# Balancing dairy production and profits in northern Australia

QDAS

## Queensland Dairy Accounting Scheme - 2018

Dairy Australia
Your Levy at Work

Queensland Government

# Balancing dairy production and profits in northern Australia

QDAS Financial and production trends – 2018

Compiled by

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Department of Agriculture and Fisheries 2018

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# Introduction

This report contains physical and financial data from 50 farms and includes data from the South Queensland (incorporating the South East Coastal and Darling Downs regions), Central Queensland and North Queensland dairy regions (Figure 1).

Milk production in Queensland decreased by 19 million litres from 418 million litres in 2016-17 to 399 million litres in 2017-18, see Table 1. This decrease was due to dry seasonal conditions and a dramatic increase in purchased feed prices which resulted in many farmers decreasing cow numbers and some farmers ceasing dairying operations.

In 2017-18 Australian milk production was 9.3 billion litres with Queensland contributing 4.3% of this.

Figure 2 shows Queensland's monthly milk production for 2016-17 and 2017-18.

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, receipts, 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 (2014-15 to 2017-18)

| | Annual production |
|---|---|
| **2014-15** | 411 m L |
| **2015-16** | 405 m L |
| **2016-17** | 418 m L |
| **2017-18** | 399 m L |

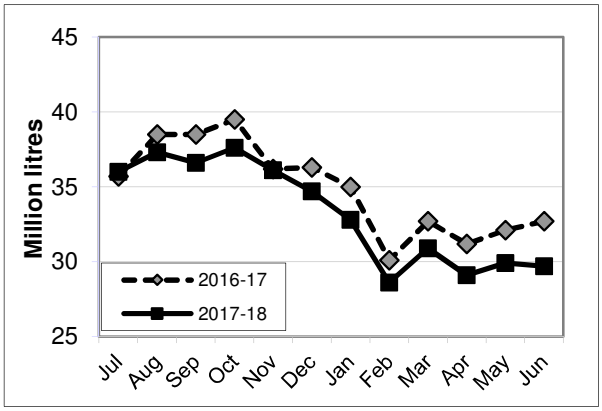


**Figure 2.** Queensland monthly milk production (2016-17 and 2017-18)

## 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 (DAF) supervise the collection and processing of data between August and November.

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

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

## Acknowledgements

The author wishes to thank all cooperating farmers who supplied data and provided valuable feedback in discussion groups held during late 2018.

The author also acknowledges the support and efforts of Howard Smith and Graeme Busby for their assistance with data collection.

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# Contents

Introduction ..... iii
Objectives ..... iv
About QDAS ..... iv
Acknowledgements ..... iv
1. 2017–18 Key findings ..... 1
2. The distribution of QDAS cooperating farms ..... 5
3. Factors affecting profitability ..... 7
Production per cow ..... 8
Herd size ..... 8
4. Feed analysis ..... 9
5. Production system analysis ..... 10
6. South Queensland - Grazing ..... 11
7. South Queensland - PMR ..... 12
8. South Queensland - TMR ..... 13
9. North Queensland – Grazing and PMR ..... 14
10. Appendices ..... 15
10.1 Group cash flow – All 50 QDAS farms (2017–18) ..... 15
10.2 Group cash flow – Top 25% of farms (2017–18) ..... 16
10.3 Group dairy farm profit map – All 50 QDAS farms (2017–18) ..... 17
10.4 Group dairy farm profit map – Top 25% of farms (2017–18) ..... 18
10.5 Group cash flow – South Queensland Grazing (2017–18) ..... 19
10.6 Group cash flow – South Queensland PMR (2017–18) ..... 20
10.7 Group cash flow – South Queensland TMR (2017–18) ..... 21
10.8 Group cash flow – North Queensland all farms (2017–18) ..... 22
10.9 Milk from feed – All 50 QDAS farms (2017–18) ..... 23
10.10 Business traits, key performance indicators and definitions ..... 24

# Tables

**Table 1.** Annual milk production for Queensland (2014-15 to 2017-18) ..... iii
**Table 2.** Financial and performance ratios for QDAS farms (2014-15 to 2017-18) ..... 1
**Table 3.** Indicative prices per tonne of major farm inputs (June 2015 to June 2018) ..... 3
**Table 4.** Cash analysis of the costs of production (2017-18) ..... 3
**Table 5.** Analysis of overhead costs (2017-18) ..... 4
**Table 6.** KPI for top 25% and the remaining 75% of farms (2017-18) ..... 7
**Table 7.** KPI for four production groups (L per cow) in Queensland (2017-18) ..... 8
**Table 8.** KPI for four herd size groups (number of milking and dry cows) in Queensland (2017-18) ..... 8
**Table 9.** Amounts fed to milking cows in each of the regional production systems (2017-18) ..... 9
**Table 10.** The number of farms collected in each regional production system (2017-18) ..... 10

**Table 11.** KPI for farming systems (2017-18) ..... 10
**Table 12.** Statistics for South Queensland grazing farms – 14 farms (2017-18) ..... 11
**Table 13.** Trends for 12 South Queensland grazing farms with continuous data (2014-15 to 2017-18) ..... 11
**Table 14.** Statistics for South Queensland PMR farms – 17 farms (2017-18) ..... 12
**Table 15.** Trends for 14 South Queensland PMR farms with continuous data (2014-15 to 2017-18) ..... 12
**Table 16.** Statistics for South Queensland TMR farms – 6 farms (2017-18) ..... 13
**Table 17.** Trends for 6 South Queensland TMR farms with continuous data (2014-15 to 2017-18) ..... 13
**Table 18.** Statistics for North Queensland grazing and PMR farms – 12 farms (2017-18) ..... 14
**Table 19.** Trends for 8 North Queensland grazing farms with continuous data (2014-15 to 2017-18) ..... 14
**Table 20.** Key performance indicators used in QDAS ..... 24

# Figures

**Figure 1.** The location of dairy farms in Queensland ..... iii
**Figure 2.** Queensland monthly milk production (2016-17 and 2017-18) ..... iii
**Figure 3.** Change in milk production on individual farms between 2016-17 and 2017-18 ..... 2
**Figure 4.** Change in average milk receipts on individual farms between 2016-17 and 2017-18 ..... 2
**Figure 5.** The distribution of QDAS farms by cow numbers ..... 5
**Figure 6.** The distribution of QDAS farms by irrigated area ..... 5
**Figure 7.** The distribution of QDAS farms by number of labour units ..... 5
**Figure 8.** The distribution of QDAS farms by effective dairy area ..... 5
**Figure 9.** The distribution of QDAS farms by the percentage of effective area that is leased ..... 5
**Figure 10.** The distribution of QDAS farms by litres per labour unit ..... 5
**Figure 11.** The distribution of QDAS farms by production per cow ..... 6
**Figure 12.** The distribution of QDAS farms by feed related costs ..... 6
**Figure 13.** The distribution of QDAS farms by equity percentage ..... 6
**Figure 14.** The distribution of QDAS farms by average milk receipts ..... 6
**Figure 15.** The distribution of QDAS farms by return on assets managed ..... 6
**Figure 16.** The distribution of QDAS farms by liabilities per cow ..... 6

# 1. 2017–18 Key findings

Fifteen Key Performance Indicators (KPI) are used to highlight the results for profitability, solvency and efficiency. Table 2 shows these results for 2017-18 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 (2014-15 to 2017-18)

| **Business traits and indicators**[1] | **Top 25%** | **QDAS average** | **Past QDAS averages** | | |
|---|---|---|---|---|---|
| **Profitability** | **2017-18** | **2017-18** | **2016-17** | **2015-16** | **2014-15** |
| Return on assets managed (%) | 5.1 | 2.3 | 4.4 | 4.4 | 3.4 |
| Return on equity (%) | 6.2 | 1.5 | 4.9 | 4.8 | 3.2 |
| Operating profit margin (%) | 19.5 | 9.6 | 18.4 | 18.9 | 15.4 |
| Dairy operating profit ($/cow) | 928 | 400 | 758 | 770 | 606 |
| **Solvency** | | | | | |
| Equity (%) | 80 | 80 | 78 | 76 | 80 |
| Debt to equity ratio | 0.27 | 0.25 | 0.28 | 0.32 | 0.25 |
| **Efficiency – Capital/Finance** | | | | | |
| Asset turnover ratio | 0.31 | 0.28 | 0.31 | 0.30 | 0.29 |
| Total liabilities per cow ($) | 3,196 | 2,847 | 2,932 | 3,242 | 2,762 |
| Interest paid/cow ($) | 141 | 136 | 141 | 178 | 174 |
| **Efficiency – Productivity** | | | | | |
| Feed related costs (c/L) | 28.7 | 30.2 | 27.1 | 28.9 | 31.8 |
| Margin over feed related costs (c/L) | 29.2 | 28.4 | 31.1 | 30.2 | 26.1 |
| Margin over feed related costs ($/cow) | 2,111 | 1,768 | 1,951 | 1,848 | 1,591 |
| Operating cash surplus (c/L) | 20.4 | 17.4 | 20.0 | 18.5 | 16.0 |
| **Efficiency – Physical** | | | | | |
| Production per cow (L) | 7,234 | 6,232 | 6,266 | 6,121 | 6,088 |
| Litres per labour unit | | | | | |
| - On farms <1.5 m L | 540,530 | 333,310 | 384,182 | 410,364 | 419,594 |
| - On farms >1.5 m L | 550,215 | 503,426 | 511,572 | 518,815 | 526,278 |

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

## Profitability

After three stable years, the profitability of Queensland dairy farms has declined dramatically in 2017-18. Table 2 shows that dairy operating profit per cow has declined from $758 in 2016-17 to $400 in 2017-18. Average return on assets managed on QDAS farms has also decreased from 4.4% to 2.3%.

The most significant influence on this decline in profit is the drought in eastern Australia which has increased the price of purchased feed and also increased the amount of feed being purchased by Queensland dairy farmers. The result has been a 3.1c/L increase in feed related costs.

A second influence on profit is a reduction in the cattle trading profit from 6.4 c/L in 2016-17 to 4.4c/L in 2017-18. This is a result of a drop in cattle sale prices and the average number of cattle on hand remaining stable during 2017-18 (where as this increased in 2016-17).

A positive influence on cash flow and profit is an increase in other farm receipts from 0.7c/L in 2016-17 to 1.5c/L in 2017-18. The main factor here is a significant number of farmers in the QDAS sample receiving back payment for 2016-17 contract incentive payments that has been withheld while contract negotiations were completed.

## Production per cow

Table 2 shows that after increasing for three consecutive years from 2014-15 to 2016-17, production per cow has decreased slightly to be 6,232 litres in 2017-18. The top 25% farms achieved a production per cow of 7,234 litres in 2017-18, 1,002 litres higher than the QDAS average.

## Production and prices

The 19 million litre decrease in Queensland's milk supply in 2017-18 is reflected on QDAS farms with the average milk supplied by QDAS farms decreasing by 93,977 litres to 1,586,266 litres. This decrease is primarily a result of a decrease in the average number of milking and dry cows from 268 to 255. Drought conditions and very high purchased feed prices prompted many farmers to review and reduce their cow numbers to better match their stored feed supply and the productive capacity of their cows.

Another factor affecting milk production was a lag effect from the 2016-17 cyclone Debbie related floods. While infrastructure was repaired relatively quickly, pasture productivity continued to be suppressed into 2017-18.

The milk production changes on individual farms are varied, with two QDAS farms increasing production by more than 500,000 litres and three farms decreasing production by 300,000 litres or more. Figure 3 shows the changes in milk production between 2016-17 and 2017-18 for individual QDAS farms.

