



Balancing dairy production and profit



Northern Australia's dairy industry in 2004



Queensland Dairy Accounting Scheme
Financial and production trends – 2004

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This publication summarises physical and financial data for 2003-2004 from 150 dairy farms in QLD and NNSW who use the Queensland Dairy Accounting Scheme. It provides background information for farmers, agribusiness and DPI&F advisers who have an interest in profitable and sustainable dairy production systems.

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QDAS Financial and production trends – 2004

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Objectives and Acknowledgements

Objectives

The objectives of this book are to:

- Provide Queensland Dairy Accounting Scheme (QDAS) participants with a summary of physical and financial data from South-East Queensland (SEQ), Central Queensland (CQ), North Queensland (NQ) and Northern New South Wales (NNSW). This 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.

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Project Leader

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1. Introduction

Queensland's annual milk production declined to 674 million litres in 2003-04. The decline is predicted to continue with estimated annual production for 2004-05 likely to be approximately 615 million litres. There has been an increase in production at farm level, 6.7 percent per year over the last four years. Farm numbers declined by 575 or 37 percent in the same four-year period.

Table 1. Queensland industry statistics – 2000 to 2004

Year	No of farms	Annual Production (Million litres)	Production per farm (Litres)
1999-2000	1,545	848	548,867
2000-2001	1,305	760	582,375
2001-2002	1,185	738	622,785
2002-2003	1,125	719	639,111
2003-2004	970	674	694,845

Source – Dairy Australia, QDO and DPI&F

In Northern New South Wales (NNSW) the annual increase in production per farm was approximately 4.5 percent over the last four years. The production per farm in 2004 was similar to that in Queensland. Farm numbers have dropped by 30 percent while intakes are down around 20 percent.

This report contains physical and financial data from 164 farms and includes data from all dairy regions in Queensland and Northern New South Wales. The farms in Northern New South Wales have production systems similar to coastal dairy farms in South East Queensland.

Participation in the Queensland dairy accounting scheme (QDAS) is voluntary and therefore results and trends will need to be interpreted carefully.

A summary of results is presented in Section 2 of the book. Four business traits – liquidity, solvency, profitability and efficiency are used to measure farm performance. The results for these traits are presented using 16 key performance indicators (KPIs).

Section 3 details the trends from 90 farms that have contributed data over four continuous years. Analysis of their data gives perhaps a more accurate reflection of changes in the Northern Australian dairy industry since deregulation.

Section 4 and 5 present a detailed financial analysis of all farms, examining trends and highlighting practices designed to improve both cashflow and profit. The cost of production is calculated in cash and on a profit basis. The appendices contain summary reports from all regions.

2. Summary of results 2003 – 2004

QDAS averages for the last four years together with information from a group of farms with the highest dairy operating profit (DOP) or earnings before interest and tax (EBIT) – referred to throughout this report as the top 25 percent, are shown below.

Table 2. Financial and performance ratios for the top 25% and the average QDAS farm – 2001 to 2004

Business traits and Indicators*	Top 25%	QDAS average	Past QDAS averages		
	2003-04	2003-04	2002-03	2001-02	2000-01
Liquidity					
Additional debt repayment capacity (\$)	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 (RoA%)	6.5	1.1	1.6	2.4	1.2
Return on Equity (RoE%)	5.4	-1.1	-0.2	0.8	-0.9
Operating Profit Margin (OPM%)	24.4	5.3	6.3	9.6	5.4
Efficiency – Capital					
Asset Turn Over ratio (ATO c/\$)	27	22	25	24	22
Efficiency – Financial					
Feed Related Costs (c/L FRC)	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 TVC)	19.7	22.3	24.4	21.6	22.3
Gross Margin (\$/cow)	878	596	536	593	562
Efficiency – Physical					
Litres of 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 – <i>On farms <750 000 L</i>	313,970	281,800	260,755	260,101	249,500
<i>On farms >750 000 L</i>	513,240	458,000	450,464	440,419	358,300

* The definition of each indicator and how it is calculated can be found in Appendix 6.7.

2.1 Major industry findings 2003 - 2004

Liquidity – The average additional debt repayment capacity (ADC) was again negative (-\$6,609), which indicates that short term debt is probably being financed from 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 group's ADC was a healthy \$56,005 indicating capacity to cover depreciation of equipment and have funds for re-investment.

Solvency – There was a slight reduction in farmer's equity to 80 percent, but net worth increased due to the escalation in land values. On average the asset value increased by \$140,000 on the prior year. Total liabilities and interest payments per cow are within acceptable limits in dollar terms. Increasing farm income either through additional production or diversification will ensure the payments remain manageable. The top group of farms had a similar debt per cow and interest costs per cow.

Profitability – The profitability result as measured by RoA, RoE and OPM are unacceptably low at 1.1, -1.1 and 5.3 percent, while the top group virtually achieved the QDAS benchmarks as used in prior years. Their result would be attractive to investors.

Efficiency – Farmers were able to produce their milk at a lower variable cost (2.2 cents per litre less) this 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. However better seasons, increases in water entitlements for irrigation farms and improvements in feed utilisation are the way forward.

The average farm could increase per cow production by 500 to 1,000 litres economically. Increasing farm production and optimising inputs is the key to profitable dairying in the future.

2.2 Major findings for farmers 2003 - 2004

- the average cash cost of production was 37.4 cents per litre while top farms produced milk for 33.4 cents per litre. This cash cost included a living allowance of \$45,000
- in North Queensland the average milk return was 30.7 cents per litre. The adverse weather conditions of the last few years have resulted in very tight margins for this area. Variable production costs have been controlled at 21.7 cents per litre, but this is 71 percent of each milk dollar. Farmers are milking larger herds, farm production was 1.17 million litres
- it has been a common belief that as farmers returns improve their cost of production increases. This statement is not correct based on 2004 data. When divided into two equal groups, farm data for SEQ and NNSW shows:

➤ Group 1	Average milk income 30.9 cents per litre	TVC 23.2 cents per litre
➤ Group 2	Average milk income 35.7 cents per litre	TVC 21.8 cents per litre

Efficiency is not lost when all groups have tight margins.

- 90 farms have continuous data for four years; their results are included in section 3. All these farms increased cow numbers over the four years by 25 to 30 milkers
- major differences between farms can be identified in the areas – production per cow, fertiliser use, size of operations, home grown feed utilisation. Attention to these areas will increase production and profits
- the top 25 percent of farms had higher per cow production (+156 litres), their margin over feed related costs was \$151 higher and produced more milk from pasture (66 compared to 52 percent) than the remaining 75 percent of farms
- farms with cows producing 6-7,000 litres (6,361 litres on average) had the highest margin over feed costs per cow (\$1,099), the highest gross margin per farm (\$142,142) and the highest dairy operating profit or EBIT.
- farms producing in excess of 1.25 million litres had the highest production per cow (>5,800 litres), the highest margins, and highest labour use efficiency, milking almost 100 cows per labour unit.
- in all regions, farms with highest production from pastures had the highest dairy operating profit per cow
- in high rainfall areas, farms using 150 units of nitrogen per cow had the highest gross margin and litres produced from low cost pasture. Fertiliser use combined with higher stocking rates is a way forward
- the drivers of production are detailed in figure 3. The complex interaction is highlighted
- land values account for 69 percent of the total asset value with livestock making up just 12.4 percent
- only small savings in overhead costs per litre are evident as production increases.

3. Regional trends in farm financial performance

Participation in QDAS is voluntary, the farm data collated is not a random sample of industry data. In fact, the average QDAS farm produces 265,000 litres more annually than the average North Australian dairyfarm. From the cooperating group in 2004, 90 farms have a minimum four years past data. To highlight the real trends since deregulation on these farms their data is shown in tables below.

