	1,509,607	3,090,501
Cows (milkers + dry)	124	182	248	454
Production per cow (L)	4,950	5,283	6,093	6,806
Margin over feed related costs ($/cow)	1,579	1,530	1,829	2,082
Litres per labour unit	341,336	411,765	490,929	511,531
Return on assets managed (%)	3.0	2.3	4.0	5.9
Dairy operating profit ($/cow)	582	411	724	1,012

Milk from home grown feed

An analysis of milk from home grown feed was conducted by recording the amount of concentrates, hay and silage that were fed to milking cows. The estimated feed consumption, in tonnes of dry matter per cow over the year, is shown below.

- Grazing: 2.0 tonne DM
- Forage (hay and silage) 0.7 tonne DM
- Concentrates 2.4 tonne DM

Table 12 splits farms into two groups by the number of litres produced from home grown feed. The farms that achieved more than 10 litres from home grown feed produced more litres per cow and had 1.6 c/L lower feed related costs and $129/cow more in dairy operating profit. This shows that increasing the litres from home grown feed is not about limiting purchased feed but feeding a balanced diet that improves feed conversion efficiency.

Table 12. KPI for farms with different levels of milk from home grown feed (2015-16)

	<10 litres per cow per day	>10 litres per cow per day
Milk from home grown feed (%)	41	59
Production per cow (L)	5,811	6,446
Feed related costs (c/L)	29.7	28.1
Margin over FRC (c/L)	28.9	31.4
Margin over FRC ($/cow)	1,679	2,026
Dairy operating profit ($/cow)	700	829
Dairy operating profit (c/L)	12.0	12.9

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 and grain and concentrates fed in the dairy. Less than 5% 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 5% 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 13 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 13. The number of farms collected in each regional production system (2015-16)

Region	GRA	PMR	TMR	Total
North Queensland	11	1	0	12
Central Queensland	1	0	0	1
Darling Downs	3	3	9	15
South East Coastal	13	15	0	28
Total	28	19	9	56

Table 14 presents a summary of the KPI for each regional production system. There are several points of interest.

- Milk receipts vary from 57.9c/L for South East Coastal PMR to 61.6 c/L for South East Coastal Grazing farms. The majority of the South East Coastal Grazing farms are paid on a milk solid basis and over time have increased their milk solids percentage and therefore milk price per litre.
- Production per cow increases as the feeding system intensifies. The grazing farms in South East Coastal and North Queensland achieved 5,560 L/cow and 5,538 L/cow. The South East Coastal PMR farms averaged 6,074 L/cow while the Darling Downs TMR farms achieved 7,106 L/cow.
- For the first time since QDAS has reported regional production systems results, all systems have achieved a dairy operating profit greater than $500 per cow. South East Coastal grazing farms achieved the highest dairy operating profit of $875/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 14. KPI for farming systems (2015-16)

	Sth East Coastal Grazing	Sth East Coastal PMR	Darling Downs TMR	North Qld Grazing
Cows (milkers + dry)	241	274	319	209
Farm production (L)	1,338,636	1,662,686	2,266,177	1,155,872
Production per cow (L)	5,560	6,074	7,106	5,538
Milk receipts (c/L)	61.6	57.9	58.5	58.3
Feed related costs (c/L)	27.7	28.0	33.4	26.6
Total variable costs (c/L)	32.9	32.2	36.8	35.2
Margin over feed related costs (c/L)	33.9	29.9	25.2	31.7
Dairy operating profit ($/cow)	875	599	840	681
Return on assets managed (%)	5.1	3.3	5.2	3.6

6. South East Coastal - Grazing

Farms obtaining a large proportion of their milk from grazing and which are located in the areas of Beaudesert, Moreton, Brisbane Valley and Gympie have been grouped under the heading of South East Coastal. These areas have higher and more reliable rainfall and have a higher proportion of irrigation than the Darling Downs farms. 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 $11,922 per cow in their operation, of which 65% is in the land value. Equity levels are high, averaging at 76%, and a return on assets managed of 5.1% was achieved.

Table 16 shows the data trends for farms with continuous participation in QDAS over the last four years (2012-13 to the present). This sample of farms is slightly smaller than the sample used in Table 15. There are several points of interest:

- Milk receipts have increased in 2015-16 to 60.9c/L and this is the highest of these four years.
- Cow numbers have increased from 206 in 2012-13 to 217 in 2015-16.
- Production per cow has decreased from 5,415 in 2013-14 to 5,295 in 2015-16.
- Feed related costs were highest in 2014-15.
- Dairy operating profit increased each year to be $815 per cow in 2015-16.

Table 15. Statistics for South East Coastal grazing farms – 13 farms (2015-16)

Resources	
Cows (milkers + dry)	241
Mated heifers	93
Other heifers	104
Total dairy herd	438
Milking cow area (ha)	79
Effective dairy area (ha)	210
Labour units	3.0
Assets and Liabilities	
Land & buildings ($)	1,872,538
Stock ($)	520,500
Plant ($)	229,077
Other ($)	248,249
TOTAL ($)	2,870,364
Liabilities ($)	700,827
Equity (%)	76
Investment per cow ($)	11,922
Debt per cow ($)	2,911
Productivity	
Milk production (L)	1,338,636
Production per cow (L)	5,560
Financial	
Milk receipts (c/L)	61.6
Feed related costs (c/L)	27.7
Total variable costs (c/L)	32.9
Margin over feed related costs (c/L)	33.9
Dairy operating profit ($/cow)	875
Return on assets managed (%)	5.1

Table 16. Trends for 12 South East Coastal grazing farms with continuous data (2012-13 to 2015-16)

	2012-13	2013-14	2014-15	2015-16
Milk receipts (c/L)	52.5	55.6	59.6	60.9
Cows (milkers and dry)	206	210	218	217
Production per cow (L)	4,855	5,415	5,359	5,295
Feed related costs (c/L)	25.4	28.3	29.1	27.1
Margin over feed related costs (c/L)	27.1	27.3	30.4	33.9
Total variable costs (c/L)	30.0	32.7	33.3	32.5
Dairy operating profit ($/cow)	284	428	708	815

7. South East Coastal - PMR

South East Coastal PMR farms are located alongside the grazing properties in this region. 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 $12,800 per cow in their operation with 70% tied to the land. Equity levels are high, averaging at 81% and a return on assets managed of 3.1% was achieved.