QDAS average milk receipts (milk price) increased by 0.3 c/L. This is caused by two factors. Firstly, the milk price negotiations between farmers and a milk processor mentioned in a previous section had reduced the milk price in 2016-17 but this was resolved in 2017-18. Secondly, farmers in north Queensland experienced a 1.4c/L reduction in milk price.

Figure 4 shows the changes in average milk receipts per litre between 2016-17 and 2017-18 for individual QDAS farms. The farms with the large increases in milk receipts are the result of overcoming milk quality issues that had decreased milk receipts in the previous year.

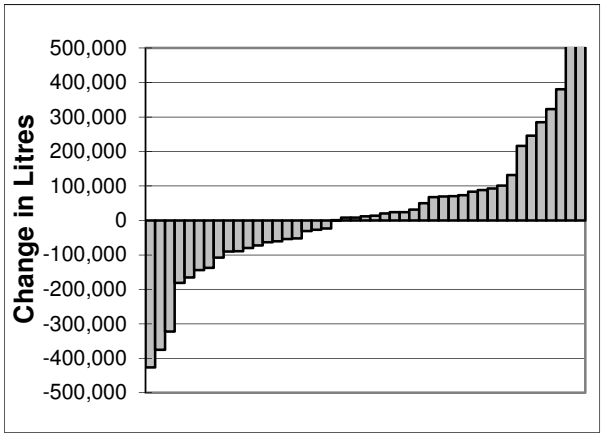



**Figure 3.** Change in milk production on individual farms between 2016-17 and 2017-18

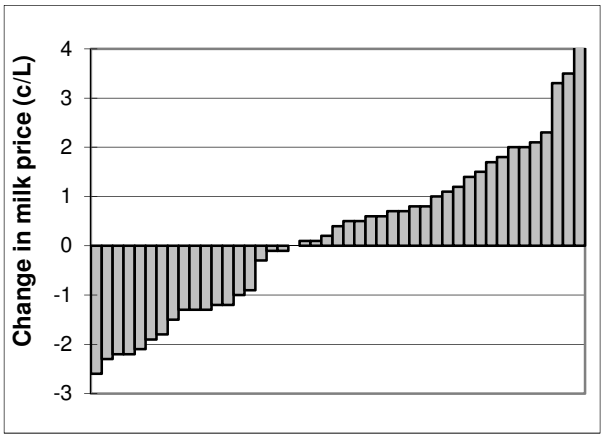



**Figure 4.** Change in average milk receipts on individual farms between 2016-17 and 2017-18

## *Production costs*

Table 2 shows that feed related costs increased by 3.1 c/L, from 27.1 c/L in 2016-17 to 30.2 c/L in 2017-18. This increase in feed related costs has been tempered by many QDAS farmers forward contracting concentrate prices during 2016-17 and only being exposed to the high spot prices for concentrates in the last quarter of 2017-18. These farmers are expected to be exposed to the high concentrate prices for all of 2018-19 and feed related costs are predicted to increase by a further 3.6c/L in 2018-19.

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

The margin over feed related costs decreased by 2.7 c/L, from 31.1 c/L to 28.4 c/L. The margin over feed related costs per cow decreased from $1,951 to $1,768.

The top 25% group (sorted by dairy operating profit per cow) achieved feed related costs of 28.7 c/L. This is 1.5 c/L lower than the average of all farms. This underlines the importance of feed costs, which consume 51% of milk receipts.

The operating cash surplus for the top 25% group is 20.4 c/L, which is 3.0 c/L higher than the average of all farms. On individual farms in the top 25% group, the operating cash surplus ranged from 11.4 c/L to 36.1 c/L.

Table 4 shows the cash receipts and cash costs of production for QDAS farms for 2017-18. Full details of QDAS average cash receipts and cash costs can be found in Appendix 10.1.

**Table 3.** Indicative prices per tonne of major farm inputs (June 2015 to June 2018)

| | June 2015 | June 2016 | June 2017 | June 2018 |
|---|---|---|---|---|
| **Concentrates** | | | | |
| Sorghum | $340 | $235 | $285 | $380 |
| Barley | $345 | $260 | $290 | $420 |
| Wheat | $350 | $285 | $300 | $433 |
| Soybean meal | $620 | $660 | $580 | $685 |
| Canola meal | $510 | $480 | $480 | $570 |
| 14% dairy pellet | $410 | $400 | $420 | $550 |
| **Fertiliser** | | | | |
| Urea | $535 | $460 | $650 | $550 |
| **Diesel** | | | | |
| Bowser price | $1.39 | $1.25 | $1.26 | $1.52 |

**Table 4.** Cash analysis of the costs of production (2017-18)

| | c/L |
|---|---|
| Farm receipts | |
| Milk receipts (Net) | 58.5 |
| Other farm receipts | 7.0 |
| **Total farm receipts** | **65.5** |
| | |
| Production costs | |
| Purchased feed | 22.6 |
| Home grown feed | 7.6 |
| Total feed related costs | 30.2 |
| Herd costs | 2.9 |
| Shed costs | 2.0 |
| Employed labour | 7.1 |
| Repairs & maintenance | 3.5 |
| Other overheads | 2.1 |
| **Farm working expenses** | **48.1** |
| Interest, principal, lease | 6.4 |
| Owners labour | 7.7 |
| **Total cash costs** | **62.2** |
| Surplus / Deficit | 3.4 |

## Labour

Average employed labour costs are $111,974 for 1.9 labour units. This equates to 7.1 c/L, which is 0.2 c/L lower than in 2016-17. As farms milk more cows there are opportunities to utilise labour more effectively. Table 5 shows that farms producing less than 1.0 m L (144 cows) do so at 298,319 litres per labour unit, whereas farms producing more than 2.0 m L (431 cows) do so at 534,484 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 3.7 full time equivalents (FTE).

## Repairs and other overheads

The QDAS average repairs and maintenance is $56,286 (3.5 c/L). Table 5 shows that repairs and maintenance is 4.2 c/L for the farms that produce less than 1.0 m L and 3.1 c/L for the farms that produce more than 2.0 m L of milk.

The QDAS average for other overhead costs is $39,414 (2.5 c/L). While overhead costs increase as production increases, the costs get proportionately lower per litre. Table 5 shows other overhead costs falling from 3.6 c/L to 1.8 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 (2017-18)

| | <1.0 m L | 1.0 – 1.5m L | 1.5 – 2.0m L | >2.0m L |
|---|---|---|---|---|
| **Milk production (L)** | 727,520 | 1,281,377 | 1,713,532 | 3,152,486 |
| **Cows (milkers + dry)** | 144 | 231 | 284 | 431 |
| **Overheads** | | | | |
| **Repairs & Maintenance ($)** | 30,904 | 48,666 | 63,351 | 104,886 |
| **Repairs & Maintenance (c/L)** | 4.2 | 3.8 | 3.7 | 3.1 |
| **Other overheads ($)** | 26,362 | 40,836 | 44,585 | 55,284 |
| **Other overheads (c/L)** | 3.6 | 3.2 | 2.6 | 1.8 |
| **Labour** | | | | |
| **Unpaid labour (FTE)** | 1.5 | 1.3 | 1.8 | 2.2 |
| **Paid labour (FTE)** | 0.9 | 1.4 | 2.0 | 3.7 |
| **Paid labour cost (c/L)** | 6.8 | 6.9 | 6.9 | 7.3 |
| **Litres per labour unit** | 298,319 | 472,383 | 458,496 | 534,484 |