General comments:

- 2004 total variable costs account for a large percentage of the gross milk income – 61 cents (CQ), 66 cents (SEQ), 65 cents (NNSW) and 72 cents in (NQ) of each dollar of milk income
- the data would suggest that on average farmers have reduced their total variable costs as much as possible. Twenty-two cents per litre may be the base variable cost. The general rise in input costs over time for, fuel, fertiliser, and repairs appears to negate the possible gains in efficiency
- land values rose in all areas. While the cash position remains tight for many farmers, the higher land values should be reflected by an improvement in net worth on the balance sheet.

In SEQ:

- farm production has increased to 936,120 litres or by 18 percent over the period, due mainly to an increase in herd size, 24 additional milkers
- feed related costs declined by 2.6 cents per litre last year, total variable cost declined by 1.5 cents
- 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.

Table 3. Regional trends in KPIs over four years in SEQ, CQ, NQ and NNSW – 2001 to 2004

3.1 South east 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
PPC (L)	5,273	5,234	5,410	5,380
FRC (c/L)	12.4	16.1	19.0	16.4
TVC (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
RoA (%)	2.7	1.2	1.2	1.5
OPM (%)	13	5	5	8
DOP (\$/cow) *	209	85	93	145

* DOP/cow in this table is calculated using milk income only

In NQ:

- farm production has increased to 980,154 litres or by 15 percent over the period, due to the increase in herd size, 25 additional milkers
- feed and other variable costs have been contained, but a reduction in milk returns by 2.8 cents per litre in the last year has negatively affected all profit indicators.

3.2 North Queensland (continuous 4 year participation)

	2000-2001	2001-2002	2002-2003	2003-2004
Total milk income (c/L)	28.4	31.3	32.8	30.0
Average herd size	164	164	199	189
PPC (L)	5,190	5,225	4,969	5,186
FRC (c/L)	12.2	14.9	17.1	16.1
TVC (c/L)	17.5	20.4	22.2	21.7
Gross margin (c/L)	10.9	10.9	10.6	8.3
Equity* (%)	73	76	77	77
RoA (%)	-0.8	2.8	2.2	-0.5
OPM (%)	-3.8	10	8	-2
DOP (\$/cow) *	-56	164	130	-31

* DOP /cow in this table is calculated using milk income only

In CQ:

- farm production has increased to 694,281 litres, very similar to the average QLD farm production. This an increase of 18 percent over the period
- herd size has increased from 116 to 147 milkers, but production per cow has fallen for the third year in succession and is now 4,723 litres
- milk returns continue to improve and this is reflected in the milk gross margin and dairy operating profit per cow improving in the last three years.

3.3 Central Queensland (continuous 4 year participation)

	2000-2001	2001-2002	2002-2003	2003-2004
Total milk income (c/L)	35.3	37.2	40.2	42.0
Average herd size	116	116	140	147
PPC (L)	5,073	4,951	4,913	4,723
FRC (c/L)	12.5	17.7	19.9	17.0
TVC (c/L)	19.8	24.6	27.6	25.6
Gross margin (c/L)	7.8	6.3	12.6	16.3
Equity* (%)	69	67	69	72
RoA (%)	4.5	1.7	10.4	4.1
OPM (%)	17	6	13	15
DOP (\$/cow) *	304	111	257	297

*DOP /cow in this table is calculated using milk income only

IN NNSW:

- annual farm production increased over the period by 19 percent to 1,119,356 litres
- the increase in production was achieved by a herd increase of 23 milkers and a rise in per cow production by 436 litres to 5,711 litres, a significant change compared to other areas.

3.4 Northern New South Wales (continuous 4 year participation)

	2000-2001	2001-2002	2002-2003	2003-2004
Total milk income (c/L)	29.4	34.3	35.5	35.0
Average herd size	173	191	198	196
PPC (L)	5,275	5,512	5,546	5,711
FRC (c/L)	12.9	17.4	19.9	18.7
TVC (c/L)	19.1	21.8	25.1	24.6
Gross margin (c/L)	10.3	12.5	10.3	10.5
Equity* (%)	73	78	78	77
RoA (%)	-1.2	2.9	1.1	0.8
OPM (%)	-5.5	9.0	3.8	2.8
DOP(\$/cow) *	-85	170	75	56

* DOP /cow in this table is calculated using milk income only

4. Drivers of farm production and profitability

4.1 Characteristics of the farms with the highest operating profit

Dairy operating profit is also called earnings before interest and tax (EBIT). The calculation highlights the amount of profit retained after paying all expenses except finance costs and taxes. These expenses include non-cash items, depreciation and an allowance for the manager's time and skill. This latter expense is termed management allowance.

Operating profit when expressed as a percentage is referred to as operating profit margin. It is a measure of the efficiency of the farming operation and effectiveness of management to generate a profit from the revenue earned.

As a profit calculation it includes trading stock profits rather than stock sales.

Farms with the highest dairy operating profit per farm (top 25 percent) were compared to the rest of the QDAS farms. Table 4 shows some of the features of this group.

Table 4. KPIs for top 25 percent of farms –2003-04

	Top 25 percent – Dairy operating profit (EBIT)	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
FRC (c/L)	13.9	17.9
FRC (\$/cow)	757	908
Milk from HGF (%)	66	52

* Includes milk income, cattle trading profit and HGF inventory adjustment

In summary, this group did a number of small management operations slightly better than the average farm. Total operating costs were six cents per litre lower, the major difference being in feed and paid labour. All regional dairying districts were represented in the group.

To raise production and increase margins QDAS results indicate consideration should be given to the following:

- increasing production per cow
- increasing the utilisation of home grown feed
- nitrogen fertiliser use
- stocking rates
- expanding the size of the farming operation
- quality and use of farm assets.

4.2 Increasing production per cow

The detailed operational costs obtained from farmers has provided information that consistently shows that as you improve a cow's diet, thereby utilising her genetic potential, you increase the margin over feed costs, the gross margin per cow and per farm. This was certainly true in the 6-7,000 litre production group. There may be a limit however to increasing production using high cost supplements. The comment has been made that when returns are based on international export milk prices, high input dairy systems may be unprofitable. If changing to a high input system it is essential to maximise home-grown feed utilisation and produce large volumes of milk, in an industry with low margins.

In table 5, data for 2003-2004 is presented which highlights the effects of increasing per cow production. In QDAS the number of milking cows plus the dry cows are totalled to determine the milking herd size. This calculation assumes a twelve-month inter-calving interval. Herds with inter-calving intervals of 13 or 14 months will find that their average production in QDAS reports is lower than that reported in herd recording reports. This difference could be as high as 600 litres per cow in some herds, the QDAS calculation method will have more impact in high per cow producing herds with long inter-calving intervals. Points to note in this table:

- milk income in cents per litre does not have a significant impact on the differences in margins between the groups
- large herds can achieve high production per cow – the 5-6,000 and 6-7,000 litre groups had 193 and 186 cows each
- in the groups from 4000 up to 7,000 litres per cow, the margin over feed related costs only varied by 0.5 cents per litre, but on a per cow basis, the 6-7000 litre group (6,361 L average) had the highest margin over feed costs per cow at \$1,099. There were only a limited number of herds producing in excess of 7,000 litres; the data tends to indicate that efficiency is lost. However, the QDAS calculation of cow numbers as described above may have an impact.
- farm gross margin increased from \$60,988 in the lower production group to \$142,142. The group with an average production of 6,361 litres (6-7,000), the dairy operating profit was also higher.

