PART THREE: SOUTH WEST

Farms ranked in the top 25% by operating profit per hectare are shown as the striped bars in all graphs.
Please refer to page 2 for notes on the presentation of data.

2006/07 SEASONAL CONDITIONS

FIGURE 25: 2006/07 ANNUAL RAINFALL AND LONG TERM AVERAGE RAINFALL – SOUTH WEST

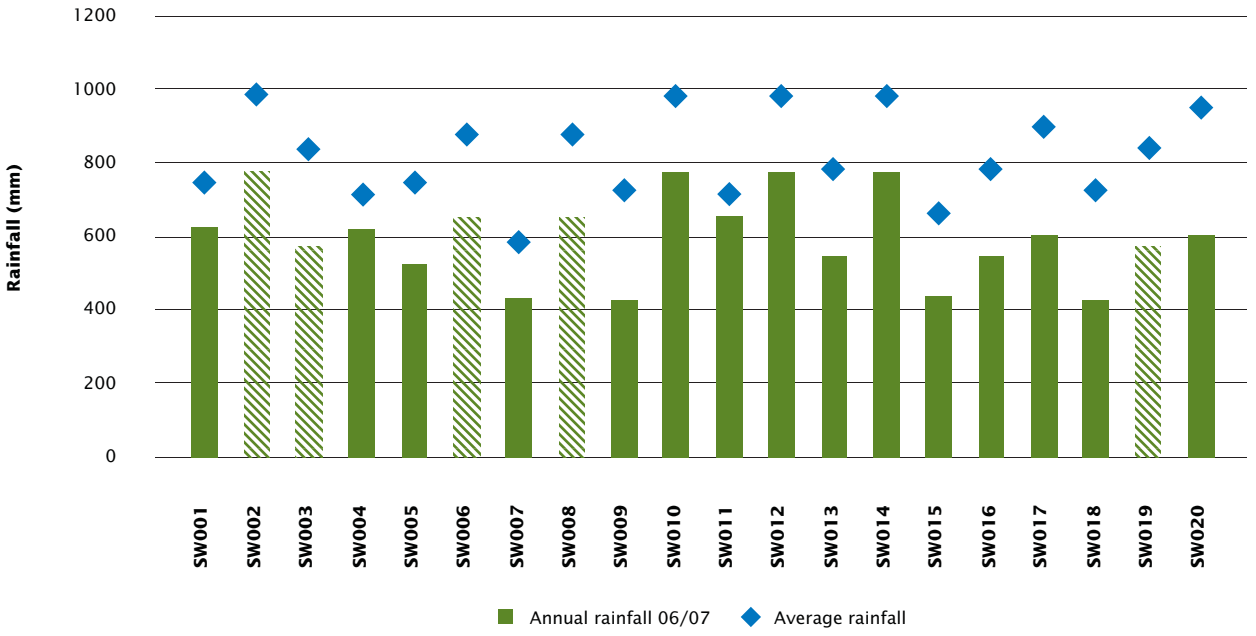


Figure 25 shows the challenging climatic conditions participants across the South West faced during the 2006/07 year. Rainfall totals were between 59% and 90% of the individual long-term averages. Appendix Table B2 gives further data on total water used and, when compared to Figure 25, suggests that two of the farms in the top 25% had irrigation in 2006/07.

WHOLE FARM ANALYSIS

Table 4 presents some key whole farm physical parameters for the South West. The Q1 – Q3 range shows the band in which the middle 50% of farms for each parameter sit.

The top 25% of farms ranked on operating profit per hectare were slightly smaller than the average of the entire South West, but generally were not vastly different physically from the average. They did have higher water use and sourced a greater proportion of their herd's metabolisable energy (ME) requirements from home grown feed than the average. The top 25% for all of these parameters is within the corresponding Q1 - Q3 range.

TABLE 4: FARM PHYSICAL DATA – SOUTH WEST

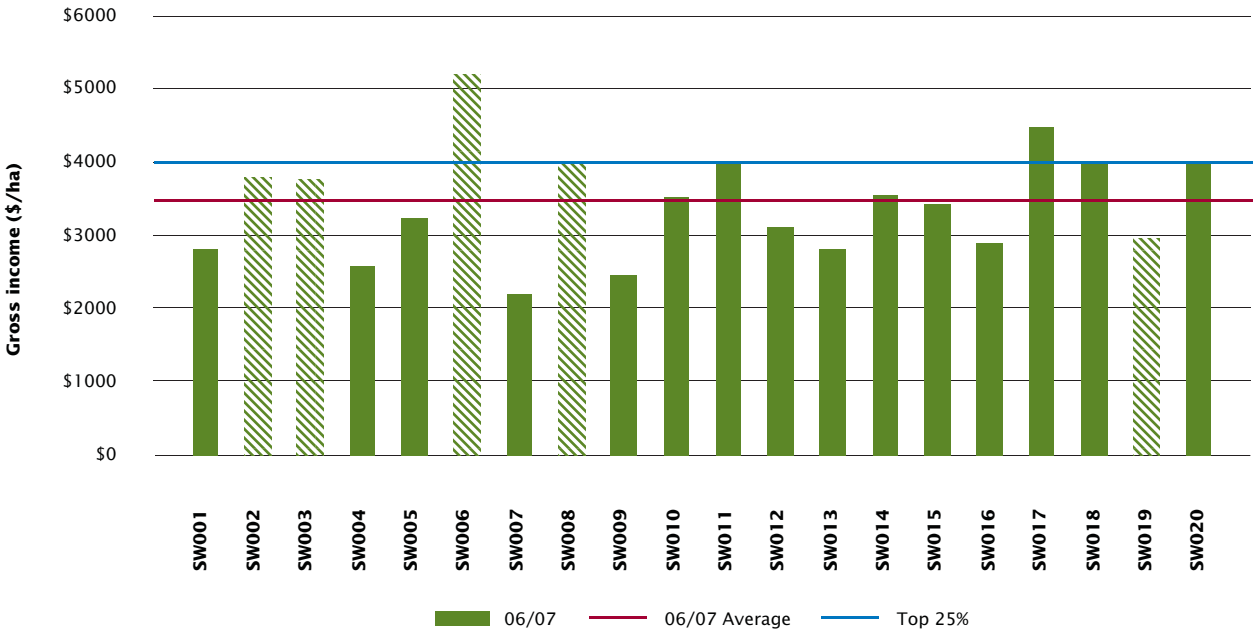
Farm physical parameters	SW average	Q1 to Q3 range	Top 25% average
Annual rainfall 06/07	603	543 - 654	647
Water used (irrigation + rainfall) (mm/ha)	622	543 - 760	707
Total useable area (hectares)	286	139 - 325	225
Stocking rate (milking cows per useable hectares)	1.4	1.2 - 1.5	1.5
Milk sold (kg MS /ha)	688	582 - 783	758
Milk sold (kg MS /cow)	500	452 - 551	525
Home grown feed as % of ME consumed	61%	42% - 73%	71%
Labour efficiency (milking cows / labour unit)	73	56 – 89	76
Labour efficiency (kg MS / labour unit)	36,702	30,786 – 47,722	39,886

GROSS FARM INCOME

Gross farm income includes all farm income, whether that is income from milk sales, an increase in inventories of stock or feed or cash income from livestock trading.

Figure 26 shows that gross income in the South West ranged from $2,200 to $5,200 per hectare. The top 25% of farms had a higher gross income than the average for the South West group. It can also be seen that 9 farms had a gross income greater than farm SW019, yet were not ranked in the top farms i.e. had a lower operating profit per hectare. Gross income per hectare was strongly linked to stocking rate.

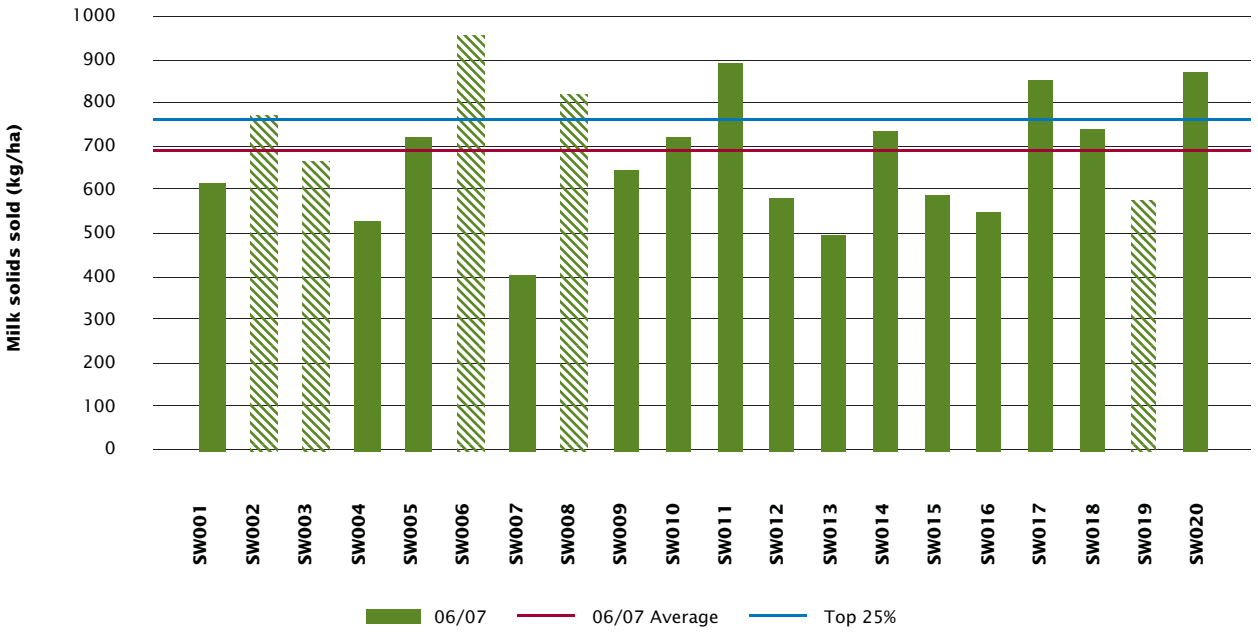
FIGURE 26: GROSS FARM INCOME PER HECTARE – SOUTH WEST



MILK SOLIDS PRODUCTION

Figures 26 and 27 show the very strong correlation between income and milk solids sold per hectare. However, variation between figures 26 and 27 as a result of livestock trading and feed inventory can be seen. The top 25% of farms in the South West produced an average 758kg MS /ha, marginally more than the whole of group average of 688kg MS /ha.

FIGURE 27: MILK SOLIDS SOLD PER HECTARE – SOUTH WEST



OVERHEAD COSTS

Figure 28 illustrates the variation in overhead costs per hectare. There was not a large difference in the average overhead cost for the South West group and the top 25% average despite the large variation between individual farms. Values ranged from $630 to $2,520 per hectare. Farms with the highest overhead costs had the highest imputed labour costs and also high depreciation costs, both of which are somewhat subjective. Appendix Table B6 shows the percentage breakdown of overhead costs. A description of the calculation for imputed labour can be found in Appendix E.

