MEAT & LIVESTOCK AUSTRALIA

on farm

Economic Analysis of Sheep Production Systems

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Report prepared for MLA by:
Hassall & Associates Pty Ltd

Meat & Livestock Australia Limited
ABN: 39 081 678 364
Locked Bag 991
North Sydney NSW 2059

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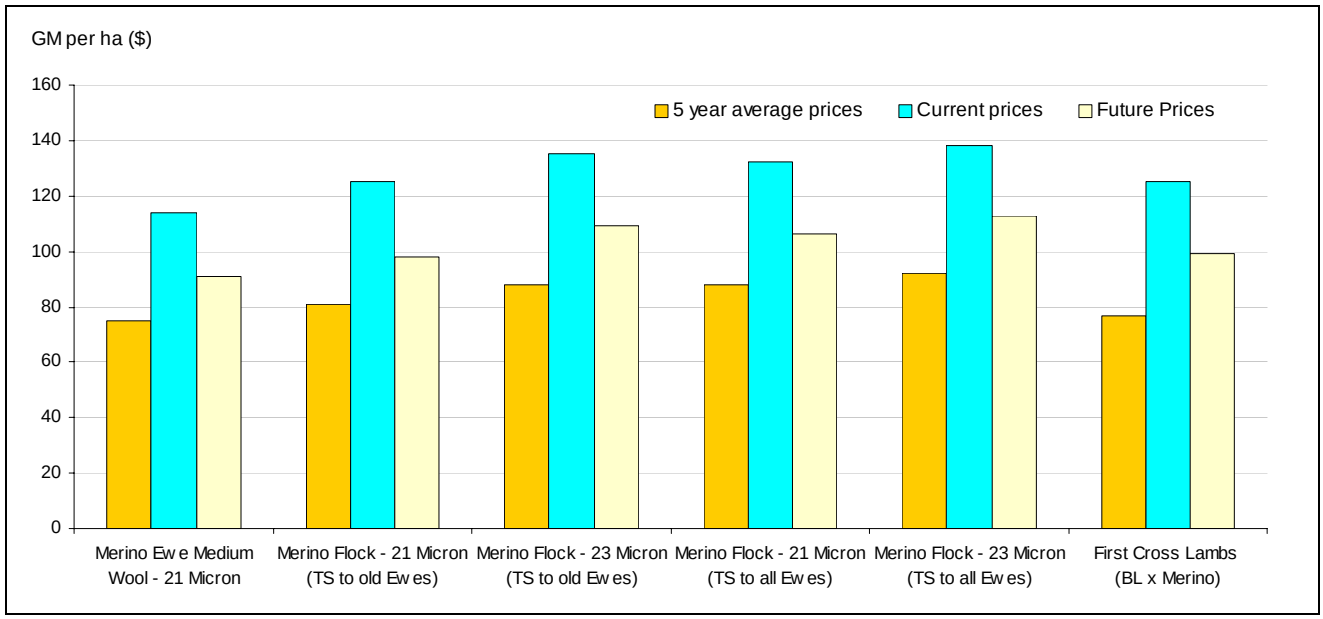
EXECUTIVE SUMMARY

Australian sheep producers in most production regions are questioning traditional assumptions about the most appropriate and profitable enterprise for their areas and production systems. Factors driving change include current price relativities for the three major products wool, lamb and mutton. Future price expectations, price volatility and production risk for alternative production systems, and potential for productivity gains in different enterprises are other factors which producers consider.

Hassall & Associates have estimated the profitability of 12 alternative sheep production systems using gross margin analysis. A range of scenarios and prices are analysed. These include current prices (average of the past 12 months), historical prices (the past 5 and 10 year averages), and predicted prices for the next 5 years (ABARE estimates). The analyses also examine the impact of achievable changes in productivity.

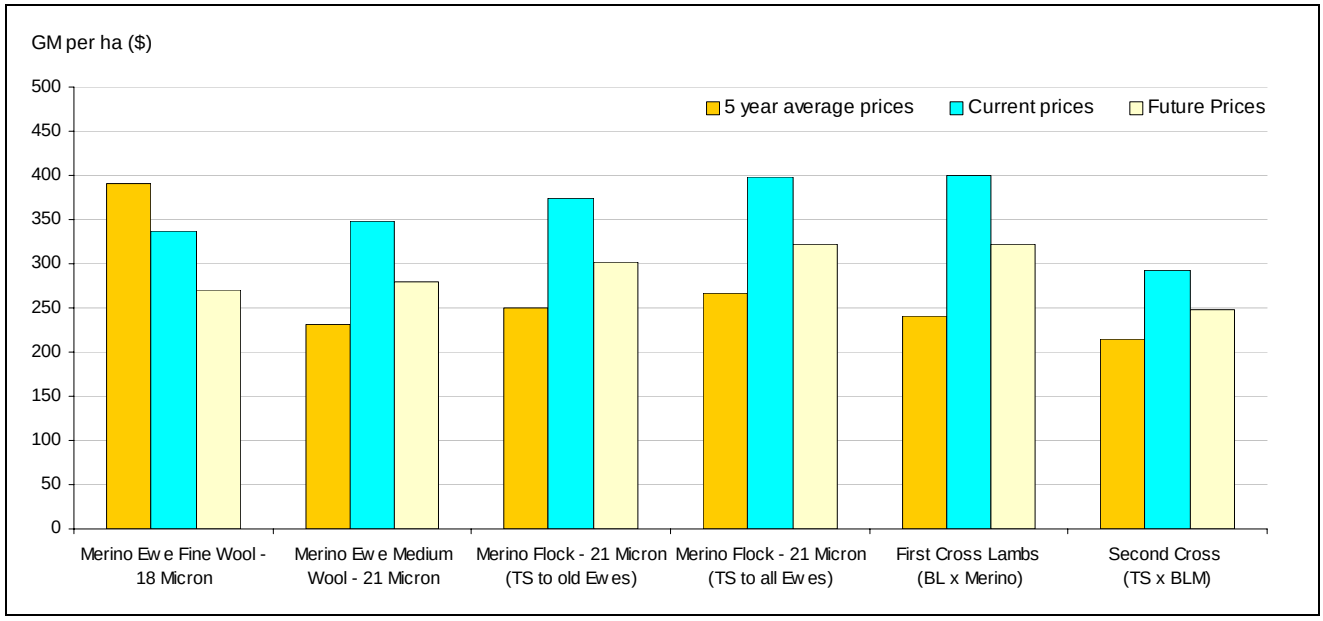
The following results are provided to highlight differences in profitability between sheep enterprise types under a range of commodity market conditions. The graph below provides estimated gross margin returns per hectare in the Wheat / Sheep Zone for 6 of the 12 enterprises. Broadly, we can see that the returns across enterprises are similar and the prices in the past year have provided higher returns than both the past 5 years and those predicted for the next 5 years.

Selected Enterprise Gross Margins per hectare Wheat / Sheep Zone



A range of gross margin returns per hectare are also provided for selected enterprises in the High Rainfall Zone. The return per hectare are higher than the Sheep / Wheat Zone however, the broad trends in differences between enterprises hold true.

Selected Enterprise Gross Margins per hectare High Rainfall Zone



At current prices, production of prime lambs sired by either terminal or maternal sires out of medium and strong wool Merino ewes are the most profitable. Highly productive Merino ewe flocks, run at high stocking rates on quality pastures and with active grazing management, have the potential to achieve highly competitive profit levels from both apparel wool and prime lamb production.

Comparing sheep production systems it can be seen that that Merino production is profitable and provides a large number of enterprise options to suit different environments and farming systems.

Analyses of data from sheep enterprise benchmarking services show that the highest profitability flocks produce 50 to 70% higher income per dse and per hectare than low profitability flocks. Analyses also indicate that wool production per hectare and lamb production per hectare are the most important drivers of these differences in income.

The three really important tools that wool and sheep meat producers can use to increase output per hectare (of wool and / or meat) and therefore have the biggest possible impact on profitability, are stocking rate, lambing rate and the genetics of their animals.

CONTENTS

1. INTRODUCTION

Australian sheep producers in most production regions are questioning traditional assumptions about the most appropriate and profitable enterprise for their areas and production systems. Factors driving change are:

- price relativities for the three major products – wool, lamb, mutton
- perceived outlook for the demand for these products and likely future price relativities
- price volatility and production risk for alternative production systems
- potential for productivity gains in different enterprises

In this paper, we present estimates of the profitability of 12 alternative sheep production systems:

1. Self replacing, pure bred Merino – fine wool
2. Self replacing, pure bred Merino – medium wool
3. Self replacing, medium wool Merino (oldest ewe class mated to terminal sires)
4. Self replacing, strong wool Merino (oldest ewe class mated to terminal sires)
5. Medium wool Merino ewes mated to terminal sires
6. Strong wool Merino ewes mated to terminal sires
7. Medium wool Merino ewes mated to maternal sires (first cross lambs)
8. First cross ewes mated to terminal sires (second cross lambs)
9. Lamb finishing on lucerne
10. Lamb finishing in feedlot
11. Wethers for wool and live export
12. Wethers for lifetime wool production

Profitability is assessed using a gross margin model developed by Hassall & Associates – the model calculates income from wool and sheep sales from a base 1,000 ewe flock for each enterprise in either the mixed cropping / livestock zone or the high rainfall, temperate pasture zone. Assumptions are varied as appropriate to the zone. Production costs include variable costs only (ie, land ownership and overhead costs are not included). Gross margin is calculated as income less production costs and expressed on a per dry sheep equivalent (dse) and per hectare (ha) basis.

Four price scenarios for wool, lambs, young sheep and mutton (cast-for-age animals) are analysed:

- Average prices – past 12 months (“current” prices)
- Average prices – past 5 years
- Average prices – past 10 years
- Future prices – ABARE forecast, average next 5 years

2. DESCRIPTION OF ENTERPRISES AND KEY ASSUMPTIONS

The production characteristics assumed for each enterprise in this analysis are based on:

- Hassall & Associates' data, from over 35 years of benchmarking clients' flocks
- review of publications from other benchmarking service providers (eg: "Farm Monitor Project – summary of results 2000-2001", DNRE Victoria; "How Sheep Flocks Performed 2000/01", Holmes Sackett & Associates; "Merino Bloodline Performance", NSW Agriculture; "Australian Prime Lamb Industry 2003", MLA, ABARE)
- personal consultation with extension officers, brokers and processors (see list in Appendix 1)

A summary of key production assumptions are presented in Table 1 (wheat / sheep zone) and Table 2 (high rainfall zone). Actual data from flocks in these zones show considerable variation in these production traits. Our analysis takes account of some of the variation through "sensitivity analyses" (see page 15).