Table 5. KPIs for five per cow production groups – 2003-04

Production group	<4000 L	4-5000 L	5-6000 L	6-7000 L	>7000 L
No of farms	18	41	48	29	11
Litres (L)	559,663	781,673	1,049,026	1,187,692	1,347,188
Average herd size	153	172	193	186	181
Production/cow (L)	3,644	4,531	5,433	6,361	7,416
Total milk income (c/L)	33.8	34.2	33.7	33.6	33.1
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/cow (\$)	397	517	668	761	653
Gross margin/farm (\$)	60,988	89,139	127,823	142,142	118,705
DOP (EBIT -\$/farm)	-824	11,468	30,863	34,184	6,492

At production levels of 6-7,000 litres at least two tonnes of concentrate per cow will be required. It has been shown that optimising milk production from paddock feed is essential as a first step in achieving a high gross margin for milk produced. The relative proportion of nutrients going to cow maintenance verses milk production for a range of daily production levels is shown below.

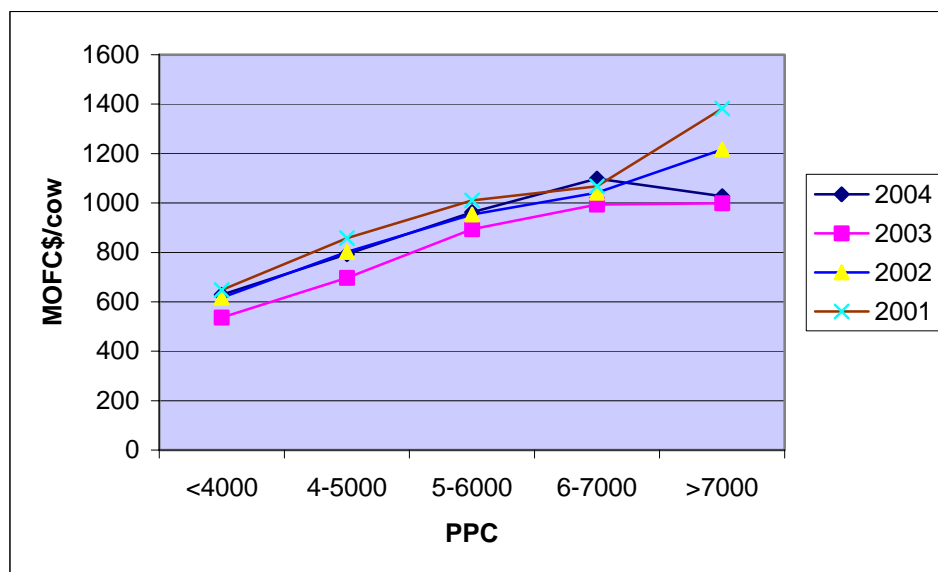
As the daily production increases the proportion of nutrients partitioned for milk increases.

Table 6. Proportion of energy intake partitioned for maintenance and milk production

Milk yield (litres/day)	%Percent of intake to maintenance	Percent of intake to production
10	50	50
20	38	62
30	32	68

The following graph shows the consistent increase in margin over feed costs for the last four years.

Figure 1. The relationship between production per cow and the margin over feed costs – 2001 to 2004



4.3 Increasing herd size

Table 7 shows how large farms compare on a range of important KPI. For example:

- as farm production increase from 750,000 to 2 million litres herd size increases from 114 to 433, production per cow increases from 4,731 litres to 5,849 litres
- the margin over feed costs per cow tapers off on the largest farms, but gross margin per farm continued to increase to a high of \$278,324. As the variable costs account for at least 60-70% of every milk dollar a high gross margin is important
- key profitability ratios – return on assets and dairy operating profit per cow and per farm were highest on the farms in the groups producing greater than 1.5 million litres, and were unacceptable in the lower producing groups
- capital efficiency improved with production but is impacted heavily by the improved asset values.

Table 7. The relationship between the level of production and KPIs – 2003-04

	<750 000 L	750 000 – 1.25m L	1.25 – 2.0m L	>2.0m L
Production (L)	545,169	956,423	1,560 947	2,538, 291
Herd Size	114	178	268	433
PPC (L)	4,731	5,338	5,801	5,849
Margin over FRC (\$)	745	889	1035	962
GM/cow (\$)	562	621	672	641
GM/farm (\$)	64,761	111,198	180,728	278,324
LLU	281,797	390,995	477,732	579,519
RoA (%)	0.8	0.5	2.2	2.8
RoE (%)	-0.7	-2.0	-0.3	-0.7
OPM (%)	4.8	2.0	7.9	9.9
DOP (EBIT - \$/farm)	9,841	7,247	47,479	85,437
OPM (\$/cow)	86	41	177	197
Equity (%)	86	79	75	70
ATO (c/\$)	16	22	27	28
% Milk from HGF	59	56	55	52

4.4 Milk production from home grown feed

Past reports and research has 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.

Table 8 shows the production from home grown feeds for farms with below and above average variable costs (22.2 cents per litre). Points to note are:

- farms could improve production from home grown feeds
- in all regions, the low variable cost farms had the highest litres from home feeds and they also obtained the highest dairy operating profit per cow.

Table 8. Production per cow from home-grown feed – 2003-04

Region	TVC < 22.2 c/L		TVC >22.2 c/L	
	Litres per cow	DOP (\$/cow)	Litres per cow	DOP (\$/cow)
SEQ	10.3	274	8.4	-108
CQ	NA*	NA	6.9	326
NQ	9.6	53	7.7	-179
NNSW	12.7	389	11.1	-31

* Not enough farms in this category

This production is well below the potential 13 – 17 litres achieved from forage in research trials, although the result achieved on NNSW farms is closer to the milk production potential from tropical pastures.

Table 9. Target milk yields from forage

Pasture system	Potential yield from pasture (L)	Production target L/ cow	% Required from forage	Daily milk from forage (L)
Tropical	3,500 – 4,000	6,500	55 – 60	11.5 – 13.5
Temperate	4,500 – 5,200	7,500	60 – 65	15.0 – 17.0

4.5 Strategic nitrogen fertiliser application

Fertiliser use has been collated on 100 high rainfall or irrigation farms in 2003-2004. To analyse the effect of nitrogen fertiliser use the farms were segregated into three equal sub groups based on nitrogen usage – high, medium or low.

The average nitrogen levels in the three sub groups were 33, 84 and 150 kilograms per milker respectively. The dry conditions reduced fertiliser usage when compared to levels used in the late 1990's. Insufficient data was available to calculate responses in the low rainfall areas.

The effects on farm production and gross margins are shown in Table 10 below, as nitrogen fertiliser use per cow increases we have:

- higher production per cow
- higher gross margins per farm
- more milk produced from home grown feed.

Table 10. The effect of nitrogen fertiliser use on production – 2003-04

Nitrogen usage	High rainfall		
	Low	Medium	High
Units of N/cow (kg)	33	84	150
PPC (L)	4,765	5,338	5,816
Prod'n/ farm (L)	896,469	1,028,305	1,332,575
GM/farm (\$)	90,601	95,711	141,300
Litres from HGF	389,902	607,032	744,205

4.6 Increasing the stocking rate

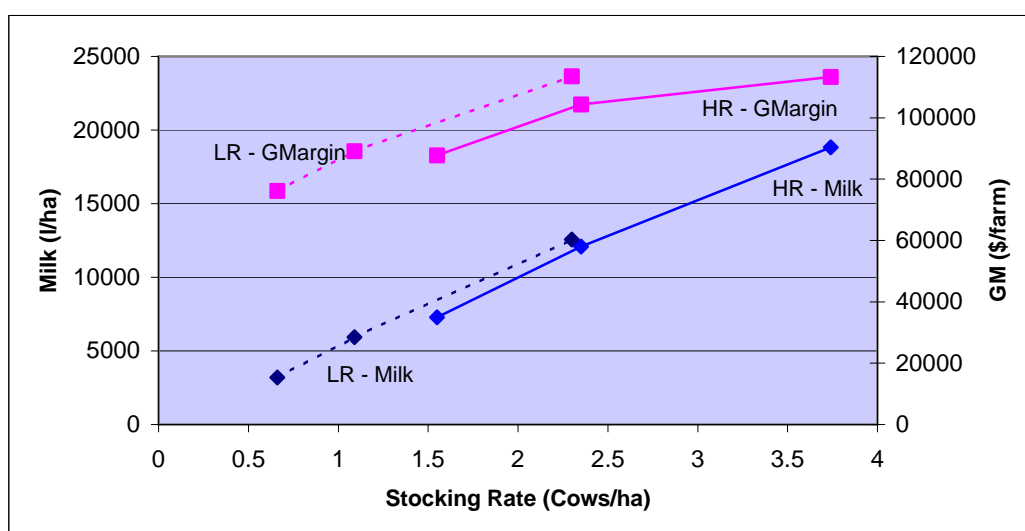
QDAS data indicates producing larger volumes of milk per hectare by utilising higher stocking rates on the milking cow areas will improve farm gross margins significantly. This statement remained true whether your farm is in a low or high rainfall area.

