

QUEENSLAND DAIRY ACCOUNTING SCHEME 2004 RESULTS AND ANALYSIS

Ray Murphy¹
Graeme Busby²

ABSTRACT

This paper provides an overview of the operation of the Queensland Dairy Accounting Scheme (QDAS) and the results and analysis of the 2003-04 data. QDAS is a voluntary scheme providing dairy farmers with an analysis of their dairy business. Key indicators measure performance and the results are then compared against benchmarks and personal targets. Analysis of data has shown that the profit drivers on the most profitable farms in QDAS, are production per cow, herd size, use of homegrown feeds and use of nitrogen fertiliser.

Keywords: Benchmarking, dairy business analysis, comparative analysis

INTRODUCTION

The Queensland Dairy Accounting Scheme (QDAS) was established in 1976 by the then Department of Primary Industries 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 variable costs. The data was used to answer questions such as “is the production of an extra unit of milk profitable”. QDAS has evolved to now examine the business traits of liquidity, solvency, profitability and efficiency but still maintains a similar aim to help dairy farmers make informed decisions based on business information.

Ronan and Cleary (2000) define benchmarking as:

“... an enterprise or activity-based analysis that focuses on the physical/technical processes used by a farmer to enact his enterprise plan and the consequences of those processes in terms of unit revenue and costs, enterprise efficiency and enterprise profitability.”

Benchmarking is also known as an ongoing process used to continually improve performance by comparing performance indicators with those of other similar businesses, Wilson et al (2004).

Given these definitions, QDAS can be thought of as benchmarking. It is a learning exercise that involves looking at a few key indicators of performance and comparing individuals performance to others. The indicators that are measured are called Key Performance Indicators (KPI) as they are indeed the critical factors that make a difference to a business. Individual farm results for each KPI are compared to benchmarks, those usually being the average result for all QDAS farms and the average of the top twenty five percent of farms (ranked by their Dairy Operating Profit result). Given that all farms are different, each farmer is encouraged to set their own target for each KPI that may be different the benchmarks.

¹Agricultural economist with the Queensland Department of Primary Industry and Fisheries, Toowoomba, Queensland, Australia. He has specialised in the areas of farm business management, property management planning and computerised farm financial analysis. (e-mail: Ray.L.Murphy@dpi.qld.gov.au)

²Graeme Busby is a principal extension officer with the Queensland Department of Primary Industry and Fisheries, Australia. He leads the Queensland Dairy Accounting Scheme as well as leading programs such as Milk Business. He specialises in dairy business management and benchmarking. (e-mail: Graeme.Busby@dpi.qld.gov.au)

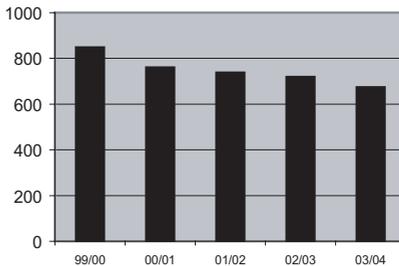


The Queensland dairy industry

The state of Queensland, Australia, is home to twenty five percent of Australia's population. These people will consume an estimated 419 million litres of packaged milk in 2004-05, being a 2.2% increase on the previous year, Dairy Australia (2005b).

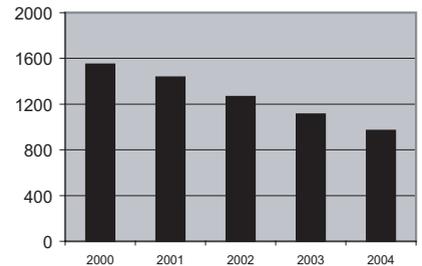
It is estimated that the Queensland dairy industry will supply 609 million litres in 2004-05 or only five percent of Australia's total milk production, Dairy Australia (2005a). This production not only supplies the fresh milk needs of the state, it also supplies manufacturing facilities in Brisbane, Toowoomba and Malanda.

Figure 1. Queensland milk production in millions of litres



Source: Dairy Australia (2005a)

Figure 2. Number of dairy farms in Queensland, as at June 30 each year



Source: Dairy Australia

The Australian dairy industry was deregulated on 1 July 2000, resulting in a dramatic drop (approximately twenty five percent) in milk returns paid to farmers in Queensland. The consequence of the price drop has been a continual decline in milk production from 848 million litres in 1999-2000 (Figure 1). Furthermore, the number of dairy farms in Queensland has also decreased over the last four years from 1,545 to 970 (Figure 2). The pressure of increasing demand for milk in Queensland and decreasing supply as resulted in the closure of several small manufacturing facilities in regional Queensland and the recent announcement of the planned closure of the Toowoomba facility in 2006.