Table 18 shows the data trends for farms with continuous participation in QDAS over the last four years (2012-13 to the present). This sample of farms is slightly smaller than the sample used in Table 17. There are several points of interest:

- Milk receipts have increased each year to 58.2 c/L in 2015-16.
- Cow numbers were quite stable from 2012-13 to 2014-15, but have jumped to 254 in 2015-16.
- Production per cow has increased each year from 5,979 in 2012-13 to 6,183 in 2015-16.
- Feed related costs were highest in 2014-15 at 30.2 c/L.
- Dairy operating profit is highest in 2015-16 at $556 per cow.

Table 17. Statistics for South East Coastal PMR farms – 15 farms (2015-16)

Resources	
Cows (milkers + dry)	274
Mated heifers	81
Other heifers	106
Total dairy herd	460
Milking cow area (ha)	116
Effective dairy area (ha)	249
Labour units	3.9
Assets and Liabilities	
Land & buildings ($)	2,437,333
Stock ($)	594,227
Plant ($)	346,423
Other ($)	125,696
TOTAL ($)	3,503,678
Liabilities ($)	668,495
Equity (%)	81
Investment per cow ($)	12,800
Debt per cow ($)	2,442
Productivity	
Milk production (L)	1,662,686
Production per cow (L)	6,074
Financial	
Milk receipts (c/L)	57.9
Feed related costs (c/L)	28.0
Total variable costs (c/L)	32.2
Margin over feed related costs (c/L)	29.9
Dairy operating profit ($/cow)	586
Return on assets managed (%)	3.1

Table 18. Trends for 9 South East Coastal PMR farms with continuous data (2012-13 to 2015-16)

	2012-13	2013-14	2014-15	2015-16
Milk receipts (c/L)	51.3	54.3	57.6	58.2
Cows (milkers and dry)	246	248	246	254
Production per cow (L)	5,979	6,111	6,178	6,183
Feed related costs (c/L)	24.2	29.5	30.2	27.9
Margin over feed related costs (c/L)	27.1	24.8	27.5	30.2
Total variable costs (c/L)	27.7	33.1	34.2	32.2
Dairy operating profit ($/cow)	235	195	441	556

8. Darling Downs - TMR

The majority of the TMR farms are located north of the Warrego Highway 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. In years of average or above average rainfall they grow all their own forage requirements.

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. It is common to feed up to 12 -14 kilograms of concentrate per cow per day.

They have invested $12,781 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 $4,591 and equity of 64%, the lowest equity of all groups. A return on assets managed of 5.3% was achieved.

Table 20 shows the data trends for farms with continuous participation in QDAS over the last four years (2012-13 to the present). This sample of farms is slightly smaller than the sample used in Table 19. There are several points of interest:

- Milk receipts have increased each year to be 58.4 c/L in 2015-16.
- Cow numbers have increased from 292 in 2012-13 to 311 in 2015-16.
- Production per cow is above 7,000 litres for each year except 2013-14.
- Feed related costs were very high in 2013-14 and 2014-15.
- Dairy operating profit is highest in 2015-16.

Table 19. Statistics for Darling Downs TMR farms – 9 farms (2015-16)

Resources	
Cows (milkers + dry)	319
Mated heifers	109
Other heifers	165
Total dairy herd	593
Milking cow area (ha)	280
Effective dairy area (ha)	565
Labour units	4.2
Assets and Liabilities	
Land & buildings ($)	2,351,956
Stock ($)	872,394
Plant ($)	629,689
Other ($)	221,520
TOTAL ($)	4,075,559
Liabilities ($)	1,463,903
Equity (%)	64
Investment per cow ($)	12,781
Debt per cow ($)	4,591
Productivity	
Milk production (L)	2,266,177
Production per cow (L)	7,106
Financial	
Milk receipts (c/L)	58.5
Feed related costs (c/L)	33.4
Total variable costs (c/L)	36.8
Margin over feed related costs (c/L)	25.2
Dairy operating profit ($/cow)	840
Return on assets managed (%)	5.3

Table 20. Trends for 8 Darling Downs TMR farms with continuous data (2012-13 to 2015-16)

	2012-13	2013-14	2014-15	2015-16
Milk receipts (c/L)	53.3	55.2	57.6	58.4
Cows (milkers and dry)	292	302	299	311
Production per cow (L)	7,152	6,701	7,187	7,071
Feed related costs (c/L)	32.5	39.0	40.7	33.4
Margin over feed related costs (c/L)	20.8	16.2	16.9	24.9
Total variable costs (c/L)	35.4	42.2	44.2	36.6
Dairy operating profit ($/cow)	677	46	460	876

9. North Queensland - Grazing

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 whole cottonseed and many feed rhodes grass hay for limited periods.

The farms in this group have invested $14,931 per cow in their operation, of which 75% is in the land value. Equity levels are high, averaging 80%, and a return on assets managed of 3.6% was achieved.

Feed concentrates are more expensive (due to the freight component) than in the South East Coastal and Darling Downs systems.

Table 22 shows the data trends for farms with continuous participation in QDAS over the last four years (2012-13 to the present). This sample of farms is slightly smaller than the sample used in Table 21. There are several points of interest:

- Milk receipts have increased each year to be 58.5 c/L in 2015-16.
- Cow numbers have stayed between 186 and 188 over these four years.
- Production per cow has risen to 6,025 litres after two years below 5,500 litres.
- Feed related costs were the highest in 2014-15.
- Dairy operating profit per cow has increased from -$18 in 2012-13 to $683 in 2015-16.