Figure 2 shows the data for 2003-2004. The solid lines represent high rainfall areas while the dotted line represents low rainfall areas.

Milk production per hectare increased in line with increasing stocking rates but due to the cost of concentrates there was an impact on gross margins.

In the high rainfall area, as stocking rate increases from 1.40 to 3.55 cows per hectare the milk produced increases from 6,968 litres to 19,208 litres per hectare. Farm gross margin rose from \$86,546 to \$136,945. In the low rainfall areas, as stocking rate increases from 0.56 to 1.93 cows per hectare the milk produced increases from 2,814 litres to 10,941 litres per hectare. Farm gross margin rose from \$69,199 to \$95,907.

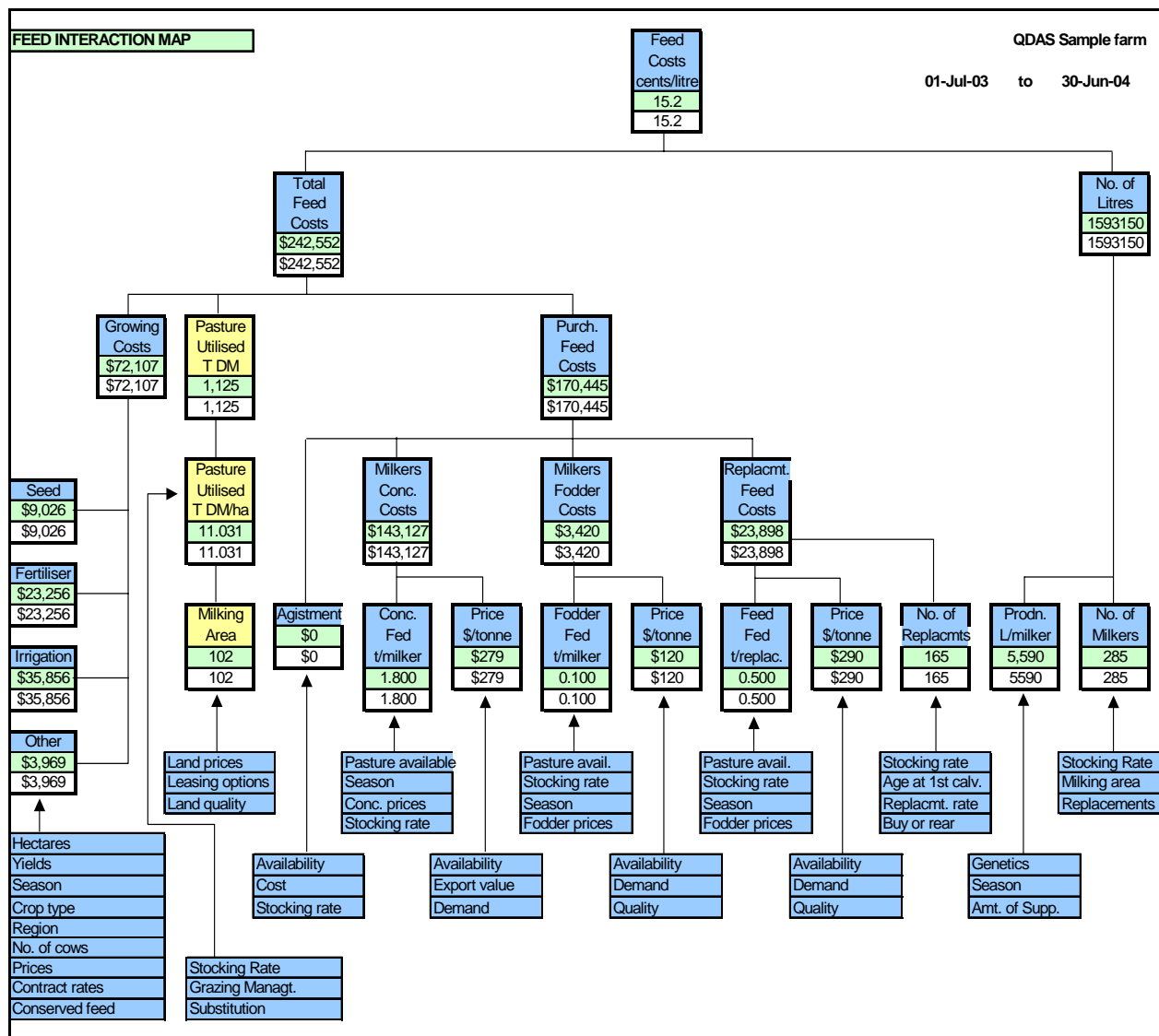
Figure 2. The relationship between stocking rate, milk yield and margins – 2001 to 2004



4.7 Interaction between production drivers and the feed related cost

The figure below shows the interaction between feed inputs and costs that determine annual milk production. It is clear that operating systems can be complex and major changes must be assessed carefully.

Figure 3. Feed interaction map for a sample QDAS farm



Source: T Dowman (pers comm.)

To highlight this point management of an irrigated pasture could involve the following:

- the paddock could be owned or leased
- the paddock could be grazed by milkers and/or dry stock and heifers
- silage could be made from part of the area
- silage could be fed back to any group of animals or it could be sold in part or whole
- the conserved feed could form part of next year's feed stocks and be accounted for as part of the feed inventory
- substitution of cheaper feeds with more expensive supplements often occurs.

Stocking rate, fertiliser and irrigation water applied may also vary throughout at the season.

5. Other results from 2003-2004

5.1 Calculating total production costs

The calculation of profit includes the following non-cash items as expenses – adjustments to the purchased feedstocks, plant depreciation and management allowance. On the income side, adjustments are made for the use and or increase in the homegrown feed inventory. Consideration is given to the opening and closing cattle inventory, sales and purchases to arrive at the cattle trading profit.

A profit map showing the QDAS result for the top 25 percent of farms in 2004 is included as appendix 1. The map clearly shows how QDAS calculates profit. This format follows **national benchmarking guidelines**.

If your return on asset is below the benchmark or target set for your farm, it is simply a matter of tracing back up the map to isolate the areas where your result differs from your predetermined target and formulating a plan to correct the problem area. The calculations in the map are in total dollars but by dividing by the annual production (litres) or by the number of milkers or labour units a value per litre, per cow or per labour unit is possible. Tables 11 and 12 below show the cash cost and the cost as determined in a profit analyses for 2003-04.