METHODOLOGY

Farmer participation in QDAS is voluntary and free. Officers of the Department of Primary Industries and Fisheries (DPI&F) and milk processing companies collect data by visiting farms between September and November. Data is entered into the officers' computers and transferred to a central point. Data collection is made easier because most cooperating farms use a computer cashbook system and a chart of accounts provided by the DPI&F that is consistent with QDAS.

QDAS generates gross margins, cash flows, production reports, profit maps, five-year trends, key performance indicators (KPI) and a comparative analysis report. In general four business traits, those being liquidity, solvency, profitability and efficiency, are used to measure farm performance. The results for these traits are presented using sixteen KPI. The QDAS project team believe these sixteen KPI are sufficient to provide meaningful analysis. Australian national benchmarking definitions are adhered to in QDAS preparation and analysis. This gives continuity and transparency to the reports. Full details of KPI calculations can be found in the full QDAS report that is available at www.dairyinfo.biz.

Farmers receive reports for their farm soon after the visit and follow up farmer meetings

are held to discuss the results and trends. Farmers are encouraged to compare their results with their budgets and targets. In 2004 Dairy Australia initiated the Taking Stock program with the aim of providing Australian dairy farmers with an analysis of their business and an action plan for improvement. Talking Stock has added value to QDAS by funding on farm visits by advisors to provide individual analysis of 2003-04 results and generate action plans.

A book is produced every year to summarise the state of the dairy farms in northern Australia. Individual farm data remains confidential and only aggregated data is published, a feature of QDAS that is valued by participating farmers. The voluntary nature of the QDAS service means that the results are not statistically representative of all north Australian dairy farms but the sample size of fifteen percent means the results are significant. The average QDAS farm produces 265,000 litres more annually than the average north Australian dairy farm. Some of the most powerful information to come from the reports is the trends in indicators from farms that have been in QDAS for at least four years.

In 2003-04 physical and financial data from 164 farms from all dairy regions in Queensland and Northern New South Wales was collected. Table 1 shows more information of the number of farms taking part. The farms in Northern New South Wales are included in QDAS since they have production systems similar to coastal dairy farms in South East Queensland.

Table 1. Farms involved in QDAS by region

	Southeast Qld	Central Qld	North Qld	Northern NSW
Number farms in QDAS	89	8	21	46
Percentage of total farms in QDAS	12%	11%	20%	22%
Average milkers plus dry cows	161	158	223	185

Business trait findings for 2003-04

Liquidity – Table 2 shows that the average Additional Debt Repayment Capacity (ADRC) was negative \$6,609, which indicates that short term debt is probably being financed from overdraft, off farm income, government payments, subsidies or transfers from other accounts. At this time farmers have little capacity to absorb increased finance costs. The top twenty five percent of farms when sorted by Dairy Operating Profit had an ADRC of \$56,005 indicating a capacity to cover depreciation of equipment and have funds for capital development.

Solvency – There was a slight reduction from 2002-03 in farmer's equity to eighty percent, but net worth increased due to an escalation in land values. On average the asset value increased by \$140,000 on the prior year, driven largely by increases in land values. Land values accounted for sixty nine percent of the total asset value with livestock making up just 12.4 percent. Total liabilities and interest payments per cow are within acceptable limits in dollar terms.

Profitability – The profitability results are unacceptably low with an average Return on Assets of 1.1%, Return on Equity of -1.1% and Operating Profit Margin of 5.3%. The profit map in Figure 3 shows the top group virtually achieved the QDAS benchmarks as used in prior years, their results indicate these businesses would be attractive to investors.