Table 1: Assumptions Wheat / Sheep Zone – Sheep Enterprises

Enterprise	Mature Live Weight (kg / hd)	dse / hd	Stocking Rate dse / ha	Weaning (%)	Live Weight Lambs / Young Sheep Sold (kg/hd)	Wool cut / hd (kg clean)
Merino Ewe Fine Wool - 18 Micron	45	1.9	3.5	80	38	2.8
Merino Ewe Medium Wool - 21 Micron	50	2.1	3.5	85	40	3.6
Merino Flock - 21 micron – TS* to old Ewes	50	2.1	3.5	90	45	3.6
Merino Flock - 23 micron - TS to old Ewes	55	2.1	3.5	90	45	4.1
Merino Flock - 21 micron - TS to all Ewes	50	2.3	3.5	95	45	3.6
Merino Flock - 23 micron - TS to all Ewes	55	2.3	3.5	95	45	4.1
First Cross Lambs - BL x Merino	50	2.3	3.5	90	42	3.6
Second Cross - TS x BLM**	70	2.5	3.5	110	50	3.1
Store Lamb Finishing on Lucerne	na	1.2	10.0	na	57	0.7
Feedlot Lambs for Export	na	1.2	na	na	57	0.7
Boat wethers - 21 Micron	na	1.1	3.5	na	50	3.9
Merino Wethers Medium Wool - 21 Micron	50	1.1	3.5	na	na	3.9

* TS – terminal sire, ** BLM – Border Leicester x Merino.

Table 2: Assumptions High Rainfall Zone – Sheep Enterprises

Enterprise	**Mature Live Weight (kg / hd)**	**dse / hd**	**Stocking Rate dse / ha**	**Weaning Rate (%)**	**Live Weight Lambs / Young Sheep Sold (kg/hd)**	**Wool cut / hd (kg clean)**
Merino Ewe Fine Wool - 18 Micron	45	1.9	10.0	80	36	2.8
Merino Ewe Medium Wool - 21 Micron	50	2.1	10.0	90	38	3.6
Merino Flock - 21 micron - TS to old Ewes	50	2.1	10.0	95	43	3.6
Merino Flock - 23 micron - TS to old Ewes	55	2.1	10.0	95	43	4.1
Merino Flock - 21 micron - TS to all Ewes	50	2.3	10.0	100	43	3.6

Enterprise	Mature Live Weight (kg / hd)	dse / hd	Stocking Rate dse / ha	Weaning Rate (%)	Live Weight Lambs / Young Sheep Sold (kg/hd)	Wool cut / hd (kg clean)
Merino Flock - 23 micron - TS to all Ewes	55	2.3	10.0	100	43	4.1
First Cross Lambs - BL x Merino	50	2.3	10.0	100	41	3.6
Second Cross - TS x BLM	70	2.5	10.0	110	48	3.1
Store Lamb Finishing on Lucerne	na	1.2	20.0	na	55	0.7
Feedlot Lambs for Export	na	1.2	na	na	55	0.7
Boat wethers - 21 Micron	na	1.0	10.0	na	48	3.9
Merino Wethers Medium Wool - 21 Micron	50	1.1	10.0	na	na	3.9

Further details about the assumptions underlying estimates of production, income and costs used in these analyses can be gleaned from Appendix 2, which presents a print out of the gross margin models from enterprises 2, 5, 7 and 10 from Table 1.

3. BACKGROUND COMMODITY PRICE DATA

In any region, sheep and wool producers will have a wide range of approaches to enterprise planning and budgeting. Some will place greater emphasis on actual historical data while others will see good reason to base decisions on future commodity market analyses. In this paper, we attempt to provide analyses which cover this spectrum of approaches.

The following series of figures summarise a range of data sets for wool, sheep and lamb prices over the past 10 years. Note, our analyses use three alternative historical price scenarios in estimating the profitability of different sheep enterprises:

- 10 year average prices
- 5 year average prices
- past 12 month average prices ("current" prices)

3.1 Wool Prices

Figures 1, 2 and 3 deal with wool prices – 10 year average (19 to 23μm), 5 year average (19 to 23μm) and 10 year average (18μm), respectively[1].

[1] The northern indicator based on sales in Sydney & Newcastle is used for the analysis presented in this report.

Figure 1

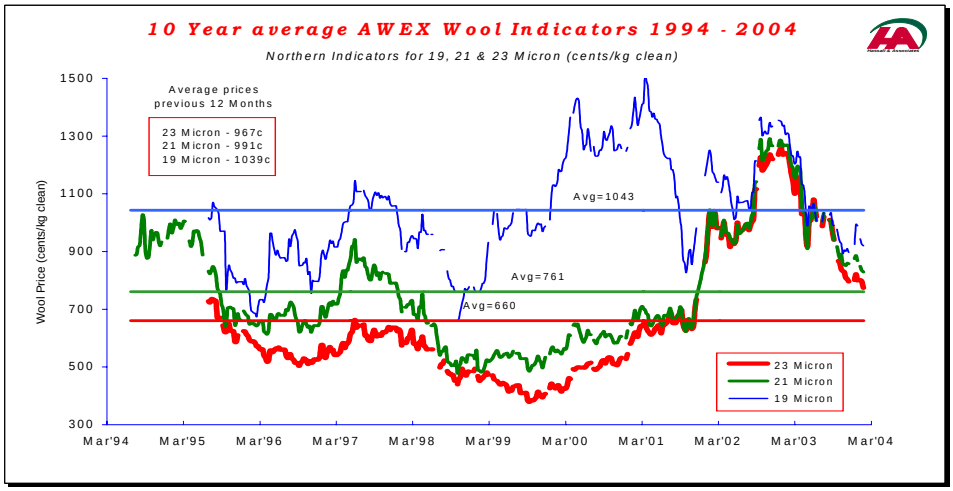


Figure 2

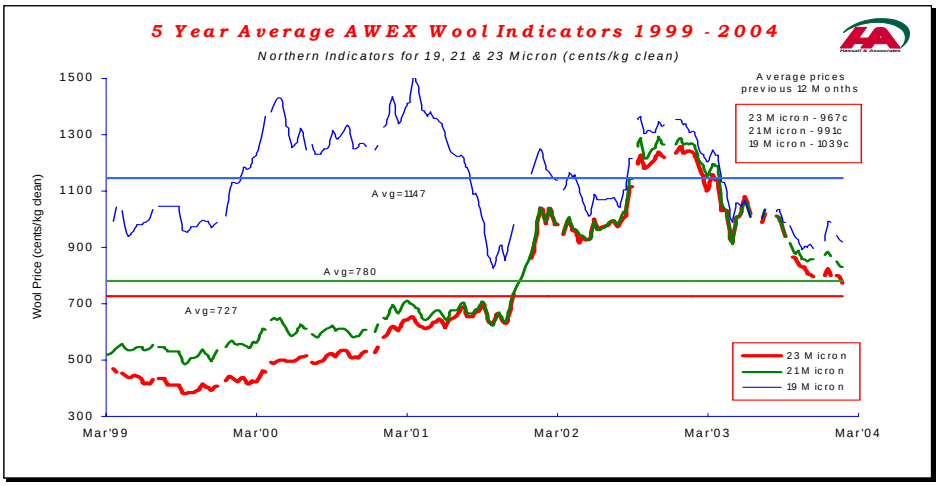
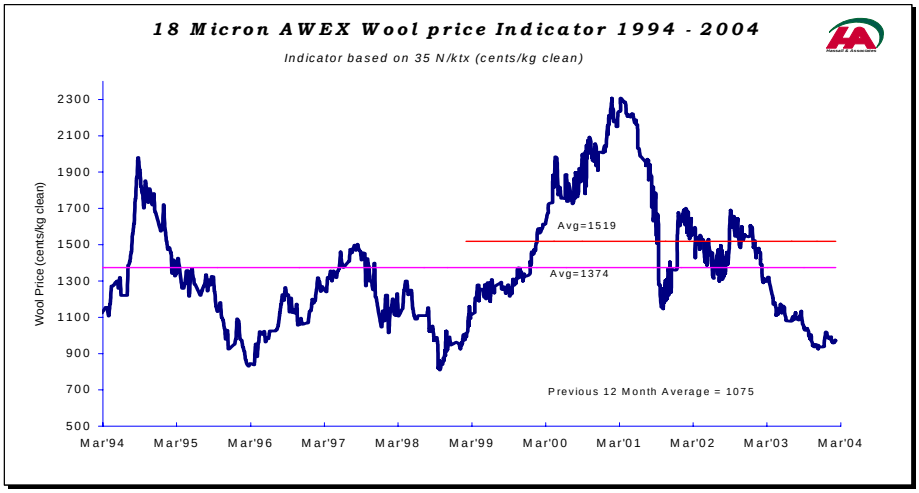


Figure 3



There are some important messages about wool prices from Figures 1, 2 and 3 which are demonstrated in Table 3, below.

The medium term historical view (5 and 10 years) indicates a significant premium for fine wool over medium and strong wools. At current prices, that premium (and absolute price for fine wools) has declined significantly, whereas prices for medium and stronger wools have increased in absolute and relative terms.

Table 3: Summary of Wool Price (c / kg clean) by fibre diameter over three historical intervals

Fibre Diameter (μm)	Current (Average Past 12 Months)	5 year Average	10 year Average
18	1,075	1,519	1,374
21	991	780	761
(18 : 21 μm premium)	(8.4%)	(94.7%)	(80.5%)
23	967	727	660
(21 : 23 μm premium)	(2.5%)	(7.3%)	(15.3%)

While Figures 1, 2 and 3 and Table 3 highlight the relationship between fibre diameter and clean wool price, it is important to remember that, while fibre diameter is generally the most important determinant of wool value, other wool quality characteristics such as staple strength, staple length, colour and style, can have significant impacts on wool value.

3.2 Sheep Meat Prices

Figures 4, 5 and 6 deal with live animal prices for sheep and lambs (Dubbo Saleyards), first cross ewes (Narromine Saleyards) and live export wethers (from MLA).

