

Stocking rate analysis - Wethers @ Hamilton VIC

1/01/1980 - 31/12/2008

Analysis Summary Stocking rate report

Gross margin table

Long term averages for financial year [1 Jan - 31 Dec, 1980-2008]

	Stocking rate	20/ha	30/ha	40/ha
Net wool income - main flock	\$/ha	654	903	1097
Net wool income - young stock	\$/ha	0	0	0
Sale income - sold at foot	\$/ha	0	0	0
Sale income - young stock	\$/ha	0	0	0
Sale income - cast-for-age	\$/ha	242	309	362
TOTAL INCOME	\$/ha	896	1212	1459
Animal husbandry	\$/ha	39	59	79
Shearing costs	\$/ha	117	175	233
Replacements purchased	\$/ha	310	464	619
Rams or bulls purchased	\$/ha	0	0	0
Sale costs	\$/ha	25	34	43
Maintenance supplement	\$/ha	11	111	332
Production supplement	\$/ha	0	0	0
Pasture costs	\$/ha	50	50	50
TOTAL EXPENSES	\$/ha	552	893	1356
GROSS MARGIN	\$/ha	345	319	104

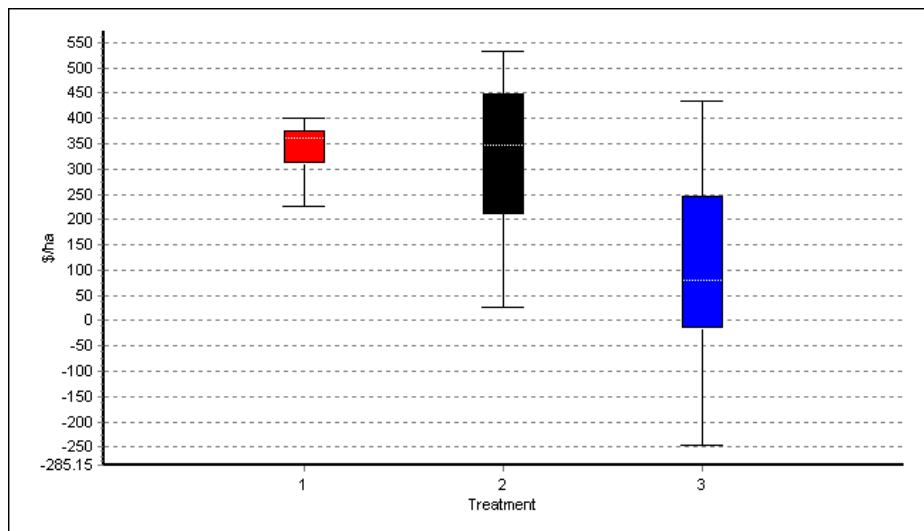
Variability of Gross Margin

Long term standard deviation of the annual gross margin (\$/ha) [1 Jan - 31 Dec, 1980-2008]

	Stocking rate	20/ha	30/ha	40/ha
Total income	\$/ha	33.15	72.83	43.95
Total expense	\$/ha	24.24	97.68	154.21
Gross margin	\$/ha	49.22	160.75	184.40

Boxplots for gross margins for all treatments.

Annual gross margin (\$/ha) for financial year [1 Jan - 31 Dec, 1980-2008]



Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Interpretation of boxplots

The box shows the middle 50% of values (the interquartile range). The horizontal line inside the box is the median. The lines extending above and below the box (whiskers) show the upper and lower quartiles (25% of values). Beyond the whiskers, outlying values are shown by dots and extreme values are shown by asterisks. "Outlying values" lie more than 1.5 times the interquartile range beyond the upper and lower quartiles. "Extreme values" lie more than 3.0 times the interquartile range beyond the upper and lower quartiles.

Production summary

Long term averages for financial year [1 Jan - 31 Dec, 1980-2008]

	Stocking rate	20/ha	30/ha	40/ha
Dry sheep equivalents (av.)	dse/ha	23.6	29.0	33.3
Wool cut - total flock (sum)	kg CFW/ha	70.6	90.3	96.7
Wool cut - lambs (sum)	kg CFW/ha	0.0	0.0	0.0
Shorn fibre diameter - ewe adults (av.)	microns	n/a	n/a	n/a
Shorn fibre diameter - wether adults (av.)	microns	18.2	17.7	17.0
Shorn fibre diameter - lambs (av.)	microns	n/a	n/a	n/a
Meat sold - total flock (sum)	kg LW/ha	393	492	565
Meat sold - young stock (sum)	kg LW/ha	0	0	0

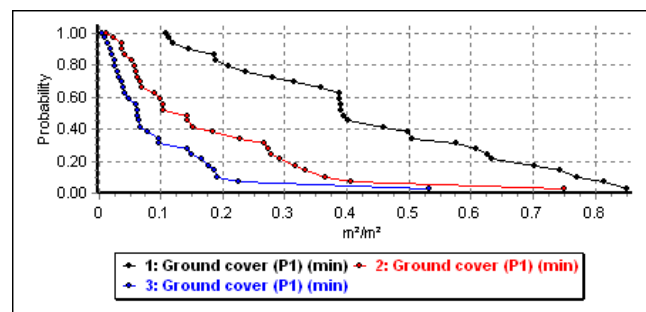
Sustainability

Long term average annual production (NPP) and minimum mass of pasture, water balance and methane production [1 Jan - 31 Dec, 1980-2008]