Table 11. Production costs on QDAS farms – standard profit analysis technique – 2003-04

	Average farm	Top 1/4 of farms
Average return (c/L)*	36.5	40.0
Total variable cost (c/L)**	22.6	19.7
Administration costs (c/L)	2.5	2.1
Paid labour costs (c/L)	2.8	1.7
Imputed labour (c/L)***	4.4	4.5
Depreciation costs (c/L)	2.1	2.0
Finance costs (c/L)	3.4	3.1
Total production costs (c/L)	37.8	33.1

*Average return in a profit analysis includes – milk income, cattle trading profit and HGF inventory changes

** Purchased feed inventory changes are included in these figures

*** Imputed labour is calculated using the formula shown in Table 14

Table 12. Production costs for QDAS farms – standard cash analysis technique – 2003-04

	Average farm	Top 1/4 of farms
Average return (c/L)*	36.9	38.6
Total variable cost (c/L)**	22.2	19.7
Administration costs (c/L)	2.5	2.1
Paid labour costs (c/L)	2.7	1.7
Principal + interest payments (c/L)	5.3	5.1
Living expenses (c/L) ***	4.7	4.8
Total production costs (c/L) ****	37.4	33.4

* Average return includes milk income and cattle sales

** Variable costs are cash costs only

*** \$45,000 was used as the living expense

**** No capital expenditure is shown in this analysis.

5.2 Capital efficiency

Asset turnover ratio (ATO) is the measure of capital efficiency used in QDAS. It measures the income generated per dollar invested. The formula used in the analysis is:

$$\text{ATO} = \text{Total dairy income (milk income + cattle trading profit + Inventory changes)} / \text{asset value}$$

The average value for cooperating farms in 2003-2004 was 22 cents for each dollar invested. The top 25 percent of farms achieved 38cents for each dollar invested.

Research at Mutdapilly in SEQ (M5 project) has also confirmed that a high asset turnover ratio is possible on irrigated farmlets with high stocking rates and supplement levels.

Asset valuation plays a critical part in the above formula. In QDAS, farmers are asked to place a 'walk in-walk out' value on their asset after considering current land sales, cattle prices and plant auctions. Advisers have sought valuations from stock agents and valuers to assist in this process. The average dairy farm last year was valued at \$1,616,319 an increase of nearly \$140,000 on the previous year. A three-year comparison of the asset breakdown is shown in Table 13 below. The increase in asset value will impact positively on net worth.

Table 13. Land, plant and stock valuations for QDAS dairy farms – 2002 to 2004

	2001-02	%	2002-03	%	2003-04	%
Land & bdgs (\$)	886,040	65.9	960,280	65	1,115,260	69
Stock (\$)	206,461	15.4	219,710	14.9	200,424	12.4
Plant (\$)	155,483	11.6	174,790	11.8	163,248	10.1
Other* (\$)	<u>95,990</u>	7.1	<u>122,320</u>	8.3	<u>137,387</u>	8.5
TOTAL (\$)	1,343,974		1,477,100		1,616,319	

* Other includes; value of quota, shares, feed inventories & cash.

Critical questions to address when reviewing capital efficiency are:

- how can revenue be increased economically as the KPI to measure asset turnover does not consider the cost structure?
- would relocation be an option for QDAS farms located in areas where land valuations are high? Farmers have been reluctant to relocate.
- what would be the impact of; leasing additional land verses ownership, contracting land preparation verses ownership of plant? Contract rearing of stock is not popular at present. It is not traditional in QLD to lease large areas of productive land.
- how would feed-lotting change the asset turnover ratio? The value of the productive asset – cows, increases markedly in proportion to the other assets in feedlot operations.
- what benchmark is appropriate for Queensland and NNSW? Is asset turnover a worthwhile key performance indicator?

5.3 Administration costs

Administration includes the following costs; accountancy, rates, registration of farm vehicles, insurance, telephone and associated office expenses, repairs to permanent improvements and membership of professional organisations. The average administration cost across all 164 farms in QDAS was \$ 24,057 or 2.5c/L. Administration is a fixed expense and hence gets proportionately smaller as farms expand production. Table 14 provides this example.

Table 14. Administration costs for farms with increasing annual production – 2003-04

Annual production	<750,000 L	750 –1.25 m L	1.25-2.0 m L	>2.0 m L
Administration (c/L)	3.0	2.7	2.2	2.0
Administration (\$)	16,200	25,495	33,934	51,040

5.4 Labour resources

The number of labour units contributing to the milk production was recorded under two headings in 2004:

- unpaid permanent labour – the farm owners
- paid labour – casual and permanent.

When looking for an acceptable analytical approach to the calculation of the number of labour units employed and how to value their contribution to milk production, a number of issues require clarification. Some include:

- should the value of unpaid (owners) labour be imputed on an hourly basis, and if so what is an appropriate rate?
- should there be maximum and minimum values applied?
- what constitutes dairy farm duties, eg how to treat time spent at industry meetings and cattle sales?
- how to evaluate effective and ineffective work practices?
- how to record and treat contactors, eg off farm heifer rearing, silage harvesting?
- should imputed rates reward both labour and management skills?
- how to treat high productivity at the expense of lifestyle and perhaps profits?

Paid labour costs include superannuation contributions, taxation and workers compensation payments. Average regional labour information, paid labour plus the opportunity cost of the owners/managers labour is summarised in Table 16.

Table 15. Imputed labour / management allowance calculation – 2003-04

Farm production	Management allowance
Where production is less than 300,000 L	\$20,000
Where production is between 300,000 & 900,000 L	6 c/L
Where production exceeds 900,000 L	\$54,000

Table 16. Regional labour statistics – 2003-04

Region	No of units Paid + unpaid	Cost Paid + imputed	Average Litres produced per labour unit
SEQ	0.7 + 1.7	\$25,760 + \$42,122 = \$67,882	379,653
CQ	1.0 + 1.7	\$16,835 + \$41,003 = \$57,838	332,120
NQ	0.8 + 1.7	\$21,742 + \$ 42,607 = \$64,349	485,908
NNSW	0.8 + 1.4	\$35,023+ \$44,866 = \$79,889	472,044

Being able to make the best use of labour is essential - it's a matter of trying to work smarter, combined with knowing the value of each labour unit and equating any capital expenditure against potential labour savings. The question - how best should labour be utilised, is one of the areas which needs constant attention as production increases.

The following points are areas to consider when addressing labour issues:

- the number of employees
- milk per labour unit
- cows per labour unit
- award rates and conditions
- job skills and training programs
- shed design and farm layout
- unpaid family labour
- other labour saving technology.

Labour costs are the second biggest production cost after feed costs.