Figure 4

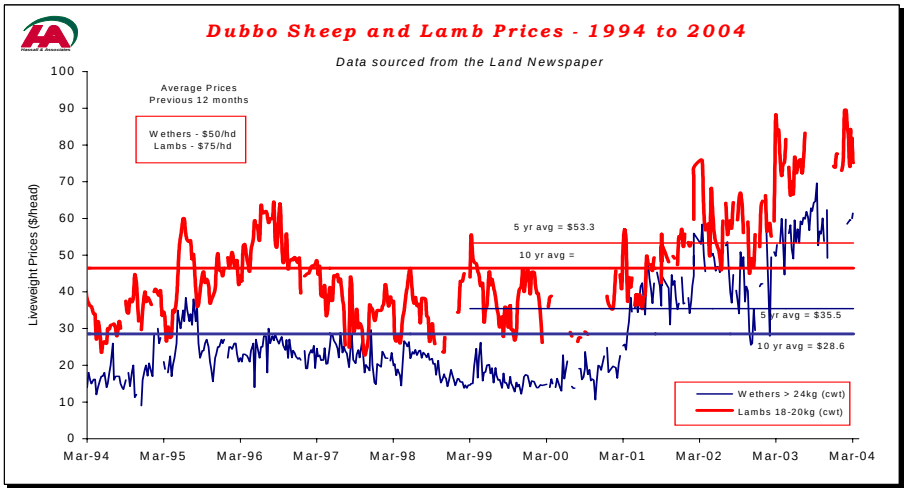
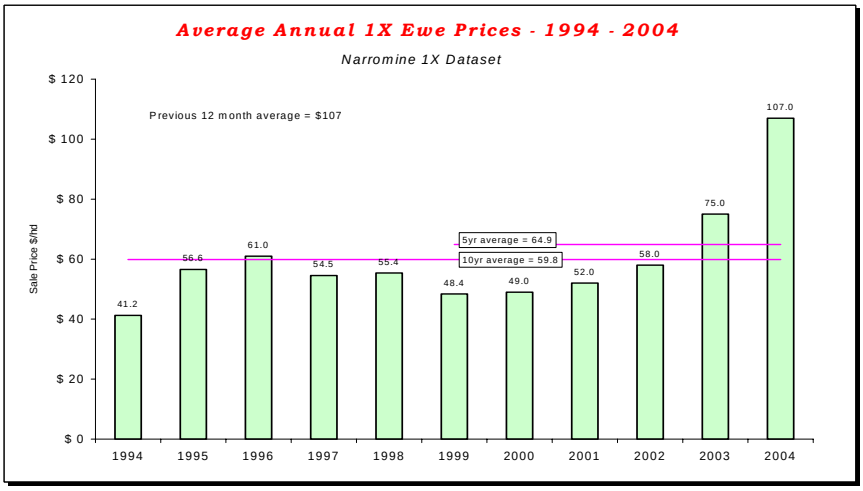
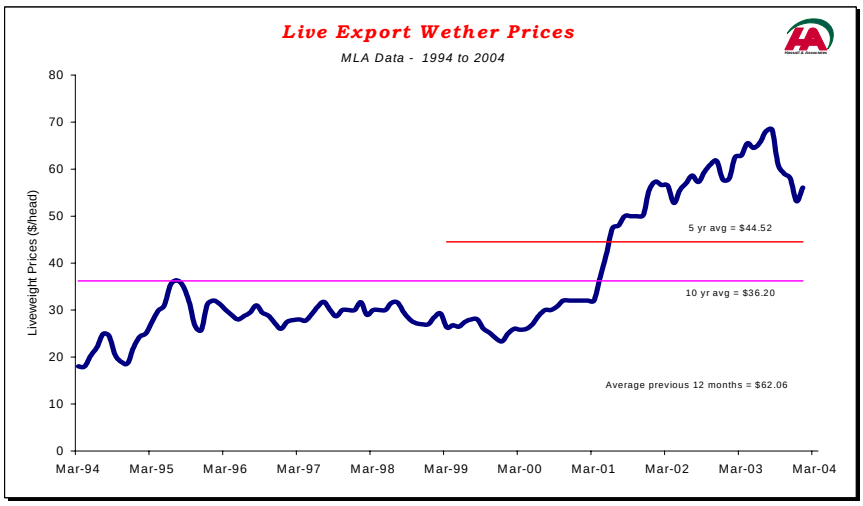


Figure 5



First cross ewe prices shown in Figure 5 are for ewe lambs (less than 12 months old).

Figure 6



The graphs and 5 and 10 year average live sheep and lamb prices indicate relative stability, whereas current prices (past 12 months) for all categories of live sheep and lambs have increased significantly (by over 70%) compared to historic price levels, as Table 4 presents.

Table 4: Summary of lamb, sheep, live export wether, and first cross ewe prices ($ / hd)

	Current (Average Past 12 months)	5 year Average	10 year Average
Wethers (Dubbo Saleyards)	$50	$36	$29
Lambs 18-20 kg cwt (Dubbo Saleyards)	$75	$53	$47
BL x M ewes (Narromine Saleyards)	$107	$65	$60
Live export wethers (MLA)	$62	$45	$36

Further insights into lamb prices of different breeds and carcass weight ranges are provided in Figures 7 and 8.

Figure 7

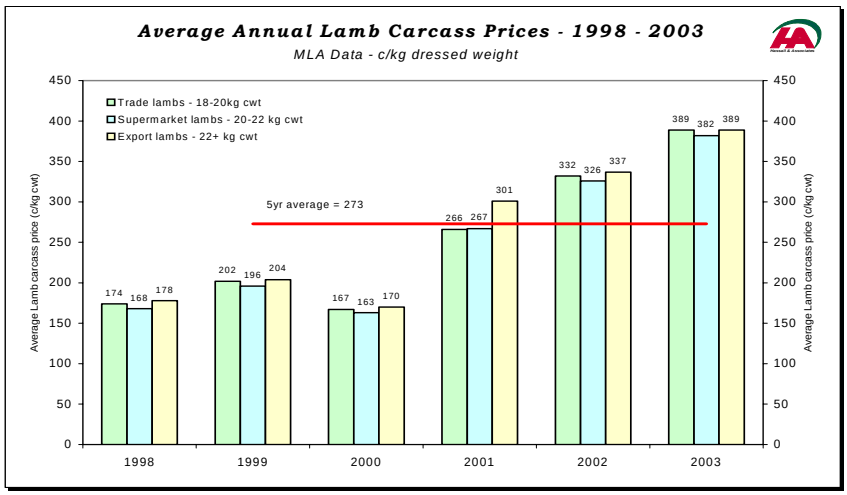


Figure 8

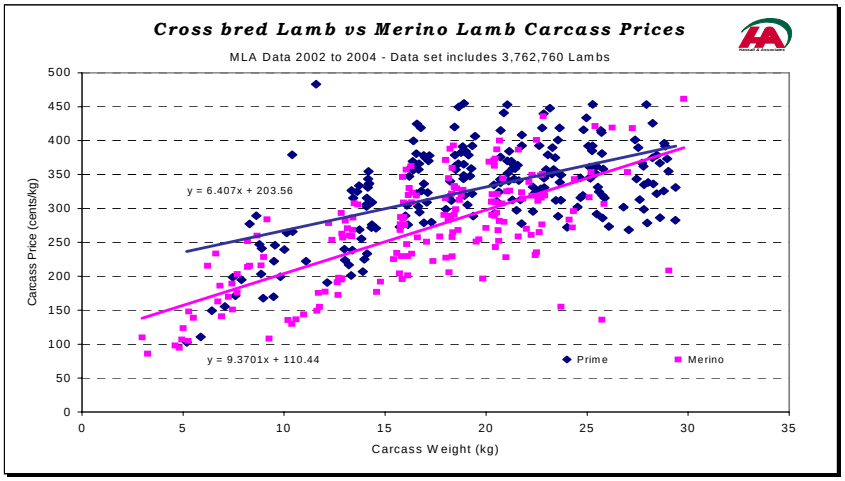


Figure 7 confirms the significant and similar increases in price of all three main categories (weight ranges) of lambs in the past few years. Figure 8 presents a summary of prices for Merino and cross bred lambs over the past two years. For light trade lamb (approximately 18kg cwt) Merino lambs achieved approximately 85% of the price of equivalent weight cross bred lambs. At approximately 25kg cwt, the difference between Merino and crossbred lambs in carcass price / kg was only 5%.

3.3 Future Prices – Wool, Lamb and Mutton

There are a range of forecasting services for Australian rural commodity prices. ABARE is the most widely recognised and we have taken an average of ABARE forecasts for 2004 to 2008/09 (*source: ABARE Australian Commodities, Volume 11, No 1 – March 2004*) to estimate future sheep enterprise gross margins. These future price estimates are summarised in Table 5.

Table 5: ABARE forecasts of Future Wool, Lamb and Mutton Prices

Commodity	5 year Average Projected Price
Wool – Eastern Market Indicator (c / kg clean)	753
Mutton (c / kg carcass)	155
Lamb (c / kg carcass)	306

4. PROFITABILITY OF ENTERPRISES

Tables 6 and 7 present gross margins per dse and per ha, respectively, for a range of sheep enterprises in the wheat / sheep or mixed cropping / livestock zone.