	Stocking rate	20/ha	30/ha	40/ha
Annual pasture production (P1) (sum)	kg/ha	11320	10127	9224
Minimum total herbage mass (P1) (min)	kg/ha	821	268	137
Ground cover (P1) (min)	m ² /m ²	0.43	0.17	0.09
Rainfall (sum)	mm	642	642	642
Runoff (P1) (sum)	mm	0	0	0
Actual evapotranspiration (P1) (sum)	mm	542	539	536
Drainage below rooting zone (P1) (sum)	mm	99	103	106
Methane production -main group (sum)	g/head	9322	7636	6579
Methane production -young stock (sum)	g/head	n/a	n/a	n/a

Cumulative distribution function for minimum ground cover for all treatments.

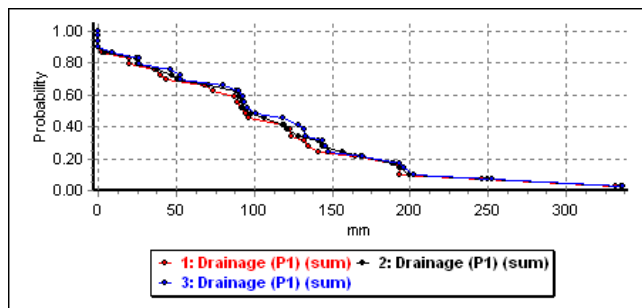
The probability (shown on the vertical axis) of the minimum ground cover in a year exceeding the value shown on the horizontal axis [1 Jan - 31 Dec, 1980-2008]



Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Cumulative distribution function for deep drainage for all treatments.

The probability (shown on the vertical axis) of the total amount of soil water draining below the root zone each year exceeding the value shown on the horizontal axis (mm/y) [1 Jan - 31 Dec, 1980-2008]

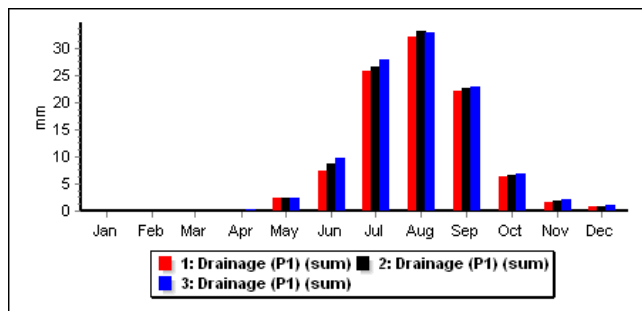


Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Timing of deep drainage for all treatments.

Drainage of water below the root zone (mm/month)

Note: distributions are typically highly skewed [1 Jan - 31 Dec, 1980-2008]

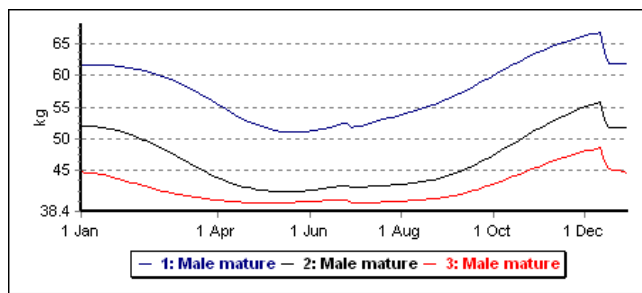


Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Average differences between treatments

Live weight of mature male sheep for all treatments.

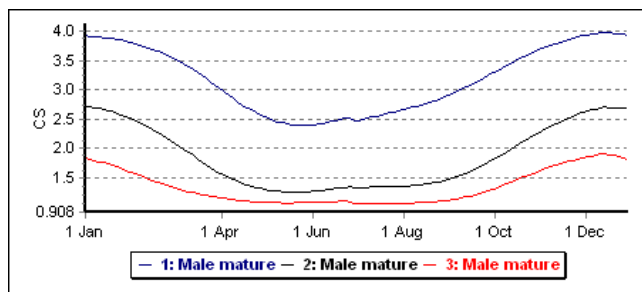
Long term average live weight, including fleece (kg/head) [1 Jan - 31 Dec, 1980-2008]



Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Body condition of mature male sheep for all treatments.

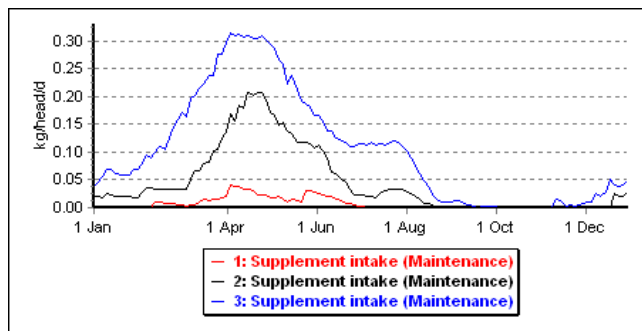
Long term average (condition score) [1 Jan - 31 Dec, 1980-2008]



Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Supplement intake of main flock for all treatments.