Efficiency – Farmers were able to produce their milk with a variable cost 2.2 cents per litre lower than the previous year, largely due to the reduction in grain and concentrate prices. Reducing variable costs below an average of 22 cents per litre may be difficult for farmers in the future as inflationary pressures on inputs such as fertiliser, fuel and equipment repairs will tend to negate efficiency gains. The average cash cost of production was 37.4 cents per litre while



Table 2. Financial and performance indicators

Business traits and Indicators	Top 25%	QDAS average	Past QDAS averages		
	2003-04	2003-04	2002-03	2001-02	2000-01
Liquidity					
ADRC (\$)	56,005	-6,609	-7,480	NA	NA
Solvency					
Equity (%)	82	80	83	83	82
Leverage	0.22	0.25	0.22	0.18	0.21
Total liabilities per cow (\$)	1,469	1,778	1,437	1,130	1,434
Interest paid/cow (\$)	172	129	101	83	106
Profitability					
Return on assets (%)	6.5	1.1	1.6	2.4	1.2
Return on equity (%)	5.4	-1.1	-0.2	0.8	-0.9
Operating profit margin (%)	24.4	5.3	6.3	9.6	5.4
Efficiency					
Asset turn over ratio (c/\$)	27	22	25	24	22
Feed related costs [FRC] (c/L)	14.4	17.2	19.4	14.8	19.0
Margin over FRC (\$/cow)	1,167	909	821	884	914
Total variable costs (c/L)	19.7	22.3	24.4	21.6	22.3
Gross margin (\$/cow)	878	596	536	593	562
Milk from home grown feed (L)	11.9	9.8	9.8	10	9.2
Production per cow (L)	5,448	5,345	5,269	5,157	5,055
Litres per labour unit –					
On farms <750 000 L	313,970	281,800	260,755	260,101	249,500
On farms >750 000 L	513,240	458,000	450,464	440,419	358,300

top farms produced milk for 33.4 cents per litre.

It has been a common belief that as farmers' returns improve, they allow their cost of production to increase. 2003-04 data shows this is not the case since farmers who received higher milk prices had lower total variable costs than farmers with lower milk prices. The analysis that determined this divided the farmers of southeast Queensland and northern New South Wales into two equal groups, see Table 3.

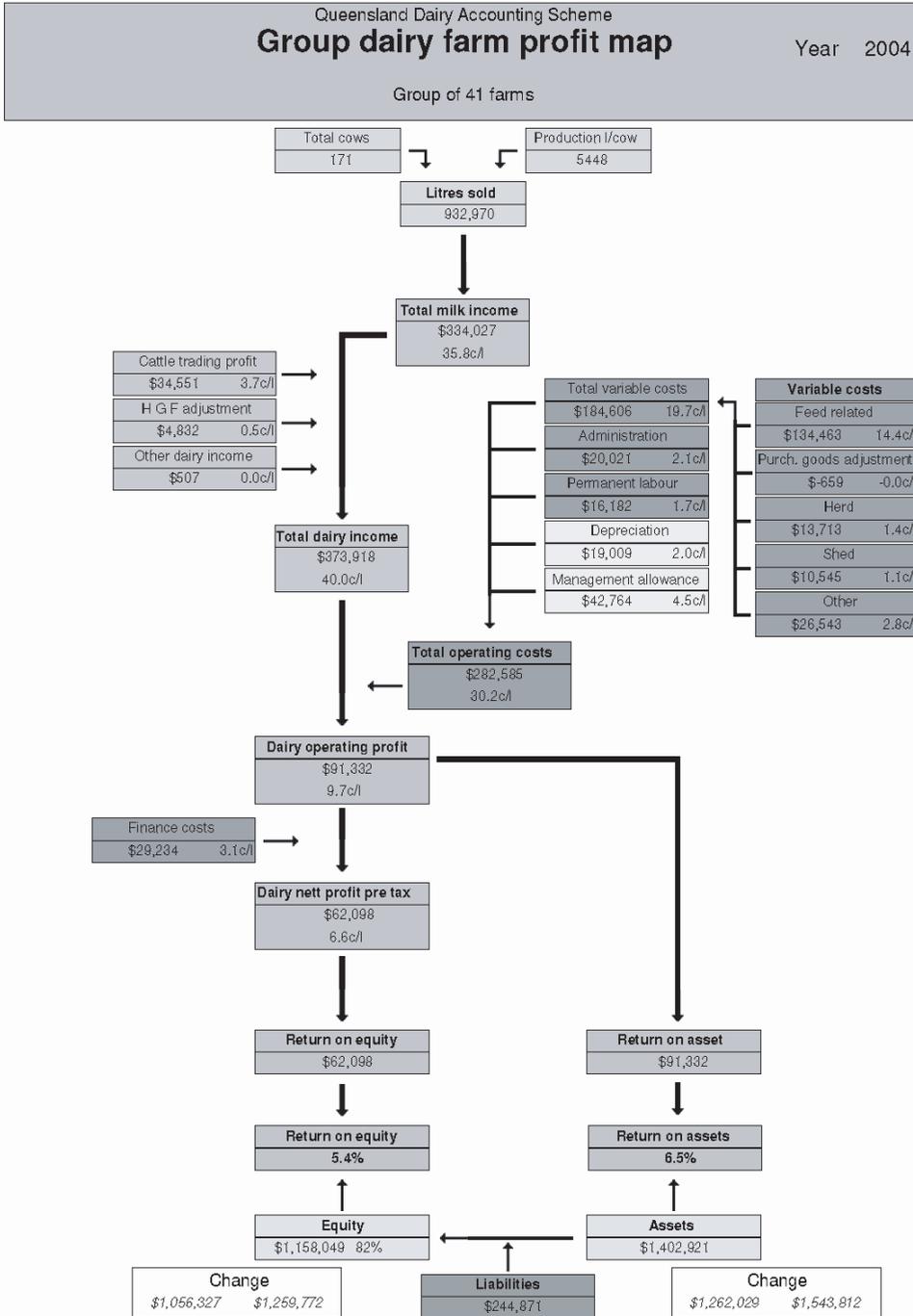
Characteristics of the farms with the highest dairy operating profit