Table 6: Wheat / Sheep Zone Producers

Enterprise	Gross Margins per dse ($/dse)			
	Current Prices 2003/04	Average Prices Previous 5 Years	Average Prices Previous 10 Years	Forecast Prices Future 5 Years
1. Merino Ewe Fine Wool - 18 Micron	28.4	30.9	27.2	22.2
2. Merino Ewe Medium Wool - 21 Micron	32.6	21.4	20.0	25.9
3. Merino Flock - 21 micron - TS to old Ewes	35.6	23.2	23.7	28.1
4. Merino Flock - 23 micron - TS to old Ewes	38.6	25.1	26.6	31.1
5. Merino Flock - 21 micron - TS to all Ewes	37.7	25.1	23.5	30.3
6. Merino Flock - 23 micron - TS to all Ewes	39.4	26.3	23.7	32.4
7. First Cross Lambs - BL x Merino	35.7	21.9	20.4	28.2
8. Second Cross - TS x BLM	29.8	21.1	20.0	25.8
9. Store Lamb Finishing on Lucerne	19.4	2.2	-2.0	9.8
10. Feedlot Lambs for Export	12.0	-6.5	-9.5	2.3
11. Boat wethers - 21 Micron	22.5	20.7	13.5	22.7
12. Merino Wethers Medium Wool - 21 Micron	17.5	12.2	11.8	15.7

Table 7: Wheat / Sheep Zone Producers

Enterprise	Gross Margins per ha ($/ha) (assumed stocking rate = 3.5 dse/ha)			
	Current Prices 2003/04	Average Prices Previous 5 Years	Average Prices Previous 10 Years	Forecast Prices Future 5 Years
1. Merino Ewe Fine Wool - 18 Micron	100	108	95	78
2. Merino Ewe Medium Wool - 21 Micron	114	75	70	91
3. Merino Flock - 21 micron - TS to old Ewes	125	81	83	98
4. Merino Flock - 23 micron - TS to old Ewes	135	88	93	109
5. Merino Flock - 21 micron - TS to all Ewes	132	88	82	106
6. Merino Flock - 23 micron - TS to all Ewes	138	92	83	113
7. First Cross Lambs - BL x Merino	125	77	71	99
8. Second Cross - TS x BLM	104	74	70	90
9. Store Lamb Finishing on Lucerne	194	22	-20	98
10. Feedlot Lambs for Export	na	na	na	na
11. Boat wethers - 21 Micron	79	72	47	80
12. Merino Wethers Medium Wool - 21 Micron	61	43	41	55

At current prices, production of prime lambs sired by either terminal or maternal sires out of medium and strong wool Merino ewes (enterprises 3, 4, 5, 6 and 7) are the most profitable. This represents a significant change to historical price based analyses, where the price premiums for fine wool and lower sheep meat prices dictate that the fine wool Merino enterprise (enterprise 1) was most profitable.

Though the current sale prices for the “finished product” of enterprises 8 (second cross lambs), 9 (lucerne finished lambs) and 10 (feedlot finished lambs) are relatively high, these

enterprises are relatively less profitable due to the current high buy-in prices of first cross (BLM) ewes and store lambs.

Tables 8 and 9 present gross margins per dse and per ha, respectively, for the high rainfall temperate pasture zone.

Table 8: High Rainfall Zone Producers

Enterprise	Gross Margins per dse ($/dse)			
	Current Prices 2003/04	Average Prices Previous 5 Years	Average Price Previous 10 Years	Forecast Prices Future 5 Years
1. Merino Ewe Fine Wool - 18 Micron	33.7	39.1	34.6	27.0
2. Merino Ewe Medium Wool - 21 Micron	34.9	23.2	21.8	28.0
3. Merino Flock - 21 micron - TS to old Ewes	37.5	25.0	23.4	30.2
4. Merino Flock - 23 micron - TS to old Ewes	42.8	27.0	24.0	33.3
5. Merino Flock - 21 micron - TS to all Ewes	39.8	26.7	25.0	32.2
6. Merino Flock - 23 micron - TS to all Ewes	42.5	28.0	25.2	34.5
7. First Cross Lambs - BL x Merino	40.0	24.0	23.2	32.2
8. Second Cross - TS x BLM	29.2	21.4	19.7	24.8
9. Store Lamb Finishing on Lucerne	21.9	3.5	0.5	12.3
10. Feedlot Lambs for Export	12.0	-6.5	-9.5	2.3
11. Boat wethers - 21 Micron	23.8	19.9	13.0	19.9
12. Merino Wethers Medium Wool - 21 Micron	20.4	14.4	14.0	18.2

Table 9: High Rainfall Zone Producers

Enterprise	Gross Margins per ha ($/ha) (assumed stocking rate = 10 dse/ha)			
	Current Prices 2003/04	Average Prices Previous 5 Years	Average Price Previous 10 Years	Forecast Prices Future 5 Years
1. Merino Ewe Fine Wool - 18 Micron	337	391	346	270
2. Merino Ewe Medium Wool - 21 Micron	349	232	218	280
3. Merino Flock - 21 Micron - TS to old Ewes	375	250	234	302
4. Merino Flock - 23 Micron - TS to old Ewes	428	270	240	333
5. Merino Flock - 21 Micron - TS to all Ewes	398	267	250	322
6. Merino Flock - 23 Micron - TS to all Ewes	425	280	252	345
7. First Cross Lambs - BL x Merino	400	240	232	322
8. Second Cross - TS x BLM	292	214	197	248
9. Store Lamb Finishing on Lucerne	439	69	10	245
10. Feedlot Lambs for Export	na	na	na	na
11. Boat wethers - 21 Micron	238	199	130	199
12. Merino Wethers Medium Wool - 21 Micron	204	144	140	182

Similar relativities in profitability of different enterprises exist in the higher rainfall zone. Again, enterprises producing both prime lambs and apparel wool are the most profitable at current prices. Notable is the profitability per hectare of the top five enterprises (4, 5, 6, 7 and 9) – averaging $418/ha. This is highly competitive with cropping gross margins – a result consistent with the analyses published by Holmes Sackett and Associates in June 2003 ("Economic and Situation Analysis of the Australian Sheep Industry").

5. VARYING KEY ASPECTS OF ENTERPRISES

The base assumptions used to characterise enterprises in these analyses (see earlier Tables 1 and 2) will be seen by some as conservative. We are aware of research outcomes and case studies of innovative producers who are achieving levels of productivity and product

quality which exceed these baselines. To investigate the impacts on profitability of different sheep enterprises, of feasible, achievable increases in key aspects of productivity or product value, we conducted sensitivity analyses for a range of these characteristics. The outcomes of these sensitivity analyses are attached as Appendix 3 – a summary for key, representative enterprises is presented below. The analyses assume these increases are achievable while not compromising other aspects of productivity or product value.

5.1 Increasing Wool Value

Using current wool prices (average of past 12 months) as a base, we estimated the impact on profitability of sheep enterprises of a 10% increase in wool sale price. A summary of the impact on gross margin per dse and per hectare for a sample of enterprises in the wheat / sheep zone is shown in Table 10.

Table 10: Impact of Increasing Wool Value by 10%

Enterprise	GM / dse		GM / ha	
	Current Prices	Price + 10%	Current Prices	Price + 10%
Medium wool Merino – self replacing	$32.60	$34.80 (+6.8%)	$114	$122
Medium wool Merino joined to terminal sires	$37.70	$39.60 (+5.1%)	$132	$139
First cross lambs – BL x M	$35.70	$37.50 (+5.1%)	$125	$131
Second cross lambs – TS x BLM	$29.80	$30.60 (+2.7%)	$104	$107
Feedlot lambs	$12.00	$12.10 (+1.0%)	na	na

5.2 Increasing Stocking Rate

We estimated the impact on profitability of a 10% increase in stocking rate on the gross margin per hectare for a sample of enterprises in the wheat / sheep zone – see Table 11.

Table 11: Impact of Increasing Stocking Rate by 10%

Enterprise	GM/ha	
	Base Case	Stocking Rate + 10%
Medium wool Merino – self replacing	$114	$125
Medium wool Merino joined to terminal sires	$132	$145
First cross lambs – BL x M	$125	$137
Second cross lambs – TS x BLM	$104	$115
Feedlot lambs	na	na

5.3 Increasing Weaning Rate

We estimated the impact on profitability of a 10% increase in weaning percent on the gross margin per dse and per hectare, for a sample of enterprises in the wheat / sheep zone – see Table 12.

Table 12: Impact of Increasing Weaning Rate by 10%

	GM / dse		GM / ha	
Enterprise	Base Case	Weaning Rate + 10%	Base Case	Weaning Rate + 10%
Medium wool Merino – self replacing	$32.60	$35.00 (+7.5%)	$114	$122
Medium wool Merino joined to terminal sires	$37.70	$40.70 (+8.0%)	$132	$142
First cross lambs – BL x M	$35.70	$38.60 (+8.2%)	$125	$135
Second cross lambs – TS x BLM	$29.80	$33.10 (+11.1%)	$104	$116
Feedlot lambs	na	na	na	na

We are aware of some innovative producers who are achieving weaning rates of up to 20% above the baselines assumed in these analyses. These increases have been achieved through a mix of breeding / genetics initiatives and management change such as scanning and feeding ewes according to litter size. Our models indicate that an increase in weaning rate by 20% above base levels (listed in Tables 1 and 2) will increase gross margin / dse for a second cross lamb production enterprise by 22% and for a medium wool self replacing Merino flock by 15% - see Table 13.

Table 13: Impact of Increasing Weaning Rate by 20%

	GM / dse		GM / ha	
Enterprise	**Base Case**	**Weaning Rate + 20%**	**Base Case**	**Weaning Rate + 20%**
Medium wool Merino – self replacing	$32.60	$37.40 (+14.9%)	$114	$131
Medium wool Merino joined to terminal sires	$37.70	$43.70 (+16.0%)	$132	$153
First cross lambs – BL x M	$35.70	$41.50 (+16.3%)	$125	$145
Second cross lambs – TS x BLM	$29.80	$36.40 (+22.1%)	$104	$127
Feedlot lambs	na	na	na	na

5.4 Increasing Fleece Weights

We estimated the impact on profitability of a 10% increase in clean fleece weight per head on gross margin per dse and per hectare, for a sample of enterprises in the sheep / wheat zone – see Table 14.

Table 14: Impact of Increasing Clean Fleece Weight per head by 10%

	GM / dse		GM / ha	
Enterprise	**Base Case**	**Fleece Weight + 10%**	**Base Case**	**Fleece Weight + 10%**
Medium wool Merino – self replacing	$32.60	$34.70 (+6.7%)	$114	$122
Medium wool Merino joined to terminal sires	$37.70	$39.60 (+5.1%)	$132	$139
First cross lambs – BL x M	$35.70	$37.40 (+5.0%)	$125	$131
Second cross lambs – TS x BLM	$29.80	$30.60 (+2.6%)	$104	$107
Feedlot lambs	$12.00	$12.10 (+0.8%)	na	na

5.5 Increasing Live Weight / Growth Rate

We estimated the impact on profitability of a 10% increase in live weight / age (growth rate) on gross margin per dse and per hectare, for a sample of enterprises in the sheep / wheat zone – see Table 15.