Long term average daily supplement intake (kg/head/d) [1 Jan - 31 Dec, 1980-2008]



Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

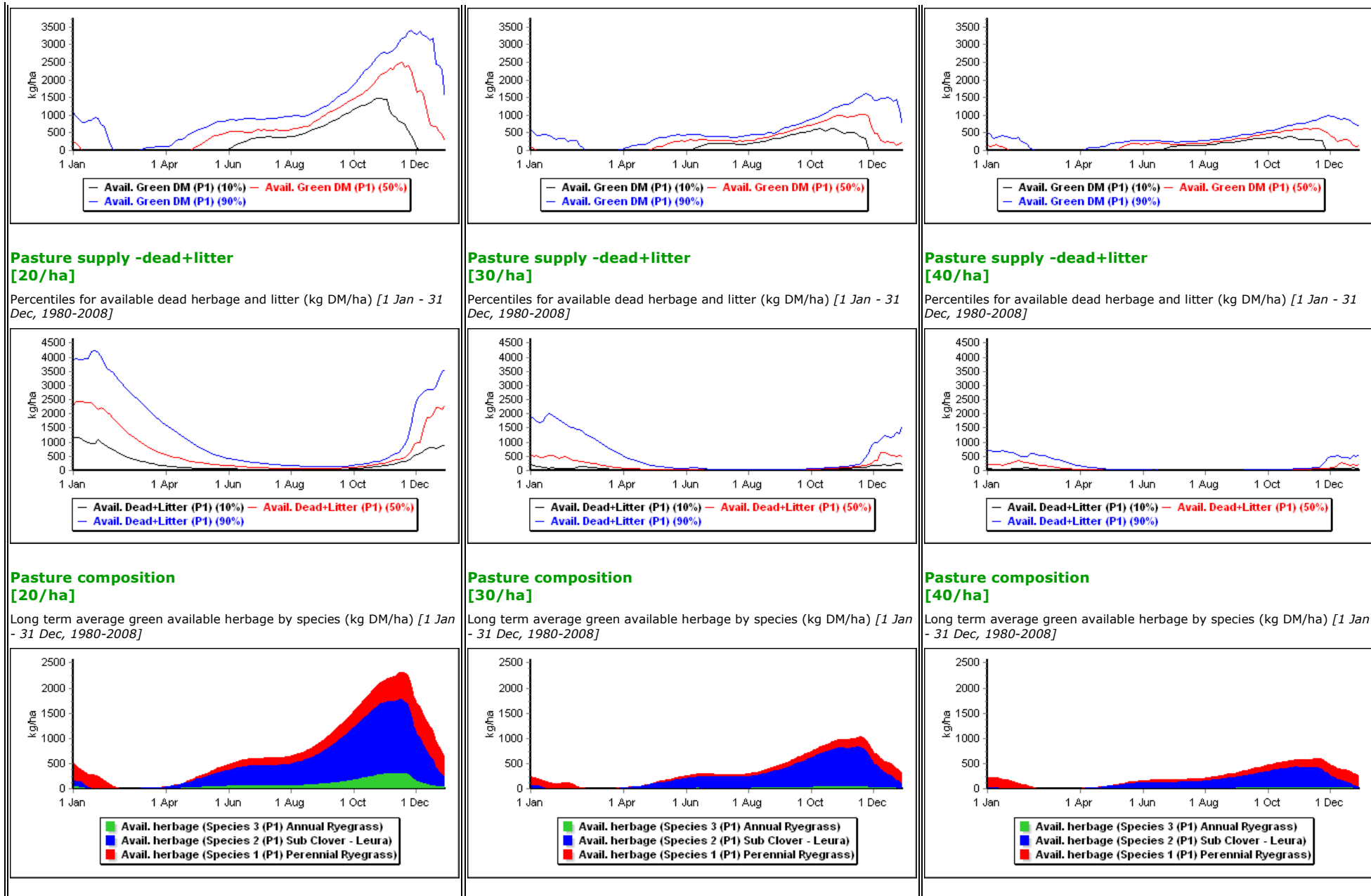
Wool growth per head by age class

Long term average clean fleece weight per head (kg/head) [1 Jan - 31 Dec, 1980-2008]

	Stocking rate	20/ha	30/ha	40/ha
Wool growth (Female weaners)	kg/head	n/a	n/a	n/a
Wool growth (Female 1-2 y.o.)	kg/head	n/a	n/a	n/a
Wool growth (Female mature)	kg/head	n/a	n/a	n/a
Wool growth (Male weaners)	kg/head	n/a	n/a	n/a
Wool growth (Male 1-2 y.o.)	kg/head	1.59	1.27	1.09
Wool growth (Male mature)	kg/head	3.64	3.10	2.49
Wool cut/ha - total	kg CFW/ha	70.6	90.3	96.7

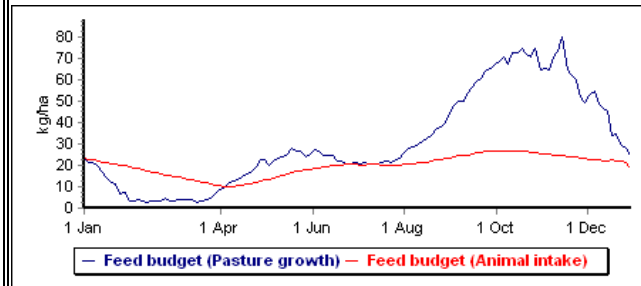
Summary of variability of each treatment