# 2. The distribution of QDAS cooperating farms

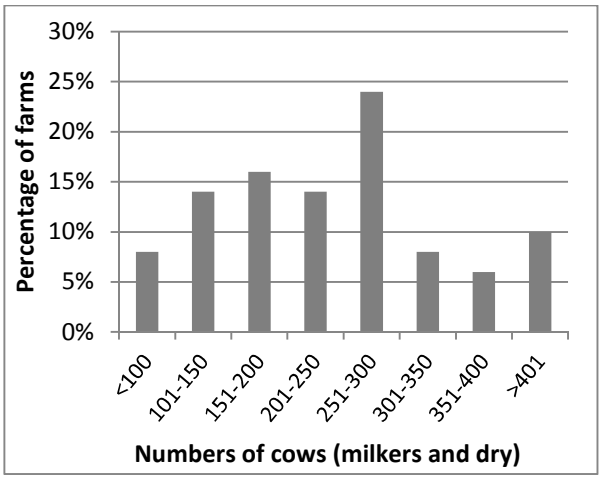



**Figure 5.** The distribution of QDAS farms by cow numbers

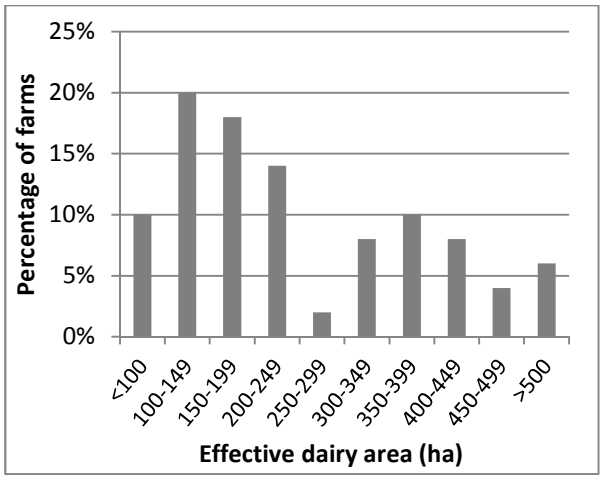



**Figure 8.** The distribution of QDAS farms by effective dairy area

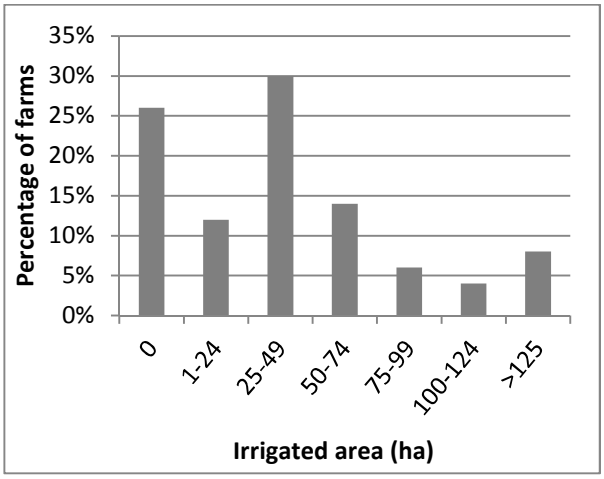



**Figure 6.** The distribution of QDAS farms by irrigated area

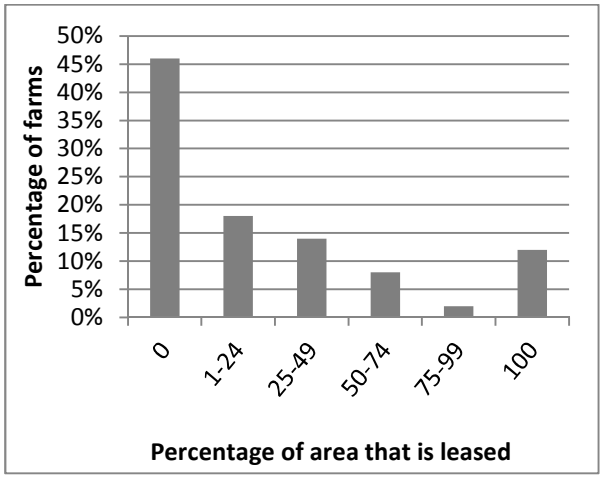



**Figure 9.** The distribution of QDAS farms by the percentage of effective area that is leased

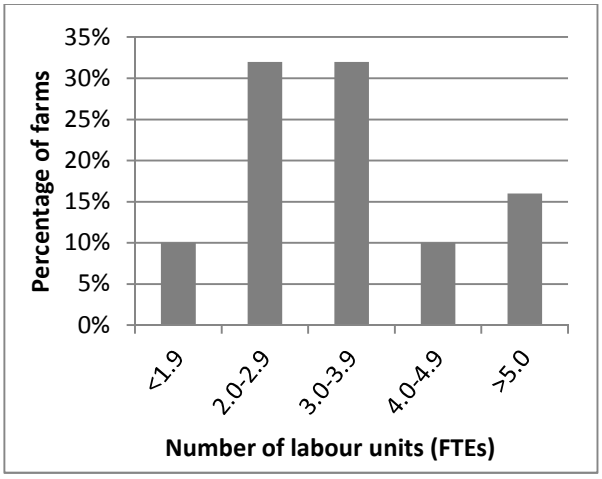



**Figure 7.** The distribution of QDAS farms by number of labour units

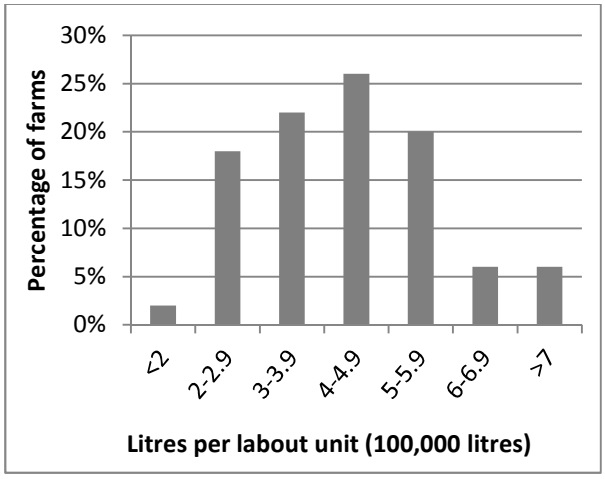



**Figure 10.** The distribution of QDAS farms by litres per labour unit

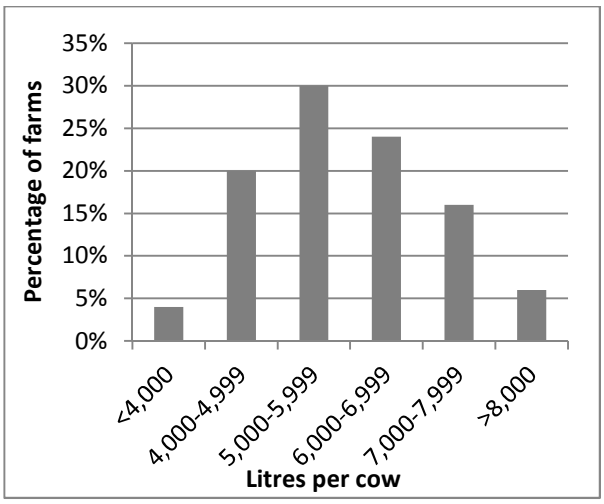



**Figure 11.** The distribution of QDAS farms by production per cow

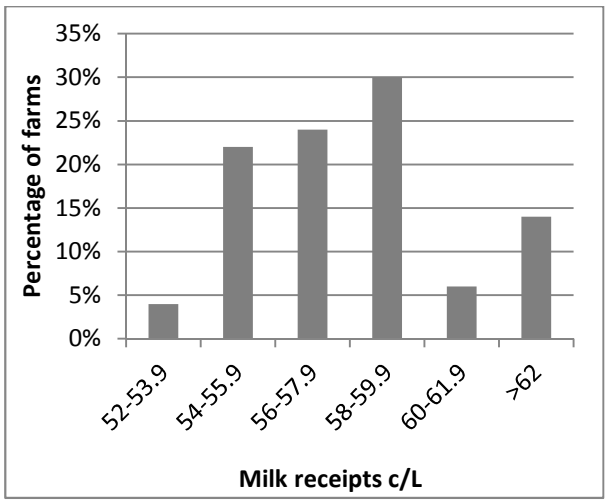



**Figure 14.** The distribution of QDAS farms by average milk receipts

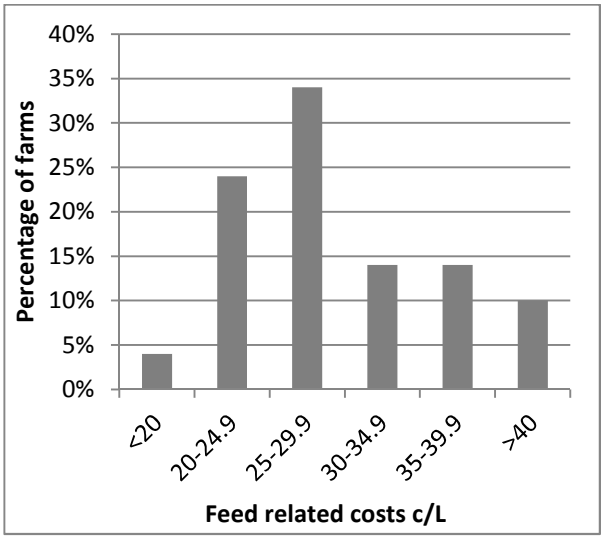



**Figure 12.** The distribution of QDAS farms by feed related costs

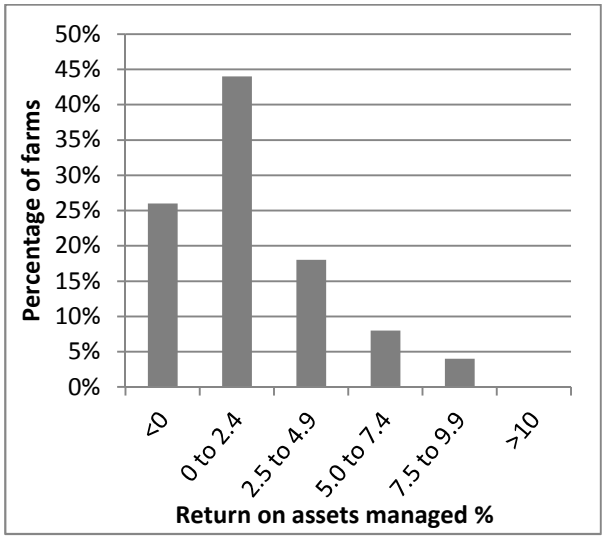



**Figure 15.** The distribution of QDAS farms by return on assets managed


**Figure 13.** The distribution of QDAS farms by equity percentage

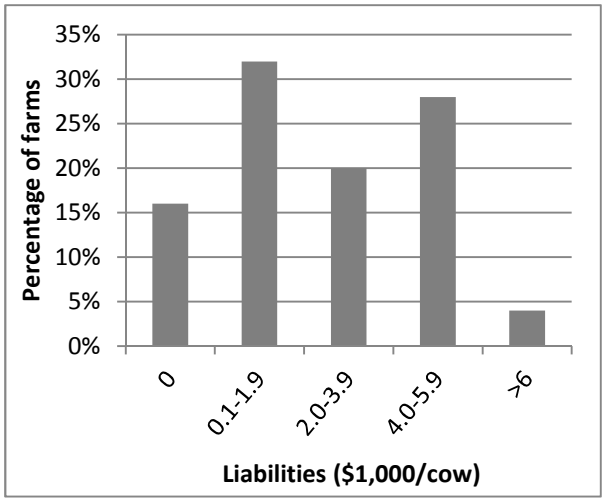



**Figure 16.** The distribution of QDAS farms by liabilities per cow

# 3. Factors affecting profitability

To investigate the factors affecting profitability, the QDAS results of the top 25% group (sorted by dairy operating profit per cow) are compared with the results of the remaining 75% of farms. Table 6 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 1,493 litres per cow more than the remaining 75% group.
- Selling more litres of milk. The top 25% group sold 1,014,753 more litres of milk than the remaining 75% group. This is driven by production per cow and by having 92 more cows (milkers and dry).
- Lower feed related costs. The top 25% group had feed related costs 2.2 c/L lower than the other group. The margin over feed related costs is 1.4 c/L higher.
- Better labour efficiency. The top 25% group achieved 107,848 more litres per labour unit.

An unusual finding from this comparison is that the milk receipts per litre of the top 25% group is less than the milk receipts of the remaining 75% group.

**Table 6.** KPI for top 25% and the remaining 75% of farms (2017-18)

| | Top 25% | Remaining 75% |
|---|---|---|
| **Physical traits** | | |
| Cows (milkers + dry) | 323 | 231 |
| Farm production (L) | 2,339,773 | 1,325,020 |
| **Efficiency - Physical** | | |
| Production per cow (L) | 7,234 | 5,741 |
| Milk from home grown feed (L/day) | 12.1 | 10.2 |
| Litres per labour unit | 548,261 | 440,413 |
| **Profit Analysis** | | |
| Dairy operating profit ($/cow) | 928 | 149 |
| Average investment ($/cow) | 13,812 | 14,370 |
| **Cash Analysis** | | |
| Milk receipts (c/L) | 57.9 | 58.8 |
| Feed related costs (c/L) | 28.7 | 30.9 |
| Total variable costs (c/L) | 32.9 | 36.2 |
| Margin over FRC (c/L) | 29.2 | 27.8 |
| Margin over FRC ($/cow) | 2,111 | 1,596 |

## Production per cow

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

Dairy operating profit per cow increases from $70 to $724 as production per cow increases.

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

**Table 7.** KPI for four production groups (L per cow) in Queensland (2017-18)

| | <5,000 | 5,000 - 6,000 | 6,000 - 7,000 | >7,000 |
|---|---|---|---|---|
| **Farm milk production (L)** | 975,300 | 1,367,347 | 1,500,905 | 2,840,695 |
| **Cows (milkers + dry)** | 213 | 239 | 224 | 354 |
| **Production per cow (L)** | 4,464 | 5,583 | 6,542 | 7,776 |
| **Milk receipts (c/L)** | 59.7 | 58.3 | 59.5 | 57.7 |
| **Margin over FRC (c/L)** | 31.7 | 29.3 | 28.2 | 26.7 |
| **Margin over FRC ($/cow)** | 1,413 | 1,635 | 1,842 | 2,072 |
| **Dairy operating profit ($/cow)** | 70 | 272 | 346 | 724 |

## Herd size

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

Increasing the scale of a farm's operation can lead to efficiencies in overheads and the use of labour. The farms with more than 320 cows (milkers and dry) had the highest production per cow at 6,785 litres, whereas the farms with less than 150 cows produced 5,500 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 500,429 litres produced per labour unit. Labour efficiency dropped to 304,636 litres per labour unit in the smaller herds.

With a dairy operating profit of $563 per cow, the farms with more than 320 cows had the highest dairy operating profit per cow. The group with less than 150 cows recorded a negative dairy operating profit per cow.

**Table 8.** KPI for four herd size groups (number of milking and dry cows) in Queensland (2017-18)

| | < 150 | 150 - 240 | 240 - 320 | > 320 |
|---|---|---|---|---|
| **Farm milk production (L)** | 666,898 | 1,137,449 | 1,774,173 | 3,060,477 |
| **Cows (milkers + dry)** | 118 | 211 | 267 | 438 |
| **Production per cow (L)** | 5,500 | 5,284 | 6,488 | 6,785 |
| **Margin over feed related costs ($/cow)** | 1,608 | 1,581 | 1,877 | 1,846 |
| **Litres per labour unit** | 304,636 | 393,770 | 493,314 | 500,429 |
| **Return on assets managed (%)** | -0.1 | 1.4 | 2.2 | 3.3 |
| **Dairy operating profit ($/cow)** | -21 | 249 | 407 | 563 |

# 4. Feed analysis

Feed related costs require significant attention by dairy farmers, especially in a subtropical environment. In 2017-18 feed related costs represented 51% of milk receipts on the QDAS average farm. On Darling Downs total mixed ration (TMR) farms it represents 63% of milk receipts. In 2013-14, a year affected by drought, feed related costs represented 69% of milk receipts on Darling Downs 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 2017-18 year.