Table 15: Impact of Increasing Live Weight by 10%

	GM / dse		GM / ha	
Enterprise	**Base Case**	**Live Weight + 10%**	**Base Case**	**Live Weight + 10%**
Medium wool Merino – self replacing	$32.60	$34.40 (+5.5%)	$114	$120
Medium wool Merino joined to terminal sires	$37.70	$40.20 (+6.8%)	$132	$141
First cross lambs – BL x M	$35.70	$38.10 (+6.8%)	$125	$133
Second cross lambs – TS x BLM	$29.80	$32.60 (+9.5%)	$104	$114
Feedlot lambs	$12.00	$12.00 (0%)	na	na

Note: the profitability of feedlot lambs could be increased by faster growing lambs, subject to increases in feed use efficiency.

5.6 Increasing Carcass Value

We estimate the impact on profitability of a 10% increase in carcass value per head on gross margin per dse and per hectare, for a sample of enterprises in the sheep / wheat zone – see Table 16.

Table 16: Impact of Increasing Carcass Value by 10%

	GM / dse		GM / ha	
Enterprise	**Base Case**	**Carcass Price + 10%**	**Base Case**	**Carcass Price + 10%**
Medium wool Merino – self replacing	$32.60	$34.40 (+5.5%)	$114	$120
Medium wool Merino joined to terminal sires	$37.70	$40.20 (+6.8%)	$132	$141
First cross lambs – BL x M	$35.70	$36.40 (+2.0%)	$125	$127
Second cross lambs – TS x BLM	$29.80	$33.40(+12.2%)	$104	$117
Feedlot lambs	$12.00	$18.30 (+52.4%)	na	na

6. RELATIVE IMPORTANCE OF PROFIT DRIVERS IN DIFFERENT ENTERPRISES

Frequently, sheep and wool producers focus on seasonal conditions and market prices as the primary determinants of profitability. However, analysis of sheep enterprise and whole farm benchmarking data indicates that within any district, in any given year, there is often a 70% range in gross margin between high and low profit flocks which have operated under very similar seasonal and market conditions. This is a signal that factors other than market fluctuations and seasonal conditions, and which producers have some management control over, are very important determinants of profitability.

Hassall & Associates' analyses, and those of other benchmarking service providers (eg, Holmes Sackett & Associates' "Economic and Situation Analysis of the Australian Sheep Industry", June 2003), indicate that the highest profitability flocks are those which produce significantly higher income per dse and per hectare, than low profitability flocks. Typically we find up a 50% to 70% range in income per dse and per hectare, between comparable high and low profit flocks. The same analyses indicate that wool production per hectare and lamb production per hectare are the most important drivers of these differences in income in specialist wool and specialist lamb enterprises, respectively.

Before further "teasing apart" the relative importance of contributors to this high variation in income between enterprises, it is important to look at the costs side of the enterprise. Operating or variable costs (per dse and per hectare) do not vary significantly between high profit and low profit flocks – typically varying by 10% to 15% in cost per hectare. So, cutting animal husbandry costs is not the secret to high profitability. This should not be confused with "cost of production" per kg of wool or lamb produced. Factors relating to productivity per hectare and marketing decisions can mean that properties with very similar operating / variable costs (per hectare or per dse) will have very different costs of production per kg of wool or lamb. For example, in one group of analyses (Holmes Sackett & Associates' "How Sheep Flocks Performed, 2000/01") the following range of costs of production were noted.

Table 17 Costs of Production

	Bottom 20% on Profitability	**Top 20% on Profitability**
Wool producers – cost / kg clean wool	$7.39	$5.86
First cross producers – cost / kg lamb carcass	$2.36	$1.13
Second cross producers – cost / kg lamb carcass	$2.24	$1.24

Returning to determinants of income and profitability, analyses reported in the previous section of this paper indicate that increasing stocking rate is the biggest contributor to increased gross margin in Merino flocks. The major management factors which will contribute to sustainably increased stocking rate are pasture production, grazing management and timing of lambing. Increased fleece weight per head and increased lambing percentage are the other important contributors to gross margin from Merinos at current prices for sheep meat and wool.

In lamb producing enterprises, stocking rate and lambing percentage were the factors with the biggest impacts on gross margin.

These analyses reinforce the findings of others in concluding that variation between producers in the price per kg they receive for their wool, lamb or sheep meat is not a strong differentiator for profitability. The two really important tools which wool and sheep meat producers can use to increase output per hectare (of wool and / or meat) and therefore that have the biggest possible impact on profitability, are stocking rate and the genetics of their animals.

7. FURTHER READING

1. AgInsights (2003). Holmes Sackett & Associates Pty Ltd.

2. Australian Prime Lamb Industry (2003). Meat & Livestock Australia; ABARE.

3. Economic and Situation Analysis of the Australian Sheep Industry (June, 2003). Holmes Sackett & Associates Pty Ltd.

4. Farm Monitor Project – Summary of Results 2000/01. Department of Natural Resources and Environment.

5. How Sheep Flocks Performed 2000/01. Holmes Sackett & Associates Pty Ltd.

6. Merino Bloodlines : The Comparisons (1998). NSW Agriculture.

7. Where will the Best Returns be for Sheep Producers (2003). Ian Rogan, Hassall & Associates Pty Ltd and the Australian Sheep Industry CRC.

APPENDIX 1: LIST OF INDIVIDUALS CONSULTED

Full Name	Company	Job Title	Business Phone
Chris Brennan		Merino Lamb Producer	(02) 6833 2061
Alan Casey	Advanced Breeding Services	Consultant	(02) 6391 3800
Roger Fletcher	Fletcher International	Manager	(02) 6884 5833
Gary Cook	Indigenous Land Corporation	National Property Manager	(02) 6269 2500
Don McDonald	Lannock Wool	Wool Broker	(02) 6884 2678
David Goodfellow	Mutual Trust	Property & Finance Manager	(03) 9605 9510
Connor Fitzgerald	NLRS - MLA	Market Analyst	(02) 9463 9372
Alex Russell	NSW Agriculture	Sheep Officer	(02) 6881 1270
Ashley White	NSW Agriculture	Sheep Officer	(02) 6349 9777
Doug Alcock	NSW Agriculture	Pasture - Grazfeed	(02) 6452 3411
Bill O'Hallaran	NSW Agriculture	Sheep/Wool Officer	(02) 6776 5000
Dean Patten	NSW Agriculture	Economic Services Unit	(02) 6880 8000
Simon Gierke	PIRSA	Sheep Lamb Officer	(08) 8207 7917
Bob Hall	RJ Hall & Co	WA Sheep Consultant	(08) 9736 1055
David Crean	TAFE	TAFE Sheep & Wool	(02) 6884 0511
Ross Kingwell	WA Agriculture	Sheep Officer	(08) 9368 3225

APPENDIX 2: SAMPLE GROSS MARGIN MODEL OUTPUTS

Sample Gross Margin Model Outputs for:

- Self replacing pure bred Merino – medium wool
- Medium wool Merino ewes mated to terminal sires
- Medium wool Merino ewes mated to maternal sires (first cross lambs)
- Lamb finishing in feedlot

Average Wheat/Sheep Zone - Current Prices & Assumptions Mar-04

ENTERPRISE : **2. Merino Ewe Medium Wool - 21 micron - 50kg**
UNIT : 1000 Breeding Ewes

- Rams Replaced	25.00	%	- Category MI Price (Clean)	991	c/kg Clean
- Ram Percentage	2.00	%			
- Ram Death Rate	5.00	%	- Wool Type (S=100,P=92)	92.00	
- Weaning Percent	85.00	%	- Wool Tax	2.00	%
- Ewe Replacement	21.60	%	- Commission	5.00	%
- Ewe Death Rate	4.00	%	- Freight	10.00	$/Bale
- Lambs Shorn	100	%	- Bale Wt	180	kg/Bale

WOOL			clean kg		clean c/kg		
Ewes	960	*	3.63	KG @ $	848	C/KG	29,569
Ewe Hoggets	356	*	1.98	KG @ $	1080	C/KG	7,618
Lambs	850	*	0.99	KG @ $	882	C/KG	7,426
Rams	20	*	4.95	KG @ $	651	C/KG	645
Crutching	2086	*	0.17	KG @ $	316	C/KG	1,088
				NET WOOL RETURN		$	46,346

SHEEP SALES		Dressing Out @	45%				
Wether Hoggets	345 c/kg dressed	319 hd @	40 kg	Liveweight	62.10	/HD	19,794
B Grade Lambs	345 c/kg dressed	106 hd @	36 kg	Liveweight	55.89	/HD	5,938
Ewe Hoggets	345 c/kg dressed	192 hd @	40 kg	Liveweight	62.10	/HD	11,923
CFA Ewes	200 c/kg dressed	176 hd @	50 kg	Liveweight	45.00	/HD O/S	7,920
Cull Rams	200 c/kg dressed	5 hd @	60 kg	Liveweight	54.00	/HD	259
Total		798 hd		NET STOCK RETURN		$	45,835

			A. TOTAL RETURNS				$92,181
SHEARING	2186	HEAD		4.60	/HD		10,056
CRUTCH	2086	HEAD		1.00	/HD		2,086
DRENCH							
- EWES	960	HEAD		0.21	/HD *	3	605
- EWE HOGGETS	356	HEAD		0.21	/HD *	2	150
- LAMBS	850	LAMBS		0.13	/HD *	2	221
- RAMS	20	RAMS		0.21	/HD *	2	8
DIP	2,186	HEAD		0.30	/HD *	1	656
JETTING	2,186	HEAD		1.00	/HD *	2	4,372
VACCINE	2,186	LAMBS		0.25	/HD *	1	547
MARK & MULES	850	LAMBS		0.80	/HD		680
RAMS	5	RAMS		750	/RAM		3,750
WOOL PACKS	30	BALES		12.00	/BALE		365
FREIGHT	30	BALES		10.00	/BALE		304
INTEREST COST $ (Ewes & Rams @ Replacement Cost)	45,000	VALUE	@	0.00	% pa		0
			B. TOTAL VARIABLE COSTS	:		$	23,799
			GROSS MARGIN (A-B)	:		$	68,382
			G.M. PER BREEDING EWE	:		$	68.38

Stocking Rates:

DSE/Ewe 2.10

DSE/Ha	3.50							
Ewes @ $	30.00		GROSS MARGIN PER DSE	:	$	32.56		
			GROSS MARGIN PER HA	:	$	113.97		
ENTERPRISE :		**5. Merino Flock - 21 micron - TS to all Ewes - 55kg**						
UNIT :		1000 Breeding Ewes						
- Rams Replaced	25.00 %	- Category MI Price (Clean)	991 c/kg Clean					
- Ram Percentage	2.00 %							
- Ram Death Rate	5.00 %	- Wool Type (S=100,P=92)	92.00					
- Weaning Percent	95.00 %	- Wool Tax	2.00 %					
- Ewe Replacement	21.60 %	- Commission	5.00 %					
- Ewe Death Rate	4.00 %	- Freight	10.00 $/Bale					
- Lambs Shorn	100 %	- Bale Wt	180 kg/Bale					
WOOL		clean kg		clean c/kg				
Ewes	960 *	3.63	KG @ $	848	C/KG			29,569
Ewe Hoggets	356 *	1.98	KG @ $	1080	C/KG			7,618
Lambs	950 *	0.99	KG @ $	588	C/KG			5,533
Rams	20 *	4.95	KG @ $	651	C/KG			645
Crutching	2186 *	0.17	KG @ $	316	C/KG			1,140
			NET WOOL RETURN	$				44,505
SHEEP SALES		Dressing Out @	45%					
MS Lambs	385 c/kg dressed	713 hd @	45 kg	Liveweight	77.96	/HD		55,548
MS Lambs	385 c/kg dressed	238 hd @	41 kg	Liveweight	70.17	/HD		16,664
CFA Ewes	200 c/kg dressed	176 hd @	50 kg	Liveweight	45.00	/HD	O/S	7,920
Cull Rams	200 c/kg dressed	5 hd @	60 kg	Liveweight	54.00	/HD		259
Total		1131 hd		NET STOCK RETURN	$			80,392
			A. TOTAL RETURNS	$				124,897
SHEARING		2286	HEAD		4.60	/HD		10,516
CRUTCH		2186	HEAD		1.00	/HD		2,186
DRENCH								
- EWES		960	HEAD		0.21	/HD *	3	605
- EWE HOGGETS		356	HEAD		0.21	/HD *	2	150
- LAMBS		950	LAMBS		0.13	/HD *	2	247
- RAMS		20	RAMS		0.21	/HD *	2	8
DIP		2286	HEAD		0.30	/HD *	1	686
JETTING		2286	HEAD		1.00	/HD *	2	4,572
VACCINE		2286	LAMBS		0.25	/HD *	1	572
MARK		950	LAMBS		0.80	/HD		760
RAMS		5	RAMS		750	/RAM		3,750
WOOL PACKS		31	BALES		12.00	/BALE		373
FREIGHT		31	BALES		10.00	/BALE		311
Replacement Ewes		217	HEAD		62.10	/HD		13,476
(Purchased from the 21 Micron Medium wool enterprise)								
			B. TOTAL VARIABLE COSTS	:	$	38,210		
Stocking Rates:			GROSS MARGIN (A-B)	:	$	86,687		
DSE/Ewe	2.30		G.M. PER BREEDING EWE	:	$	86.69		
DSE/Ha	3.50							
Ewes @ $	30.00		GROSS MARGIN PER DSE	:	$	37.69		
			GROSS MARGIN PER HA	:	$	131.91		
ENTERPRISE :		**7. First Cross - Maternal Sire - BL x Merino - 50kg**						
UNIT :		1000 Breeding Ewes						
- Rams Replaced	25.00 %	- Category MI Price (Clean)	991 c/kg Clean					
- Ram Percentage	2.00 %							

- Ram Death Rate	5.00 %	- Wool Type (S=100,P=92)	92.00		
- Weaning Percent	90.00 %	- Wool Tax	2.00 %		
- Ewe Replacement	21.60 %	- Commission	5.00 %		
- Ewe Death Rate	4.00 %	- Freight	10.00 $/Bale		
- Lambs Shorn	100 %	- Bale Wt	180 kg/Bale		

WOOL			clean kg		clean c/kg		
Ewes	960	*	3.63	KG @ $	848	C/KG	29,569
Ewe Hoggets	356	*	1.98	KG @ $	720	C/KG	5,079
Lambs	900	*	0.99	KG @ $	588	C/KG	5,242
Rams	20	*	4.95	KG @ $	651	C/KG	645
Crutching	2136	*	0.17	KG @ $	316	C/KG	1,114
				NET WOOL RETURN		$	41,648

SHEEP SALES		Dressing Out @	45%				
Wether Lambs	360 c/kg dressed	338 hd @	42 kg	Liveweight	68.04	/HD	22,962
Grade B Lambs	360 c/kg dressed	113 hd @	38 kg	Liveweight	61.23	/HD	6,889
Ewe Hogg	485 c/kg dressed	432 hd @	42 kg	Liveweight	91.67	/HD	39,599
CFA Ewes	200 c/kg dressed	176 hd @	50 kg	Liveweight	45.00	/HD O/S	7,920
Cull Rams	200 c/kg dressed	5 hd @	60 kg	Liveweight	54.00	/HD	259
Total		1063 hd		NET STOCK RETURN		$	77,629

A. TOTAL RETURNS				$		119,277
SHEARING	2236	HEAD	4.60	/HD		10,286
CRUTCH	2136	HEAD	1.00	/HD		2,136
DRENCH						
- EWES	960	HEAD	0.21	/HD *	3	605
- EWE HOGGETS	356	HEAD	0.21	/HD *	2	150
- LAMBS	900	LAMBS	0.13	/HD *	2	234
- RAMS	20	RAMS	0.21	/HD *	2	8
DIP	2236	HEAD	0.30	/HD *	1	671
JETTING	2236	HEAD	1.00	/HD *	2	4,472
MARK	468	LAMBS	0.80	/HD *	1	374
MARK & MULES	432	LAMBS	1.00	/HD		432
RAMS	5	RAMS	750	/RAM		3,750
WOOL PACKS	31	BALES	12.00	/BALE		369
FREIGHT	31	BALES	10.00	/BALE		308
Replacement Mo Ewes	217	HEAD	62.10	/HD		13,476
(Purchased from the 21 Micron Medium wool enterprise)						
B. TOTAL VARIABLE COSTS				:	$	37,270
GROSS MARGIN (A-B)				:	$	82,007
G.M. PER BREEDING EWE				:	$	82.01
GROSS MARGIN PER DSE				:	$	35.66
GROSS MARGIN PER HA				:	$	124.79

Stocking Rates:

DSE/Ewe	2.30
DSE/Ha	3.50
Ewes @ $	30.00

10. Feedlot Lambs for Export - 57kg **UNIT :** 1000 Mar-04

Assumptions:

Death Rate	0.50 %	Purchase Weight	44.0 kg LW
Days on Feed	50.00 days	Purchase Price	1.20 $/kg LW
Dressing %	45.00 %	Growth Rate	0.260 kg/day
Grade A Lambs	80.0 %	Sale Weight	57.0 kg LW
Grade B Lambs	18.0	Carcass Sale price	3.85 $/kg DW
Shy Feeders	2.0 %	Feed Conversion	6.0 :1
		DSE/Lamb	1.2

Income

Grade A Lambs	796	hd @	25.7	kg DW x	3.85	$/kg DW	78,607
Grade B Lambs	179.1	hd @	23.9	kg DW x	3.50	$/kg DW	14,950
Shy Feeders	19.9	hd @	52.80	$/hd	* purchase price		1,051
Total	995						94,608
Wool - Fleece	1000	hd @	0.65	kgs/hd @	2.20	$/kg	1,430
Wool - Crutchings	995	hd @	0.00	kgs/hd @	1.20	$/kg	-
Skin	975	hd @ $	6.00	/hd			5,851
						Total Income	101,889

Costs

Purchase Lambs	1000	hd @	44.0	kg LW x	1.20	$/kg LW	52,800
Feed	1,552	kgs @	0.24	$ /kg for	50.00	days	18,439
Shearing	1,000	hd @	4.60	$/hd	1		4,600
Crutching	995	hd @	0.00	$/hd			-
Drench	1,000	hd @	0.25	$/hd x	1	Appl.	250
Fly (Click)	1,000	hd @	1.00	$/hd x	0	Appl.	-
Vitamins (A,D,C,B12)	1,000	hd @	0.25	$/hd x	1	Appl.	250
Vaccine (6 in 1)	1,000	hd @	0.25	$/hd x	1	Appl.	250
Electrolyte - pre slaughter	1,000	hd @	0.10	$/hd x	1	Appl.	100
Transport - In	1,000	hd @	2.00	$/hd			2,000
Transport - Out Sale	975.1	hd @	4.50	$/hd			4,388
Transport - Out Shy	19.9	hd @	1.00	$/hd			20
Commission - Buy	0.60 % of Lamb Purchase Price						317
Commission - Sell	4.00 % of Lamb Sale Price						3,784
Transport - Wool	3.6 Bales @		10.00	$/Bale			36
Wool packs/Supplies	3.6 Bales @		12.0	$/Bale			43
Marketing Costs	0.25 % of Lamb Sale Price						237
						Total Costs ($)	87,514
Profit/Loss						**Gross Margin ($)**	14,375
						Gross Margin ($/dse)	11.98

APPENDIX 3: OUTCOMES OF SENSITIVITY ANALYSES

Wheat / Sheep Zone – Impact of increasing wool value

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Fleece Value up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	28.4	30.5	7.2
2. Merino Ewe Medium Wool - 21 Micron	32.6	34.8	6.8
3. Merino Flock - 21 micron - TS to old Ewes	35.6	37.8	6.2
4. Merino Flock - 23 micron - TS to old Ewes	38.6	41.0	6.3
5. Merino Flock - 21 micron - TS to all Ewes	37.7	39.6	5.1
6. Merino Flock - 23 micron - TS to all Ewes	39.4	41.5	5.5
7. First Cross - Maternal Sire - BL x Merino	35.7	37.5	5.1
8. Second Cross - 28 micron - TS x BLM	29.8	30.6	2.7
9. Store Lamb Finishing on Lucerne	19.4	19.5	0.6
10. Feedlot Lambs for Export	12.0	12.1	1.0
11. Boat wethers - 21 Micron	22.5	22.5	0.0
12. Merino Wethers Medium Wool - 21 Micron	17.5	20.4	16.7