Table 21. Statistics for North Queensland grazing farms – 11 farms (2015-16)

Resources	
Cows (milkers + dry)	209
Mated heifers	67
Other heifers	94
Total dairy herd	369
Milking cow area (ha)	102
Effective dairy area (ha)	230
Labour units	2.6
Assets and Liabilities	
Land & buildings ($)	2,332,818
Stock ($)	570,436
Plant ($)	199,545
Other ($)	13,620
TOTAL ($)	3,116,420
Liabilities ($)	634,427
Equity (%)	80
Investment per cow ($)	14,931
Debt per cow ($)	3,040
Productivity	
Milk production (L)	1,155,872
Production per cow (L)	5,538
Financial	
Milk receipts (c/L)	58.3
Feed related costs (c/L)	26.6
Total variable costs (c/L)	35.2
Margin over feed related costs (c/L)	31.7
Dairy operating profit ($/cow)	681
Return on assets managed (%)	3.6

Table 22. Trends for 8 North Queensland grazing farms with continuous data (2012-13 to 2015-16)

	2012-13	2013-14	2014-15	2015-16
Milk receipts (c/L)	49.0	52.9	57.6	58.5
Cows (milkers and dry)	187	186	187	188
Production per cow (L)	5,620	5,474	5,460	6,025
Feed related costs (c/L)	24.3	26.6	30.1	27.0
Margin over feed related costs (c/L)	24.8	26.3	27.5	31.5
Total variable costs (c/L)	30.0	32.2	36.1	35.5
Dairy operating profit ($/cow)	-18	385	249	683

10. Appendices

10.1 Group cash flow – All 56 QDAS farms (2015–16)

Queensland dairy accounting scheme

Group cashflow Year: 2016

All farms

Cash receipts	Cents/litre	$/cow	$/kg MS		Total $ earned
Milk receipts (net)	**59.1**	**3,615.9**	**8.08**		**920,301**
Stock sales - dairy	4.8	294.8	0.66		75,029
Feed sales	0.1	7.4	0.02		1,882
Other farm receipts	0.8	46.7	0.10		11,881
Total farm receipts	**64.8**	**3,964.7**	**8.86**		**1,009,092**
Cash costs	**Cents/litre**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ spent**
Purchased grain & concentrates	17.0	1,041.5	2.33	28.8	265,086
Purchased fodder, silage, hay	2.4	145.3	0.32	4.0	36,986
Other purchased feed	1.5	90.2	0.20	2.5	22,957
Total purchased feeds	**20.9**	**1,277.0**	**2.85**	**35.3**	**325,029**
Fertiliser	2.7	166.2	0.37	4.6	42,294
Fuel & oil	1.3	76.6	0.17	2.1	19,506
Pasture & crop costs	1.5	89.4	0.20	2.5	22,750
Irrigation costs	1.0	58.4	0.13	1.6	14,876
Hay and silage making costs	1.5	89.1	0.20	2.5	22,689
Agistment costs	0.1	7.4	0.02	0.2	1,871
Other feed costs	0.1	3.3	0.01	0.1	834
Feed related costs	**28.9**	**1,767.5**	**3.95**	**48.9**	**449,848**
Animal health	1.6	95.1	0.21	2.6	24,205
Herd improvement	0.7	40.6	0.09	1.1	10,331
Calf rearing	0.7	44.7	0.10	1.2	11,383
Other herd costs	0.1	4.3	0.01	0.1	1,089
Herd costs	**3.0**	**184.7**	**0.41**	**5.1**	**47,008**
Dairy shed costs - power	1.0	62.2	0.14	1.7	15,828
Dairy shed costs - chemicals	0.8	49.6	0.11	1.4	12,635
Dairy shed costs - other	0.0	1.7	0.00	0.0	439
Shed costs	**1.9**	**113.6**	**0.25**	**3.1**	**28,902**
Total variable costs	**33.7**	**2,065.7**	**4.62**	**57.1**	**525,758**
Employed labour costs	6.4	393.7	0.88	10.9	100,201
Repairs & maintenance	3.5	216.5	0.48	6.0	55,113
Other overhead costs	2.6	157.2	0.35	4.3	39,999
Total overhead costs	**12.5**	**767.4**	**1.71**	**21.2**	**195,314**
Farm working expenses	**46.3**	**2,833.1**	**6.33**	**78.4**	**721,073**
Interest	2.9	177.8	0.40	4.9	45,241
Principal	3.0	184.5	0.41	5.1	46,970
Land lease costs	1.7	105.5	0.24	2.9	26,841
Owner's labour	5.3	322.2	0.72	8.9	82,014
Total cash costs	**59.2**	**3,623.1**	**8.10**	**100.2**	**922,140**
Net cashflow before tax	**5.6**	**341.6**	**0.76**	**9.4**	**86,953**
Margin over feed related costs	30.2	1,848.4	4.13	51.1	470,452
Gross margin - milk only	25.3	1,550.2	3.46	42.9	394,542
Operating cash surplus	18.5	1,131.6	2.53	31.3	288,020

Labour inputs		**Stock**		**Production**		
Unpaid labour	1.6	Cows (milking and dry)	255	Total litres sold		1,557,860
Paid labour	1.7	Total herd	455	Litres/cow		6,121
Total labour units	3.3	**Areas**		Protein (kg)	3.32%	51,798
Litres/labour unit	470,932	Usable area (ha)	291	Butterfat (kg)	3.99%	62,097
Cows/labour unit	77	Irrigation area (ha)	49	Milk solids/cow		447