<p>Pasture supply -green [20/ha]</p> <p>Percentiles for available green herbage (kg DM/ha) [1 Jan - 31 Dec, 1980-2008]</p>	<p>Pasture supply -green [30/ha]</p> <p>Percentiles for available green herbage (kg DM/ha) [1 Jan - 31 Dec, 1980-2008]</p>	<p>Pasture supply -green [40/ha]</p> <p>Percentiles for available green herbage (kg DM/ha) [1 Jan - 31 Dec, 1980-2008]</p>
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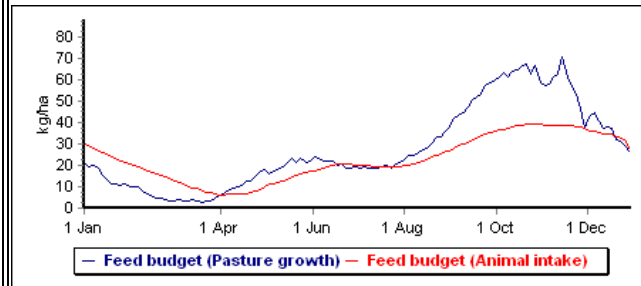
Feed budget for whole enterprise [20/ha]

Long term average pasture growth and pasture intake (kg DM/ha/d) [1 Jan - 31 Dec, 1980-2008]



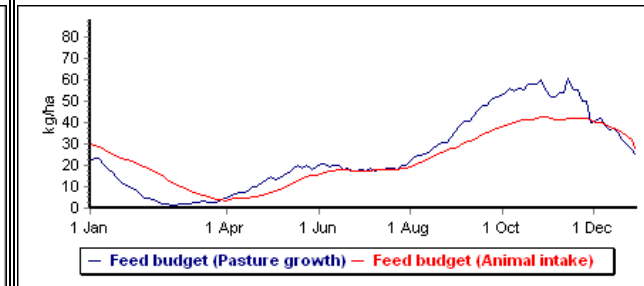
Feed budget for whole enterprise [30/ha]

Long term average pasture growth and pasture intake (kg DM/ha/d) [1 Jan - 31 Dec, 1980-2008]



Feed budget for whole enterprise [40/ha]

Long term average pasture growth and pasture intake (kg DM/ha/d) [1 Jan - 31 Dec, 1980-2008]



Pasture utilization rate [20/ha]

The long term average amount of pasture consumed by all stock as a proportion of the amount of pasture grown over the period analysed (%) [31 Dec - 31 Dec, 2008-2008]

Date	Utilization rate (%)
31 Dec	64

Pasture utilization rate [30/ha]

The long term average amount of pasture consumed by all stock as a proportion of the amount of pasture grown over the period analysed (%) [31 Dec - 31 Dec, 2008-2008]

Date	Utilization rate (%)
31 Dec	83

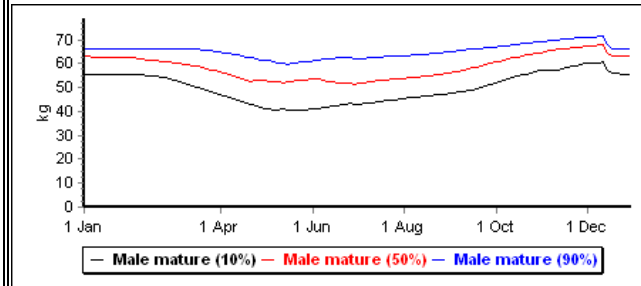
Pasture utilization rate [40/ha]

The long term average amount of pasture consumed by all stock as a proportion of the amount of pasture grown over the period analysed (%) [31 Dec - 31 Dec, 2008-2008]

Date	Utilization rate (%)
31 Dec	91

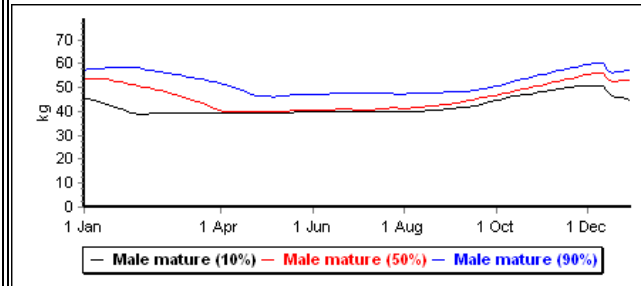
Livestock live weight - main male flock [20/ha]

Percentiles for live weight of mature sheep (kg/head) [1 Jan - 31 Dec, 1980-2008]



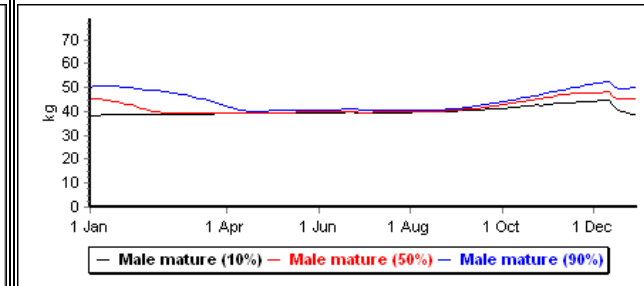
Livestock live weight - main male flock [30/ha]