FIGURE 28: WHOLE FARM OVERHEAD COSTS PER HECTARE – SOUTH WEST

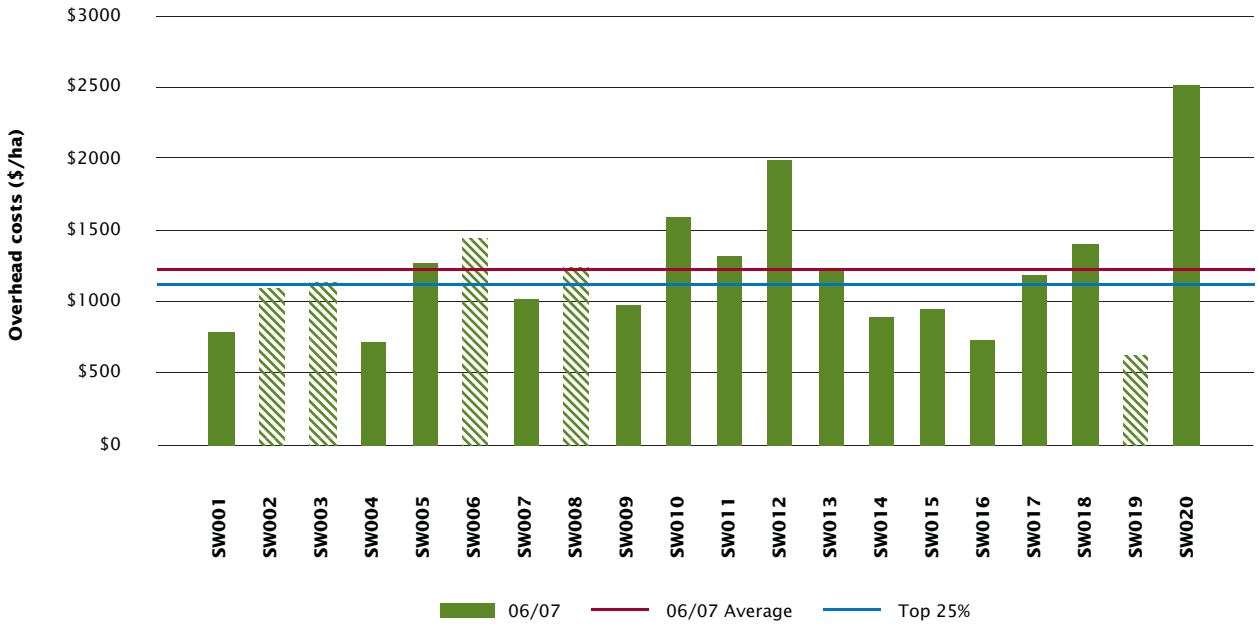


Table 5 shows that the top 25% of farms in the sample had equal or lower costs in all categories when compared to the average of the South West group. In particular the top 25% had purchased feed, inventory loss and agistment costs that were lower than the Q1 value and imputed labour costs at the lower end of the Q1 to Q3 range.

TABLE 5: COST OF PRODUCTION – SOUTH WEST

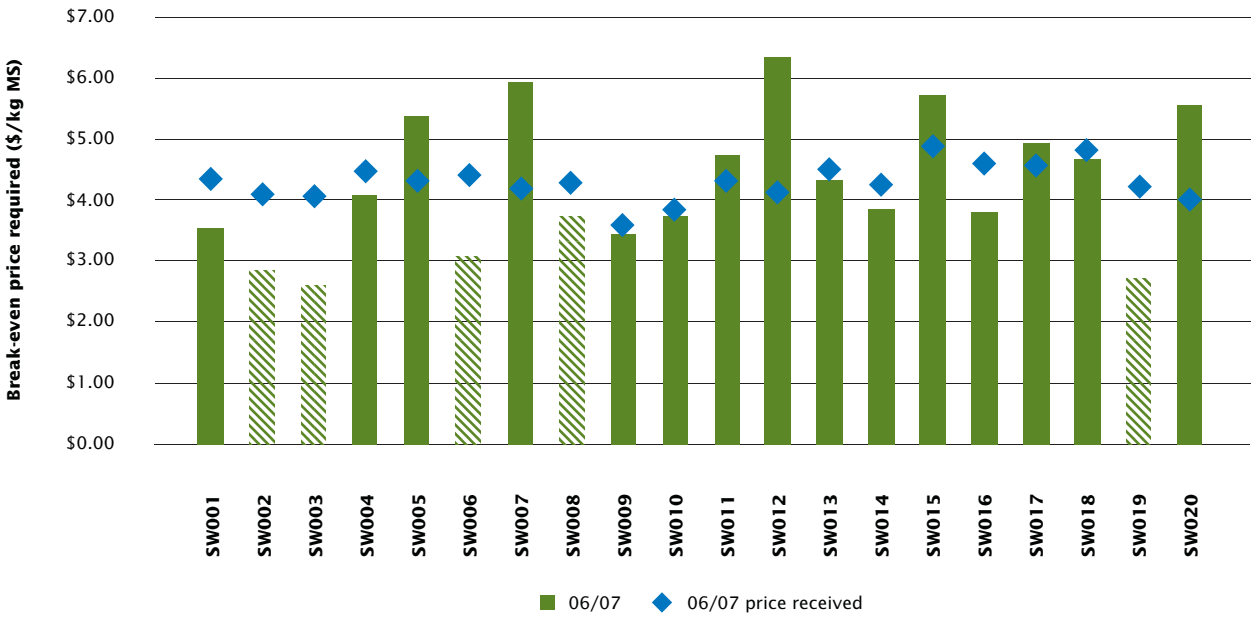
Farm costs ($/kg MS)	SW average	Q1 to Q3 range	Top 25% average
VARIABLE COSTS			
Herd costs	$0.19	$0.14 - $0.21	$0.19
Shed costs	$0.13	$0.10 - $0.15	$0.11
Purchased feed, inventory loss and agistment	$1.93	$1.44 - $2.46	$1.36
Home grown feed cost	$0.73	$0.58 - $0.96	$0.77
Livestock trading loss	$0.00	$0.00 – $0.00	$0.00
Total variable costs ($/kg MS)	$2.97	$2.41 - $3.32	$2.43
OVERHEAD COSTS			
Employed labour	$0.32	$0.17 - $0.41	$0.29
Rates	$0.03	$0.02 - $0.04	$0.03
Registration and insurance	$0.01	$0.01 - $0.01	$0.01
Farm insurance	$0.04	$0.02 - $0.06	$0.04
Repairs and maintenance	$0.25	$0.20 - $0.27	$0.26
Bank charges	$0.01	$0.01 - $0.02	$0.02
Other overheads	$0.12	$0.05 - $0.15	$0.10
Depreciation	$0.31	$0.14 - $0.34	$0.17
Imputed labour	$0.68	$0.43 - $0.83	$0.52
Total overhead costs ($/kg MS)	$1.78	$1.39 - $1.98	$1.45
Total cost of production ($/kg MS)	$4.75	$4.02 - $5.33	$3.87

BREAK-EVEN PRICE REQUIRED

The break-even price required per kilogram of milk solids sold is calculated as the cost of production less any livestock trading profit or increase in feed inventory. Figure 29 shows that the break-even price required varied from $2.60 per kg MS to $6.40 per kg MS in the South West. Farms with higher break-even price required generally had either higher overhead costs or relatively low production to spread these cost over. Low feed costs and larger than average production levels to dilute overhead costs where common characteristics of those farms with a low break-even price required. Data on feed usage for the South West is presented at the end of this section.

The difference between the price received and the break-even price required is the operating profit per kilogram of milk solids sold.

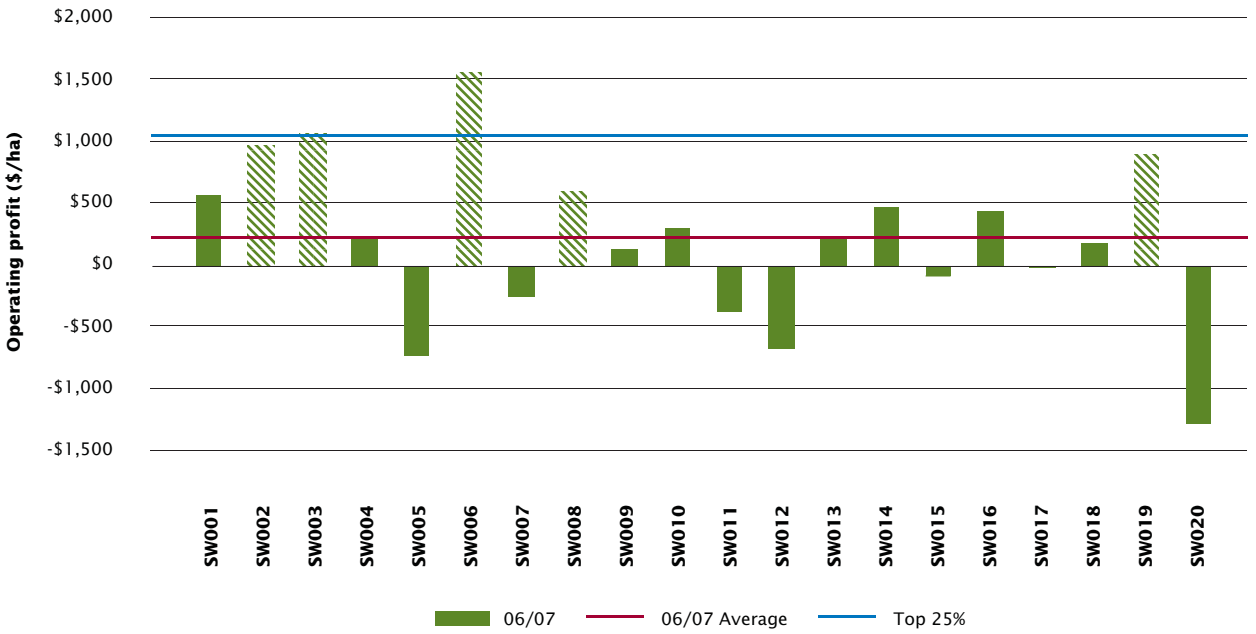
FIGURE 29: BREAK-EVEN PRICE REQUIRED PER KILOGRAM OF MILK SOLIDS SOLD – SOUTH WEST



OPERATING PROFIT

Operating profit is the gross income, less enterprise costs and overhead costs, including imputed labour cost. Figure 30 shows that 13 of the farms in the South West achieved a positive operating return for the 2006/07 year. The average for the top 25% of farms was approximately five times that of the entire South West group, at $1020/ha and $210/ha respectively.

FIGURE 30: WHOLE FARM OPERATING PROFIT PER HECTARE – SOUTH WEST



RETURN ON ASSETS AND EQUITY

Return on assets is the operating profit expressed as a percentage of total assets. It is an indicator of the overall earning power of total assets, irrespective of capital structure. Return on equity is the business profit expressed as a percentage of owner equity. It is a measure of the owner's rate of return on investment. Figures 31 and 32 were calculated excluding capital appreciation. For return on equity including capital appreciation, refer to Appendix Table B1.

Figure 31 shows that 13 of the 20 farms from the South West achieved a positive return on assets. Returns for the group range from -9.5% to 7.3%. The average return on assets for the group was 1.0%, while the average for the top 25% was 5.5%. The farms in the top 25% by operating profit per hectare do not necessarily have the highest return on assets because their farm business assets per hectare may have been assessed at higher value compared to other farms.