Farms in report: 56

Report created: 21/11/2016 7:50 AM

10.2 Group cash flow – Top 25% of farms (2015–16)

Queensland dairy accounting scheme

Group cashflow

Year: 2016

Top 25%

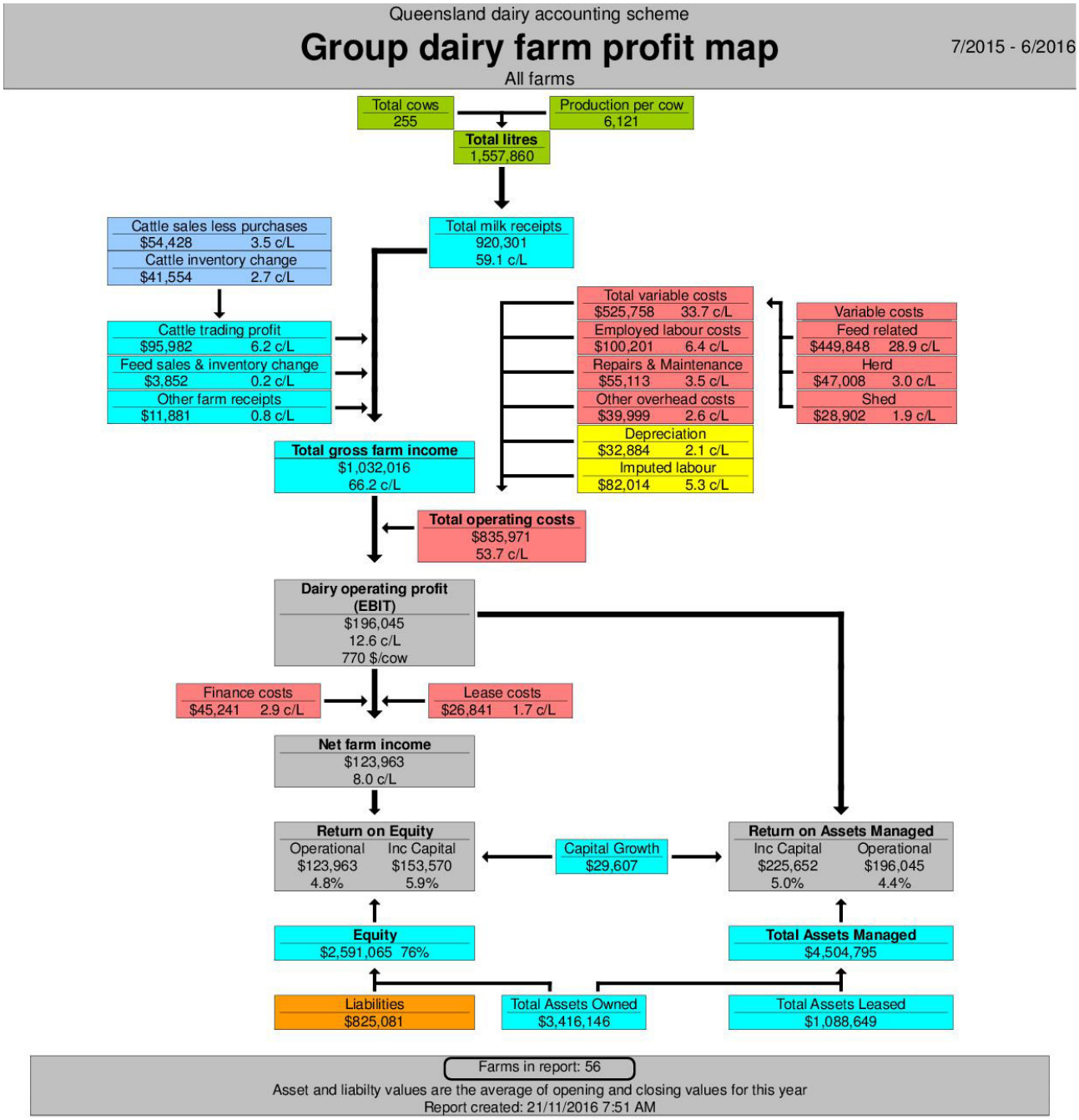
Cash receipts	Cents/litre	$/cow	$/kg MS		Total $ earned
Milk receipts (net)	**59.7**	**4,103.1**	**8.28**		**1,272,264**
Stock sales - dairy	5.6	385.2	0.78		119,443
Feed sales	0.0	0.1	0.00		26
Other farm receipts	0.7	49.9	0.10		15,465
Total farm receipts	**66.0**	**4,538.3**	**9.16**		**1,407,197**
Cash costs	**Cents/litre**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ spent**
Purchased grain & concentrates	16.8	1,151.6	2.32	28.1	357,091
Purchased fodder, silage, hay	1.6	112.1	0.23	2.7	34,751
Other purchased feed	1.8	121.7	0.25	3.0	37,734
Total purchased feeds	**20.2**	**1,385.4**	**2.80**	**33.8**	**429,576**
Fertiliser	2.2	153.0	0.31	3.7	47,438
Fuel & oil	1.1	73.8	0.15	1.8	22,886
Pasture & crop costs	1.7	113.8	0.23	2.8	35,277
Irrigation costs	0.8	52.5	0.11	1.3	16,273
Hay and silage making costs	1.7	113.9	0.23	2.8	35,306
Agistment costs	0.1	5.1	0.01	0.1	1,589
Other feed costs	0.0	2.1	0.00	0.1	647
Feed related costs	**27.6**	**1,899.5**	**3.83**	**46.3**	**588,991**
Animal health	1.4	94.3	0.19	2.3	29,226
Herd improvement	0.6	40.6	0.08	1.0	12,586
Calf rearing	0.5	33.5	0.07	0.8	10,384
Other herd costs	0.1	6.8	0.01	0.2	2,101
Herd costs	**2.5**	**175.1**	**0.35**	**4.3**	**54,297**
Dairy shed costs - power	0.9	65.0	0.13	1.6	20,154
Dairy shed costs - chemicals	0.6	42.0	0.08	1.0	13,036
Dairy shed costs - other	0.0	0.5	0.00	0.0	163
Shed costs	**1.6**	**107.6**	**0.22**	**2.6**	**33,353**
Total variable costs	**31.8**	**2,182.2**	**4.41**	**53.2**	**676,641**
Employed labour costs	5.8	399.1	0.81	9.7	123,762
Repairs & maintenance	2.9	200.4	0.40	4.9	62,141
Other overhead costs	2.2	151.4	0.31	3.7	46,960
Total overhead costs	**10.9**	**751.0**	**1.52**	**18.3**	**232,863**
Farm working expenses	**42.7**	**2,933.2**	**5.92**	**71.5**	**909,504**
Interest	2.8	192.2	0.39	4.7	59,587
Principal	4.1	280.0	0.57	6.8	86,827
Land lease costs	2.3	161.1	0.33	3.9	49,966
Owner's labour	4.4	301.8	0.61	7.4	93,571
Total cash costs	**56.3**	**3,868.3**	**7.81**	**94.3**	**1,199,456**
Net cashflow before tax	**9.7**	**670.0**	**1.35**	**16.3**	**207,741**
Margin over feed related costs	32.1	2,203.6	4.45	53.7	683,272
Gross margin - milk only	28.0	1,920.9	3.88	46.8	595,622
Operating cash surplus	23.4	1,605.1	3.24	39.1	497,693

Labour inputs		Stock		Production		
Unpaid labour	1.6	Cows (milking and dry)	310	Total litres sold		2,130,841
Paid labour	2.2	Total herd	576	Litres/cow		6,872
Total labour units	3.8	**Areas**		Protein (kg)	3.31%	70,510
Litres/labour unit	568,224	Usable area (ha)	374	Butterfat (kg)	3.90%	83,087
Cows/labour unit	83	Irrigation area (ha)	68	Milk solids/cow		495