Percentiles for live weight of mature sheep (kg/head) [1 Jan - 31 Dec, 1980-2008]



Livestock live weight - main male flock [40/ha]

Percentiles for live weight of mature sheep (kg/head) [1 Jan - 31 Dec, 1980-2008]



Wool fibre diameter profile of mature sheep [20/ha]

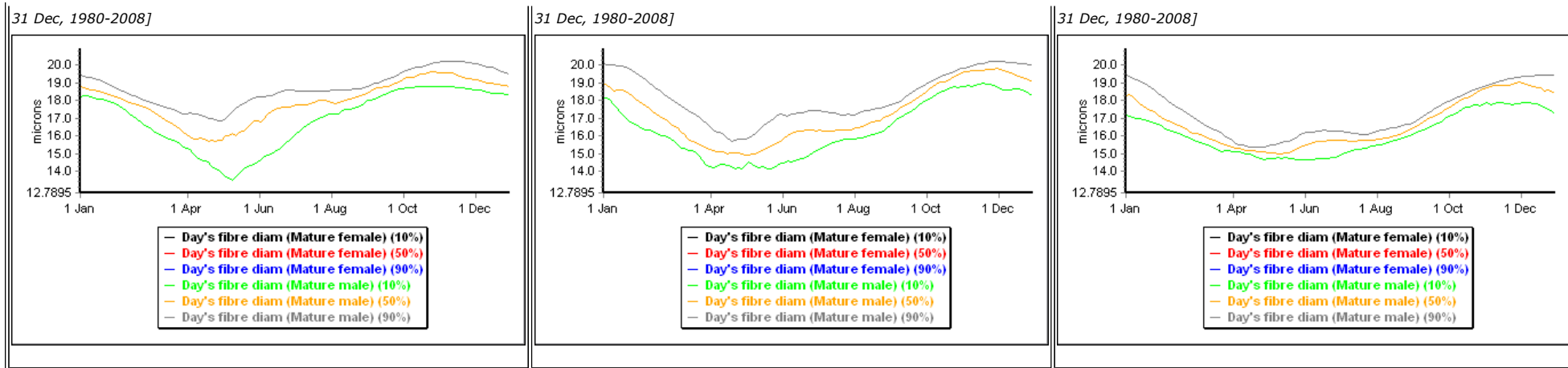
Percentiles for fibre diameter of each day's wool growth (micron) [1 Jan -

Wool fibre diameter profile of mature sheep [30/ha]

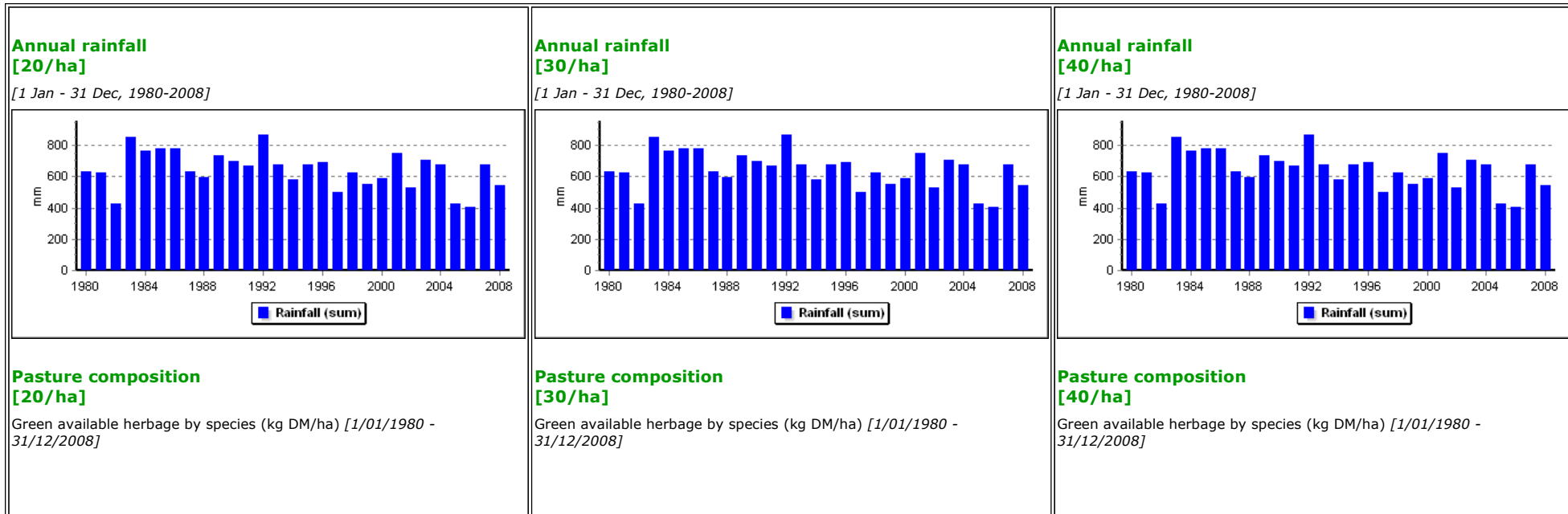
Percentiles for fibre diameter of each day's wool growth (micron) [1 Jan -