FIGURE 31: RETURN ON ASSETS – SOUTH WEST

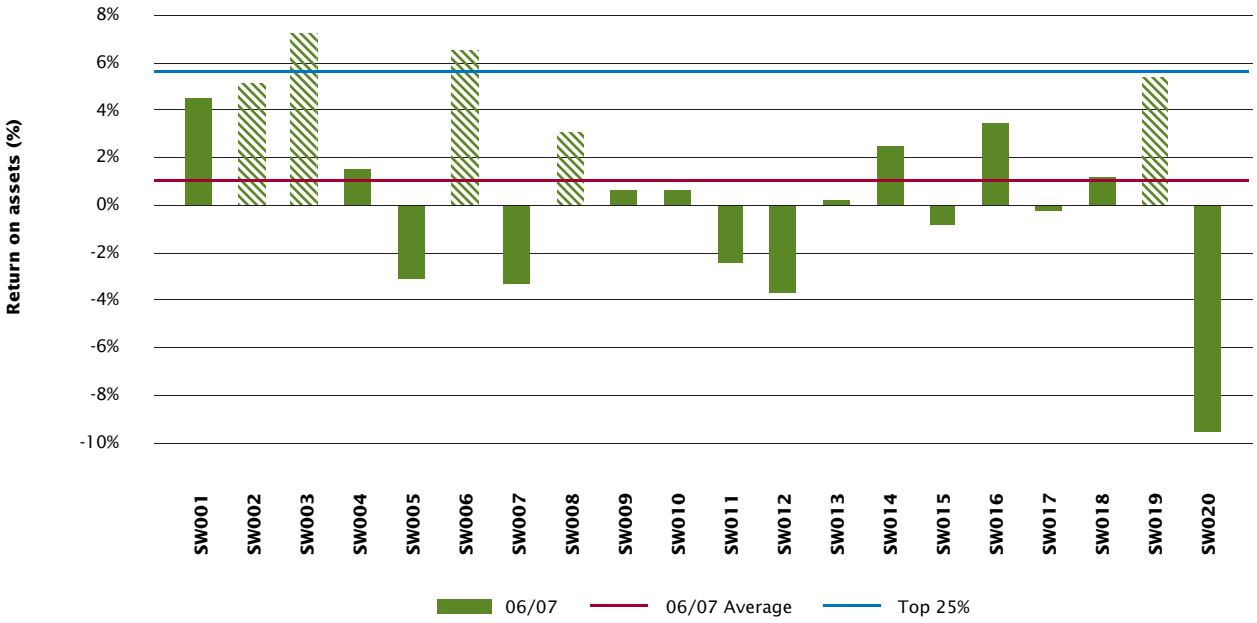
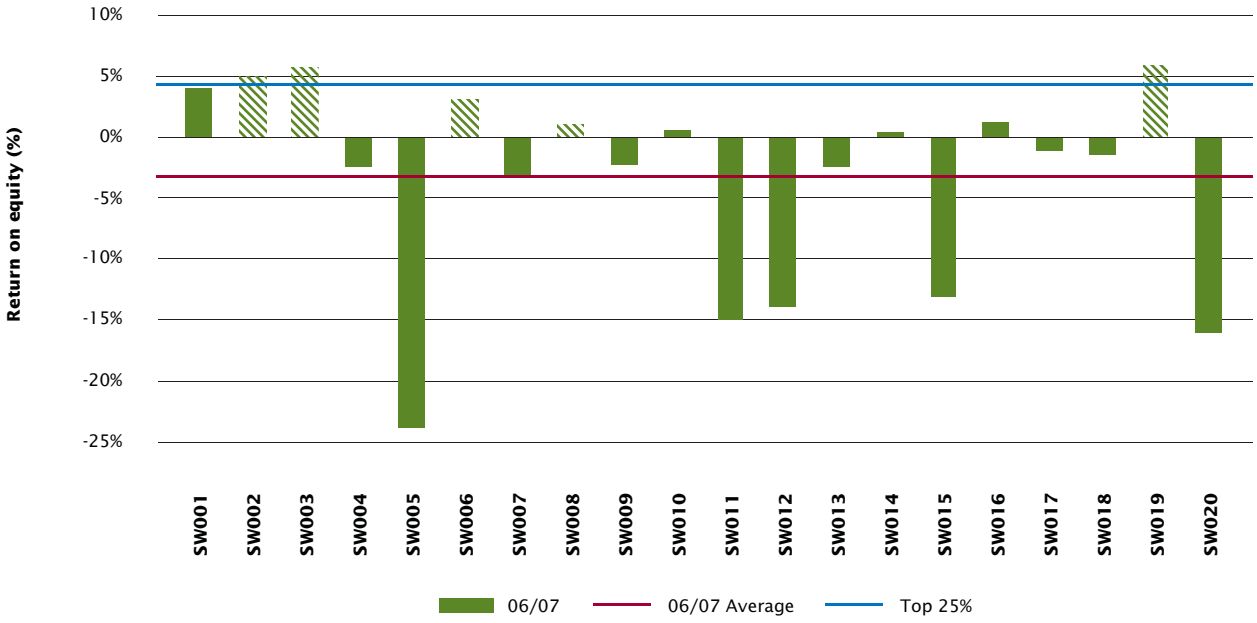


Figure 32 shows that 9 farms achieved a positive return on equity. The return on equity for the group ranged from 6% to -24% and averaged -3%. The average return on equity for the top 25% was 4%. Only 1 farm had a return on equity greater than its return on assets.

A decrease between return on assets and return on equity is the result of interest or lease repayments as a percent of operating profit being greater than return to assets.

FIGURE 32: RETURN ON EQUITY – SOUTH WEST



FEED & FERTILISER

FEED CONSUMPTION

Feed data was collected on a whole farm basis as determining which feeds went to which class of stock would have made the data collection process too difficult on many farms. Figure 33 shows the relative contribution of each feed type to the ME consumption on the farm. It can be seen that for 8 of the 20 farms grazed pasture contributed less than half of the ME consumed on farm in 2006/07.

FIGURE 33: SOURCES OF WHOLE FARM METABOLISABLE ENERGY – SOUTH WEST

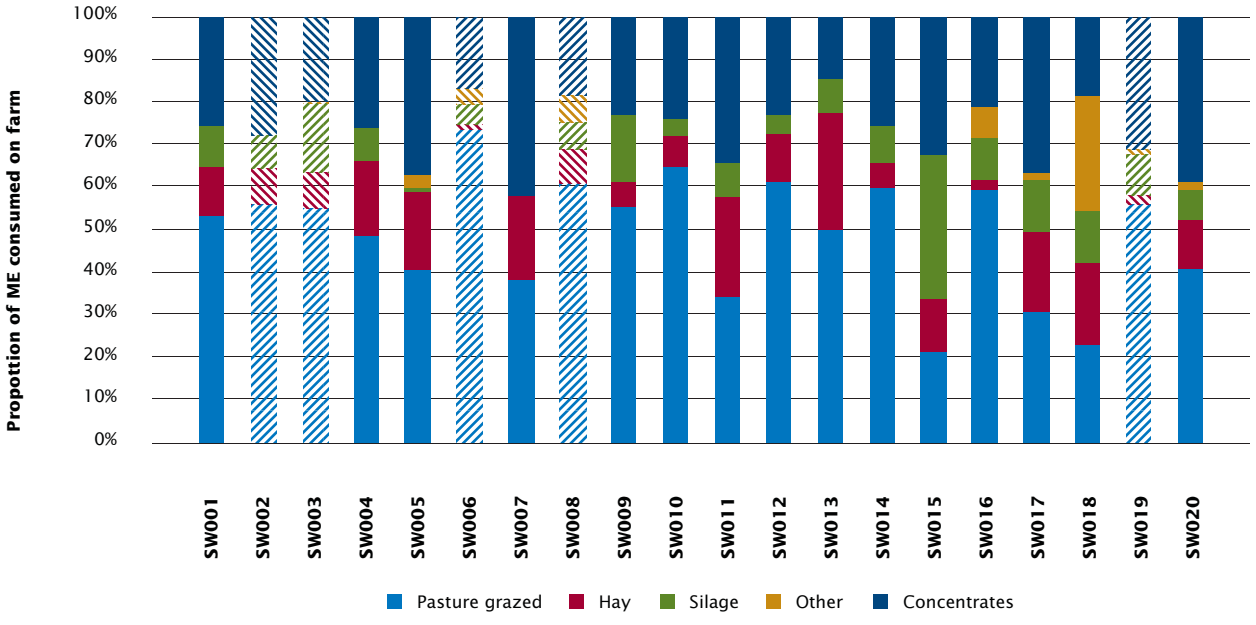
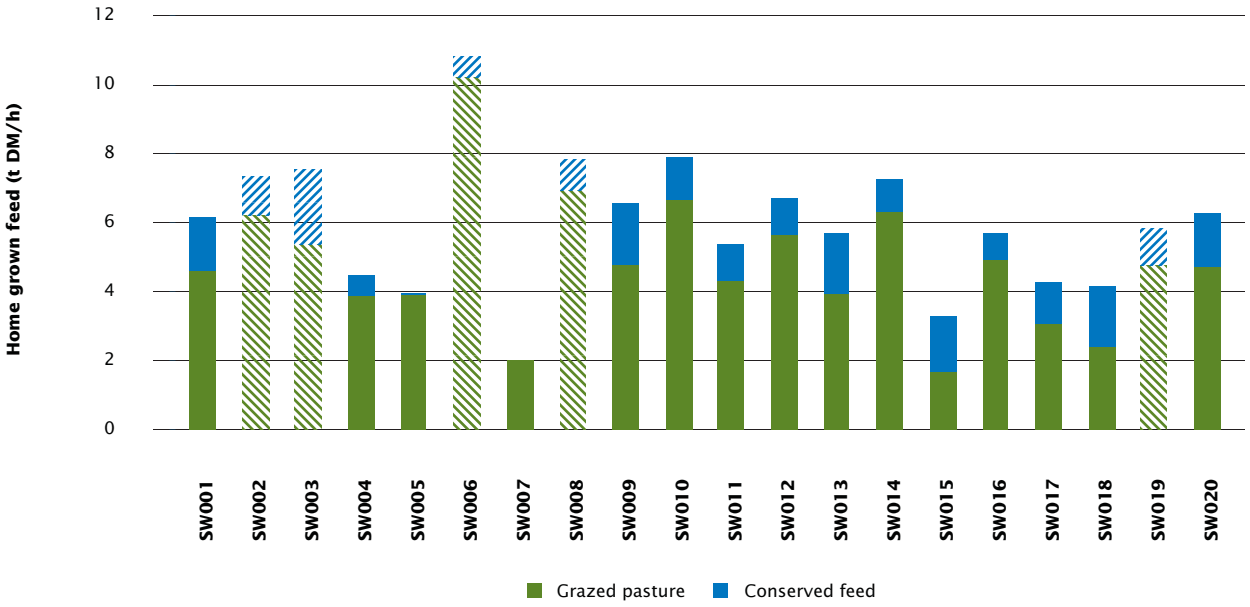


Figure 34 shows the estimated home grown feed production per hectare for farms in the South West. The range is very large, from over 10t/ha down to about 2t/ha. Grazed pasture consumption is estimated by using a back calculation method. There can be a number of sources of error in this method including incorrect estimation of liveweight, amounts of fodder and concentrates fed, energy content of fodder and concentrate, energy content of pasture, wastage of feed and associative effects of feeds. Comparing pasture consumption estimated using the back calculation method between farms can lead to incorrect conclusions due to errors in each farms estimate and it is best to compare pasture consumption on the same farm over time using the same method of estimation. More details on how pasture consumption was calculated can be found in Appendix E.

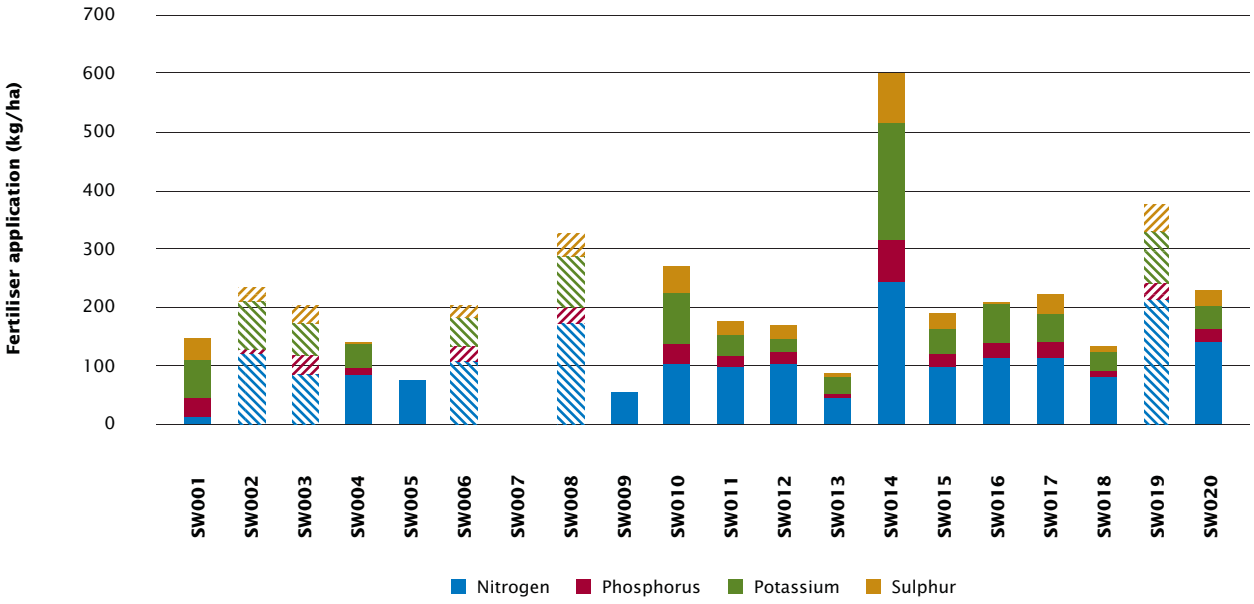
FIGURE 34: ESTIMATED TONNES OF HOME GROWN FEED PRODUCED PER HECTARE– SOUTH WEST



FERTILISER APPLICATION

Figures 34 and 35 do not exhibit as strong a relationship as may be expected between fertiliser application and estimated pasture growth. Figure 11 in Part 1 showed that these values were high as compared to the other regions. Extremely high values may be the result of soil improvement strategies or fodder crops.