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 3.5 dse/ha)		
	Current Prices 2003/04	Fleece Value up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	100	107	7
2. Merino Ewe Medium Wool - 21 Micron	114	122	8
3. Merino Flock - 21 micron - TS to old Ewes	125	132	8
4. Merino Flock - 23 micron - TS to old Ewes	135	144	9
5. Merino Flock - 21 micron - TS to all Ewes	132	139	7
6. Merino Flock - 23 micron - TS to all Ewes	138	145	8
7. First Cross - Maternal Sire - BL x Merino	125	131	6
8. Second Cross - 28 micron - TS x BLM	104	107	3
9. Store Lamb Finishing on Lucerne	194	195	1
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	79	79	0
12. Merino Wethers Medium Wool - 21 Micron	61	72	10

High Rainfall Zone – Impact of increasing wool value

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Fleece Value up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	33.7	36.4	7.9
2. Merino Ewe Medium Wool - 21 Micron	34.9	37.3	6.9
3. Merino Flock - 21 micron - TS to old Ewes	37.5	39.9	6.4
4. Merino Flock - 23 micron - TS to old Ewes	42.8	45.5	6.2
5. Merino Flock - 21 micron - TS to all Ewes	39.8	41.9	5.3
6. Merino Flock - 23 micron - TS to all Ewes	42.5	44.8	5.5
7. First Cross - Maternal Sire - BL x Merino	40.0	42.0	5.0
8. Second Cross - 28 micron - TS x BLM	29.2	30.1	3.0
9. Store Lamb Finishing on Lucerne	21.9	22.0	0.5
10. Feedlot Lambs for Export	12.0	12.1	1.0
11. Boat wethers - 21 Micron	23.8	23.8	0.0
12. Merino Wethers Medium Wool - 21 Micron	20.4	23.5	15.6

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 10 dse/ha)		
	Current Prices 2003/04	Fleece Value up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	337	364	27
2. Merino Ewe Medium Wool - 21 Micron	349	373	24
3. Merino Flock - 21 micron - TS to old Ewes	375	399	24
4. Merino Flock - 23 micron - TS to old Ewes	428	455	27
5. Merino Flock - 21 micron - TS to all Ewes	398	419	21
6. Merino Flock - 23 micron - TS to all Ewes	425	448	24
7. First Cross - Maternal Sire - BL x Merino	400	420	20
8. Second Cross - 28 micron - TS x BLM	292	301	9
9. Store Lamb Finishing on Lucerne	439	441	2
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	238	238	0
12. Merino Wethers Medium Wool - 21 Micron	204	235	32

Note: There are minor rounding errors for a small number of deviation calculations in this Appendix.

Wheat / Sheep Zone – Impact of increasing stocking rate

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Stocking rate up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	28.4	28.4	0.0
2. Merino Ewe Medium Wool - 21 Micron	32.6	32.6	0.0
3. Merino Flock - 21 micron - TS to old Ewes	35.6	35.6	0.0
4. Merino Flock - 23 micron - TS to old Ewes	38.6	38.6	0.0
5. Merino Flock - 21 micron - TS to all Ewes	37.7	37.7	0.0
6. Merino Flock - 23 micron - TS to all Ewes	39.4	39.4	0.0
7. First Cross - Maternal Sire - BL x Merino	35.7	35.7	0.0
8. Second Cross - 28 micron - TS x BLM	29.8	29.8	0.0
9. Store Lamb Finishing on Lucerne	19.4	19.9	2.3
10. Feedlot Lambs for Export	12.0	12.0	0.0
11. Boat wethers - 21 Micron	22.5	22.5	0.0
12. Merino Wethers Medium Wool - 21 Micron	17.5	17.5	0.0

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 3.5 dse/ha)		
	Current Prices 2003/04	Stocking rate up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	100	109	10
2. Merino Ewe Medium Wool - 21 Micron	114	125	11
3. Merino Flock - 21 micron - TS to old Ewes	125	137	12
4. Merino Flock - 23 micron - TS to old Ewes	135	149	14
5. Merino Flock - 21 micron - TS to all Ewes	132	145	13
6. Merino Flock - 23 micron - TS to all Ewes	138	152	14
7. First Cross - Maternal Sire - BL x Merino	125	137	12
8. Second Cross - 28 micron - TS x BLM	104	115	10
9. Store Lamb Finishing on Lucerne	194	219	24
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	79	87	8
12. Merino Wethers Medium Wool - 21 Micron	61	67	6

High Rainfall Zone – Impact of increasing stocking rate

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Stocking rate up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	33.7	33.7	0.0
2. Merino Ewe Medium Wool - 21 Micron	34.9	34.9	0.0
3. Merino Flock - 21 micron - TS to old Ewes	37.5	37.5	0.0
4. Merino Flock - 23 micron - TS to old Ewes	42.8	42.8	0.0
5. Merino Flock - 21 micron - TS to all Ewes	39.8	39.8	0.0
6. Merino Flock - 23 micron - TS to all Ewes	42.5	42.5	0.0
7. First Cross - Maternal Sire - BL x Merino	40.0	40.0	0.0
8. Second Cross - 28 micron - TS x BLM	29.2	29.2	0.0
9. Store Lamb Finishing on Lucerne	21.9	22.2	1.0
10. Feedlot Lambs for Export	12.0	12.0	0.0
11. Boat wethers - 21 Micron	23.8	23.8	0.0
12. Merino Wethers Medium Wool - 21 Micron	20.4	20.4	0.0

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 10 dse/ha)		
	Current Prices 2003/04	Stocking rate up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	337	371	34
2. Merino Ewe Medium Wool - 21 Micron	349	384	35
3. Merino Flock - 21 micron - TS to old Ewes	375	412	37
4. Merino Flock - 23 micron - TS to old Ewes	428	471	43
5. Merino Flock - 21 micron - TS to all Ewes	398	438	40
6. Merino Flock - 23 micron - TS to all Ewes	425	467	42
7. First Cross - Maternal Sire - BL x Merino	400	440	40
8. Second Cross - 28 micron - TS x BLM	292	321	29
9. Store Lamb Finishing on Lucerne	439	487	49
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	238	261	24
12. Merino Wethers Medium Wool - 21 Micron	204	224	20

Wheat / Sheep Zone – Impact of increasing weaning rate

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Weaning rate up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	28.4	30.6	7.7
2. Merino Ewe Medium Wool - 21 Micron	32.6	35.0	7.5
3. Merino Flock - 21 Micron - TS to old Ewes	35.6	38.3	7.6
4. Merino Flock - 23 Micron - TS to old Ewes	38.6	41.3	7.2
5. Merino Flock - 21 Micron - TS to all Ewes	37.7	40.7	8.0
6. Merino Flock - 23 Micron - TS to all Ewes	39.4	42.3	7.5
7. First Cross - Maternal Sire - BL x Merino	35.7	38.6	8.2
8. Second Cross - 28 Micron - TS x BLM	29.8	33.1	11.1
9. Store Lamb Finishing on Lucerne	19.4	19.4	0.0
10. Feedlot Lambs for Export	12.0	12.0	0.0
11. Boat wethers - 21 Micron	22.5	22.5	0.0
12. Merino Wethers Medium Wool - 21 Micron	17.5	17.5	0.0

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 3.5 dse/ha)		
	Current Prices 2003/04	Weaning rate up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	100	107	8
2. Merino Ewe Medium Wool - 21 Micron	114	122	8
3. Merino Flock - 21 Micron - TS to old Ewes	125	134	9
4. Merino Flock - 23 Micron - TS to old Ewes	135	145	10
5. Merino Flock - 21 Micron - TS to all Ewes	132	142	11
6. Merino Flock - 23 Micron - TS to all Ewes	138	148	10
7. First Cross - Maternal Sire - BL x Merino	125	135	10
8. Second Cross - 28 Micron - TS x BLM	104	116	12
9. Store Lamb Finishing on Lucerne	194	194	0
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	79	79	0
12. Merino Wethers Medium Wool - 21 Micron	61	61	0

High Rainfall Zone – Impact of increasing weaning rate

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Weaning rate up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	33.7	35.9	6.4
2. Merino Ewe Medium Wool - 21 Micron	34.9	37.3	7.1
3. Merino Flock - 21 Micron - TS to old Ewes	37.5	40.2	7.3
4. Merino Flock - 23 Micron - TS to old Ewes	42.8	45.9	7.1
5. Merino Flock - 21 Micron - TS to all Ewes	39.8	42.8	7.7
6. Merino Flock - 23 Micron - TS to all Ewes	42.5	45.6	7.3
7. First Cross - Maternal Sire - BL x Merino	40.0	43.2	7.9
8. Second Cross - 28 Micron - TS x BLM	29.2	32.4	10.9
9. Store Lamb Finishing on Lucerne	21.9	21.9	0.0
10. Feedlot Lambs for Export	12.0	12.0	0.0
11. Boat wethers - 21 Micron	23.8	23.8	0.0
12. Merino Wethers Medium Wool - 21 Micron	20.4	20.4	0.0

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 10 dse/ha)		
	Current Prices 2003/04	Weaning rate up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	337	359	22
2. Merino Ewe Medium Wool - 21 Micron	349	373	25
3. Merino Flock - 21 Micron - TS to old Ewes	375	402	27
4. Merino Flock - 23 Micron - TS to old Ewes	428	459	31
5. Merino Flock - 21 Micron - TS to all Ewes	398	428	31
6. Merino Flock - 23 Micron - TS to all Ewes	425	456	31
7. First Cross - Maternal Sire - BL x Merino	400	432	32
8. Second Cross - 28 Micron - TS x BLM	292	324	32
9. Store Lamb Finishing on Lucerne	439	439	0
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	238	238	0
12. Merino Wethers Medium Wool - 21 Micron	204	204	0

Wheat / Sheep Zone – Impact of increasing fleece weight

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Fleece weight up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	28.4	30.4	7.1
2. Merino Ewe Medium Wool - 21 Micron	32.6	34.7	6.7
3. Merino Flock - 21 Micron - TS to old Ewes	35.6	37.8	6.1
4. Merino Flock - 23 Micron - TS to old Ewes	38.6	41.0	6.2
5. Merino Flock - 21 Micron - TS to all Ewes	37.7	39.6	5.1
6. Merino Flock - 23 Micron - TS to all Ewes	39.4	41.5	5.4
7. First Cross - Maternal Sire - BL x Merino	35.7	37.4	5.0
8. Second Cross - 28 Micron - TS x BLM	29.8	30.6	2.6
9. Store Lamb Finishing on Lucerne	19.4	19.5	0.6
10. Feedlot Lambs for Export	12.0	12.1	0.9
11. Boat wethers - 21 Micron	22.5	22.5	0.0
12. Merino Wethers Medium Wool - 21 Micron	17.5	20.4	16.4