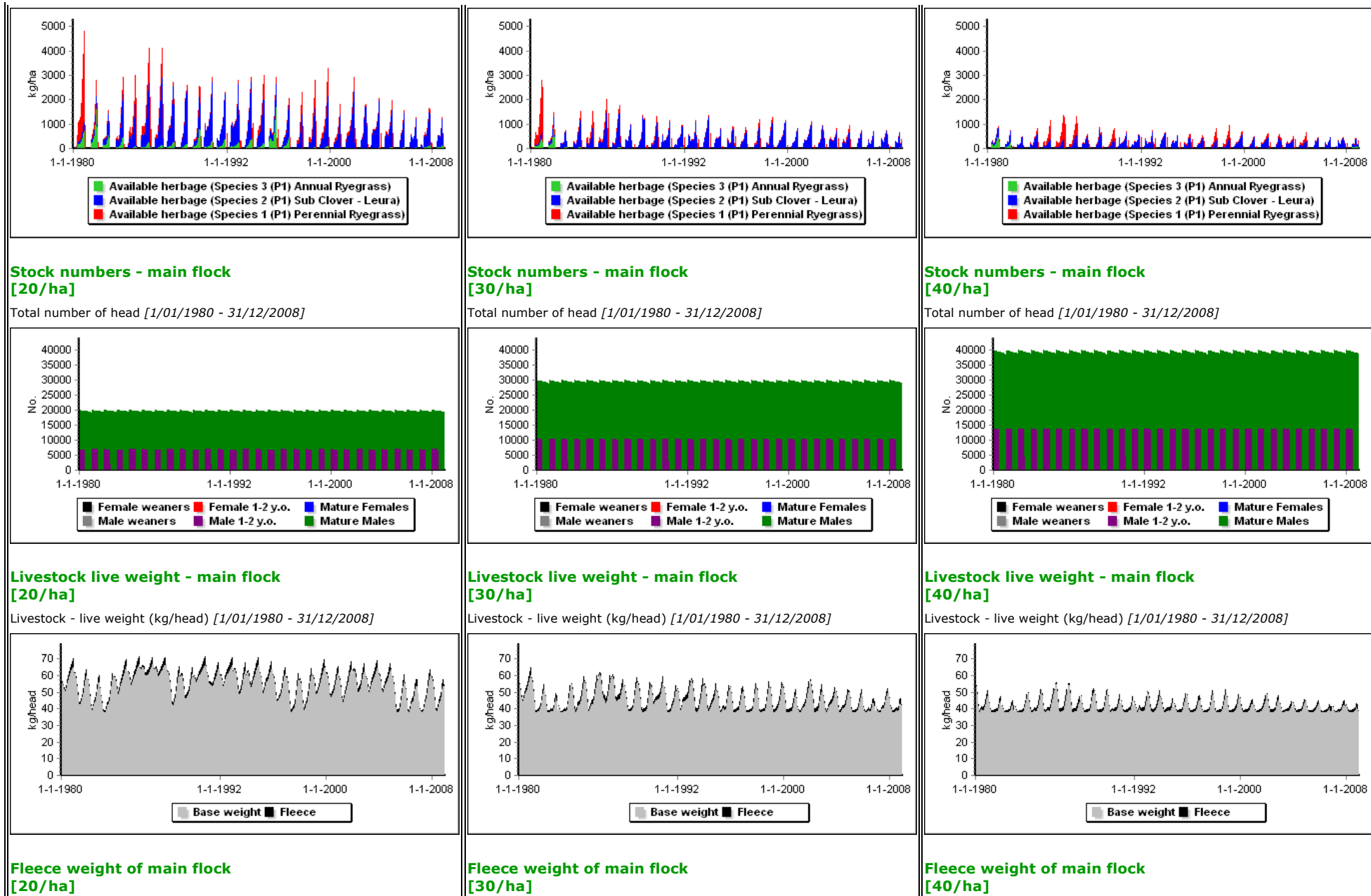
Wool fibre diameter profile of mature sheep [40/ha]