Dairy operating profit highlights the amount of profit retained after paying all expenses

Table 3. Comparison of the Total Variable Costs of farms grouped by milk price

	Group 1	Group 2
Average milk income	30.9 cents per litre	35.7 cents per litre
Total Variable Costs	23.2 cents per litre	21.8 cents per litre

Figure 3. Map of farm performance – top 25% of farms



Report created 20/12/2004 11:20 AM Asset and liability values are the average of opening and closing values for this year Note: Management allowance is calculated rfarm3.frnc



except finance costs and taxes. These expenses include non-cash items, depreciation and an allowance for the manager's time and skill. Farms with the highest dairy operating profit (the top twenty five percent) were compared to the rest of the QDAS farms, see Table 4.

In summary, the top twenty five percent group did a number of small management operations slightly better than the average farm. Total operating costs were lower, the major difference being in feed and paid labour. A discussion on what drives the higher Dairy Operating Profit follows.

Table 4. Indicators for groups of farms sorted by Dairy Operating Profit

	Top 25 percent	Remaining 75 percent
Average herd size	171	183
Production per cow (L)	5,448	5,292
Total dairy income (c/L) *	40.0	35.4
Feed related costs (c/L)	13.9	17.9
Feed related costs (\$/cow)	757	908
Milk from home grown feed (%)	66	52

* Includes milk income, cattle trading profit and home grown feed inventory adjustment

The drivers of farm production and profitability

To raise production and increase margins QDAS results indicate farmers should give consideration to:

- increasing production per cow
- increasing herd size
- increasing the utilisation of home grown feed
- nitrogen fertiliser use

Increasing production per cow - Analysis of QDAS results has provided information that consistently shows that as farmers improve a cow's diet, thereby utilising her genetic potential, they increase the margin over feed costs and the gross margin per cow and per farm. Table 5 shows that the group of surveyed farms who produced six to seven thousand litres per cow had the highest margin over feed costs per cow at \$1,099, the highest gross margin and the highest dairy operating profit. The group of farms with per cow production exceeding seven thousand litres show a drop in these indicators but the significance of this is inconclusive due the small number in this group.

Table 5. Influence of Production Per Cow on Key Performance Indicators

	Production per cow				
	<4000 L	4-5000 L	5-6000 L	6-7000 L	>7000 L
Margin over FRC (c/L)	17.2	17.5	17.7	17.2	13.8
Margin over FRC (\$/cow)	628	793	962	1,099	1,027
Gross margin (\$/farm)	60,988	89,139	127,823	142,142	118,705
DOP (\$/farm)	-824	11,468	30,863	34,184	6,492

Increasing herd size - 2003-04 data shows that surveyed farms, with larger herds, producing over two million litres, had higher production per cow and while the gross margin per cow decreases, the gross margin and dairy operating profit per farm increases, see Table 6.

Table 6 Influence of herd size on Key Performance Indicators

	Milk production per farm			
	<750 000 L	0.75 – 1.25mil L	1.25 – 2.0mil L	>2.0mil L
Herd Size	114	178	268	433
Production per cow (L)	4,731	5,338	5,801	5,849
Gross Margin/cow (\$)	562	621	672	641
Gross Margin/farm (\$)	64,761	111,198	180,728	278,324
DOP (\$/farm)	9,841	7,247	47,479	85,437

Optimising milk production from home grown feed - Through the years, QDAS reports have shown that optimising utilisation of home grown feed can control feed related costs and improve gross margins. Farms with high paddock feed utilisation can also maintain acceptable individual cow production. 2003-04 data again shows that farms with a low variable cost had the highest milk production from home grown feeds. Furthermore, farms with the highest production from pastures had the highest dairy operating profit per cow.