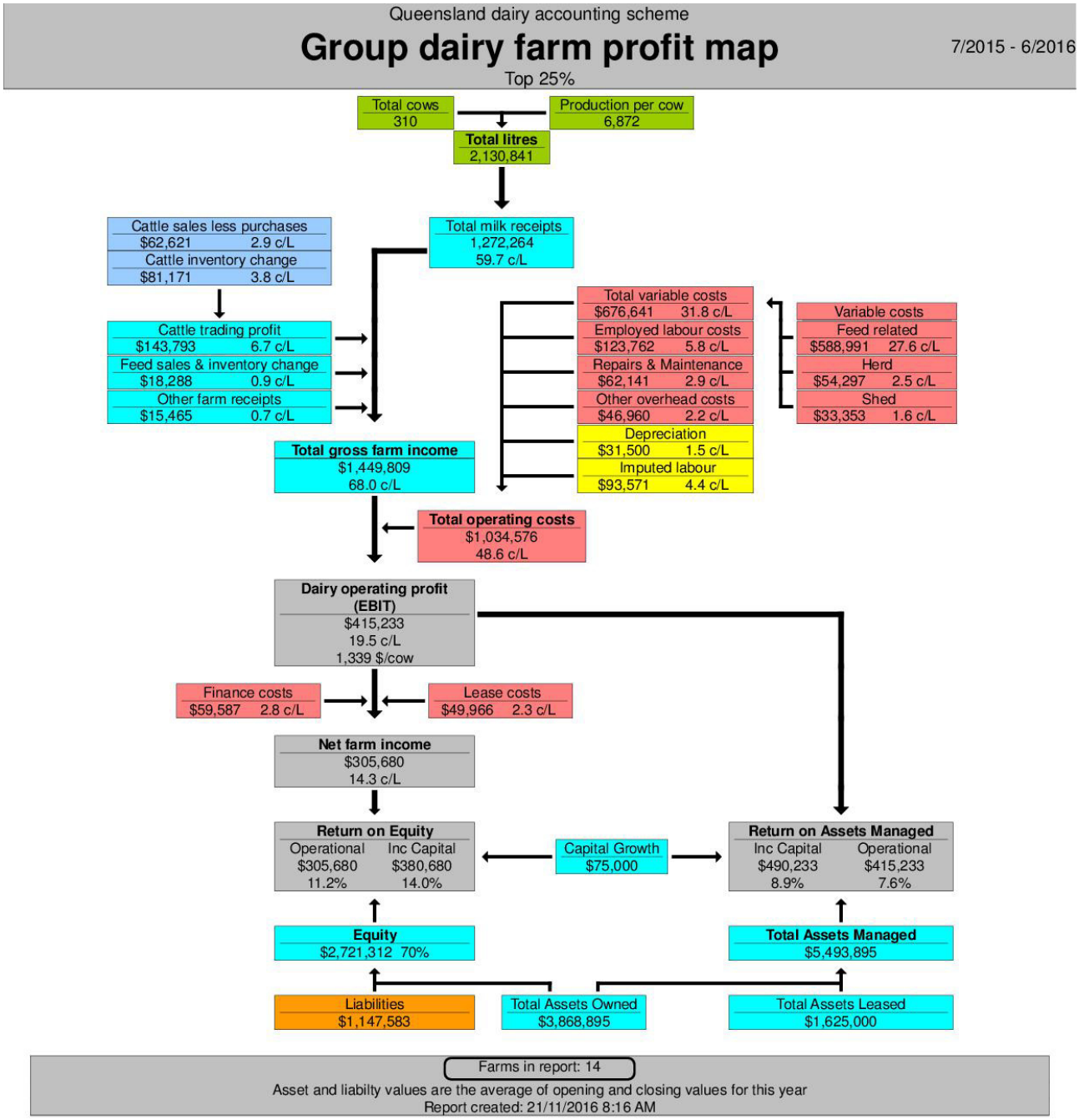
Farms in report: 14

Report created: 21/11/2016 8:15 AM

10.3 Group dairy farm profit map – All 56 QDAS farms (2015–16)



10.4 Group dairy farm profit map – Top 25% of farms (2015–16)



10.5 Group cash flow – South East Coastal – Grazing (2015–16)

Queensland dairy accounting scheme

Group cashflow

Year: 2016

South East Coastal Grazing

Cash receipts	Cents/litre	$/cow	$/kg MS		Total $ earned
Milk receipts (net)	**61.6**	**3,426.8**	**8.18**		**825,058**
Stock sales - dairy	4.9	273.7	0.65		65,888
Feed sales	0.2	10.6	0.03		2,558
Other farm receipts	0.9	47.5	0.11		11,446
Total farm receipts	**67.6**	**3,758.6**	**8.97**		**904,950**
Cash costs	**Cents/litre**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ spent**
Purchased grain & concentrates	18.8	1,043.0	2.49	30.4	251,125
Purchased fodder, silage, hay	0.4	22.4	0.05	0.7	5,383
Other purchased feed	0.5	28.5	0.07	0.8	6,863
Total purchased feeds	**19.7**	**1,093.9**	**2.61**	**31.9**	**263,372**
Fertiliser	3.7	203.0	0.48	5.9	48,880
Fuel & oil	1.1	62.7	0.15	1.8	15,102
Pasture & crop costs	1.4	79.0	0.19	2.3	19,024
Irrigation costs	1.1	62.0	0.15	1.8	14,925
Hay and silage making costs	0.7	36.9	0.09	1.1	8,886
Agistment costs	0.0	1.2	0.00	0.0	300
Other feed costs	0.0	1.4	0.00	0.0	336
Feed related costs	**27.7**	**1,540.2**	**3.68**	**44.9**	**370,824**
Animal health	1.9	104.7	0.25	3.1	25,210
Herd improvement	0.8	45.9	0.11	1.3	11,047
Calf rearing	0.6	35.6	0.08	1.0	8,561
Other herd costs	0.1	5.1	0.01	0.1	1,216
Herd costs	**3.4**	**191.2**	**0.46**	**5.6**	**46,034**
Dairy shed costs - power	0.9	50.8	0.12	1.5	12,224
Dairy shed costs - chemicals	0.9	47.9	0.11	1.4	11,528
Dairy shed costs - other	0.0	0.1	0.00	0.0	13
Shed costs	**1.8**	**98.7**	**0.24**	**2.9**	**23,765**
Total variable costs	**32.9**	**1,830.1**	**4.37**	**53.4**	**440,623**
Employed labour costs	7.5	415.7	0.99	12.1	100,081
Repairs & maintenance	3.3	182.2	0.44	5.3	43,870
Other overhead costs	2.9	162.7	0.39	4.7	39,180
Total overhead costs	**13.7**	**760.6**	**1.82**	**22.2**	**183,130**
Farm working expenses	**46.6**	**2,590.7**	**6.19**	**75.6**	**623,753**
Interest	2.2	123.6	0.30	3.6	29,760
Principal	1.2	68.2	0.16	2.0	16,413
Land lease costs	2.5	138.0	0.33	4.0	33,220
Owner's labour	5.2	290.7	0.69	8.5	70,000
Total cash costs	**57.8**	**3,211.1**	**7.67**	**93.7**	**773,146**
Net cashflow before tax	**9.8**	**547.4**	**1.31**	**16.0**	**131,804**
Margin over feed related costs	33.9	1,886.6	4.50	55.1	454,234
Gross margin - milk only	28.7	1,596.7	3.81	46.6	384,435
Operating cash surplus	21.0	1,167.9	2.79	34.1	281,197