FIGURE 35: FERTILISER APPLICATION PER HECTARE – SOUTH WEST

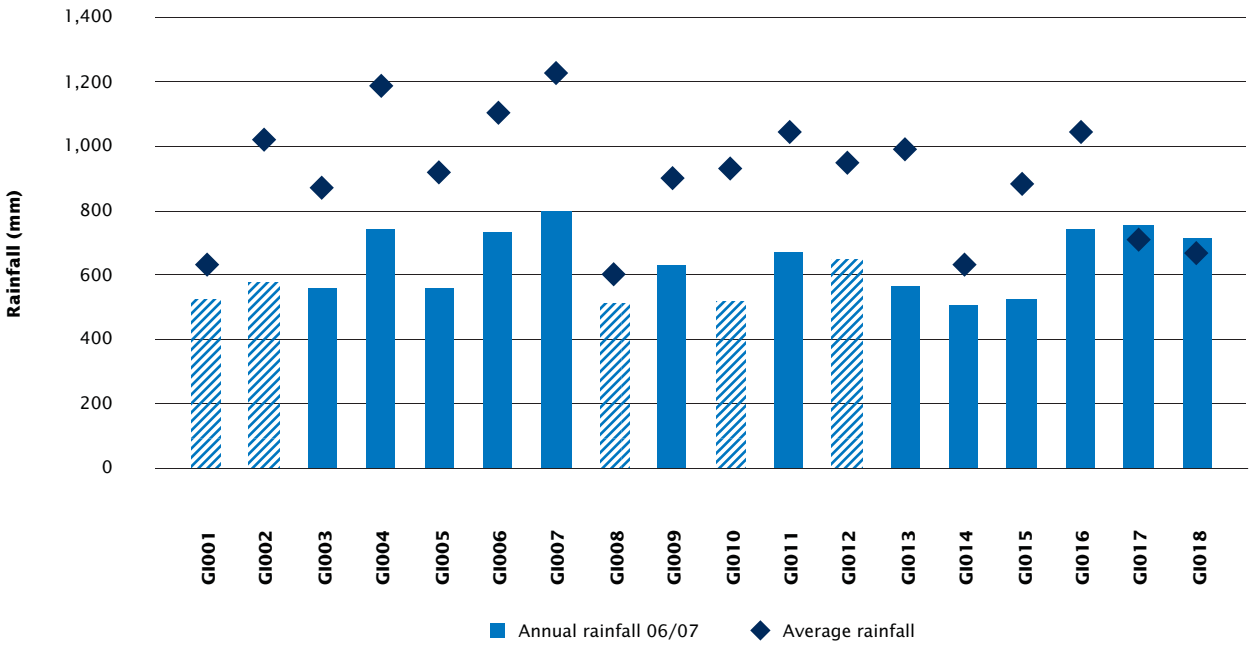


PART FOUR: GIPPSLAND

Farms ranked in the top 25% by operating profit per hectare are shown as the striped bars in all graphs.
Please refer to page 2 for notes on the presentation of data.

2006/07 SEASONAL CONDITIONS

FIGURE 36: 2006/07 ANNUAL RAINFALL AND LONG TERM AVERAGE RAINFALL – GIPPSLAND



Much like the rest of the state, Gippsland farms experienced a testing 2006/07 production year. Some of the individual totals in figure 36 will have been pushed up by the extreme rainfall event which occurred in the final week of June 2007. The monthly rainfall graph presented in Part 1 goes some way to describing the significant size of this event. This graph also shows that the rainfall totals during spring were well down, contributing to the failure of the spring season.

WHOLE FARM ANALYSIS

Table 6 presents some key whole farm physical parameters for the Gippsland group in 2006/07. The Q1-Q3 range shows the band in which the middle 50% of farms for each parameter sit.

The averages of the top 25% of farms ranked on operating profit per hectare were generally within the bounds of the Q1-Q3 range. The only two parameters in which they were above the Q3 value were kilograms of milk solids sold per cow and home grown feed as a percent of metabolisable energy (ME) consumed. Compared to the average for all Gippsland participants, the top 25% managed a smaller useable area and had a lower average rainfall during the year.

TABLE 6: FARM PHYSICAL DATA – GIPPSLAND

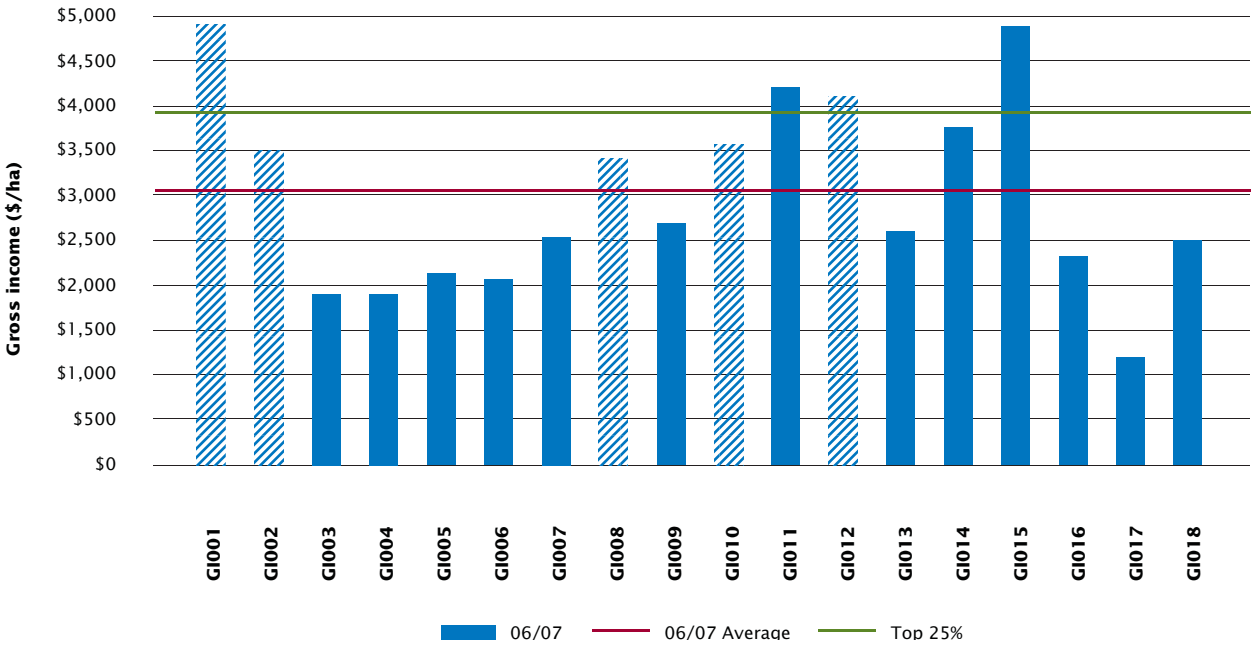
Farm Physical Parameters	Gippsland average	Q1 to Q3 range	Top 25% average
Annual rainfall 06/07	630	537 - 730	559
Water used (irrigation + rainfall) (mm/ha)	668	572 - 744	656
Total useable area (hectares)	191	99 - 231	178
Stocking rate (milking cows per useable hectares)	1.4	1.3 - 1.6	1.5
Milk sold (kg MS /ha)	579	431 - 747	720
Milk sold (kg MS /cow)	405	339 - 473	483
Home grown feed as % of ME consumed	71%	67% - 77%	80%
Labour efficiency (milking cows / labour unit)	68	50 – 87	67
Labour efficiency (kg MS / labour unit)	27,359	15,744 – 35,153	31,623

GROSS FARM INCOME

Gross farm income includes all farm income, whether that is income from milk sales, an increase in inventories of stock or feed or cash income from livestock trading. Figure 37 below shows the large variation in gross income per hectare between participants in Gippsland, ranging from $1200/ha up to $ 4920/ha.

The top 25% of farms averaged $3,910/ha, compared to the group average of $3,020. This higher income is strongly linked to both stocking rate and higher milk solids per cow. While the farms in the top 25% all had high income, they also display other strengths which resulted in them having the top whole farm operating profit in the group.

FIGURE 37: GROSS FARM INCOME PER HECTARE – GIPPSLAND

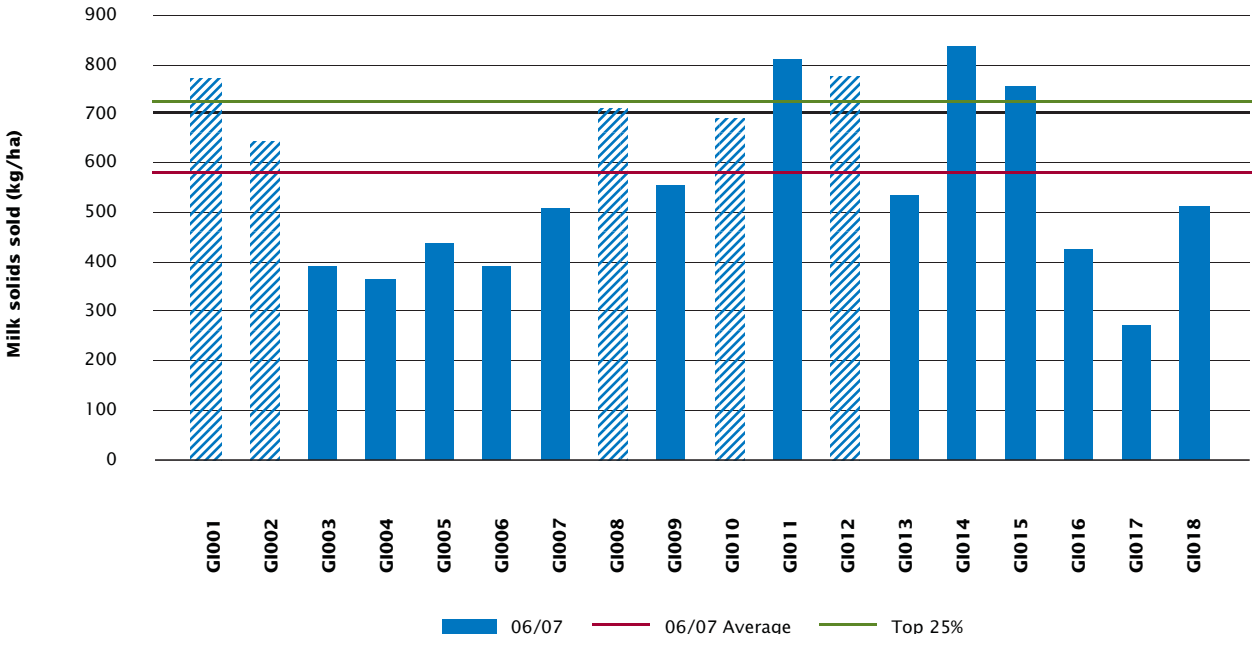


MILK SOLIDS PRODUCTION

The high individual and average milk solids sold per hectare of the top 25% of farms is seen clearly below. These farms averaged 720 kg MS/ha compared to the regional average of 580 kg MS/ha. There does not appear to be any strong link between milk solids sold per hectare with either the 2006/07 rainfall total or the long-term average for individual farms.

The across-farm differences between Figure 37 and Figure 38 are explained by differences in the milk price received and income received from other sources by the individual farms.

FIGURE 38: MILK SOLIDS SOLD PER HECTARE – GIPPSLAND



OVERHEAD COSTS

Figure 39 illustrates the overhead costs per hectare for Gippsland. This figure includes imputed labour and depreciation. Both these cost categories are very important costs to be considered in an economic analysis of a business, but can be somewhat subjective given their methods of calculation. Imputed labour was the major overhead cost, accounting for 46% of overhead costs in the top 25% and 56% in the regional average. For a detailed explanation of how imputed labour is calculated, refer to Appendix E.