Strategic nitrogen fertiliser application – Gross margin per farm increases as nitrogen fertiliser use increases from 33 to 150 units of nitrogen per cow. Table 7 shows the value of using nitrogen rates on pasture. Home grown pasture is the least expensive feed and this is reflected in the gross margin at \$141,300.

Table 7 Influence of nitrogen fertiliser use on Key Performance Indicators

	Units of N per cow (kg)		
	33 (Low)	84 (Medium)	150 (High)
Production per cow (L)	4,765	5,338	5,816
Gross margin per farm (\$)	90,601	95,711	141,300

Regional trends in farm financial performance

Further analysis has been done on the ninety farms that have continued to participate in QDAS from 2000-01 to 2003-04. Table 8 shows that in South East Queensland farm production has increased to 936,120 litres or by eighteen percent over the period, due mainly to an

Table 8 Southeast Queensland (continuous 4 year participation)

	2000-2001	2001-2002	2002-2003	2003-2004
Total milk income (c/L)	30.6	32.6	34.4	33.7
Average herd size	150	141	172	174
Production per cow (L)	5,273	5,234	5,410	5,380
Feed related costs (c/L)	12.4	16.1	19.0	16.4
Total variable costs (c/L)	17.9	21.2	23.7	22.2
Gross margin (c/L)	12.7	11.4	10.7	11.5
Equity (%)	86	85	83	85
Return on Assets (%)	2.7	1.2	1.2	1.5
Operating profit margin (%)	13	5	5	8
Dairy operating profit (\$/cow)	209	85	93	145



increase in herd size, twenty four additional milkers. Feed related costs declined by 2.6 cents per litre last year, total variable cost declined by 1.5 cents over the last four years. Dairy operating profit per cow while rising over the last three years to \$145 per cow is still \$64 per cow below that achieved in 2001.

CONCLUSIONS

The worth of QDAS has again been demonstrated in 2003-04 by providing an insight into the financial position of dairy farmers in northern Australia. The credibility of QDAS among farmers is built on the meaningfulness of the analysis, the informed interaction with advisors that it allows and the confidentiality of individual farm data. Farmers are encouraged to compare their results with their budgets and targets, and use QDAS reports as a basis for discussions with bankers and partners. The QDAS project team believe the sixteen KPI used are sufficient to provide meaningful analysis. The transparency of QDAS is enhanced with the adherence to Australian national benchmarking definitions in the preparation and analysis of reports. The power of QDAS is the identification of drivers of profitability on farms. These drivers are production per cow, herd size, the utilisation of homegrown feed and the use of nitroliser.

REFERENCES

Busby, Graeme, Hetherington, Geoff, Itzstien Ross and Murphy, Ray, Balancing dairy production and profits, Northern Australia's dairy industry 2004, Department of Primary Industries, Queensland.

Cooper I. M. (1995) Comparative Analysis Revisited, in Charry A. A. and McKerchar M. (Eds), Technical Proceedings 21st National Conference of Australian Farm Management Society - "Keys to Farm Business Success"

Dairy Australia (2005a) Australian Milk Production 04/05 by State,
http://www.dairyaustralia.com.au/Content/Markets_and_Trade/Australian_Dairy_Industry/Milk_Production/Latest_Milk_Production_Statistics.xls

Dairy Australia (2005b) Packaged Milk Sales Volume 04/05 by State
http://www.dairyaustralia.com.au/template_default.asp?Page=Content/Markets_and_Trade/Latest_Statistics/index.htm

Ferris, Alexandria & Malcolm, Bill (1999) Sense and Nonsense in Dairy Farm Management Economic Analysis Australasian Agribusiness Perspectives Paper 31 Agribusiness Association of Australia Inc

Ronan, Glenn Stuart, & Cleary, Gordon (2000) Best Practice Benchmarking in Australian Agriculture: Issues and Challenges, Agribusiness Perspectives - Paper 39

Wilson R, Charry AA and Kemp DR 2004 ' Whole Farm Financial Performance Indicators and Benchmarks in Australian Agriculture: A Review ', The University of Sydney, Faculty of Rural Management, Orange, NSW.