Labour inputs		**Stock**		**Production**		
Unpaid labour	1.4	Cows (milking and dry)	241	Total litres sold		1,338,636
Paid labour	1.6	Total herd	440	Litres/cow		5,560
Total labour units	3.0	**Areas**		Protein (kg)	3.39%	45,424
Litres/labour unit	452,007	Usable area (ha)	210	Butterfat (kg)	4.14%	55,408
Cows/labour unit	81	Irrigation area (ha)	48	Milk solids/cow		419

Farms in report: 13

Report created: 21/11/2016 8:38 AM

10.6 Group cash flow – South East Coastal – PMR (2015–16)

Queensland dairy accounting scheme

Group cashflow

Year: 2016

South East Coastal PMR

Cash receipts	Cents/litre	$/cow	$/kg MS		Total $ earned
Milk receipts (net)	**57.9**	**3,516.7**	**7.96**		**962,649**
Stock sales - dairy	4.0	240.9	0.55		65,940
Feed sales	0.2	12.6	0.03		3,446
Other farm receipts	0.7	39.7	0.09		10,875
Total farm receipts	**62.7**	**3,809.9**	**8.62**		**1,042,910**
Cash costs	**Cents/litre**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ spent**
Purchased grain & concentrates	14.8	897.8	2.03	25.5	245,749
Purchased fodder, silage, hay	2.4	148.1	0.34	4.2	40,545
Other purchased feed	1.9	114.2	0.26	3.2	31,251
Total purchased feeds	**19.1**	**1,160.1**	**2.63**	**33.0**	**317,546**
Fertiliser	2.3	137.5	0.31	3.9	37,632
Fuel & oil	1.3	77.7	0.18	2.2	21,270
Pasture & crop costs	1.5	91.0	0.21	2.6	24,915
Irrigation costs	1.7	101.3	0.23	2.9	27,732
Hay and silage making costs	2.1	127.6	0.29	3.6	34,929
Agistment costs	0.1	6.7	0.02	0.2	1,827
Other feed costs	0.0	1.0	0.00	0.0	261
Feed related costs	**28.0**	**1,702.8**	**3.85**	**48.4**	**466,112**
Animal health	1.8	107.6	0.24	3.1	29,461
Herd improvement	0.6	35.0	0.08	1.0	9,586
Calf rearing	0.1	5.7	0.01	0.2	1,560
Other herd costs	0.1	4.6	0.01	0.1	1,266
Herd costs	**2.5**	**153.0**	**0.35**	**4.3**	**41,873**
Dairy shed costs - power	0.9	52.3	0.12	1.5	14,328
Dairy shed costs - chemicals	0.8	50.3	0.11	1.4	13,767
Dairy shed costs - other	0.0	0.1	0.00	0.0	41
Shed costs	**1.7**	**102.8**	**0.23**	**2.9**	**28,136**
Total variable costs	**32.2**	**1,958.6**	**4.43**	**55.7**	**536,121**
Employed labour costs	9.1	554.0	1.25	15.8	151,638
Repairs & maintenance	3.3	198.0	0.45	5.6	54,207
Other overhead costs	2.4	147.6	0.33	4.2	40,412
Total overhead costs	**14.8**	**899.6**	**2.04**	**25.6**	**246,257**
Farm working expenses	**47.1**	**2,858.2**	**6.47**	**81.3**	**782,378**
Interest	2.2	132.0	0.30	3.8	36,137
Principal	2.4	142.9	0.32	4.1	39,109
Land lease costs	2.2	133.2	0.30	3.8	36,452
Owner's labour	4.6	281.5	0.64	8.0	77,067
Total cash costs	**58.4**	**3,547.8**	**8.03**	**100.9**	**971,142**
Net cashflow before tax	**4.3**	**262.2**	**0.59**	**7.5**	**71,768**
Margin over feed related costs	29.9	1,813.9	4.10	51.6	496,538
Gross margin - milk only	25.7	1,558.2	3.53	44.3	426,529
Operating cash surplus	15.7	951.8	2.15	27.1	260,532

Labour inputs		Stock		Production		
Unpaid labour	1.4	Cows (milking and dry)	274	Total litres sold		1,662,686
Paid labour	2.5	Total herd	464	Litres/cow		6,074
Total labour units	3.9	**Areas**		Protein (kg)	3.32%	55,188
Litres/labour unit	427,792	Usable area (ha)	249	Butterfat (kg)	3.96%	65,782
Cows/labour unit	70	Irrigation area (ha)	81	Milk solids/cow		442