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

The calculation of total intake (kgDM/cow/day) and milk production (L/cow/day) in Table 9 assume a 300 day lactation.

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

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

Molasses is a significant feed, especially in north Queensland. Distillers Syrup is used on several TMR farms on the Darling Downs.

The largest contribution to "other concentrates" is from brewer's grain. Bread and flour are also fed in significant amounts on some PMR and TMR farms.

Good quality silages include maize, cereals, legumes and ryegrass. Medium quality silages include forage sorghum and tropical grasses. No one should ever make poor quality silage.

Good quality hays are predominately lucerne or 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 (2017-18)

| | South Qld Grazing | South Qld PMR | South Qld TMR | North Qld All | All Qld |
|---|---|---|---|---|---|
| **Grazing (tDM/cow/year)** | 2.68 | 2.01 | 0.00 | 2.79 | 1.95 |
| **Grain and pellets (tDM/cow/year)** | 1.84 | 1.59 | 1.83 | 1.31 | 1.63 |
| **Protein (tDM/cow/year)** | 0.04 | 0.45 | 1.26 | 0.15 | 0.44 |
| **Molasses & syrup (tDM/cow/year)** | 0.00 | 0.05 | 0.07 | 0.55 | 0.15 |
| **Other concentrates (tDM/cow/year)** | 0.34 | 0.42 | 0.47 | 0.00 | 0.32 |
| **Silage good quality (tDM/cow/year)** | 0.05 | 1.28 | 0.79 | 0.39 | 0.76 |
| **Silage medium quality (tDM/cow/year)** | 0.04 | 0.40 | 2.59 | 0.01 | 0.59 |
| **Hay good quality (tDM/cow/year)** | 0.09 | 0.16 | 0.80 | 0.20 | 0.25 |
| **Hay medium quality & straw (tDM/cow/year)** | 0.03 | 0.15 | 0.11 | 0.00 | 0.09 |
| **Total intake (tDM/cow/year)** | 5.10 | 6.51 | 7.92 | 5.40 | 6.17 |
| | | | | | |
| **Total intake (kgDM/cow/day)** | 17.0 | 21.7 | 26.4 | 18.1 | 20.6 |
| **Production (L/cow/day)** | 17.8 | 21.8 | 24.7 | 18.8 | 20.8 |
| **Feed Conversion Efficiency (L/kgDM)** | 1.04 | 1.01 | 0.93 | 1.04 | 1.01 |
| **Forage to concentrate ratio** | 57:43 | 63:37 | 54:46 | 63:37 | 59:41 |

# 5. Production system analysis

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

**Grazing (GRA)** – Milk production principally from grazing, with grain and concentrates fed in the dairy. Less than 10% of dry matter intake is from hay or silage.

**Partial Mixed Ration (PMR)** – Milk production from a combination of grazing, grain, concentrates, hay and silage. More than 10% of dry matter intake is from hay or silage and at least 1% of dry matter intake is from grazing.

**Total Mixed Ration (TMR)** – Milk production principally from a silage based mixed ration fed on a pad. Less than 1% of dry matter intake is from grazing.

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

**Table 10.** The number of farms collected in each regional production system (2017-18)

| Region | GRA | PMR | TMR | Total |
|---|---|---|---|---|
| **North Queensland** | 10 | 2 | 0 | 12 |
| **Central Queensland** | 0 | 1 | 0 | 1 |
| **South Queensland** | 14 | 17 | 6 | 37 |
| **Total** | 24 | 20 | 6 | 50 |

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

- Milk receipts vary from 57.8 c/L in North Queensland farms to 59.2 c/L in South Queensland Grazing farms. The majority of the South Queensland grazing farms are paid on a milk solid basis and over time have increased their milk solids percentage and therefore milk receipts per litre.
- Production per cow increases as the feeding system intensifies. The grazing farms in South Queensland achieved 5,331 L/cow. The South Queensland PMR farms averaged 6,600 L/cow while the South Queensland TMR farms achieved 7,405 L/cow.
- South Queensland TMR farms achieved the highest dairy operating profit of $549/cow. The dairy operating profit of the South Queensland grazing farms was the lowest at $275/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 (2017-18)

| | South Qld Grazing | South Qld PMR | South Qld TMR | North Qld All farms |
|---|---|---|---|---|
| **Cows (milkers + dry)** | 186 | 306 | 343 | 207 |
| **Farm production (L)** | 991,529 | 2,016,368 | 2,537,300 | 1,169,190 |
| **Production per cow (L)** | 5,331 | 6,600 | 7,405 | 5,653 |
| **Milk receipts (c/L)** | 59.2 | 58.4 | 58.6 | 57.8 |
| **Feed related costs (c/L)** | 29.3 | 28.8 | 36.8 | 25.7 |
| **Total variable costs (c/L)** | 35.0 | 33.0 | 40.6 | 32.3 |
| **Margin over feed related costs (c/L)** | 29.9 | 29.5 | 21.8 | 32.1 |
| **Dairy operating profit ($/cow)** | 275 | 463 | 549 | 295 |
| **Return on assets managed (%)** | 1.6 | 2.5 | 3.3 | 1.7 |

# 6. South Queensland - Grazing

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

The farms in this group have invested $12,774 per cow in their operation, of which 69% is in the land value. Equity levels are high, averaging at 82%, and a return on assets managed of 1.6% was achieved.

Table 13 shows the data trends for farms with continuous participation in QDAS over the last four years (2014-15 to the present). This sample of farms is slightly smaller than the sample used in Table 12. There are several points of interest:

- Milk receipts have decreased from a high of 59.5 c/L in 2015-16 to 58.6 c/L in 2017-18.
- Cow numbers gradually increased from 192 to 196 over these four years.
- Production per cow has stayed between 5,282 and 5,486 over these four years.
- Feed related costs were highest in 2014-15.
- Dairy operating profit has decreased from a high of $940 per cow in 2015-16 to be $303 per cow in 2017-18.

**Table 12.** Statistics for South Queensland grazing farms – 14 farms (2017-18)

| | |
|---|---|
| **Resources** | |
| Cows (milkers + dry) | 186 |
| Heifers >1 year old | 76 |
| Heifers <1 year old | 66 |
| Total dairy herd | 328 |
| Milking cow area (ha) | 75 |
| Effective dairy area (ha) | 168 |
| Labour units | 2.4 |
| **Assets and Liabilities** | |
| Land & buildings ($) | 1,645,143 |
| Stock ($) | 401,946 |
| Plant ($) | 205,314 |
| Other ($) | 123,591 |
| TOTAL ($) | 2,375,993 |
| Liabilities ($) | 428,895 |
| Equity (%) | 82 |
| Investment per cow ($) | 12,774 |
| Debt per cow ($) | 2,306 |
| **Productivity** | |
| Milk production (L) | 991,529 |
| Production per cow (L) | 5,331 |
| **Financial** | |
| Milk receipts (c/L) | 59.2 |
| Feed related costs (c/L) | 29.3 |
| Total variable costs (c/L) | 35.0 |
| Margin over feed related costs (c/L) | 29.9 |
| Dairy operating profit ($/cow) | 275 |
| Return on assets managed (%) | 1.6 |

**Table 13.** Trends for 12 South Queensland grazing farms with continuous data (2014-15 to 2017-18)

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|
| **Milk receipts (c/L)** | 58.3 | 59.5 | 58.5 | 58.6 |
| **Cows (milkers and dry)** | 192 | 193 | 195 | 196 |
| **Production per cow (L)** | 5,442 | 5,486 | 5,391 | 5,282 |
| **Feed related costs (c/L)** | 27.8 | 26.3 | 25.4 | 27.7 |
| **Margin over feed related costs (c/L)** | 30.6 | 33.2 | 33.1 | 30.9 |
| **Total variable costs (c/L)** | 32.1 | 31.5 | 30.9 | 33.5 |
| **Dairy operating profit ($/cow)** | 693 | 940 | 759 | 303 |

# 7. South Queensland - PMR

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

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

The farms in this group have invested $14,472 per cow in their operation with 66% tied to the land. Equity levels are high, averaging at 83% and a return on assets managed of 2.5% was achieved.

Table 15 shows the data trends for farms with continuous participation in QDAS over the last four years (2014-15 to the present). This sample of farms is slightly smaller than the sample used in Table 14. There are several points of interest:

- Milk receipts have been relatively stable, varying between 58.5 c/L and 59.6 c/L over these four years.
- Cow numbers have increased from 298 in 2014-15 to 322 in 2017-18.
- Production per cow increased from 6,188 litres in 2014-15 to a high of 6,593 litres in 2016-17.
- Feed related costs are lowest in 2016-17 at 27.9 c/L.
- Dairy operating profit is lowest in 2017-18 at $395 per cow.

**Table 14.** Statistics for South Queensland PMR farms – 17 farms (2017-18)

| | |
|---|---|
| **Resources** | |
| Cows (milkers + dry) | 306 |
| Heifers >1 year old | 116 |
| Heifers <1 year old | 101 |
| Total dairy herd | 523 |
| Milking cow area (ha) | 127 |
| Effective dairy area (ha) | 279 |
| Labour units | 4.5 |
| **Assets and Liabilities** | |
| Land & buildings ($) | 2,918,837 |
| Stock ($) | 680,112 |
| Plant ($) | 552,467 |
| Other ($) | 270,298 |
| TOTAL ($) | 4,421,713 |
| Liabilities ($) | 744,309 |
| Equity (%) | 83 |
| Investment per cow ($) | 14,472 |
| Debt per cow ($) | 2,436 |
| **Productivity** | |
| Milk production (L) | 2,016,368 |
| Production per cow (L) | 6,600 |
| **Financial** | |
| Milk receipts (c/L) | 58.4 |
| Feed related costs (c/L) | 28.8 |
| Total variable costs (c/L) | 33.0 |
| Margin over feed related costs (c/L) | 29.5 |
| Dairy operating profit ($/cow) | 463 |
| Return on assets managed (%) | 2.5 |

**Table 15.** Trends for 14 South Queensland PMR farms with continuous data (2014-15 to 2017-18)

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|
| **Milk receipts (c/L)** | 58.9 | 59.6 | 58.5 | 58.9 |
| **Cows (milkers and dry)** | 298 | 305 | 321 | 322 |
| **Production per cow (L)** | 6,188 | 6,242 | 6,593 | 6,492 |
| **Feed related costs (c/L)** | 28.7 | 27.5 | 24.1 | 28.8 |
| **Margin over feed related costs (c/L)** | 30.2 | 32.1 | 34.3 | 30.0 |
| **Total variable costs (c/L)** | 32.3 | 31.5 | 27.9 | 33.0 |
| **Dairy operating profit ($/cow)** | 788 | 751 | 949 | 395 |

# 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. 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 $14,915 per cow in their operation with 59% tied to the land. With the large investment in infrastructure that is required, they have a high debt per cow of $4,840 and equity of 68%, the lowest equity of all groups. A return on assets managed of 3.3% was achieved.

Table 17 shows the data trends for farms with continuous participation in QDAS over the last four years (2014-15 to the present). This sample of farms is slightly smaller than the sample used in Table 16. There are several points of interest:

- Milk receipts have varied between 57.5 c/L and 58.8 c/L over these four years.
- Cow numbers have increased from 319 to 343 over these four years.
- Production per cow has increased each year to be 7,405 litres in 2017-18.
- Feed related costs were highest in 2014-15.
- Dairy operating profit is highest in 2015-16.