There was a broad range of total overhead costs in Gippsland during 2006/07, with the highest value of $2,370/ha being over three times greater than the lowest value of $750/ha.

FIGURE 39: WHOLE FARM OVERHEAD COSTS PER HECTARE – GIPPSLAND

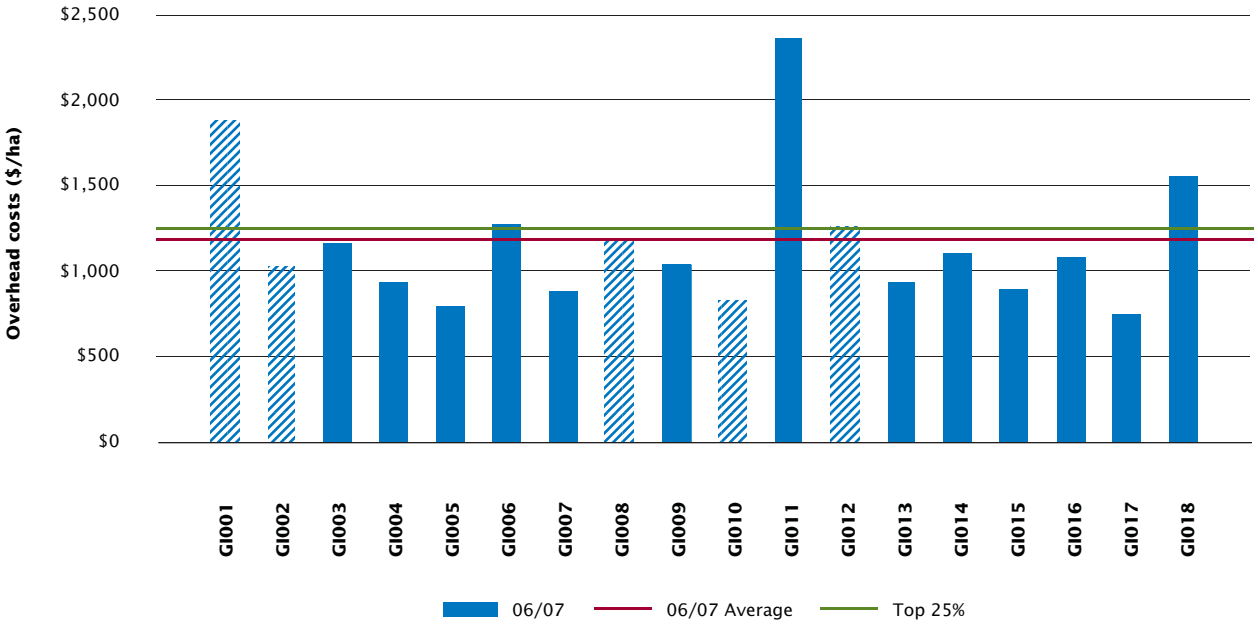


Table 7 presents both variable and overhead costs per kilogram of milk solids sold to give the total cost of production. The cost of purchased feed, feed inventory loss and agistment was the most significant variable cost across the region. It was also the major difference in total variable costs between the regional average and the top 25%. The top 25% invested more money into producing home grown feed and relied less on purchased feed and agistment on a per kilogram of milk solids sold basis. Appendix C3 gives a breakdown of each farm's variable costs.

TABLE 7: COST OF PRODUCTION – GIPPSLAND

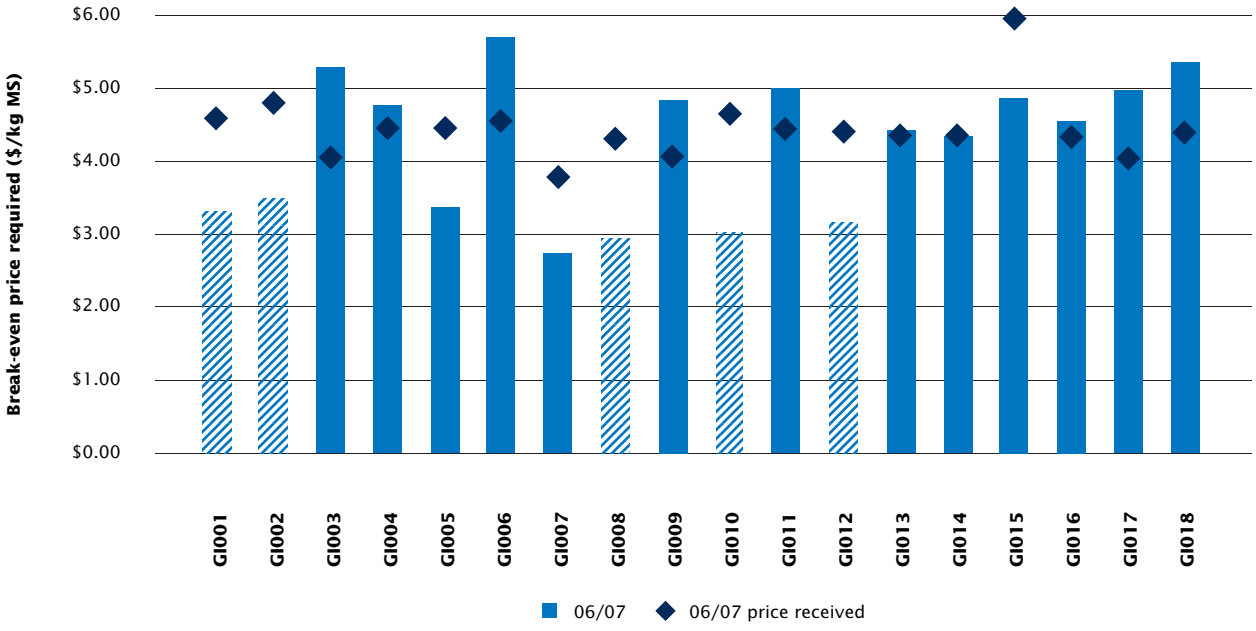
Farm costs ($/kg MS)	Gippsland average	Q1 to Q3 range	Top 25% average
VARIABLE COSTS			
Herd costs	$0.23	$0.15 - $0.31	$0.27
Shed costs	$0.15	$0.12 - $0.17	$0.15
Purchased feed, inventory loss and agistment	$1.68	$1.15 - $2.12	$1.02
Home grown feed cost	$0.67	$0.41 - $0.84	$0.88
Livestock trading loss	$0.00	$0.00 – $0.00	$0.00
Total variable costs ($/kg MS)	$2.72	$2.36 - $3.06	$2.31
OVERHEAD COSTS			
Employed labour	$0.21	$0.01 - $0.34	$0.23
Rates	$0.06	$0.04 - $0.06	$0.06
Registration and insurance	$0.02	$0.01 - $0.03	$0.02
Farm insurance	$0.04	$0.03 – $0.06	$0.04
Repairs and maintenance	$0.25	$0.14 - $0.33	$0.27
Bank charges	$0.01	$0.00 - $0.01	$0.01
Other overheads	$0.10	$0.07 - $0.11	$0.07
Depreciation	$0.24	$0.08 - $0.20	$0.23
Imputed labour	$1.19	$0.79 - $1.54	$0.78
Total overhead cost ($/kg MS)	$2.13	$1.64 - $2.71	$1.70
Total cost of production ($/kg MS)	$4.85	$3.98 - $5.62	$4.02

BREAK-EVEN PRICE REQUIRED

The break-even price required for milk is calculated as the cost of production per kilogram of milk solids sold less any livestock trading profit or increase in feed inventory. By accounting for all costs and other sources of income, the break-even price required allows for a direct comparison to the price received for the main output of the business, being milk. The difference between the break-even price required and the price received is the operating profit per unit.

Figure 40 shows that the break-even price required varies from $2.75 per kg MS to $5.72 per kg MS in Gippsland. Strong production as well as very low feed costs and strong livestock trading profits and feed inventory gains were the major influencing factors in these calculations. Data on feed usage for Gippsland is presented at the end of this section.

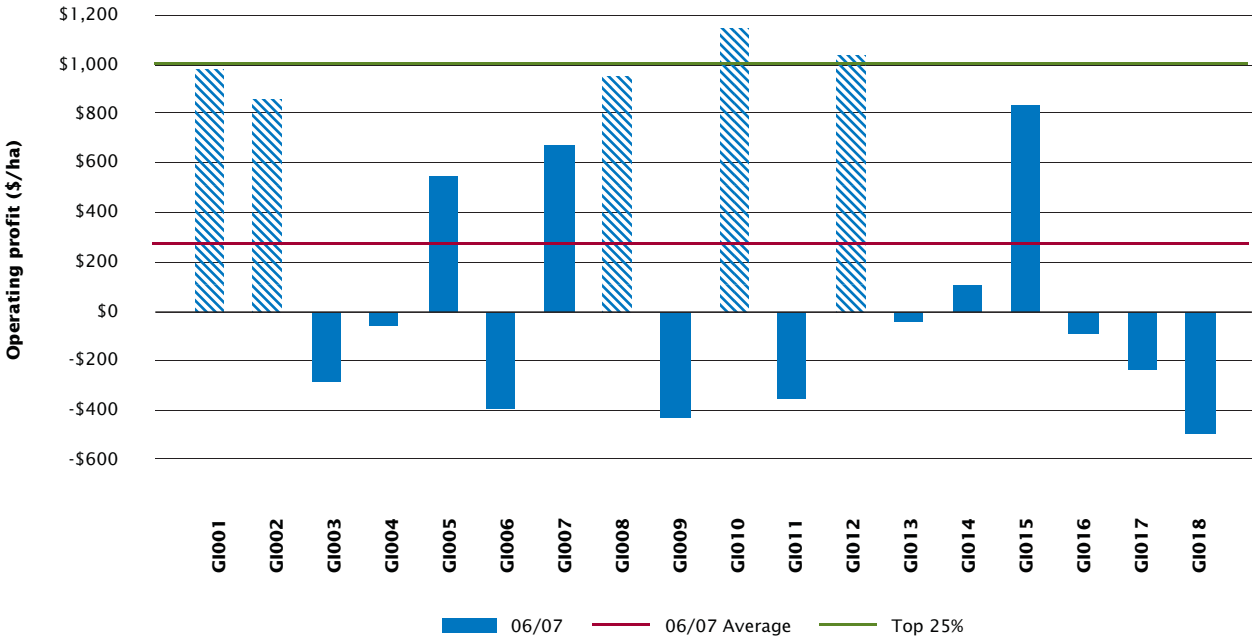
FIGURE 40: BREAK-EVEN PRICE REQUIRED PER KILOGRAM OF MILK SOLIDS SOLD – GIPPSLAND



OPERATING PROFIT

Operating profit is the gross income, less enterprise costs and overhead costs including imputed labour cost. During 2006/07, half of the Gippsland farms achieved a positive operating return. The top 25% achieved an average operating profit of $1000/ha, significantly more than the regional average of $270/ha.