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 3.5 dse/ha)		
	Current Prices 2003/04	Fleece weight up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	100	107	7
2. Merino Ewe Medium Wool - 21 Micron	114	122	8
3. Merino Flock - 21 Micron - TS to old Ewes	125	132	8
4. Merino Flock - 23 Micron - TS to old Ewes	135	143	8
5. Merino Flock - 21 Micron - TS to all Ewes	132	139	7
6. Merino Flock - 23 Micron - TS to all Ewes	138	145	7
7. First Cross - Maternal Sire - BL x Merino	125	131	6
8. Second Cross - 28 Micron - TS x BLM	104	107	3
9. Store Lamb Finishing on Lucerne	194	195	1
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	79	79	0
12. Merino Wethers Medium Wool - 21 Micron	61	71	10

High Rainfall Zone – Impact of increasing fleece weight

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Fleece weight up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	33.7	36.3	7.8
2. Merino Ewe Medium Wool - 21 Micron	34.9	37.3	6.9
3. Merino Flock - 21 Micron - TS to old Ewes	37.5	39.9	6.3
4. Merino Flock - 23 Micron - TS to old Ewes	42.8	45.4	6.1
5. Merino Flock - 21 Micron - TS to all Ewes	39.8	41.9	5.2
6. Merino Flock - 23 Micron - TS to all Ewes	42.5	44.8	5.5
7. First Cross - Maternal Sire - BL x Merino	40.0	41.9	4.9
8. Second Cross - 28 Micron - TS x BLM	29.2	30.1	2.9
9. Store Lamb Finishing on Lucerne	21.9	22.0	0.5
10. Feedlot Lambs for Export	12.0	12.1	0.9
11. Boat wethers - 21 Micron	23.8	23.8	0.0
12. Merino Wethers Medium Wool - 21 Micron	20.4	23.5	15.4

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 10 dse/ha)		
	Current Prices 2003/04	Fleece weight up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	337	363	26
2. Merino Ewe Medium Wool - 21 Micron	349	373	24
3. Merino Flock - 21 Micron - TS to old Ewes	375	399	24
4. Merino Flock - 23 Micron - TS to old Ewes	428	454	26
5. Merino Flock - 21 Micron - TS to all Ewes	398	419	21
6. Merino Flock - 23 Micron - TS to all Ewes	425	448	23
7. First Cross - Maternal Sire - BL x Merino	400	419	20
8. Second Cross - 28 Micron - TS x BLM	292	301	8
9. Store Lamb Finishing on Lucerne	439	441	2
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	238	238	0
12. Merino Wethers Medium Wool - 21 Micron	204	235	31

Wheat / Sheep Zone – Impact of increasing live weight

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Live weight up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	28.4	30.1	5.7
2. Merino Ewe Medium Wool - 21 Micron	32.6	34.4	5.5
3. Merino Flock - 21 Micron - TS to old Ewes	35.6	37.7	5.9
4. Merino Flock - 23 Micron - TS to old Ewes	38.6	40.7	5.4
5. Merino Flock - 21 Micron - TS to all Ewes	37.7	40.2	6.8
6. Merino Flock - 23 Micron - TS to all Ewes	39.4	41.8	6.3
7. First Cross - Maternal Sire - BL x Merino	35.7	38.1	6.8
8. Second Cross - 28 Micron - TS x BLM	29.8	32.6	9.5
9. Store Lamb Finishing on Lucerne	19.4	19.4	0.0
10. Feedlot Lambs for Export	12.0	12.0	0.0
11. Boat wethers - 21 Micron	22.5	24.8	10.0
12. Merino Wethers Medium Wool - 21 Micron	17.5	17.5	0.0

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 3.5 dse/ha)		
	Current Prices 2003/04	Live weight up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	100	105	6
2. Merino Ewe Medium Wool - 21 Micron	114	120	6
3. Merino Flock - 21 Micron - TS to old Ewes	125	132	7
4. Merino Flock - 23 Micron - TS to old Ewes	135	142	7
5. Merino Flock - 21 Micron - TS to all Ewes	132	141	9
6. Merino Flock - 23 Micron - TS to all Ewes	138	146	9
7. First Cross - Maternal Sire - BL x Merino	125	133	9
8. Second Cross - 28 Micron - TS x BLM	104	114	10
9. Store Lamb Finishing on Lucerne	194	194	0
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	79	87	8
12. Merino Wethers Medium Wool - 21 Micron	61	61	0

High Rainfall Zone – Impact of increasing live weight

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Live weight up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	33.7	35.2	4.6
2. Merino Ewe Medium Wool - 21 Micron	34.9	36.7	5.3
3. Merino Flock - 21 Micron - TS to old Ewes	37.5	39.6	5.7
4. Merino Flock - 23 Micron - TS to old Ewes	42.8	45.1	5.4
5. Merino Flock - 21 Micron - TS to all Ewes	39.8	42.4	6.5
6. Merino Flock - 23 Micron - TS to all Ewes	42.5	45.1	6.1
7. First Cross - Maternal Sire - BL x Merino	40.0	42.7	6.8
8. Second Cross - 28 Micron - TS x BLM	29.2	31.9	9.2
9. Store Lamb Finishing on Lucerne	21.9	21.9	0.0
10. Feedlot Lambs for Export	12.0	12.0	0.0
11. Boat wethers - 21 Micron	23.8	26.1	10.0
12. Merino Wethers Medium Wool - 21 Micron	20.4	20.4	0.0

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 10 dse/ha)		
	Current Prices 2003/04	Live weight up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	337	352	15
2. Merino Ewe Medium Wool - 21 Micron	349	367	18
3. Merino Flock - 21 Micron - TS to old Ewes	375	396	21
4. Merino Flock - 23 Micron - TS to old Ewes	428	451	23
5. Merino Flock - 21 Micron - TS to all Ewes	398	424	26
6. Merino Flock - 23 Micron - TS to all Ewes	425	451	26
7. First Cross - Maternal Sire - BL x Merino	400	427	27
8. Second Cross - 28 Micron - TS x BLM	292	319	27
9. Store Lamb Finishing on Lucerne	439	439	0
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	238	261	24
12. Merino Wethers Medium Wool - 21 Micron	204	204	0

Wheat / Sheep Zone – Impact of increasing meat value

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Meat value up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	30.2	32.0	6.0
2. Merino Ewe Medium Wool - 21 Micron	34.8	36.8	5.8
3. Merino Flock - 21 Micron - TS to old Ewes	38.0	40.3	6.2
4. Merino Flock - 23 Micron - TS to old Ewes	41.0	43.3	5.7
5. Merino Flock - 21 Micron - TS to all Ewes	39.7	42.5	6.9
6. Merino Flock - 23 Micron - TS to all Ewes	41.3	44.0	6.5
7. First Cross - Maternal Sire - BL x Merino	40.0	40.8	2.1
8. Second Cross - 28 Micron - TS x BLM	31.4	35.3	12.5
9. Store Lamb Finishing on Lucerne	19.4	25.7	32.2
10. Feedlot Lambs for Export	12.0	18.3	52.4
11. Boat wethers - 21 Micron	24.8	27.2	10.0
12. Merino Wethers Medium Wool - 21 Micron	16.8	na	na

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 3.5 dse/ha)		
	Current Prices 2003/04	Meat value up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	106	112	6
2. Merino Ewe Medium Wool - 21 Micron	122	129	7
3. Merino Flock - 21 Micron - TS to old Ewes	133	141	8
4. Merino Flock - 23 Micron - TS to old Ewes	143	152	8
5. Merino Flock - 21 Micron - TS to all Ewes	139	149	10
6. Merino Flock - 23 Micron - TS to all Ewes	145	154	9
7. First Cross - Maternal Sire - BL x Merino	140	143	3
8. Second Cross - 28 Micron - TS x BLM	110	123	14
9. Store Lamb Finishing on Lucerne	194	257	63
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	87	95	9
12. Merino Wethers Medium Wool - 21 Micron	59	na	na

High Rainfall Zone – Impact of increasing meat value

Enterprise	Gross Margins per dse ($/dse)		
	Current Prices 2003/04	Meat value up 10%	Deviation +/- (%)
1. Merino Ewe Fine Wool - 18 Micron	33.7	35.2	4.6
2. Merino Ewe Medium Wool - 21 Micron	34.9	36.7	5.3
3. Merino Flock - 21 Micron - TS to old Ewes	37.5	39.6	5.7
4. Merino Flock - 23 Micron - TS to old Ewes	42.8	45.1	5.4
5. Merino Flock - 21 Micron - TS to all Ewes	39.8	42.4	6.5
6. Merino Flock - 23 Micron - TS to all Ewes	42.5	45.1	6.1
7. First Cross - Maternal Sire - BL x Merino	40.0	40.8	2.1
8. Second Cross - 28 Micron - TS x BLM	29.2	32.7	11.9
9. Store Lamb Finishing on Lucerne	21.9	28.2	28.6
10. Feedlot Lambs for Export	12.0	18.3	52.4
11. Boat wethers - 21 Micron	23.8	26.1	10.0
12. Merino Wethers Medium Wool - 21 Micron	20.4	na	na

Enterprise	Gross Margins per hectare ($/ha) (assumed stocking rate = 10 dse/ha)		
	Current Prices 2003/04	Meat value up 10%	Deviation +/- ($)
1. Merino Ewe Fine Wool - 18 Micron	337	352	15
2. Merino Ewe Medium Wool - 21 Micron	349	367	18
3. Merino Flock - 21 Micron - TS to old Ewes	375	396	21
4. Merino Flock - 23 Micron - TS to old Ewes	428	451	23
5. Merino Flock - 21 Micron - TS to all Ewes	398	424	26
6. Merino Flock - 23 Micron - TS to all Ewes	425	451	26
7. First Cross - Maternal Sire - BL x Merino	400	408	9
8. Second Cross - 28 Micron - TS x BLM	292	327	35
9. Store Lamb Finishing on Lucerne	439	564	125
10. Feedlot Lambs for Export	na	na	na
11. Boat wethers - 21 Micron	238	261	24
12. Merino Wethers Medium Wool - 21 Micron	204	na	na