Percentiles for fibre diameter of each day's wool growth (micron) [1 Jan -

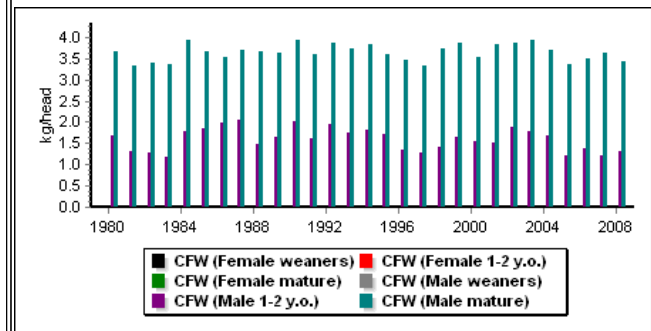


Comparisons of treatments over years

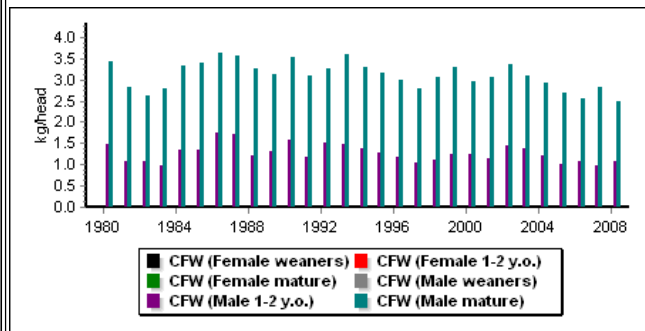




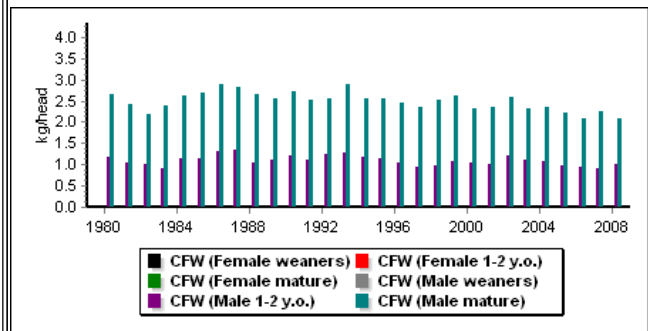
Clean fleece weight shorn for each year (kg/head) [1 Jan - 31 Dec, 1980-2008]



Clean fleece weight shorn for each year (kg/head) [1 Jan - 31 Dec, 1980-2008]

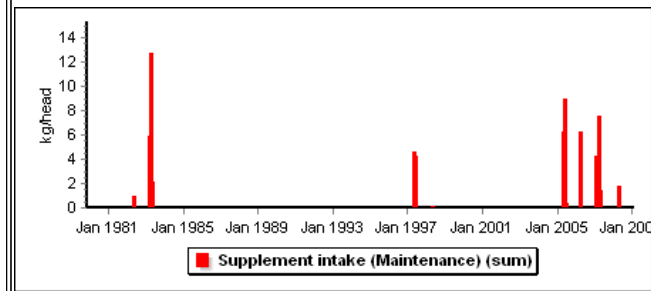


Clean fleece weight shorn for each year (kg/head) [1 Jan - 31 Dec, 1980-2008]



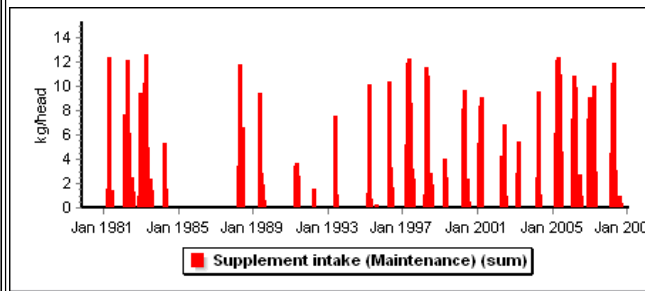
Supplement intake of main flock by type [20/ha]

Total monthly intake of supplement (kg/head/month) [1/01/1980 - 31/12/2008]



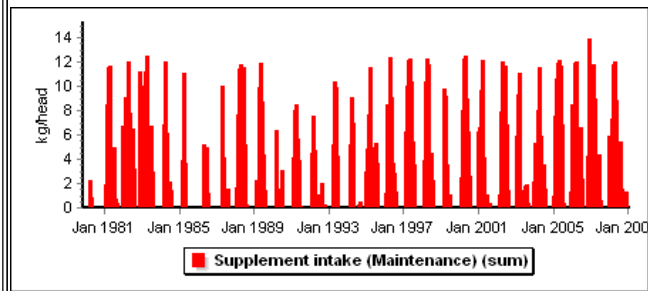
Supplement intake of main flock by type [30/ha]

Total monthly intake of supplement (kg/head/month) [1/01/1980 - 31/12/2008]



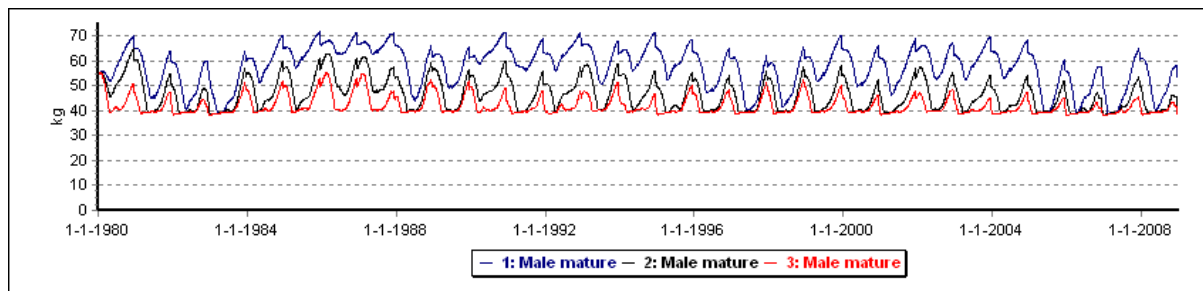
Supplement intake of main flock by type [40/ha]

Total monthly intake of supplement (kg/head/month) [1/01/1980 - 31/12/2008]



Livestock male live weight - main flock for all treatments.