6. Appendices

6.1 Map of farm performance – top 25% of farms, 2003-2004

6.2 Group cash gross margin – 164 QDAS farms, 2003-2004

6.3 Group cash gross margin – SEQ farms, 2003-2004

6.4 Group cash gross margin – CQ farms, 2003-2004

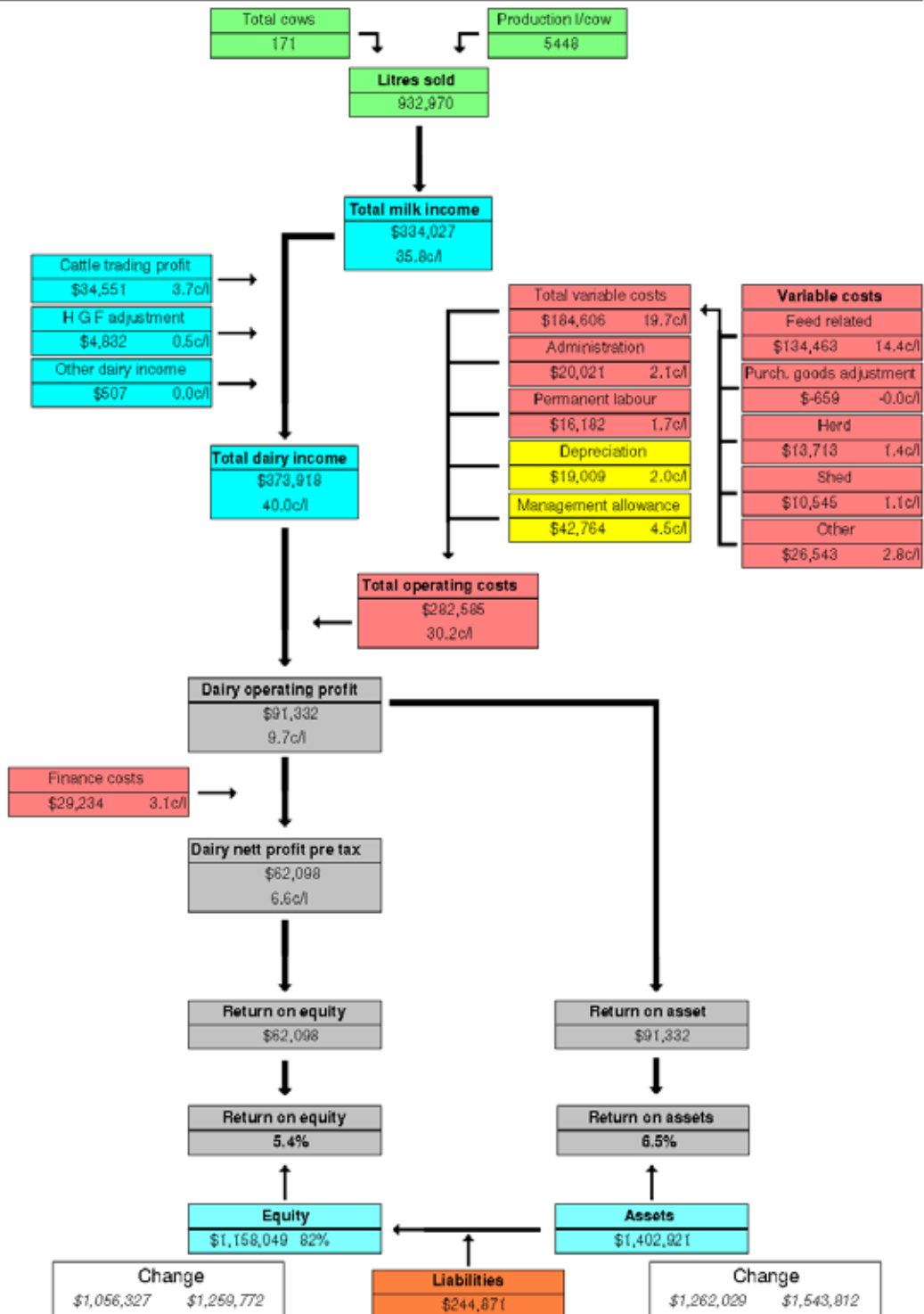
6.5 Group cash gross margin – NQ farms, 2003-2004

6.6 Group cash gross margin – NNSW farms, 2003-2004

6.7 Business traits, KPIs and definitions used in 2003-2004

6.1 Map of farm performance – top 25% of farms, 2003 – 2004

Queensland Dairy Accounting Scheme
Group dairy farm profit map Year 2004
 Group of 41 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 rfamp3.tcx

6.2 Group Cash Gross Margin – 164 QDAS farms, 2003 – 2004

Queensland Dairy Accounting Scheme				
Group cash gross margin				Period ending 6/2004
All Farms				
Income	Cents/litre	Dollars/cow	Total \$ earned	
Milk	31.7	1,685.4	296,901	
Milk bonuses/incentives/rebates/other	2.1	116.0	20,435	
Milk income	33.8	1,801.4	317,337	
(936410 l)				
Stock sales - dairy	3.1	168.4	29,681	
Stock sales - other	0.2	10.8	1,912	
Produce sales	0.3	18.8	3,317	
Other income	2.7	145.4	25,627	
Non-milk income	6.4	343.6	60,538	
Total farm income	40.3	2,145.1	377,875	
Production costs	Cents/litre	Dollars/cow	% Milk income	Total \$ spent
Purchased feeds	10.8	578.3	32.1	101,884
Fertiliser	2.1	112.1	6.2	19,754
Fuel & oil	1.0	55.6	3.0	9,799
Seed	0.8	45.1	2.5	7,953
Irrigation costs	0.5	31.3	1.7	5,519
Other feed costs	1.1	63.5	3.5	11,190
Feed related costs	16.6	886.1	49.1	156,101
Margin over feed related costs	17.2	915.3	50.8	161,235
Heifer feeds	0.5	31.0	1.7	5,465
Animal health	0.8	42.6	2.3	7,504
Herd improvement	0.5	28.2	1.5	4,967
Herd costs	1.9	101.8	5.6	17,937
Dairy shed costs - electricity	0.5	27.9	1.5	4,931
Dairy shed costs - chemicals	0.5	27.1	1.5	4,775
Shed costs	1.0	55.1	3.0	9,706
Cartage	0.3	20.2	1.1	3,566
Levies	0.3	17.0	0.9	3,006
Repairs & maintenance	1.6	89.7	4.9	15,803
Sundry variable costs	0.2	15.6	0.8	2,761
Other variable costs	2.6	142.7	7.9	25,139
Total variable costs	22.3	1,185.8	65.8	208,885
Gross margins: milk only	11.5	615.6	34.1	108,451
whole farm	18.0	959.3	53.2	168,990
Permanent wages	2.6	141.6	7.8	24,950
Personal drawings etc	3.6	194.0	10.7	34,189
Labour inputs	Areas (ha)	Stock	Production	
Permanent unpaid 1.6	Milking cow 103	Milking cows 151	Fed to calves (l)	15298 2%
Permanent paid 0.6	Effective dairy 188	Dry cows 24	Protein total (kg)	29897 3.19%
Casual paid 0.1	Agistment 12.8	Heifers 15+ 43	Butterfat total (kg)	36832 3.96%
	Winter irrigation 28	Heifers <15 56	Total solids (kg)	66729
	Summer irrigation 26	Adult equivalents 228	Litres / cow	5315
			Total solids / cow (kg)	378
Farms in report 164				
Total Operating Costs	\$323,567			
Dairy Operating Surplus (EBIT)	\$18,463			
ROA	1.2%			
Asset value	\$1,578,553			
Equity	80%			
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6.3 Group Cash Gross Margin – South-east Queensland, 2003 – 2004

Queensland Dairy Accounting Scheme		Period ending 6/2004	
Group cash gross margin			
SEQ Farms			

Income	Cents/litre	Dollars/cow	Total \$ earned
Milk	31.6	1,701.6	274,346
Milk bonuses/incentives/rebates/other	2.0	109.1	17,594
Milk income (867438 l)	33.6	1,810.7	291,941
Stock sales - dairy	3.3	182.4	29,413
Stock sales - other	0.1	10.2	1,650
Produce sales	0.2	11.7	1,892
Other income	3.4	182.9	29,502
Non-milk income	7.2	387.4	62,459
Total farm income	40.8	2,198.1	354,400

Production costs	Cents/litre	Dollars/cow	% Milk income	Total \$ spent
Purchased feeds	10.9	587.4	32.4	94,717
Fertiliser	1.5	85.8	4.7	13,844
Fuel & oil	1.2	66.2	3.6	10,685
Seed	0.7	39.7	2.1	6,402
Irrigation costs	0.7	37.9	2.0	6,123
Other feed costs	1.5	81.6	4.5	13,165
Feed related costs	16.7	898.9	49.6	144,939
Margin over feed related costs	16.9	911.7	50.3	147,001
Heifer feeds	0.3	18.9	1.0	3,055
Animal health	0.7	41.2	2.2	6,655
Herd improvement	0.4	23.0	1.2	3,712
Herd costs	1.5	83.2	4.5	13,422
Dairy shed costs - electricity	0.4	26.2	1.4	4,229
Dairy shed costs - chemicals	0.4	24.5	1.3	3,965
Shed costs	0.9	50.8	2.8	8,194
Cartage	0.2	15.1	0.8	2,442
Levies	0.3	17.5	0.9	2,831
Repairs & maintenance	1.9	102.9	5.6	16,596
Sundry variable costs	0.3	19.7	1.0	3,180
Other variable costs	2.8	155.3	8.5	25,050
Total variable costs	22.0	1,188.4	65.6	191,608
Gross margins: milk only	11.5	622.3	34.3	100,333
whole farm	18.7	1,009.7	55.7	162,792
Permanent wages	2.9	158.4	8.7	25,539
Personal drawings etc	3.5	189.8	10.4	30,602