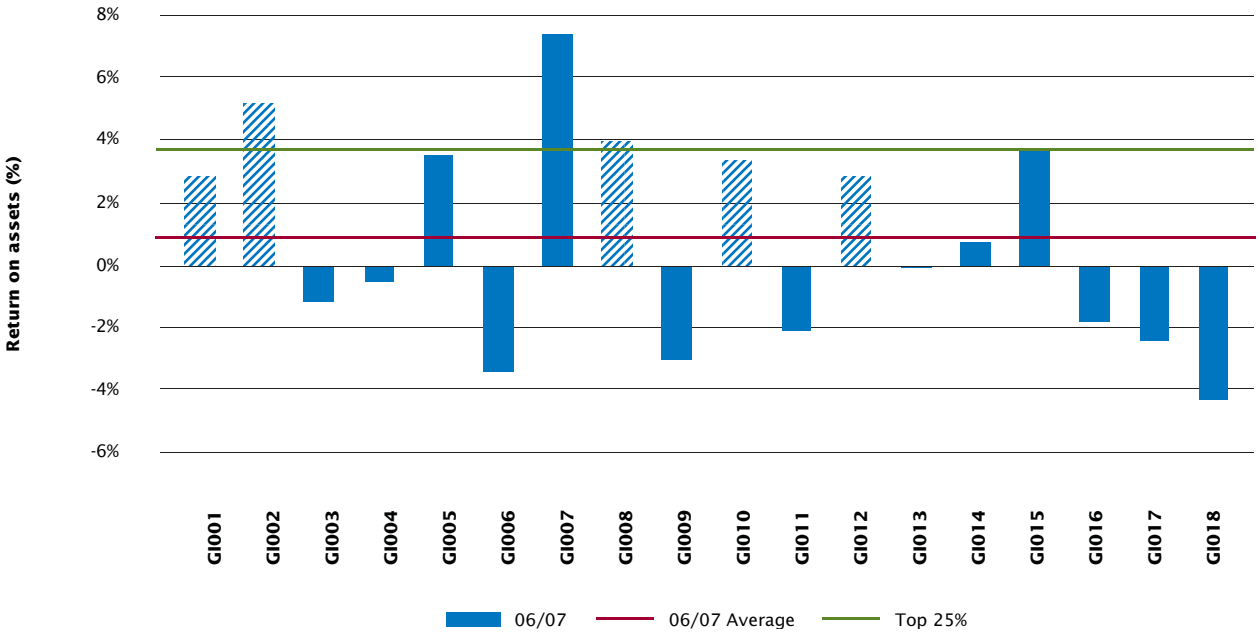
FIGURE 41: WHOLE FARM OPERATING PROFIT PER HECTARE – GIPPSLAND



RETURN ON ASSETS AND EQUITY

Return on assets is the operating profit expressed as a percentage of total assets. It is an indicator of the earning power of total assets, irrespective of capital structure. Return on equity is the business profit (operating profit less interest and lease payments) expressed as a percentage of owner equity. It is a measure of the owner's rate of return on investment.

FIGURE 42: RETURN ON ASSETS – GIPPSLAND

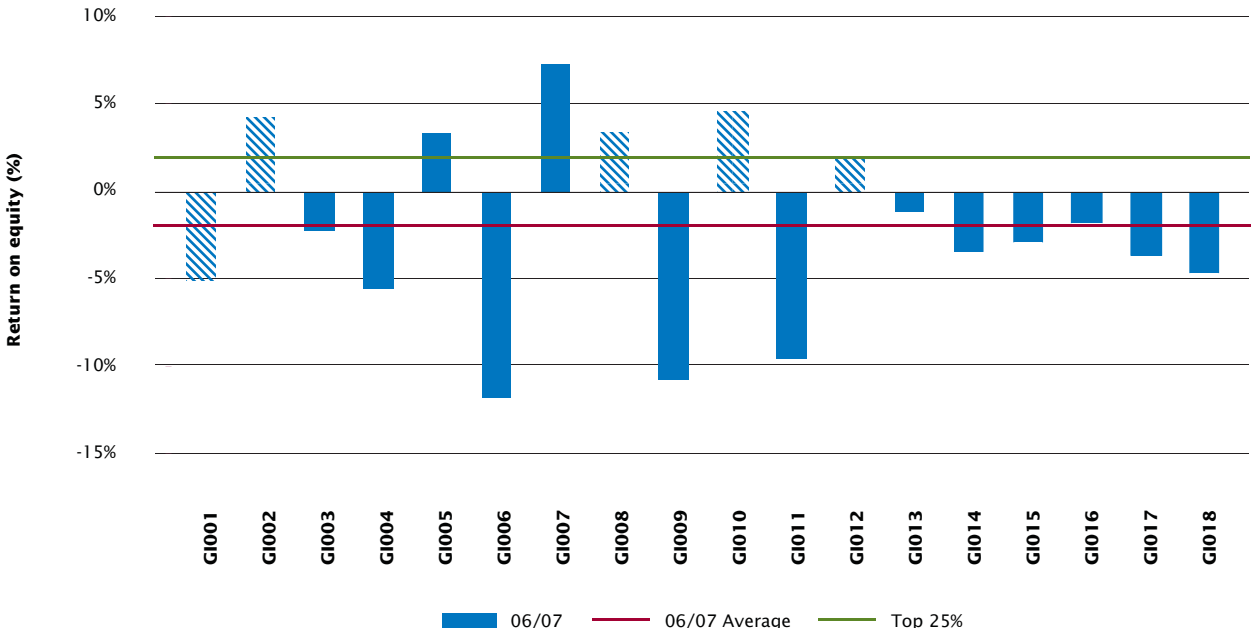


Return on assets will reflect operating profit, with differences between farms being explained by the variation in the valuation of the total assets managed. These results are a reflection of the total economic result on the farm. In tough times, people will have reduced cash drawings for living expenses, so the above results may be worse than the actual results on farm. Return on assets in Gippsland ranged from -4.3% to 7.4% during 2006/07.

A positive return on assets becomes a negative return on equity when total interest and lease payments exceed the operating profit. When the percentage increases, it is the result of a higher return on assets than the interest or lease rate on the loan principle value.

Gippsland had mixed results for return on equity, with only six of the eighteen farms achieving a positive value. Values ranged from -11.8% to 7.3%. Return on equity does not include any increased wealth from appreciation in the value of the land, which most of these farms will have experienced on a significant level during the year. These values can be seen in Appendix C1.

FIGURE 43: RETURN ON EQUITY – GIPPSLAND

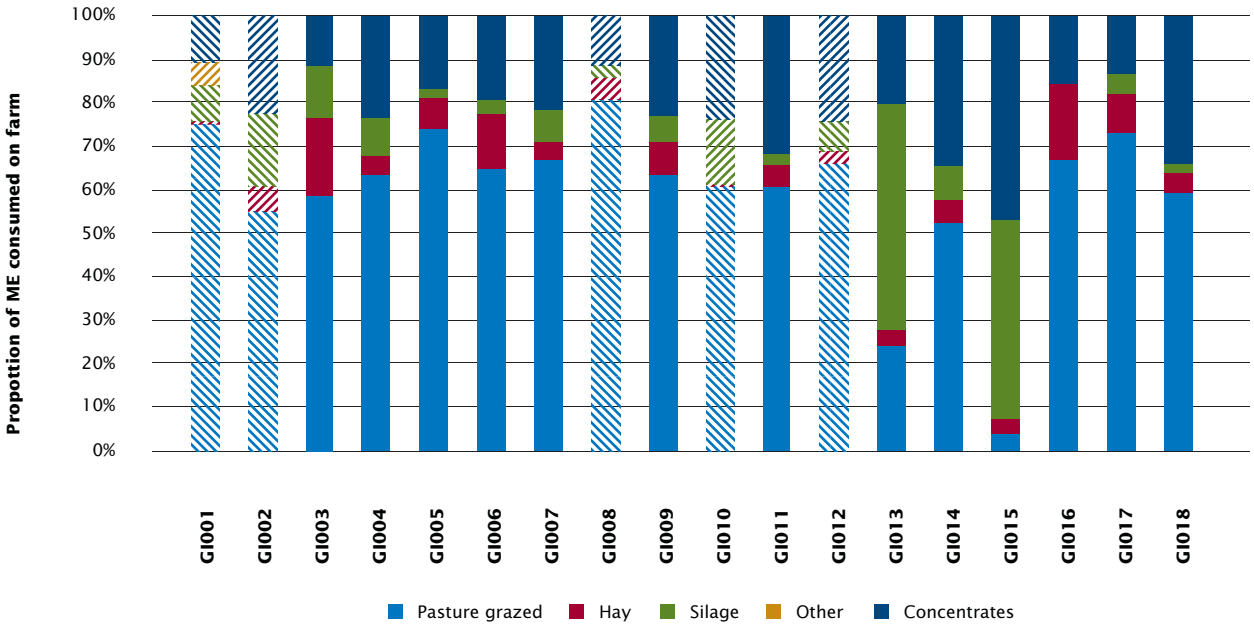


FEED & FERTILISER

FEED CONSUMPTION

Gippsland dairy farming systems were predominantly grass based, with 16 of 18 farms getting over half their energy requirement as grazed pasture and all participants getting over half their energy requirements from home grown feed. Pasture consumption is calculated as the gap between the calculated total energy required on farm for all stock classes and the energy provided from concentrates, silage, hay and other sources. Refer to the Appendix E for further explanation.

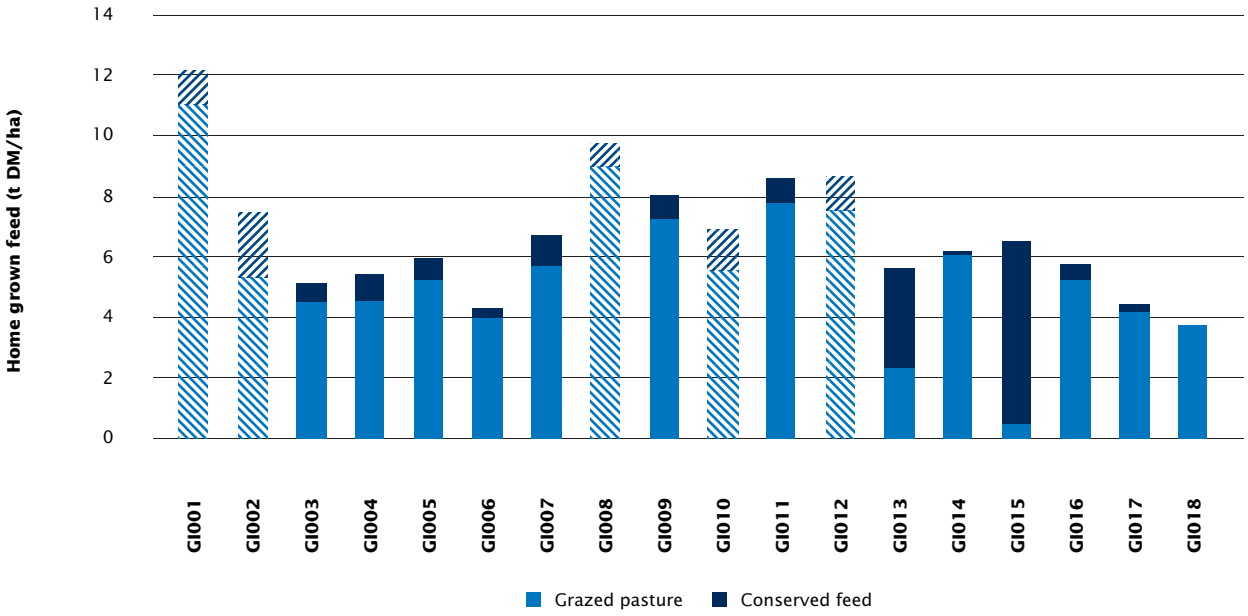
FIGURE 44: SOURCES OF WHOLE FARM METABOLISABLE ENERGY – GIPPSLAND



Estimated levels of home grown feed in Gippsland ranged from 3.7 tonnes of dry matter per hectare up to 12.2 tonnes per hectare. There does not appear to be a strong relationship with the rainfall data in Figure 36. The top 25% of farms all had high estimates of home grown feed produced, with values of 7.0 tn DM/ha or more.

There can be a number of sources of error in this method including incorrect estimation of liveweight, amounts of fodder and concentrates fed, energy content of fodder and concentrate, energy content of pasture, wastage of feed and associative effects of feeds. Comparing pasture consumption estimated using the back calculation method between farms can lead to incorrect conclusions due errors in each farms estimate and it is best to compare pasture consumption on the same farm over time using the same method of estimation. More details on how pasture consumption was calculated can be found in Appendix E.