Live weight of mature animals [1/01/1980 - 31/12/2008]



Treatment	Stocking rate
1	20/ha
2	30/ha
3	40/ha

Farm system description

Initial values for base Farm System used in this analysis

Farm System

Name	Wethers @ Hamilton VIC
Description	Stock: Finewool Merino wethers
Enterprise type	Wether
Tested	Over 1 Jan 1980 to 31 Dec 2008
Passed	Yes
Pasture parameters	<i>standard</i> , last edited 20 Mar 2009 by Andrew Moore
Animal parameters	<i>standard</i> , last edited 09 Feb 2004 by Andrew Moore

Property: Hamilton PVI

Number of paddocks	1
Total area	1000 ha

Weather: Hamilton (VIC)

Weather station	Hamilton (VIC)
Latitude	37°50'S
Longitude	142°04'E
Data period	1 Jan 1957 to 31 Dec 2009
Last edited	10 May 2010

Paddock: Paddock 1

Area	1000.0 ha
Steepness	Level
Fertility	0.80
Reduce wind to	100%

Soil: Hamilton PVI

Description	Silty clay loam over clay (White)	
Soil albedo	0.17	
Soil evaporation	3.5 mm/d ^{1/2}	
	Topsoil	Subsoil
Cumulative depth (mm)	250	1000
Field capacity (m³/m³)	0.32	0.48
Wilting point (m³/m³)	0.13	0.33
Bulk density (Mg/m³)	1.06	1.33
Saturated conductivity (mm/hr)	8.30	1.00
Initial water (m³/m³)	0.15	0.38

Pasture: Perennial ryegrass - sub clover-annual grass

Population	Perennial Ryegrass	Sub Clover - Leura	Annual Ryegrass
Phenology	S. Dormant (0)	Senescent	Senescent
Live DM (kg/ha)	0	0	0
Standing dead DM (kg/ha)	4002	2000	500
Litter DM (kg/ha)	500	200	200
Below ground DM (kg/ha)	200	0	0
Max. rooting depth (mm)	700	400	500
Seed DM (kg/ha)	-	100	150

Livestock: Finewool Merino wethers

Breed	Small Merino
Standard reference weight	45.0 kg
Greasy fleece weight	4.00 kg
Fibre diameter	18.0 microns
Fleece yield	73 %
Death rate: adults	3.0 %/year
Death rate: weaners	3.0 %/year

Using default values for initial animal and fleece weights

Management policy: Wethers

Stocking rate	Description	20 wethers/ha
	Rate	20.0/ha
Shearing date	Description	15 Dec
	Main flock	15 Dec
Replacement rule	Description	Cull Dec, buy Jan
	Purchase	Purchase wethers on 1 Jan at age 18 months, live weight 55 kg and C.S. 3.0
	Cast for age	Sell stock aged 4 to 5 years on 31 Dec

Maintenance Feeding rule: Wether Maintenance Feeding rule	
Description	Maintain condition when < score 1.0 (weaners < score 2.0)
Main flock/herd	
Mature Males	Feed in paddock, applying the rule: If animal condition falls to 1.0 during 1 Jan to 31 Dec feed to maintain condition of the thinnest animals
Immature Males	Feed in paddock, applying the rule: If animal condition falls to 1.0 during 1 Jan to 31 Dec feed to maintain condition of the thinnest animals
Weaner flock/herd	
Weaners	Feed in paddock, applying the rule: If animal condition falls to 2.0 during 1 Jan to 31 Dec feed to maintain condition of the thinnest animals
Supplement	Supplement: Wheat, whole
Ingredient	Wheat, whole
Proportion of mix (%)	100
Dry matter content (%)	89
Dry matter digestibility (%)	90
ME:DM (MJ/kg)	13.8
Crude protein (%)	14
Rumen-degradable protein (%)	92
Production Feeding rule: Nil Production Feeding	
Feeding rule	none
Pasture rule	
Description	reset 5 Apr
Reset on	5 Apr

Costs: Sheep costs -Merino

Wether Shearing		\$6.00/head
Wether Husbandry		\$2.00/head
Wether Replacement		\$45.00/head
Sheep sales commission		5%
Sheep sales cost		\$2.00/head
Pasture costs	Fertilty scalar = 0.60	\$30.00/ha
	Fertilty scalar = 0.70	\$40.00/ha
	Fertilty scalar = 0.80	\$50.00/ha
	Fertilty scalar = 0.90	\$60.00/ha
Supplement costs	Barley, whole	\$185.00/t
	Canola meal	\$270.00/t
	Cottonseed meal	\$250.00/t
	Cottonseed, whole	\$170.00/t
	Peas	\$190.00/t
	Hay	\$95.00/t
	Lupins	\$230.00/t
	Molasses	\$47.00/t
	Oats, whole	\$170.00/t

Sorghum, whole	\$180.00/t
Triticale, whole	\$190.00/t
Wheat, whole	\$195.00/t
Pea straw	\$95.00/t

Prices: Merino prices -fine wool

Description	Fine wool prices 2002-07 (50%ile) 75-84mm, 35-39 N/ktex (Independent Commodity Services P/L)	
Wool prices for wethers	16 micron	1915 c/kg
	17 micron	1375 c/kg
	19 micron	990 c/kg
	20 micron	885 c/kg
	Av. Fleece Price	85.0 %
	Wool commission	5.0 %
Wether sales	Base price	120.0 c/kg
	Dressing percentage	46.0 %
	Skin price	\$4.00/head

GrassGro 3.2.3. Build 16 Jun 2010