**Table 16.** Statistics for South Queensland TMR farms – 6 farms (2017-18)

| | |
|---|---|
| **Resources** | |
| Cows (milkers + dry) | 343 |
| Heifers >1 year old | 166 |
| Heifers <1 year old | 141 |
| Total dairy herd | 650 |
| Milking cow area (ha) | 1 |
| Effective dairy area (ha) | 625 |
| Labour units | 4.4 |
| **Assets and Liabilities** | |
| Land & buildings ($) | 3,020,267 |
| Stock ($) | 895,517 |
| Plant ($) | 791,383 |
| Other ($) | 403,973 |
| TOTAL ($) | 5,111,140 |
| Liabilities ($) | 1,658,399 |
| Equity (%) | 68 |
| Investment per cow ($) | 14,915 |
| Debt per cow ($) | 4,840 |
| **Productivity** | |
| Milk production (L) | 2,537,300 |
| Production per cow (L) | 7,405 |
| **Financial** | |
| Milk receipts (c/L) | 58.6 |
| Feed related costs (c/L) | 36.8 |
| Total variable costs (c/L) | 40.6 |
| Margin over feed related costs (c/L) | 21.8 |
| Dairy operating profit ($/cow) | 549 |
| Return on assets managed (%) | 3.3 |

**Table 17.** Trends for 6 South Queensland TMR farms with continuous data (2014-15 to 2017-18)

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|
| **Milk receipts (c/L)** | 58.2 | 58.8 | 57.5 | 58.6 |
| **Cows (milkers and dry)** | 319 | 313 | 326 | 343 |
| **Production per cow (L)** | 6,914 | 6,987 | 7,088 | 7,405 |
| **Feed related costs (c/L)** | 43.1 | 34.9 | 32.2 | 36.8 |
| **Margin over feed related costs (c/L)** | 15.2 | 24.0 | 25.3 | 21.8 |
| **Total variable costs (c/L)** | 47.2 | 38.8 | 36.3 | 40.6 |
| **Dairy operating profit ($/cow)** | 360 | 749 | 733 | 549 |

# 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 $15,265 per cow in their operation, of which 74% is in the land value. Equity levels are high, averaging 84%, and a return on assets managed of 1.7% was achieved.

Table 19 shows the data trends for farms with continuous participation in QDAS over the last four years (2014-15 to the present). This sample of farms is slightly smaller than the sample used in Table 18. There are several points of interest:

- Milk receipts have varied between 57.4 c/L and 59.3 c/L over these four years.
- Cow numbers gradually increased from 200 to 208.
- Production per cow has consistently increased from 5,321 litres in 2014-15 to 6,087 litres in 2017-18.
- Feed related costs were the highest in 2014-15.
- Dairy operating profit per cow was highest in 2015-16.

**Table 18.** Statistics for North Queensland grazing and PMR farms – 12 farms (2017-18)

| | |
|---|---|
| **Resources** | |
| Cows (milkers + dry) | 207 |
| Heifers >1 year old | 72 |
| Heifers <1 year old | 66 |
| Total dairy herd | 344 |
| Milking cow area (ha) | 95 |
| Effective dairy area (ha) | 192 |
| Labour units | 3.1 |
| **Assets and Liabilities** | |
| Land & buildings ($) | 2,325,000 |
| Stock ($) | 507,746 |
| Plant ($) | 245,833 |
| Other ($) | 78,735 |
| TOTAL ($) | 3,157,314 |
| Liabilities ($) | 498,109 |
| Equity (%) | 84 |
| Investment per cow ($) | 15,265 |
| Debt per cow ($) | 2,408 |
| **Productivity** | |
| Milk production (L) | 1,169,190 |
| Production per cow (L) | 5,653 |
| **Financial** | |
| Milk receipts (c/L) | 57.8 |
| Feed related costs (c/L) | 25.7 |
| Total variable costs (c/L) | 32.3 |
| Margin over feed related costs (c/L) | 32.1 |
| Dairy operating profit ($/cow) | 295 |
| Return on assets managed (%) | 1.7 |

**Table 19.** Trends for 8 North Queensland grazing farms with continuous data (2014-15 to 2017-18)

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|---|---|---|---|---|
| **Milk receipts (c/L)** | 57.8 | 59.3 | 59.2 | 57.4 |
| **Cows (milkers and dry)** | 200 | 205 | 206 | 208 |
| **Production per cow (L)** | 5,321 | 5,863 | 5,987 | 6,087 |
| **Feed related costs (c/L)** | 30.2 | 27.9 | 28.4 | 26.2 |
| **Margin over feed related costs (c/L)** | 27.6 | 31.4 | 30.8 | 31.2 |
| **Total variable costs (c/L)** | 36.2 | 37.3 | 36.8 | 33.8 |
| **Dairy operating profit ($/cow)** | 409 | 675 | 407 | 374 |

# 10. Appendices

## *10.1 Group cash flow – All 50 QDAS farms (2017–18)*

Queensland dairy accounting scheme

**Group cashflow**

All farms

Year: 2018

| Cash receipts | Cents/litre | $/cow | $/kg MS | | Total $ earned |
|---|---|---|---|---|---|
| **Milk receipts (net)** | **58.5** | **3,647.3** | **7.92** | | **928,305** |
| Stock sales - dairy | 5.3 | 328.9 | 0.71 | | 83,715 |
| Feed sales | 0.2 | 14.3 | 0.03 | | 3,646 |
| Other farm receipts | 1.5 | 94.2 | 0.20 | | 23,964 |
| **Total farm receipts** | **65.5** | **4,084.7** | **8.87** | | **1,039,632** |
| **Cash costs** | **Cents/litre** | **$/cow** | **$/kg MS** | **% Milk receipts** | **Total $ spent** |
| Purchased grain & concentrates | 18.4 | 1,149.1 | 2.49 | 31.5 | 292,465 |
| Purchased fodder, silage, hay | 2.3 | 144.8 | 0.31 | 4.0 | 36,858 |
| Other purchased feed | 1.8 | 115.2 | 0.25 | 3.2 | 29,321 |
| **Total purchased feeds** | **22.6** | **1,409.1** | **3.06** | **38.6** | **358,645** |
| Fertiliser | 2.2 | 140.1 | 0.30 | 3.8 | 35,651 |
| Fuel & oil | 1.3 | 79.8 | 0.17 | 2.2 | 20,303 |
| Pasture & crop costs | 1.3 | 83.1 | 0.18 | 2.3 | 21,142 |
| Irrigation costs | 1.1 | 66.3 | 0.14 | 1.8 | 16,872 |
| Hay and silage making costs | 1.4 | 85.3 | 0.19 | 2.3 | 21,704 |
| Agistment costs | 0.2 | 11.3 | 0.02 | 0.3 | 2,870 |
| Other feed costs | 0.1 | 4.2 | 0.01 | 0.1 | 1,079 |
| **Feed related costs** | **30.2** | **1,879.1** | **4.08** | **51.5** | **478,267** |
| Animal health | 1.7 | 107.2 | 0.23 | 2.9 | 27,283 |
| Herd improvement | 0.7 | 41.3 | 0.09 | 1.1 | 10,511 |
| Calf rearing | 0.5 | 32.8 | 0.07 | 0.9 | 8,344 |
| Other herd costs | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Herd costs** | **2.9** | **181.3** | **0.39** | **5.0** | **46,139** |
| Dairy shed costs - power | 1.2 | 71.8 | 0.16 | 2.0 | 18,275 |
| Dairy shed costs - chemicals | 0.8 | 49.8 | 0.11 | 1.4 | 12,685 |
| Dairy shed costs - other | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Shed costs** | **2.0** | **121.6** | **0.26** | **3.3** | **30,960** |
| **Total variable costs** | **35.0** | **2,182.0** | **4.74** | **59.8** | **555,366** |
| Employed labour costs | 7.1 | 439.9 | 0.96 | 12.1 | 111,974 |
| Repairs & maintenance | 3.5 | 221.1 | 0.48 | 6.1 | 56,286 |
| Other overhead costs | 2.5 | 154.9 | 0.34 | 4.2 | 39,414 |
| **Total overhead costs** | **13.1** | **815.9** | **1.77** | **22.4** | **207,675** |
| **Farm working expenses** | **48.1** | **2,998.0** | **6.51** | **82.2** | **763,041** |
| Interest | 2.2 | 135.7 | 0.29 | 3.7 | 34,540 |
| Principal | 2.7 | 168.0 | 0.36 | 4.6 | 42,748 |
| Land lease costs | 1.5 | 95.1 | 0.21 | 2.6 | 24,210 |
| Owner's labour | 7.7 | 477.8 | 1.04 | 13.1 | 121,602 |
| **Total cash costs** | **62.2** | **3,874.5** | **8.41** | **106.2** | **986,141** |
| **Net cashflow before tax** | **3.4** | **210.2** | **0.46** | **5.8** | **53,490** |
| Margin over feed related costs | 28.4 | 1,768.2 | 3.84 | 48.5 | 450,039 |
| Gross margin - milk only | 23.5 | 1,465.3 | 3.18 | 40.2 | 372,939 |
| Operating cash surplus | 17.4 | 1,086.7 | 2.36 | 29.8 | 276,591 |

| Labour inputs | | Stock | | Production | | |
|---|---|---|---|---|---|---|
| Unpaid labour | 1.7 | Cows (milking and dry) | 255 | Total litres sold | | 1,586,266 |
| Paid labour | 1.9 | Total herd | 447 | Litres/cow | | 6,232 |
| Total labour units | 3.6 | **Areas** | | Protein (kg) | 3.34% | 53,013 |
| Litres/labour unit | 446,174 | Usable area (ha) | 271 | Butterfat (kg) | 4.05% | 64,212 |
| Cows/labour unit | 72 | Irrigation area (ha) | 49 | Milk solids/cow | | 461 |