Farms in report: 15

Report created: 21/11/2016 8:44 AM

10.7 Group cash flow – Darling Downs – TMR (2015–16)

Queensland dairy accounting scheme

Group cashflow

Year: 2016

Darling Downs TMR

Cash receipts	Cents/litre	$/cow	$/kg MS		Total $ earned
Milk receipts (net)	**58.5**	**4,158.4**	**8.04**		**1,326,072**
Stock sales - dairy	6.6	469.8	0.91		149,799
Feed sales	0.1	7.0	0.01		2,233
Other farm receipts	0.6	45.2	0.09		14,409
Total farm receipts	**65.9**	**4,680.4**	**9.05**		**1,492,513**
Cash costs	**Cents/litre**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ spent**
Purchased grain & concentrates	17.8	1,262.3	2.44	30.4	402,520
Purchased fodder, silage, hay	5.1	364.2	0.70	8.8	116,139
Other purchased feed	2.4	172.0	0.33	4.1	54,849
Total purchased feeds	**25.3**	**1,798.5**	**3.48**	**43.2**	**573,508**
Fertiliser	1.6	115.3	0.22	2.8	36,774
Fuel & oil	1.8	126.4	0.24	3.0	40,308
Pasture & crop costs	1.9	131.6	0.25	3.2	41,957
Irrigation costs	0.3	18.7	0.04	0.4	5,956
Hay and silage making costs	2.4	173.0	0.33	4.2	55,156
Agistment costs	0.0	1.4	0.00	0.0	442
Other feed costs	0.1	5.8	0.01	0.1	1,845
Feed related costs	**33.4**	**2,370.6**	**4.58**	**57.0**	**755,945**
Animal health	1.1	78.0	0.15	1.9	24,859
Herd improvement	0.2	17.2	0.03	0.4	5,490
Calf rearing	0.0	2.6	0.01	0.1	826
Other herd costs	0.1	5.9	0.01	0.1	1,867
Herd costs	**1.5**	**103.6**	**0.20**	**2.5**	**33,042**
Dairy shed costs - power	1.1	78.4	0.15	1.9	25,011
Dairy shed costs - chemicals	0.9	61.8	0.12	1.5	19,700
Dairy shed costs - other	0.0	2.6	0.01	0.1	838
Shed costs	**2.0**	**142.8**	**0.28**	**3.4**	**45,549**
Total variable costs	**36.8**	**2,617.0**	**5.06**	**62.9**	**834,536**
Employed labour costs	4.7	333.6	0.64	8.0	106,384
Repairs & maintenance	3.5	251.6	0.49	6.0	80,221
Other overhead costs	2.0	141.8	0.27	3.4	45,232
Total overhead costs	**10.2**	**727.0**	**1.41**	**17.5**	**231,837**
Farm working expenses	**47.1**	**3,344.0**	**6.46**	**80.4**	**1,066,373**
Interest	3.3	236.2	0.46	5.7	75,337
Principal	5.2	367.0	0.71	8.8	117,038
Land lease costs	1.4	100.8	0.19	2.4	32,148
Owner's labour	4.4	313.6	0.61	7.5	100,000
Total cash costs	**61.4**	**4,361.7**	**8.43**	**104.9**	**1,390,895**
Net cashflow before tax	**4.5**	**318.7**	**0.62**	**7.7**	**101,618**
Margin over feed related costs	25.2	1,787.9	3.46	43.0	570,127
Gross margin - milk only	21.7	1,541.4	2.98	37.1	491,536
Operating cash surplus	18.8	1,336.3	2.58	32.1	426,140

Labour inputs		Stock		Production		
Unpaid labour	2.1	Cows (milking and dry)	319	Total litres sold		2,266,177
Paid labour	2.1	Total herd	599	Litres/cow		7,106
Total labour units	4.2	**Areas**		Protein (kg)	3.31%	74,922
Litres/labour unit	540,281	Usable area (ha)	565	Butterfat (kg)	3.97%	90,077
Cows/labour unit	76	Irrigation area (ha)	35	Milk solids/cow		517

Farms in report: 9

Report created: 21/11/2016 8:51 AM

10.8 Group cash flow – North Queensland – Grazing (2015–16)

Queensland dairy accounting scheme

Group cashflow

Year: 2016

North Queensland Grazing

Cash receipts	Cents/litre	$/cow	$/kg MS		Total $ earned
Milk receipts (net)	**58.3**	**3,230.1**	**8.12**		**674,205**
Stock sales - dairy	3.9	218.1	0.55		45,513
Feed sales	0.0	0.0	0.00		0
Other farm receipts	1.4	78.2	0.20		16,316
Total farm receipts	**63.7**	**3,526.3**	**8.87**		**736,034**
Cash costs	**Cents/litre**	**$/cow**	**$/kg MS**	**% Milk receipts**	**Total $ spent**
Purchased grain & concentrates	19.2	1,062.8	2.67	32.9	221,845
Purchased fodder, silage, hay	0.9	48.5	0.12	1.5	10,115
Other purchased feed	0.0	2.7	0.01	0.1	562
Total purchased feeds	**20.1**	**1,114.0**	**2.80**	**34.5**	**232,522**
Fertiliser	4.6	256.3	0.64	7.9	53,495
Fuel & oil	0.8	41.7	0.10	1.3	8,696
Pasture & crop costs	0.6	33.3	0.08	1.0	6,947
Irrigation costs	0.1	6.2	0.02	0.2	1,303
Hay and silage making costs	0.0	0.0	0.00	0.0	0
Agistment costs	0.2	12.6	0.03	0.4	2,637
Other feed costs	0.1	7.8	0.02	0.2	1,635
Feed related costs	**26.6**	**1,471.9**	**3.70**	**45.6**	**307,235**
Animal health	2.0	110.1	0.28	3.4	22,977
Herd improvement	1.3	74.5	0.19	2.3	15,548
Calf rearing	3.0	167.9	0.42	5.2	35,039
Other herd costs	0.0	0.1	0.00	0.0	12
Herd costs	**6.4**	**352.5**	**0.89**	**10.9**	**73,576**
Dairy shed costs - power	1.4	77.1	0.19	2.4	16,089
Dairy shed costs - chemicals	0.9	48.6	0.12	1.5	10,142
Dairy shed costs - other	0.0	0.0	0.00	0.0	0
Shed costs	**2.3**	**125.7**	**0.32**	**3.9**	**26,232**
Total variable costs	**35.2**	**1,950.1**	**4.90**	**60.4**	**407,043**
Employed labour costs	5.1	280.2	0.70	8.7	58,488
Repairs & maintenance	4.3	238.3	0.60	7.4	49,735
Other overhead costs	3.4	190.3	0.48	5.9	39,722
Total overhead costs	**12.8**	**708.8**	**1.78**	**21.9**	**147,945**
Farm working expenses	**48.0**	**2,658.9**	**6.69**	**82.3**	**554,989**
Interest	3.7	206.9	0.52	6.4	43,187
Principal	2.5	140.8	0.35	4.4	29,399
Land lease costs	1.1	61.1	0.15	1.9	12,760
Owner's labour	6.0	334.0	0.84	10.3	69,709
Total cash costs	**61.4**	**3,401.8**	**8.55**	**105.3**	**710,044**
Net cashflow before tax	**2.2**	**124.5**	**0.31**	**3.9**	**25,990**
Margin over feed related costs	31.7	1,758.1	4.42	54.4	366,969
Gross margin - milk only	23.1	1,280.0	3.22	39.6	267,161
Operating cash surplus	15.7	867.4	2.18	26.9	181,045