Labour inputs	Areas (ha)	Stock	Production
Permanent unpaid 1.6	Milking cow 111	Milking cows 134	Fed to calves (l) 11002 1%
Permanent paid 0.7	Effective dairy 207	Dry cows 27	Protein total (kg) 27491 3.17%
Casual paid 0.0	Agistment 14.5	Heifers 15+ 35	Butterfat total (kg) 34005 3.94%
	Winter irrigation 30	Heifers <15 57	Total solids (kg) 61496
	Summer irrigation 30	Adult equivalents 207	Litres / cow 5380
			Total solids / cow (kg) 381

Farms in report 89

Total Operating Costs	\$302,473
Dairy Operating Surplus (EBIT)	\$19,134
ROA	1.2%
Asset value	\$1,601,732
Equity	82%

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6.4 Group Cash Gross Margin – Central Queensland, 2003 – 2004

Queensland Dairy Accounting Scheme					
Group cash gross margin				Period ending 6/2004	
CQ Farms					
Income	Cents/litre	Dollars/cow	Total \$ earned		
Milk	39.5	1,824.7	288,772		
Milk bonuses/incentives/rebates/other	2.3	107.1	16,962		
Milk income (730665 l)	41.8	1,931.9	305,734		
Stock sales - dairy	3.8	176.0	27,865		
Stock sales - other	0.0	0.0	0		
Produce sales	0.0	3.5	564		
Other income	1.3	62.8	9,943		
Non-milk income	5.2	242.4	38,373		
Total farm income	47.0	2,174.4	344,107		
Production costs	Cents/litre	Dollars/cow	% Milk income	Total \$ spent	
Purchased feeds	12.8	592.1	30.6	93,710	
Fertiliser	1.2	55.5	2.8	8,796	
Fuel & oil	0.9	44.5	2.3	7,053	
Seed	0.4	19.1	0.9	3,036	
Irrigation costs	0.7	32.5	1.6	5,143	
Other feed costs	0.5	27.4	1.4	4,349	
Feed related costs	16.7	771.4	39.9	122,089	
Margin over feed related costs	25.1	1,160.4	60.0	183,645	
Heifer feeds	0.3	14.3	0.7	2,267	
Animal health	1.1	51.1	2.6	8,098	
Herd improvement	0.5	23.8	1.2	3,780	
Herd costs	1.9	89.3	4.6	14,146	
Dairy shed costs - electricity	0.5	24.2	1.2	3,834	
Dairy shed costs - chemicals	0.4	21.7	1.1	3,447	
Shed costs	0.9	46.0	2.3	7,281	
Cartage	1.9	91.5	4.7	14,481	
Levies	0.3	16.5	0.8	2,620	
Repairs & maintenance	1.9	89.7	4.6	14,200	
Sundry variable costs	0.1	4.8	0.2	765	
Other variable costs	4.3	202.6	10.4	32,067	
Total variable costs	24.0	1,109.5	57.4	175,584	
Gross margins: milk only	17.8	822.4	42.5	130,149	
whole farm	23.0	1,064.9	55.1	168,522	
Permanent wages	2.3	106.3	5.5	16,835	
Personal drawings etc	5.5	258.4	13.3	40,896	
Labour inputs	Areas (ha)	Stock	Production		
Permanent unpaid 1.6	Milking cow 116	Milking cows 134	Fed to calves (l)	8800	1%
Permanent paid 0.5	Effective dairy 225	Dry cows 24	Protein total (kg)	23012	3.14%
Casual paid 0.1	Agistment 5.0	Heifers 15+ 32	Butterfat total (kg)	29343	3.99%
	Winter irrigation 18	Heifers <15 51	Total solids (kg)	52356	
	Summer irrigation 19	Adult equivalents 200	Litres / cow	4617	
			Total solids / cow (kg)	330	
Farms in report 8			Total Operating Costs \$274,047		
			Dairy Operating Surplus (EBIT) \$50,840		
			ROA 4.5%		
			Asset value \$1,119,007		
			Equity 76%		
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6.5 Group Cash Gross Margin – North Queensland, 2003 – 2004

Queensland Dairy Accounting Scheme				
Group cash gross margin				Period ending 6/2004
NQ Farms				
Income	Cents/litre	Dollars/cow	Total \$ earned	
Milk	28.2	1,467.5	328,861	
Milk bonuses/incentives/rebates/other	2.5	133.2	29,856	
Milk income (1166177 l)	30.7	1,600.7	358,718	
Stock sales - dairy	2.7	145.2	32,547	
Stock sales - other	0.1	9.9	2,233	
Produce sales	0.3	15.7	3,532	
Other income	1.7	90.4	20,265	
Non-milk income	5.0	261.4	58,578	
Total farm income	35.7	1,862.1	417,297	
Production costs	Cents/litre	Dollars/cow	% Milk income	Total \$ spent
Purchased feeds	11.5	598.9	37.4	134,232
Fertiliser	2.6	139.7	8.7	31,316
Fuel & oil	0.7	40.6	2.5	9,114
Seed	0.3	19.9	1.2	4,475
Irrigation costs	0.4	22.6	1.4	5,074
Other feed costs	0.3	20.1	1.2	4,509
Feed related costs	16.1	842.1	52.6	188,722
Margin over feed related costs	14.5	758.5	47.3	169,995
Heifer feeds	1.0	53.5	3.3	12,009
Animal health	1.3	67.6	4.2	15,160
Herd improvement	0.6	32.0	2.0	7,177
Herd costs	2.9	153.2	9.5	34,347
Dairy shed costs - electricity	0.5	26.5	1.6	5,948
Dairy shed costs - chemicals	0.3	15.9	0.9	3,584
Shed costs	0.8	42.5	2.6	9,533
Cartage	0.2	11.2	0.7	2,516
Levies	0.3	15.8	0.9	3,554
Repairs & maintenance	1.1	60.7	3.7	13,613
Sundry variable costs	0.1	6.1	0.3	1,372
Other variable costs	1.8	93.9	5.8	21,056
Total variable costs	21.7	1,131.9	70.7	253,659
Gross margins: milk only	9.0	468.8	29.2	105,059
whole farm	14.0	730.2	45.6	163,637
Permanent wages	1.8	97.0	6.0	21,742
Personal drawings etc	3.8	200.8	12.5	45,014
Labour inputs	Areas (ha)	Stock	Production	
Permanent unpaid 1.9	Milking cow 100	Milking cows 187	Fed to calves (l)	28507 2%
Permanent paid 0.4	Effective dairy 174	Dry cows 36	Protein total (kg)	36767 3.18%
Casual paid 0.1	Agistment 14.7	Heifers 15+ 50	Butterfat total (kg)	44637 3.88%
	Winter irrigation 20	Heifers <15 63	Total solids (kg)	81405
	Summer irrigation 10	Adult equivalents 283	Litres / cow	5203
			Total solids / cow (kg)	363
Farms in report 21				
Total Operating Costs	\$363,529			
Dairy Operating Surplus (EBIT)	-\$4,652			
ROA	-0.3%			
Asset value	\$1,783,610			
Equity	73%			
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6.6 Group Cash Gross Margin – Northern New South Wales, 2003 - 2004

Queensland Dairy Accounting Scheme		Period ending 6/2004	
Group cash gross margin			
NNSW Farms			

Income	Cents/litre	Dollars/cow	Total \$ earned
Milk	32.7	1,757.5	327,363
Milk bonuses/incentives/rebates/other	2.2	119.3	22,237
Milk income (1000746 l)	34.9	1,876.9	349,600
Stock sales - dairy	2.9	156.8	29,206
Stock sales - other	0.2	13.9	2,605
Produce sales	0.6	34.6	6,454
Other income	2.3	125.1	23,305
Non-milk income	6.1	330.5	61,571
Total farm income	41.0	2,207.5	411,172