Farms in report: 50

## *10.2 Group cash flow – Top 25% of farms (2017–18)*

Queensland dairy accounting scheme

# Group cashflow

Top 25%

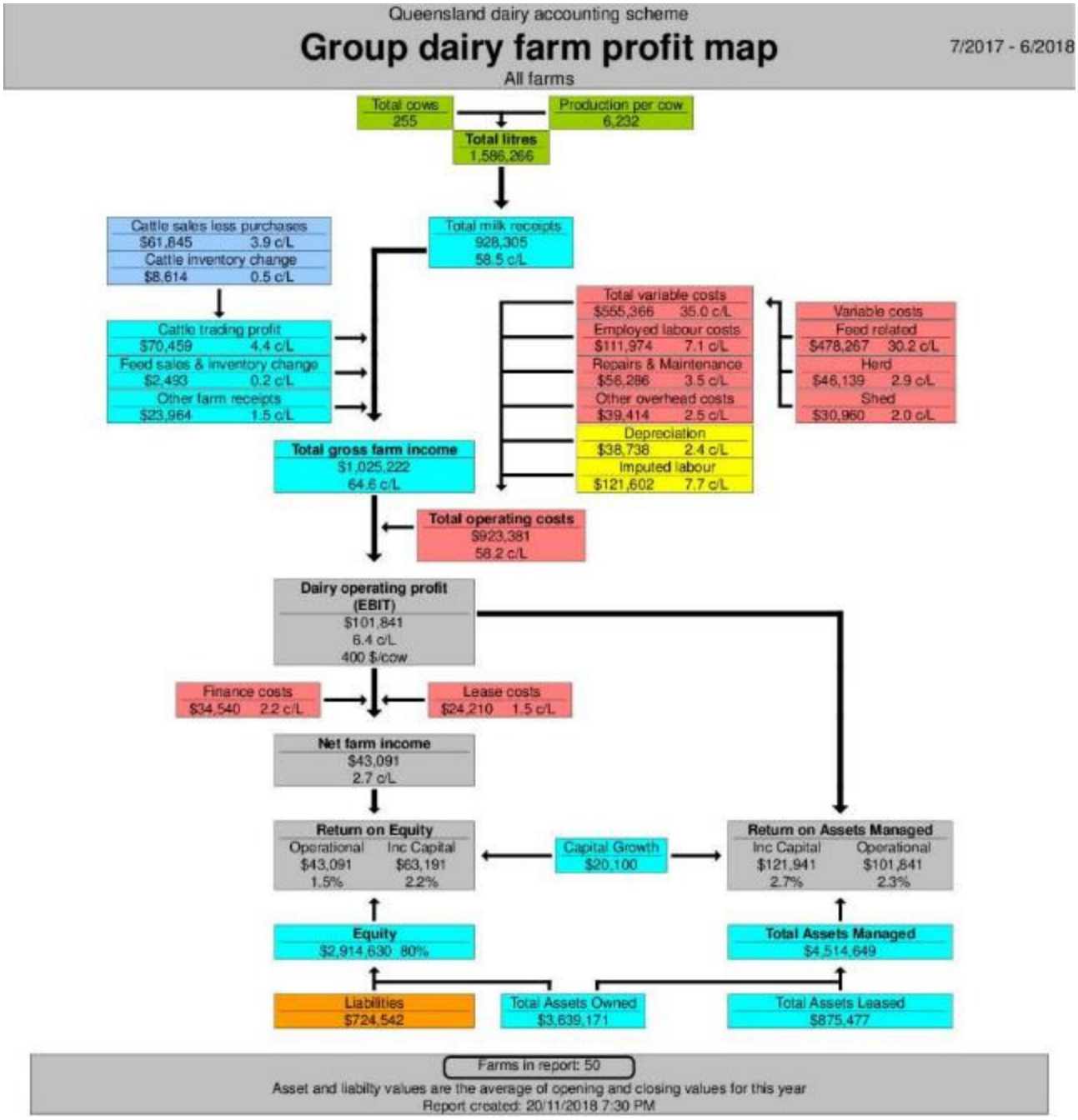
Year: 2018

| Cash receipts | Cents/litre | $/cow | $/kg MS | | Total $ earned |
|---|---|---|---|---|---|
| **Milk receipts (net)** | **57.9** | **4,189.8** | **8.06** | | **1,355,240** |
| Stock sales - dairy | 5.2 | 375.5 | 0.72 | | 121,465 |
| Feed sales | 0.2 | 17.2 | 0.03 | | 5,548 |
| Other farm receipts | 1.2 | 89.9 | 0.17 | | 29,084 |
| **Total farm receipts** | **64.6** | **4,672.4** | **8.98** | | **1,511,336** |
| **Cash costs** | **Cents/litre** | **$/cow** | **$/kg MS** | **% Milk receipts** | **Total $ spent** |
| Purchased grain & concentrates | 19.2 | 1,385.7 | 2.66 | 33.1 | 448,206 |
| Purchased fodder, silage, hay | 1.5 | 110.8 | 0.21 | 2.6 | 35,851 |
| Other purchased feed | 2.0 | 143.1 | 0.28 | 3.4 | 46,303 |
| **Total purchased feeds** | **22.7** | **1,639.6** | **3.15** | **39.1** | **530,359** |
| Fertiliser | 1.9 | 134.5 | 0.26 | 3.2 | 43,513 |
| Fuel & oil | 1.0 | 72.1 | 0.14 | 1.7 | 23,326 |
| Pasture & crop costs | 0.9 | 64.7 | 0.12 | 1.5 | 20,922 |
| Irrigation costs | 0.8 | 60.0 | 0.12 | 1.4 | 19,408 |
| Hay and silage making costs | 1.4 | 100.2 | 0.19 | 2.4 | 32,415 |
| Agistment costs | 0.1 | 3.9 | 0.01 | 0.1 | 1,251 |
| Other feed costs | 0.1 | 3.7 | 0.01 | 0.1 | 1,197 |
| **Feed related costs** | **28.7** | **2,078.7** | **4.00** | **49.6** | **672,391** |
| Animal health | 1.5 | 110.9 | 0.21 | 2.6 | 35,880 |
| Herd improvement | 0.4 | 28.9 | 0.06 | 0.7 | 9,348 |
| Calf rearing | 0.6 | 39.8 | 0.08 | 1.0 | 12,875 |
| Other herd costs | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Herd costs** | **2.5** | **179.6** | **0.35** | **4.3** | **58,103** |
| Dairy shed costs - power | 1.0 | 75.7 | 0.15 | 1.8 | 24,479 |
| Dairy shed costs - chemicals | 0.6 | 43.0 | 0.08 | 1.0 | 13,904 |
| Dairy shed costs - other | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Shed costs** | **1.6** | **118.7** | **0.23** | **2.8** | **38,383** |
| **Total variable costs** | **32.9** | **2,377.0** | **4.57** | **56.7** | **768,877** |
| Employed labour costs | 6.5 | 468.8 | 0.90 | 11.2 | 151,624 |
| Repairs & maintenance | 3.0 | 216.7 | 0.42 | 5.2 | 70,084 |
| Other overhead costs | 1.8 | 132.1 | 0.25 | 3.2 | 42,720 |
| **Total overhead costs** | **11.3** | **817.5** | **1.57** | **19.5** | **264,428** |
| **Farm working expenses** | **44.2** | **3,194.5** | **6.14** | **76.2** | **1,033,305** |
| Interest | 2.0 | 141.2 | 0.27 | 3.4 | 45,686 |
| Principal | 2.4 | 174.6 | 0.34 | 4.2 | 56,489 |
| Land lease costs | 1.4 | 101.0 | 0.19 | 2.4 | 32,672 |
| Owner's labour | 5.8 | 421.1 | 0.81 | 10.0 | 136,200 |
| **Total cash costs** | **55.7** | **4,032.5** | **7.75** | **96.2** | **1,304,351** |
| **Net cashflow before tax** | **8.8** | **639.9** | **1.23** | **15.3** | **206,985** |
| Margin over feed related costs | 29.2 | 2,111.1 | 4.06 | 50.4 | 682,848 |
| Gross margin - milk only | 25.1 | 1,812.8 | 3.49 | 43.3 | 586,363 |
| Operating cash surplus | 20.4 | 1,477.9 | 2.84 | 35.3 | 478,031 |

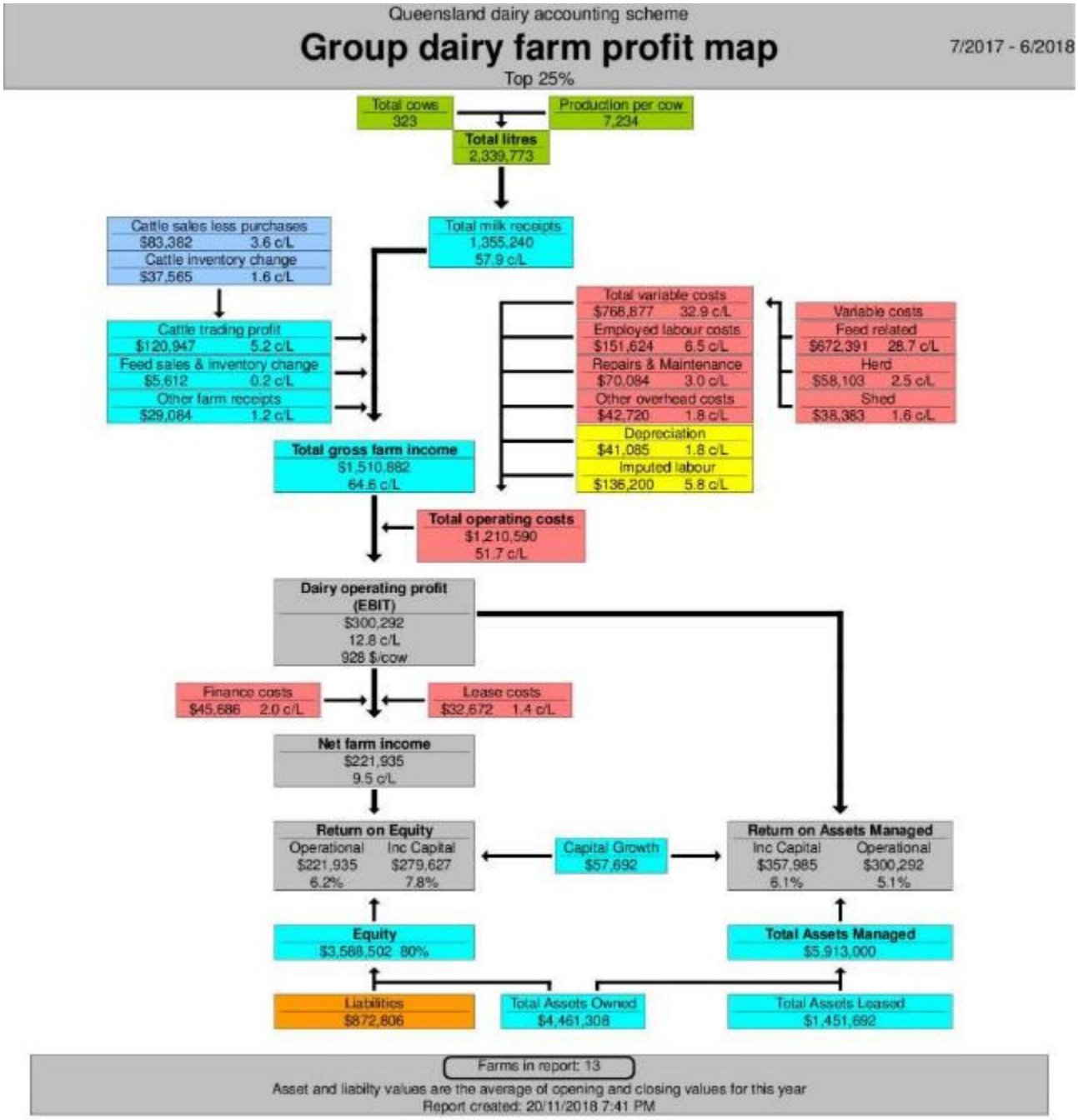
| Labour inputs | | Stock | | Production | | |
|---|---|---|---|---|---|---|
| Unpaid labour | 1.7 | Cows (milking and dry) | 323 | Total litres sold | | 2,339,773 |
| Paid labour | 2.5 | Total herd | 584 | Litres/cow | | 7,234 |
| Total labour units | 4.3 | **Areas** | | Protein (kg) | 3.32% | 77,610 |
| Litres/labour unit | 548,261 | Usable area (ha) | 366 | Butterfat (kg) | 3.87% | 90,600 |
| Cows/labour unit | 76 | Irrigation area (ha) | 58 | Milk solids/cow | | 520 |