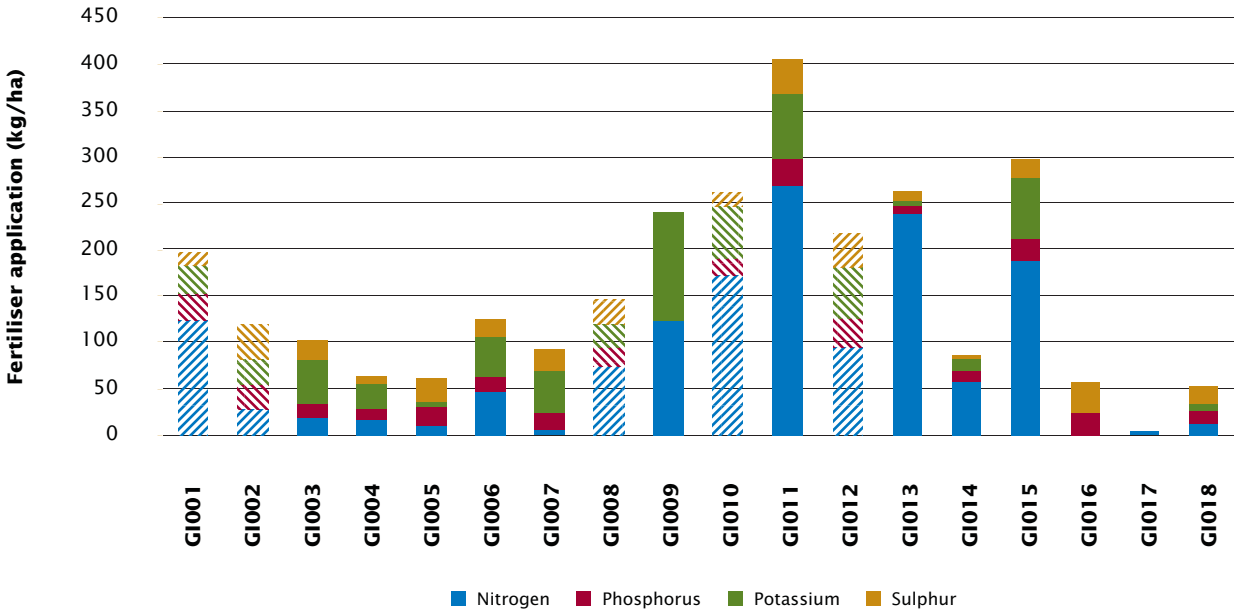
FIGURE 45: ESTIMATED TONNES OF HOME GROWN FEED PRODUCED PER HECTARE – GIPPSLAND



FERTILISER APPLICATION

The relationship between Figures 45 and 46, i.e. estimated tonnes of home growth feed and fertiliser application per hectare in Gippsland, is not strong. The high cost of fertiliser per tonne and the poor year will have influenced management decisions around fertiliser application, with many farms relying on nutrients in the soil to promote pasture growth. Conversely, the high cost and lack of availability of purchased feed may have made fertiliser an attractive option as an economical source of feed during the year, when there was adequate levels of moisture.

FIGURE 46: FERTILISER APPLICATION PER HECTARE – GIPPSLAND



PART FIVE:
BUSINESS CONFIDENCE SURVEY

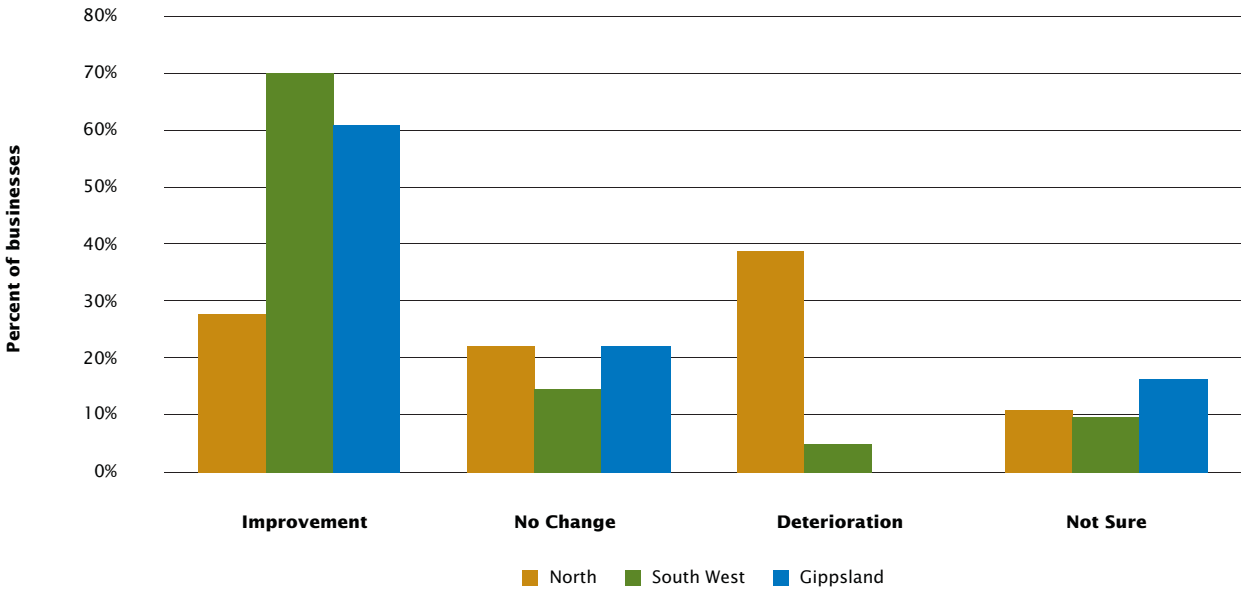
Responses to this business confidence survey where made in September 2007 with regard to the 2007/08 financial year.

EXPECTATIONS

EXPECTATIONS FOR BUSINESS RETURNS

Figure 47 shows that the majority of participant farms across Victoria expect there to be an improvement in farm business returns over the next 12 months. The North is not as confident as the other two regions, with the greatest number expecting a deterioration in their business returns. Responses to the survey were made with consideration of all aspects of farming, including climate and market conditions for all products bought and sold.

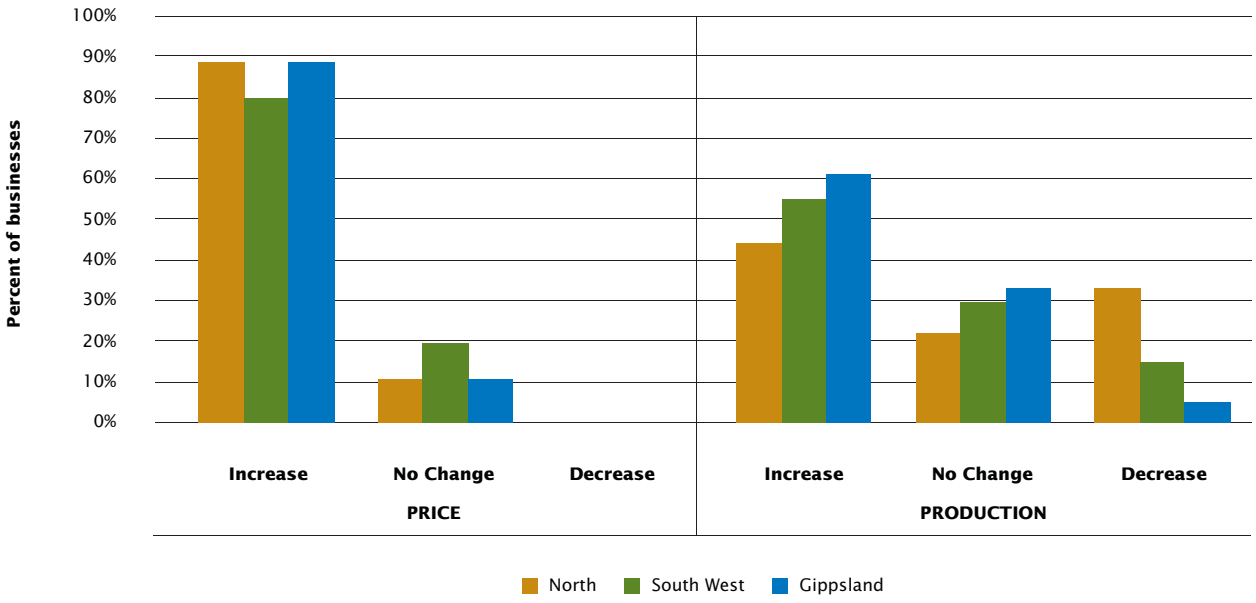
FIGURE 47: EXPECTED CHANGE TO FARM BUSINESS RETURNS IN 2007/08



PRICE AND PRODUCTION EXPECTATIONS - MILK

There is very high confidence throughout Victoria that milk prices will increase in 2007/08. Not one farm expected prices to decrease. Confidence was not as high with regard to the individual's expectations on their level of milk production. Again confidence was lowest in the North, where water availability is a major issue.

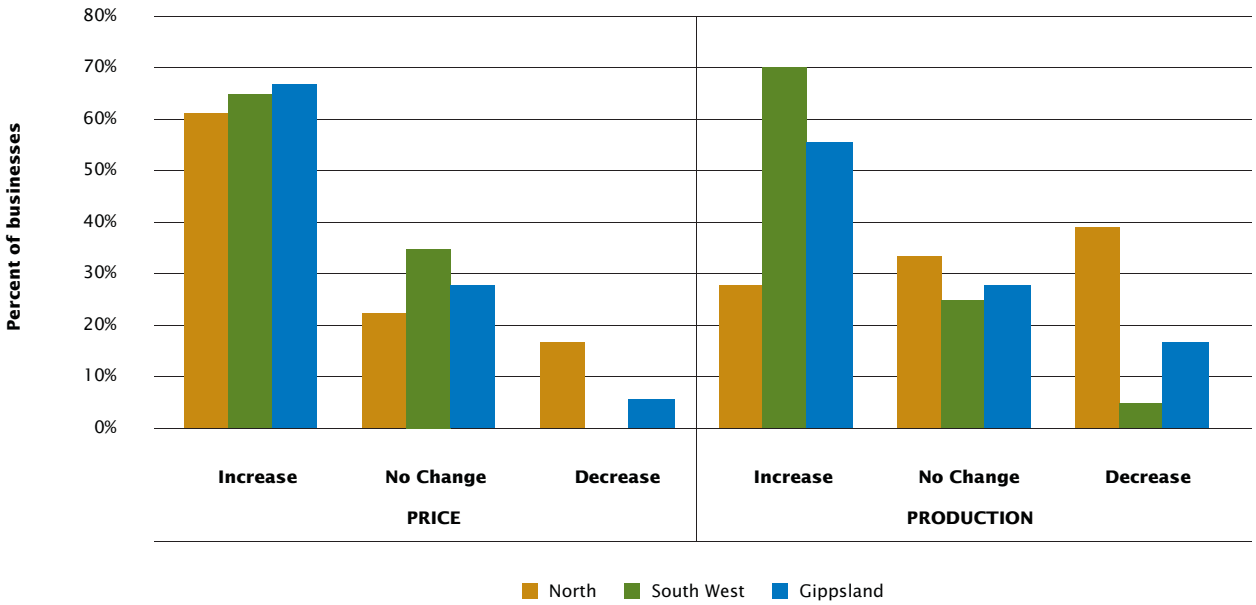
FIGURE 48: PRODUCER EXPECTATIONS OF PRICES AND PRODUCTION OF MILK IN 2007/08



PRICE AND PRODUCTION EXPECTATIONS - FODDER

Figure 49 shows that across the state there is an expected increase in the value of fodder in 2007/08. Farms in the South West and Gippsland are on the whole expecting their fodder production to either stay the same or increase. Increased production can negate the effects of a price increase if buying of fodder is reduced. The majority of farms in the North are expecting production of fodder to decrease, which is most likely aligned to expectations around availability of water.