Labour inputs		Stock		Production		
Unpaid labour	1.5	Cows (milking and dry)	209	Total litres sold		1,155,872
Paid labour	1.1	Total herd	371	Litres/cow		5,538
Total labour units	2.6	**Areas**		Protein (kg)	3.24%	37,470
Litres/labour unit	452,477	Usable area (ha)	230	Butterfat (kg)	3.94%	45,534
Cows/labour unit	82	Irrigation area (ha)	7	Milk solids/cow		398

Farms in report: 11

Report created: 21/11/2016 8:58 AM

10.9 Milk from feed (2015-16)

South East Coastal – Grazing

		Home grown	Purchased	Total
Forage	Conserved	45,857 litres, 3.4% 0.6 L/cow	2,248 litres, 0.2% 0.0 L/cow	769,729 litres, 57.5% 10.7 L/cow
	Grazed	721,625 litres, 53.9% 10.0 L/cow		
Concentrate		0 litres, 0.0% 0.0 L/cow	568,906 litres, 42.5% 7.9 L/cow	568,906 litres, 42.5% 7.9 L/cow
Total		767,482 litres, 57.3% 10.6 L/cow	571,154 litres, 42.7% 7.9 L/cow	1,338,636 litres, 100.0% 18.5 L/cow

South East Coastal – PMR

		Home grown	Purchased	Total
Forage	Conserved	363,209 litres, 21.8% 4.4 L/cow	136,478 litres, 8.2% 1.7 L/cow	973,278 litres, 58.5% 11.9 L/cow
	Grazed	473,590 litres, 28.5% 5.8 L/cow		
Concentrate		13,333 litres, 0.8% 0.2 L/cow	676,075 litres, 40.7% 8.2 L/cow	689,408 litres, 41.5% 8.4 L/cow
Total		850,133 litres, 51.1% 10.4 L/cow	821,553 litres, 48.9% 9.9 L/cow	1,662,686 litres, 100.0% 20.2 L/cow

Darling Downs – TMR

		Home grown	Purchased	Total
Forage	Conserved	743,590 litres, 32.8% 7.8 L/cow	371,335 litres, 16.4% 3.9 L/cow	1,115,487 litres, 49.2% 11.7 L/cow
	Grazed	563 litres, 0.0% 0.0 L/cow		
Concentrate		53,840 litres, 2.4% 0.6 L/cow	1,096,850 litres, 48.4% 11.5 L/cow	1,150,690 litres, 50.8% 12.0 L/cow
Total		797,993 litres, 35.2% 8.3 L/cow	1,468,184 litres, 64.8% 15.3 L/cow	2,266,177 litres, 100.0% 23.7 L/cow

North Queensland – Grazing

		Home grown	Purchased	Total
Forage	Conserved	0 litres, 0.0% 0.0 L/cow	21,360 litres, 1.8% 0.3 L/cow	668,727 litres, 57.9% 10.7 L/cow
	Grazed	647,367 litres, 56.0% 10.3 L/cow		
Concentrate		0 litres, 0.0% 0.0 L/cow	487,145 litres, 42.1% 7.8 L/cow	487,145 litres, 42.1% 7.8 L/cow
Total		647,367 litres, 56.0% 10.3 L/cow	508,505 litres, 44.0% 8.1 L/cow	1,155,872 litres, 100.0% 18.5 L/cow

10.10 Business traits, key performance indicators and definitions

Key performance indicators (KPI) are used in QDAS to monitor farm performance. Table 23 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 23. Key performance indicators used in QDAS

Profitability
- Return on asset managed – %
- Return on equity – %
- Operating profit margin – %
- Dairy operating profit –$/cow

Solvency
- Equity% – %
- Debt to equity ratio

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

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

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

Profitability KPI used in QDAS

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

Return on asset managed - operational

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). This does not include any capital (land and improvements) appreciation.

Calculation

(Dairy operating profit / Total assets managed) * 100

Return on asset managed – including capital appreciation

Return on assets managed, including capital appreciation, measures the profit-generating capacity of the total assets of the business including the growth in the value of these assets. When large companies such as BHP report a RoA, they include the growth in the value of their assets.

Calculation

((Dairy operating profit + change in the value of land and improvements) / Total assets managed) * 100

Return on equity - operational

This KPI measures the return on the owner's investment in the business (not including any appreciation in the value of land or improvements). Interest costs, land lease and rent are deducted from the operating profit to make the calculation. It takes the investor's point of view and can be a good way to encourage further investment in a business; it also allows a comparison to be made with the returns available from external investments.

Calculation

(Net farm income / Equity) * 100

Return on equity (RoE) - including capital appreciation

This KPI takes the RoE operational, discussed above, and adds in the appreciation in the value of land and improvements.

Calculation

(Net farm income + change in the value of land and improvements) / Equity * 100

Operating profit margin

This calculation 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 from revenues. Depreciation and a management allowance are included as expenses in this profit KPI.

Calculation

(Dairy operating profit / Total gross farm income) * 100

Dairy operating profit per cow

Similar to the above calculation but is expressed as dollars per cow.

Calculation

Dairy operating profit / Number of cows

Solvency KPI used in QDAS

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

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

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

Equity%

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

Calculation

((Assets – Liabilities) / Assets) *100

Debt to equity ratio

This is another way of expressing equity.

Calculation

Liabilities / (Assets – Liabilities)

Efficiency KPI used in QDAS

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

Efficiency - Capital

Asset turnover ratio (ATO)

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

Calculation

Total gross farm income / Assets

Total liabilities per cow

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

Calculation

Liabilities / Number of cows

Interest per cow

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

Calculation

Total interest payments / Number of cows

Efficiency - Production

Feed related cost per litre

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

Calculation

Total of all feed related costs / Milk sold

Margin over feed related costs per cow

Only the net milk receipts are used in this calculation, which avoids the fluctuations that occur in annual cattle sales.

Calculation

(Net milk receipts – Feed related costs) / Number of cows

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

Gross margin – milk only per cow

This highlights the milk production efficiency; the resulting dollars are available to pay fixed, financial, living and future development costs.

Calculation

(Net milk receipts – Total variable costs) / Number of cows

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

Total litres of milk / 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.