Farms in report: 13

## *10.3 Group dairy farm profit map – All 50 QDAS farms (2017–18)*



## *10.4 Group dairy farm profit map – Top 25% of farms (2017–18)*



## *10.5 Group cash flow – South Queensland Grazing (2017–18)*

Queensland dairy accounting scheme

# Group cashflow

South Queensland Grazing

Year: 2018

| Cash receipts | Cents/litre | $/cow | $/kg MS | | Total $ earned |
|---|---|---|---|---|---|
| **Milk receipts (net)** | **59.2** | **3,157.4** | **7.86** | | **587,275** |
| Stock sales - dairy | 5.0 | 268.0 | 0.67 | | 49,842 |
| Feed sales | 0.0 | 0.0 | 0.00 | | 0 |
| Other farm receipts | 1.2 | 63.7 | 0.16 | | 11,857 |
| **Total farm receipts** | **65.5** | **3,489.1** | **8.69** | | **648,974** |
| **Cash costs** | **Cents/litre** | **$/cow** | **$/kg MS** | **% Milk receipts** | **Total $ spent** |
| Purchased grain & concentrates | 21.9 | 1,169.4 | 2.91 | 37.0 | 217,517 |
| Purchased fodder, silage, hay | 0.6 | 30.1 | 0.07 | 1.0 | 5,596 |
| Other purchased feed | 0.7 | 36.4 | 0.09 | 1.2 | 6,761 |
| **Total purchased feeds** | **23.2** | **1,235.9** | **3.08** | **39.1** | **229,874** |
| Fertiliser | 2.4 | 129.4 | 0.32 | 4.1 | 24,070 |
| Fuel & oil | 0.8 | 40.7 | 0.10 | 1.3 | 7,572 |
| Pasture & crop costs | 1.2 | 62.4 | 0.16 | 2.0 | 11,609 |
| Irrigation costs | 1.2 | 65.5 | 0.16 | 2.1 | 12,174 |
| Hay and silage making costs | 0.2 | 11.2 | 0.03 | 0.4 | 2,083 |
| Agistment costs | 0.1 | 7.4 | 0.02 | 0.2 | 1,381 |
| Other feed costs | 0.2 | 9.9 | 0.02 | 0.3 | 1,835 |
| **Feed related costs** | **29.3** | **1,562.4** | **3.89** | **49.5** | **290,599** |
| Animal health | 2.3 | 124.3 | 0.31 | 3.9 | 23,122 |
| Herd improvement | 0.8 | 40.6 | 0.10 | 1.3 | 7,555 |
| Calf rearing | 0.5 | 25.6 | 0.06 | 0.8 | 4,759 |
| Other herd costs | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Herd costs** | **3.6** | **190.5** | **0.47** | **6.0** | **35,436** |
| Dairy shed costs - power | 1.2 | 61.5 | 0.15 | 1.9 | 11,434 |
| Dairy shed costs - chemicals | 0.9 | 49.6 | 0.12 | 1.6 | 9,225 |
| Dairy shed costs - other | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Shed costs** | **2.1** | **111.1** | **0.28** | **3.5** | **20,659** |
| **Total variable costs** | **35.0** | **1,863.9** | **4.64** | **59.0** | **346,693** |
| Employed labour costs | 6.0 | 322.0 | 0.80 | 10.2 | 59,898 |
| Repairs & maintenance | 3.5 | 184.7 | 0.46 | 5.8 | 34,346 |
| Other overhead costs | 2.5 | 135.1 | 0.34 | 4.3 | 25,127 |
| **Total overhead costs** | **12.0** | **641.8** | **1.60** | **20.3** | **119,372** |
| **Farm working expenses** | **47.0** | **2,505.7** | **6.24** | **79.4** | **466,065** |
| Interest | 1.7 | 92.5 | 0.23 | 2.9 | 17,207 |
| Principal | 2.3 | 123.2 | 0.31 | 3.9 | 22,924 |
| Land lease costs | 2.6 | 138.0 | 0.34 | 4.4 | 25,664 |
| Owner's labour | 10.2 | 545.2 | 1.36 | 17.3 | 101,400 |
| **Total cash costs** | **63.9** | **3,404.6** | **8.48** | **107.8** | **633,260** |
| **Net cashflow before tax** | **1.6** | **84.5** | **0.21** | **2.7** | **15,714** |
| Margin over feed related costs | 29.9 | 1,595.0 | 3.97 | 50.5 | 296,677 |
| Gross margin - milk only | 24.3 | 1,293.5 | 3.22 | 41.0 | 240,582 |
| Operating cash surplus | 18.4 | 983.4 | 2.45 | 31.1 | 182,909 |

| **Labour inputs** | | **Stock** | | **Production** | | |
|---|---|---|---|---|---|---|
| Unpaid labour | 1.4 | Cows (milking and dry) | 186 | Total litres sold | | 991,529 |
| Paid labour | 1.0 | Total herd | 331 | Litres/cow | | 5,331 |
| Total labour units | 2.4 | **Areas** | | Protein (kg) | 3.38% | 33,547 |
| Litres/labour unit | 407,079 | Usable area (ha) | 168 | Butterfat (kg) | 4.15% | 41,128 |
| Cows/labour unit | 76 | Irrigation area (ha) | 36 | Milk solids/cow | | 401 |

Farms in report: 14

## *10.6 Group cash flow – South Queensland PMR (2017–18)*

Queensland dairy accounting scheme

# Group cashflow

South Queensland PMR

Year: 2018

| Cash receipts | Cents/litre | $/cow | $/kg MS | | Total $ earned |
|---|---|---|---|---|---|
| **Milk receipts (net)** | **58.4** | **3,854.1** | **7.92** | | **1,177,534** |
| Stock sales - dairy | 4.7 | 307.8 | 0.63 | | 94,042 |
| Feed sales | 0.5 | 35.1 | 0.07 | | 10,725 |
| Other farm receipts | 1.7 | 109.7 | 0.23 | | 33,505 |
| **Total farm receipts** | **65.3** | **4,306.6** | **8.85** | | **1,315,805** |
| **Cash costs** | **Cents/litre** | **$/cow** | **$/kg MS** | **% Milk receipts** | **Total $ spent** |
| Purchased grain & concentrates | 16.2 | 1,071.4 | 2.20 | 27.8 | 327,351 |
| Purchased fodder, silage, hay | 1.8 | 120.0 | 0.25 | 3.1 | 36,677 |
| Other purchased feed | 1.9 | 125.1 | 0.26 | 3.2 | 38,231 |
| **Total purchased feeds** | **19.9** | **1,316.6** | **2.71** | **34.2** | **402,259** |
| Fertiliser | 2.2 | 145.0 | 0.30 | 3.8 | 44,296 |
| Fuel & oil | 1.4 | 90.3 | 0.19 | 2.3 | 27,604 |
| Pasture & crop costs | 1.6 | 104.1 | 0.21 | 2.7 | 31,813 |
| Irrigation costs | 1.5 | 99.7 | 0.21 | 2.6 | 30,473 |
| Hay and silage making costs | 2.0 | 132.6 | 0.27 | 3.4 | 40,505 |
| Agistment costs | 0.2 | 11.8 | 0.02 | 0.3 | 3,613 |
| Other feed costs | 0.1 | 3.7 | 0.01 | 0.1 | 1,135 |
| **Feed related costs** | **28.8** | **1,903.9** | **3.91** | **49.4** | **581,698** |
| Animal health | 1.6 | 104.9 | 0.22 | 2.7 | 32,058 |
| Herd improvement | 0.6 | 39.2 | 0.08 | 1.0 | 11,971 |
| Calf rearing | 0.3 | 17.4 | 0.04 | 0.5 | 5,325 |
| Other herd costs | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Herd costs** | **2.4** | **161.5** | **0.33** | **4.2** | **49,354** |
| Dairy shed costs - power | 1.0 | 67.7 | 0.14 | 1.8 | 20,699 |
| Dairy shed costs - chemicals | 0.7 | 45.8 | 0.09 | 1.2 | 13,984 |
| Dairy shed costs - other | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Shed costs** | **1.7** | **113.5** | **0.23** | **2.9** | **34,682** |
| **Total variable costs** | **33.0** | **2,179.0** | **4.48** | **56.5** | **665,734** |
| Employed labour costs | 8.4 | 557.6 | 1.15 | 14.5 | 170,355 |
| Repairs & maintenance | 3.6 | 237.2 | 0.49 | 6.2 | 72,473 |
| Other overhead costs | 2.5 | 164.6 | 0.34 | 4.3 | 50,305 |
| **Total overhead costs** | **14.5** | **959.4** | **1.97** | **24.9** | **293,132** |
| **Farm working expenses** | **47.6** | **3,138.4** | **6.45** | **81.4** | **958,867** |
| Interest | 1.7 | 114.4 | 0.24 | 3.0 | 34,946 |
| Principal | 2.9 | 189.4 | 0.39 | 4.9 | 57,878 |
| Land lease costs | 1.4 | 91.0 | 0.19 | 2.4 | 27,791 |
| Owner's labour | 6.6 | 437.0 | 0.90 | 11.3 | 133,518 |
| **Total cash costs** | **60.2** | **3,970.2** | **8.16** | **103.0** | **1,212,999** |
| **Net cashflow before tax** | **5.1** | **336.5** | **0.69** | **8.7** | **102,806** |
| Margin over feed related costs | 29.5 | 1,950.2 | 4.01 | 50.6 | 595,836 |
| Gross margin - milk only | 25.4 | 1,675.1 | 3.44 | 43.5 | 511,799 |
| Operating cash surplus | 17.7 | 1,168.3 | 2.40 | 30.3 | 356,938 |

| **Labour inputs** | | **Stock** | | **Production** | | |
|---|---|---|---|---|---|---|
| Unpaid labour | 1.8 | Cows (milking and dry) | 306 | Total litres sold | | 2,016,368 |
| Paid labour | 2.7 | Total herd | 527 | Litres/cow | | 6,600 |
| Total labour units | 4.5 | **Areas** | | Protein (kg) | 3.36% | 67,689 |
| Litres/labour unit | 449,256 | Usable area (ha) | 279 | Butterfat (kg) | 4.01% | 80,911 |
| Cows/labour unit | 68 | Irrigation area (ha) | 92 | Milk solids/cow | | 486 |