FIGURE 49: PRODUCER EXPECTATIONS OF PRICES AND PRODUCTION OF FODDER IN 2007/08

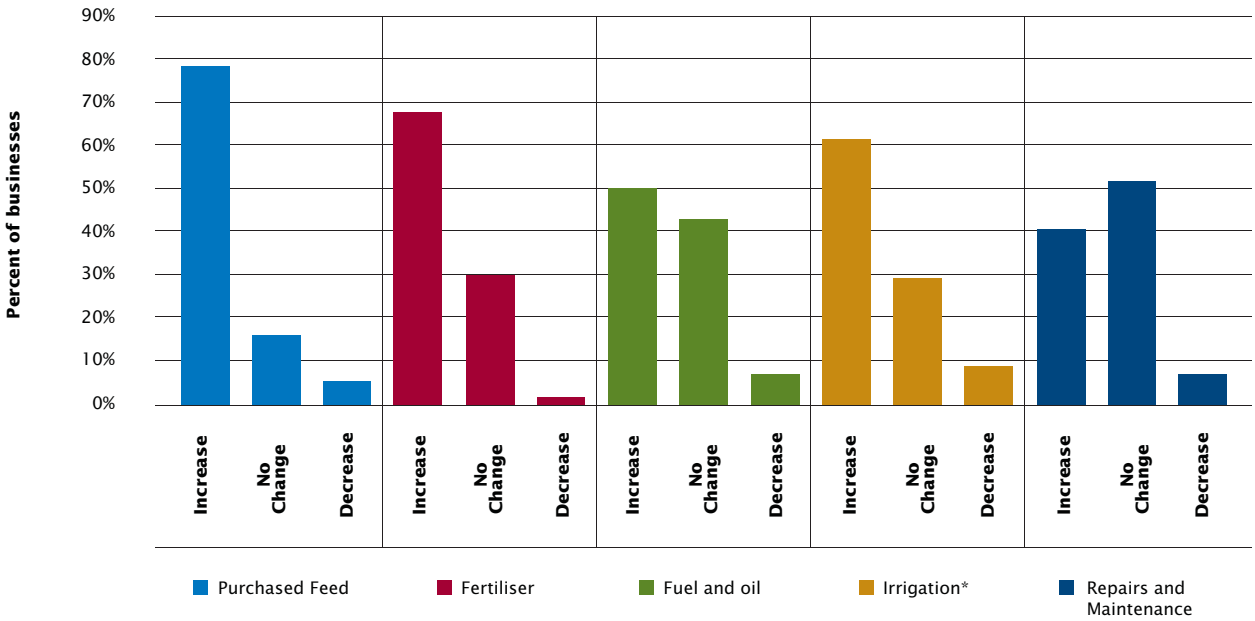


COST EXPECTATIONS

Data presented in Figure 50 is for all 56 participating farms, except for expectations on the cost of irrigation which is only for the 34 farms that have significant irrigation.

Figure 50 shows that the overwhelming expectation is that the cost of key inputs will increase in 2007/08. Expectation of a cost increase is particularly prominent in the major variable cost categories of purchased feed and fertiliser.

FIGURE 50: PRODUCER EXPECTATIONS OF COSTS FOR THE DAIRY INDUSTRY IN 2007/08



** Only includes 34 farms with irrigation*

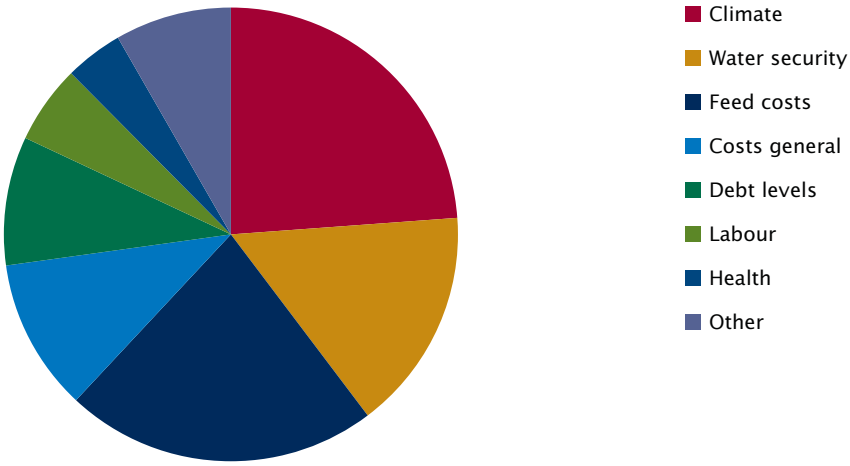
ISSUES AND INFORMATION

MAJOR ISSUES IN THE DAIRY INDUSTRY – THE NEXT 12 MONTHS

Figure 51 presents a summary of key issues over the next 12 months as identified by participating farms from across the state. There were 121 responses in total.

The responses strongly reflect the issues that farmers have faced over the last 12 months. The climate and access to water attracted 40% of the total responses. Rising costs accounted for 33% of the total responses, with cost of feed identified specifically 22% of the time. Extra debt incurred as a result of drought conditions was also a major concern, identified in 8% of responses.

FIGURE 51: MAJOR ISSUES FOR THE INDIVIDUAL BUSINESS – 12 MONTH OUTLOOK

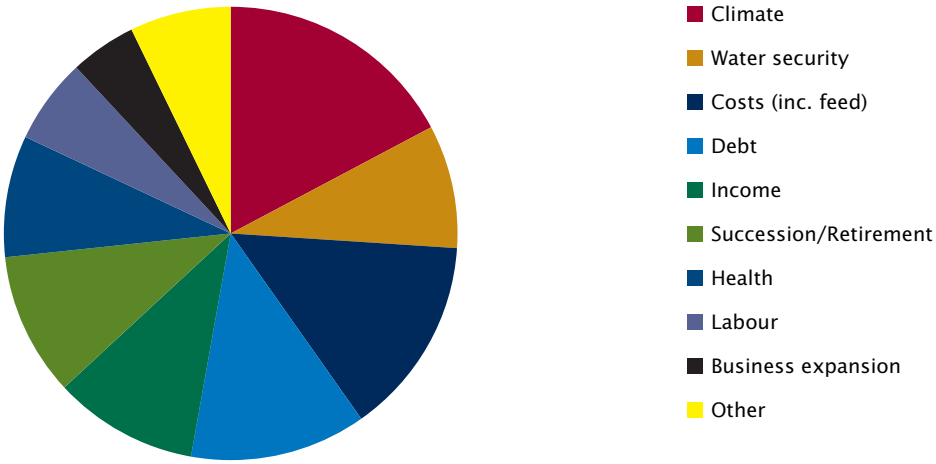


MAJOR ISSUES IN THE DAIRY INDUSTRY – THE NEXT 5 YEARS

Figure 52 presents a summary of issues facing the individual farmer over the next five years, as identified by participants across the state. There were a total of 127 responses.

Over the longer-term, many of the same issues identified as key for the next twelve months were recognised, with some other issues becoming more prominent. Climate change and water security remained the biggest issues, attracting a combined total of 26% of all responses. Costs contracted to 14% of total responses, while the issue of debt levels increased in significance, to 13%. Succession, retirement and health of the farmer all became more prominent, attracting a combined total of 19% of all responses.

FIGURE 52: MAJOR ISSUES FOR INDIVIDUAL THE BUSINESS – 5 YEAR OUTLOOK



OWNER / OPERATOR LABOUR AND HOLIDAYS

Health and labour issues were identified in 15% of all responses to what are the major issues the individual farmer faces over the next five years. While dairy farming is recognised as having high demands on labour, the tough operating conditions of the last 12 months will have put extra strain on farmer's labour and health.

Reponses showed that Gippsland farmers averaged 59 hours a week with 14 days holiday, while the South West and the North both stated that they worked an average of 65 hours a week and took 10 days holiday during 2006/07.

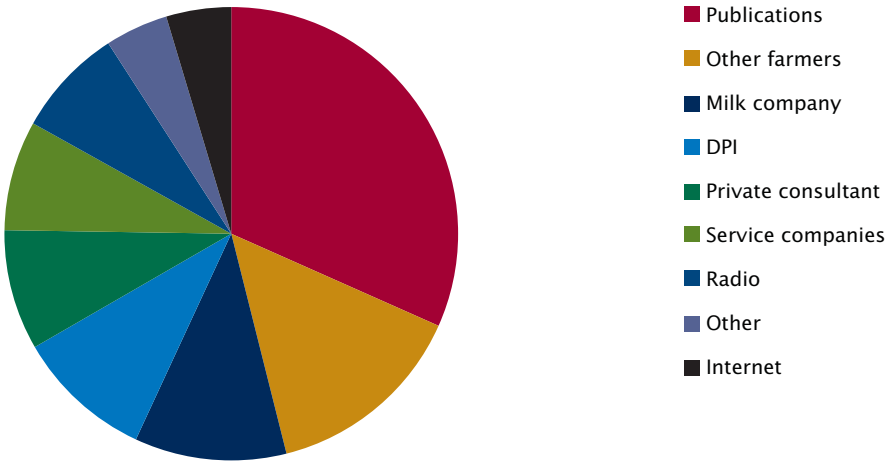
Twenty five of 56 farms identified that they had less than ten days of holidays during 2006/07, with 9 of the 25 stating that they had no holidays off the farm at all.

INFORMATION SOURCES

Figure 53 presents the summarised analysis of key information sources used by participating farms. There were 195 responses in total. This data does not reflect frequency of access to these information sources.

Publications include newspaper, magazines and newsletters from sources other than a milk company and represented 32% of the total responses. Other farmers including discussion groups were also a key source of information, identified in 14% of responses. Consultants, companies that service the dairy industry such as fertiliser or seed suppliers and the radio all attracted 8% of total responses. The internet was only identified as a top source of information 5% of the time. Milk companies and DPI attracted 11% and 10% of total responses respectively.

FIGURE 53: SOURCES OF INFORMATION 2006/07



PART SIX: GREENHOUSE

2006/07 GREENHOUSE GAS EMISSIONS

This data and the accompanying analysis is extracted from the model developed for the Australian National Greenhouse Gas Inventory method.

Carbon dioxide equivalents (CO_2-e) are used to standardise the different gases greenhouse potentials. The Global Warming Potential (GWP) is the index used to convert relevant non-carbon dioxide gases to a carbon dioxide equivalent by multiplying the quantity of the gas by its GWP. All data in this section is in CO_2- e tonnes.

The GWP for the three gases noted in this report are; 1 : 21 : 310 (CO_2 : CH_4 : N_2O). Therefore, one CO_2-e tonne is 47.6kg of methane (CH_4) and is only 3.2kg of nitrous oxide (N_2O).

Greenhouse gas emissions per tonne of milk solids produced ranged from 6.5tn/tn MS to 18.8tn /tn MS. The average level of emission was 10.3tn /tn MS. There is not a strong relationship to stocking rate. Further, there was no clear relationship between stocking rate and emissions per hectare.

Figure 54 only presents gross greenhouse gas emissions. Many of the participating farms had greatly reduced net greenhouse gas emissions as a result of extensive tree plantings.

Methane (CH_4) has been identified as the main greenhouse gas emitted from dairy farms. There are two main sources on farm; ruminant digestion and anaerobic digestion in effluent ponds. Methane produced from ruminant digestion is known as enteric methane. Enteric methane was the major source of emissions from all farms in this report, accounting for an average of around three quarters of all emissions.

The most efficient way of reducing enteric methane is by feeding high quality forages with increased digestibility. Ground or pelleted forages are more digestible than their unmodified form. Another simple and effective method of reducing enteric methane is to add unsaturated fatty acids such as linseed oil into the diet. Promising research continues into rumen modifiers and rumen microbe effects.

Methane from effluent ponds accounted for about 1% of total emissions.

Carbon dioxide (CO_2) is produced primarily from fossil fuel consumption as either electricity or petrochemicals. CO_2 accounted for 10% of total emissions per kilogram of milk solids. Levels of output were highly dependent on the source of electricity used, with all farms using Victorian brown coal. If renewable energy sources were economical, emissions from electricity could be cut by up to 98%.

Nitrous oxide (N_2O) is emitted in significant levels from four main sources on a dairy farm in the Australian National Greenhouse Gas Inventory; effluent ponds, fertiliser, soils, and excreta (dung and urine). N_2O from effluent ponds accounted for less than 0.1% of total emissions from participating farms. N_2O from fertiliser accounted for 6.5% of total emissions and 7.0% of emissions were as N_2O from excreta. N_2O emissions are greatest in warm, waterlogged soils with readily available nitrogen. Over application of nitrogen, high stocking intensity and flood irrigation are all potential causes of increased nitrogen loss as nitrous oxide.

While much of this information is currently more for interest sake given the uneconomical nature of many greenhouse gas emission reduction strategies, reducing greenhouse footprint of farms is gaining credence and may be a source of income for farms into the future.

Detailed information on the Australian National Greenhouse Gas Inventory, more details on sources of greenhouse gases on dairy farms and strategies for reducing greenhouse gas can be found on the Australian Greenhouse Office's website at www.greenhouse.gov.au .

FIGURE 54: 2006/07 GROSS GREENHOUSE GAS EMISSIONS PER TONNE OF MILK SOLIDS SOLD (CO_2 EQUIVALENT)