Production costs	Cents/litre	Dollars/cow	% Milk income	Total \$ spent
Purchased feeds	10.2	549.7	29.2	102,404
Fertiliser	2.7	149.3	7.9	27,814
Fuel & oil	0.8	47.6	2.5	8,877
Seed	1.3	71.9	3.8	13,395
Irrigation costs	0.4	24.7	1.3	4,618
Other feed costs	1.1	62.3	3.3	11,609
Feed related costs	16.8	905.8	48.2	168,721
Margin over feed related costs	18.0	971.1	51.7	180,879
Heifer feeds	0.7	41.3	2.2	7,698
Animal health	0.5	29.7	1.5	5,548
Herd improvement	0.6	35.4	1.8	6,594
Herd costs	1.9	106.5	5.6	19,840
Dairy shed costs - electricity	0.6	32.2	1.7	6,016
Dairy shed costs - chemicals	0.7	38.2	2.0	7,117
Shed costs	1.3	70.5	3.7	13,133
Cartage	0.4	23.2	1.2	4,324
Levies	0.3	16.9	0.9	3,162
Repairs & maintenance	1.5	83.4	4.4	15,549
Sundry variable costs	0.2	15.7	0.8	2,933
Other variable costs	2.5	139.4	7.4	25,970
Total variable costs	22.7	1,222.2	65.1	227,665
Gross margins: milk only	12.1	654.6	34.8	121,934
whole farm	18.3	985.2	52.4	183,506
Permanent wages	2.6	143.2	7.6	26,685
Personal drawings etc	3.4	188.0	10.0	35,023

Labour inputs	Areas (ha)	Stock	Production
Permanent unpaid 1.4	Milking cow 87	Milking cows 173	Fed to calves (l) 18711 2%
Permanent paid 0.6	Effective dairy 152	Dry cows 12	Protein total (kg) 32613 3.26%
Casual paid 0.1	Agistment 9.9	Heifers 15+ 57	Butterfat total (kg) 40040 4.03%
	Winter irrigation 30	Heifers <15 53	Total solids (kg) 72653
	Summer irrigation 27	Adult equivalents 248	Litres / cow 5372
			Total solids / cow (kg) 390

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Total Operating Costs	\$354,748
Dairy Operating Surplus (EBIT)	\$22,088
ROA	1.5%
Asset value	\$1,520,013
Equity	78%

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6.7 Business traits, KPIs and definitions used in 2003-2004

Sixteen KPI were used to monitor farm performance. Table 17 shows these indicators grouped under the four key business trait headings:

- liquidity
- solvency
- profitability
- efficiency traits.

Why use KPIs

Put simply, KPIs are calculations 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 17. Business traits and key performance indicators – 2003-04

Business trait	Key performance indicators
Liquidity	1. Additional debt repayment capacity – \$
Solvency	1. Equity percent – % 2. Leverage – ratio value 3. Total liabilities per cow – \$ 4. Interest per cow – \$/cow
Profitability	1. Return on asset (RoA) – % 2. Return on equity (RoE) – % 3. Operating profit margin (OPM) – %
Efficiency	
a) Capital efficiency	1. Asset turnover ratio (ATO) – c/\$ invested
b) Financial efficiency	2. Feed related cost (FRC) – c/L 3. Margin over feed related costs (MOFRC) – \$/cow 4. Total variable cost (TVC) – c/L 5. Gross margin (GM) – \$/cow
c) Physical efficiency	1. Litres of milk from home grown feed (L/HGF) – L 2. Production per cow (PPC) – L 3. Litres per labour unit (LLU) – L

The liquidity KPI used in QDAS

The liquidity KPI measures the capacity of the business to meet its short-term debts (cash flow ability), either by using cash or by converting current assets into cash. This calculation:

- focuses on the businesses ability to generate cash
- and is related to short-term activities of the business.

Additional term debt repayment capacity (ADC)

ADC indicates how much cash a business has available after meeting all existing commitments. It measures the ability of the business to contribute to additional debt servicing. A negative number indicates that current debts may not be able to be serviced from dairy income alone.

The cash shortfall can be balanced by the use of, off-farm income, interest subsidies, transfers from other accounts and/or the use of overdraft facilities. A positive number indicates that some cash is available for additional repayments and as a buffer against a rise in interest payments.

Calculation

(Milk income + cattle sales + other dairy related income) – (variable costs + fixed expenses + paid labour costs + drawings + leases, principal and interest payments).

Solvency KPIs used in QDAS

Solvency ratios indicate how the business is financed, eg by owners 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's 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 percent

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 cashflow.

Calculation

$((\text{Assets} - \text{liabilities}) / \text{Assets}) * 100.$

Leverage

Leverage is another term used to define the capital structure or the relationship between equity and debt financing. Leverage refers to the amount of debt capital used to fund the total asset base. The higher the value the greater the reliance on debt financing.

Calculation

Debt / Equity.

Total liabilities (debt) per milkers

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

Calculation

Liabilities / Number of milkers.

Interest per milker

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 milkers

Profitability KPIs 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 (RoA)

The KPI, RoA measures the profit-generating capacity of the total assets of the business. It measures the farm's effectiveness in using the available total capital, both debt and equity.

Calculation

$(\text{Dairy operating profit} / \text{Total assets}) * 100.$

Return on equity (RoE)

This KPI measures the return on the owner's investment in the business. Interest costs 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

$(\text{Dairy net profit (pre tax)} / \text{Equity}) * 100.$

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

$(\text{Dairy operating profit} / \text{total dairy income}) * 100.$

Efficiency KPIs used in QDAS

When examining a business these KPI 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.

Asset turnover ratio (ATO)

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

Calculation

$\text{Total dairy income} / \text{Assets}.$

Feed related cost (FRC)

FRC is a variable cash cost and includes purchased as well as all home grown feed input costs.

Calculation

$\text{Total of all feed related costs} / \text{Total production}.$

Margin over feed related costs (MOFRC)

Only the gross milk income is used in this calculation, this avoids the fluctuations that occur in annual cattle sales.

Calculation

$(\text{Gross milk income} - \text{FRC}) / \text{Number of milkers}.$

Total variable cost (TVC)

In QDAS total variable costs are compiled under four headings – FRC, herd, shed and other variable costs.

Calculation

$\text{TVC} / \text{Total production}.$

Milk gross margin (GM)

This highlights the milk production efficiency; the resulting dollars are available to pay fixed, financial, living and future development costs. It should not be confused with the profit KPIs.

Calculation

$(\text{Milk income} - \text{TVC}) / \text{Number of milkers}.$

Litres of milk from home grown feed

Home-grown forage (HGF) 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 HGF is expressed as litres per milker 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

Total milk production / Number of milkers.

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

Other measures may be important when examining an individual plan eg. cash surplus per farm family and environmental and other sustainability considerations.

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

Dairyinfo.biz and QDAS

The DairyInfo web site provides online access to a number of decision tools designed to help you within your business.

Additionally they can be downloaded to your own computer and saved - making it easy for you to take your time with your business planning.

Decision Tools available include:

- Scenario planner comparing one option
- Scenario planner comparing three options
- Loan calculator - simple
- Loan calculator - with schedule
- Assets and liabilities statement
- Feed and commodity inventory
- Livestock inventory
- Annual feed cost calculator
- Predicting milk income
- Sensitivity analysis spreadsheet



QDAS reports available online

The QDAS Annual Reports for the past three years (including this year) are available on DairyInfo for download. Select the download button from the front page and choose QDAS.

An online text version is also available through the "On the farm" Information database making it easy to read a particular section without needing the whole document.



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