Farms in report: 17

## *10.7 Group cash flow – South Queensland TMR (2017–18)*

Queensland dairy accounting scheme

# Group cashflow

South Queensland TMR

Year: 2018

| Cash receipts | Cents/litre | $/cow | $/kg MS | | Total $ earned |
|---|---|---|---|---|---|
| **Milk receipts (net)** | **58.6** | **4,340.4** | **7.88** | | **1,487,305** |
| Stock sales - dairy | 6.8 | 504.3 | 0.92 | | 172,791 |
| Feed sales | 0.0 | 0.0 | 0.00 | | 0 |
| Other farm receipts | 1.9 | 142.4 | 0.26 | | 48,791 |
| **Total farm receipts** | **67.4** | **4,987.0** | **9.05** | | **1,708,887** |
| **Cash costs** | **Cents/litre** | **$/cow** | **$/kg MS** | **% Milk receipts** | **Total $ spent** |
| Purchased grain & concentrates | 20.0 | 1,482.5 | 2.69 | 34.2 | 507,988 |
| Purchased fodder, silage, hay | 5.6 | 416.3 | 0.76 | 9.6 | 142,646 |
| Other purchased feed | 4.1 | 302.3 | 0.55 | 7.0 | 103,597 |
| **Total purchased feeds** | **29.7** | **2,201.1** | **4.00** | **50.7** | **754,231** |
| Fertiliser | 1.3 | 93.5 | 0.17 | 2.2 | 32,036 |
| Fuel & oil | 1.8 | 134.4 | 0.24 | 3.1 | 46,041 |
| Pasture & crop costs | 1.4 | 105.3 | 0.19 | 2.4 | 36,072 |
| Irrigation costs | 0.3 | 21.2 | 0.04 | 0.5 | 7,270 |
| Hay and silage making costs | 2.3 | 166.6 | 0.30 | 3.8 | 57,105 |
| Agistment costs | 0.0 | 0.2 | 0.00 | 0.0 | 71 |
| Other feed costs | 0.0 | 0.7 | 0.00 | 0.0 | 232 |
| **Feed related costs** | **36.8** | **2,722.9** | **4.94** | **62.7** | **933,059** |
| Animal health | 1.3 | 93.9 | 0.17 | 2.2 | 32,191 |
| Herd improvement | 0.3 | 22.8 | 0.04 | 0.5 | 7,828 |
| Calf rearing | 0.1 | 4.4 | 0.01 | 0.1 | 1,509 |
| Other herd costs | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Herd costs** | **1.6** | **121.2** | **0.22** | **2.8** | **41,527** |
| Dairy shed costs - power | 1.3 | 95.2 | 0.17 | 2.2 | 32,607 |
| Dairy shed costs - chemicals | 0.9 | 65.9 | 0.12 | 1.5 | 22,578 |
| Dairy shed costs - other | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Shed costs** | **2.2** | **161.0** | **0.29** | **3.7** | **55,185** |
| **Total variable costs** | **40.6** | **3,005.2** | **5.46** | **69.2** | **1,029,772** |
| Employed labour costs | 5.1 | 377.2 | 0.68 | 8.7 | 129,257 |
| Repairs & maintenance | 3.2 | 240.6 | 0.44 | 5.5 | 82,448 |
| Other overhead costs | 1.9 | 140.7 | 0.26 | 3.2 | 48,220 |
| **Total overhead costs** | **10.2** | **758.5** | **1.38** | **17.5** | **259,926** |
| **Farm working expenses** | **50.8** | **3,763.7** | **6.83** | **86.7** | **1,289,698** |
| Interest | 2.9 | 213.0 | 0.39 | 4.9 | 72,996 |
| Principal | 3.4 | 252.0 | 0.46 | 5.8 | 86,341 |
| Land lease costs | 0.8 | 59.5 | 0.11 | 1.4 | 20,380 |
| Owner's labour | 5.4 | 398.3 | 0.72 | 9.2 | 136,500 |
| **Total cash costs** | **63.3** | **4,686.5** | **8.51** | **108.0** | **1,605,915** |
| **Net cashflow before tax** | **4.1** | **300.5** | **0.55** | **6.9** | **102,972** |
| Margin over feed related costs | 21.8 | 1,617.4 | 2.94 | 37.3 | 554,246 |
| Gross margin - milk only | 18.0 | 1,335.2 | 2.42 | 30.8 | 457,533 |
| Operating cash surplus | 16.5 | 1,223.3 | 2.22 | 28.2 | 419,190 |

| Labour inputs | | Stock | | Production | | |
|---|---|---|---|---|---|---|
| Unpaid labour | 2.1 | Cows (milking and dry) | 343 | Total litres sold | | 2,537,300 |
| Paid labour | 2.4 | Total herd | 659 | Litres/cow | | 7,405 |
| Total labour units | 4.4 | **Areas** | | Protein (kg) | 3.35% | 85,121 |
| Litres/labour unit | 570,607 | Usable area (ha) | 625 | Butterfat (kg) | 4.08% | 103,618 |
| Cows/labour unit | 77 | Irrigation area (ha) | 22 | Milk solids/cow | | 551 |

Farms in report: 6

## *10.8 Group cash flow – North Queensland all farms (2017–18)*

Queensland dairy accounting scheme

# Group cashflow

Year: 2018

North Queensland

| Cash receipts | Cents/litre | $/cow | $/kg MS | | Total $ earned |
|---|---|---|---|---|---|
| **Milk receipts (net)** | **57.8** | **3,267.1** | **7.99** | | **675,741** |
| Stock sales - dairy | 4.5 | 251.7 | 0.62 | | 52,061 |
| Feed sales | 0.0 | 0.0 | 0.00 | | 0 |
| Other farm receipts | 0.9 | 53.6 | 0.13 | | 11,088 |
| **Total farm receipts** | **63.2** | **3,572.4** | **8.74** | | **738,890** |
| **Cash costs** | **Cents/litre** | **$/cow** | **$/kg MS** | **% Milk receipts** | **Total $ spent** |
| Purchased grain & concentrates | 17.6 | 994.9 | 2.43 | 30.5 | 205,783 |
| Purchased fodder, silage, hay | 1.9 | 109.6 | 0.27 | 3.4 | 22,665 |
| Other purchased feed | 0.5 | 27.9 | 0.07 | 0.9 | 5,780 |
| **Total purchased feeds** | **20.0** | **1,132.5** | **2.77** | **34.7** | **234,229** |
| Fertiliser | 3.0 | 171.9 | 0.42 | 5.3 | 35,564 |
| Fuel & oil | 0.9 | 52.5 | 0.13 | 1.6 | 10,854 |
| Pasture & crop costs | 0.7 | 41.1 | 0.10 | 1.3 | 8,498 |
| Irrigation costs | 0.4 | 21.6 | 0.05 | 0.7 | 4,477 |
| Hay and silage making costs | 0.1 | 4.0 | 0.01 | 0.1 | 833 |
| Agistment costs | 0.4 | 25.1 | 0.06 | 0.8 | 5,194 |
| Other feed costs | 0.1 | 3.1 | 0.01 | 0.1 | 632 |
| **Feed related costs** | **25.7** | **1,451.8** | **3.55** | **44.4** | **300,281** |
| Animal health | 1.8 | 103.8 | 0.25 | 3.2 | 21,478 |
| Herd improvement | 1.1 | 62.5 | 0.15 | 1.9 | 12,926 |
| Calf rearing | 1.5 | 83.7 | 0.20 | 2.6 | 17,308 |
| Other herd costs | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Herd costs** | **4.4** | **250.0** | **0.61** | **7.7** | **51,713** |
| Dairy shed costs - power | 1.3 | 75.4 | 0.18 | 2.3 | 15,595 |
| Dairy shed costs - chemicals | 0.9 | 48.3 | 0.12 | 1.5 | 9,999 |
| Dairy shed costs - other | 0.0 | 0.0 | 0.00 | 0.0 | 0 |
| **Shed costs** | **2.2** | **123.7** | **0.30** | **3.8** | **25,594** |
| **Total variable costs** | **32.3** | **1,825.6** | **4.46** | **55.9** | **377,587** |
| Employed labour costs | 7.5 | 421.5 | 1.03 | 12.9 | 87,184 |
| Repairs & maintenance | 3.7 | 208.8 | 0.51 | 6.4 | 43,185 |
| Other overhead costs | 2.9 | 165.4 | 0.40 | 5.1 | 34,218 |
| **Total overhead costs** | **14.1** | **795.8** | **1.95** | **24.4** | **164,588** |
| **Farm working expenses** | **46.4** | **2,621.3** | **6.41** | **80.2** | **542,175** |
| Interest | 2.7 | 153.7 | 0.38 | 4.7 | 31,796 |
| Principal | 1.2 | 69.3 | 0.17 | 2.1 | 14,335 |
| Land lease costs | 1.7 | 95.6 | 0.23 | 2.9 | 19,771 |
| Owner's labour | 10.1 | 570.4 | 1.39 | 17.5 | 117,975 |
| **Total cash costs** | **62.1** | **3,510.3** | **8.58** | **107.4** | **726,052** |
| **Net cashflow before tax** | **1.1** | **62.1** | **0.15** | **1.9** | **12,838** |
| Margin over feed related costs | 32.1 | 1,815.3 | 4.44 | 55.6 | 375,460 |
| Gross margin - milk only | 25.5 | 1,441.5 | 3.52 | 44.1 | 298,153 |
| Operating cash surplus | 16.8 | 951.1 | 2.33 | 29.1 | 196,714 |

| Labour inputs | | Stock | | Production | | |
|---|---|---|---|---|---|---|
| Unpaid labour | 1.6 | Cows (milking and dry) | 207 | Total litres sold | | 1,169,190 |
| Paid labour | 1.5 | Total herd | 346 | Litres/cow | | 5,653 |
| Total labour units | 3.1 | **Areas** | | Protein (kg) | 3.22% | 37,649 |
| Litres/labour unit | 377,327 | Usable area (ha) | 192 | Butterfat (kg) | 4.01% | 46,933 |
| Cows/labour unit | 67 | Irrigation area (ha) | 15 | Milk solids/cow | | 409 |

Farms in report: 12

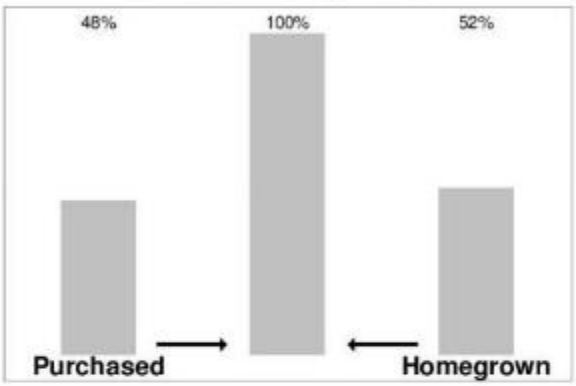
## *10.9 Milk from feed – All 50 QDAS farms (2017–18)*

Queensland dairy accounting scheme

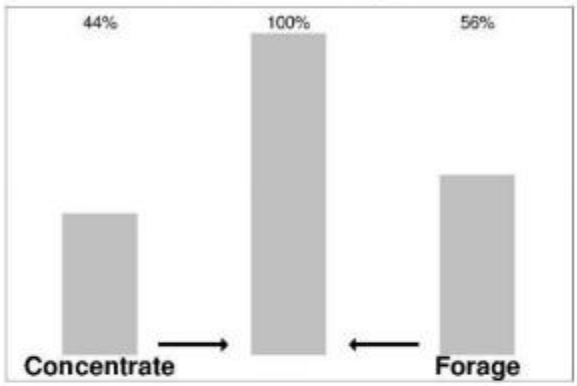
# Milk from feed

All farms 7/2017 - 6/2018

Proportions attributed to purchased and homegrown feeds




Proportions attributed to concentrates and forages




| | Homegrown | Purchased | Total |
|---|---|---|---|
| **Forage** Conserved | 284,422 litres<br>**17.9** %<br>3.7 l/cow | 90,100 litres<br>**5.7** %<br>1.2 l/cow | 890,835 litres<br>**56.2** %<br>11.7 l/cow |
| Grazed | 516,312 litres<br>**32.5** %<br>6.8 l/cow | | |
| **Concentrate** | 23,038 litres<br>**1.5** %<br>0.3 l/cow | 672,394 litres<br>**42.4** %<br>8.8 l/cow | 695,432 litres<br>**43.8** %<br>9.1 l/cow |
| **Total** | 823,772 litres<br>**51.9** %<br>10.8 l/cow | 762,494 litres<br>**48.1** %<br>10.0 l/cow | 1,586,266 litres<br>**100.0** %<br>20.8 l/cow |

| | Amount fed to milkers | | Milk from this feed |
|---|---|---|---|
| | Tonnes DM | kg DM/cow/day | L/cow/day |
| Grazing | 496 | 6.5 | 6.8 |
| Conserved forage | 433 | 5.7 | 4.9 |
| Concentrates | 645 | 8.5 | 9.1 |
| Total | 1,575 | 20.6 | 20.8 |

| | |
|---|---|
| **Feed conversion efficiency** | 1.01 (L/kg DM) |
| **Forage concentrate ratio** | 59:41 |

Farms in report: 50

## 10.10 Business traits, key performance indicators and definitions

Key performance indicators (KPI) are used in QDAS to monitor farm performance. Table 20 shows these indicators grouped under the three key business trait headings:

- Solvency
- Profitability
- Efficiency

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

**Why use KPI**

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

**Table 20.** Key performance indicators used in QDAS

**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.