

Appendix 2

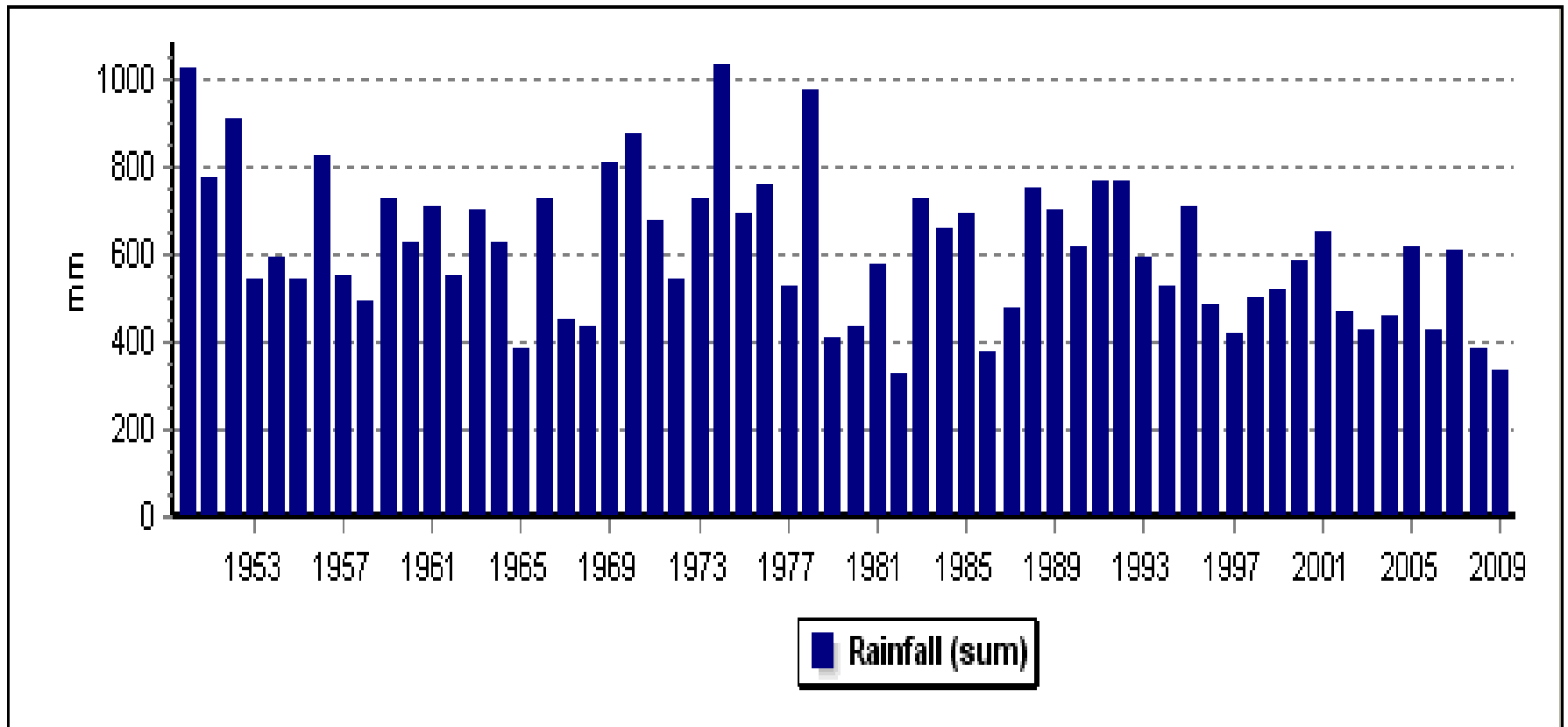
Time of lambing for the Monaro

Aim

- To examine the effect lambing time has on the long term sustainability of a self replacing merino flock on the Monaro.
- Sustainability is measured economically and environmentally.

Constants

614 mm ave rainfall from 1950-2009

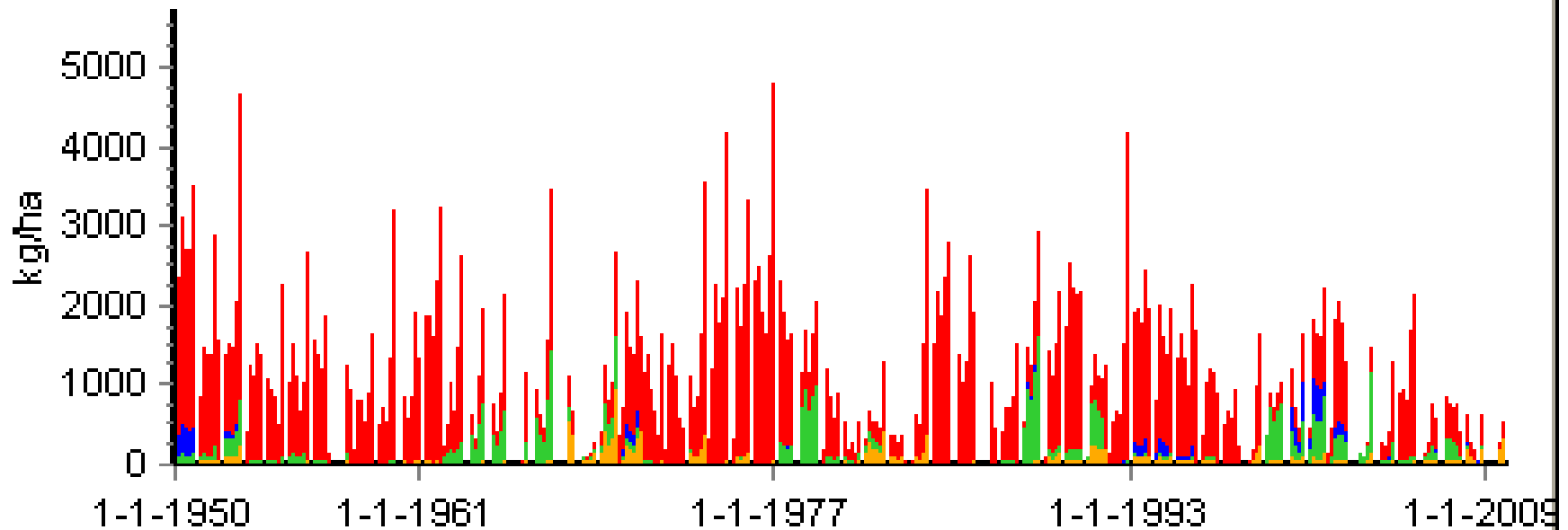


Basalt soil

Soil: Basalt soil

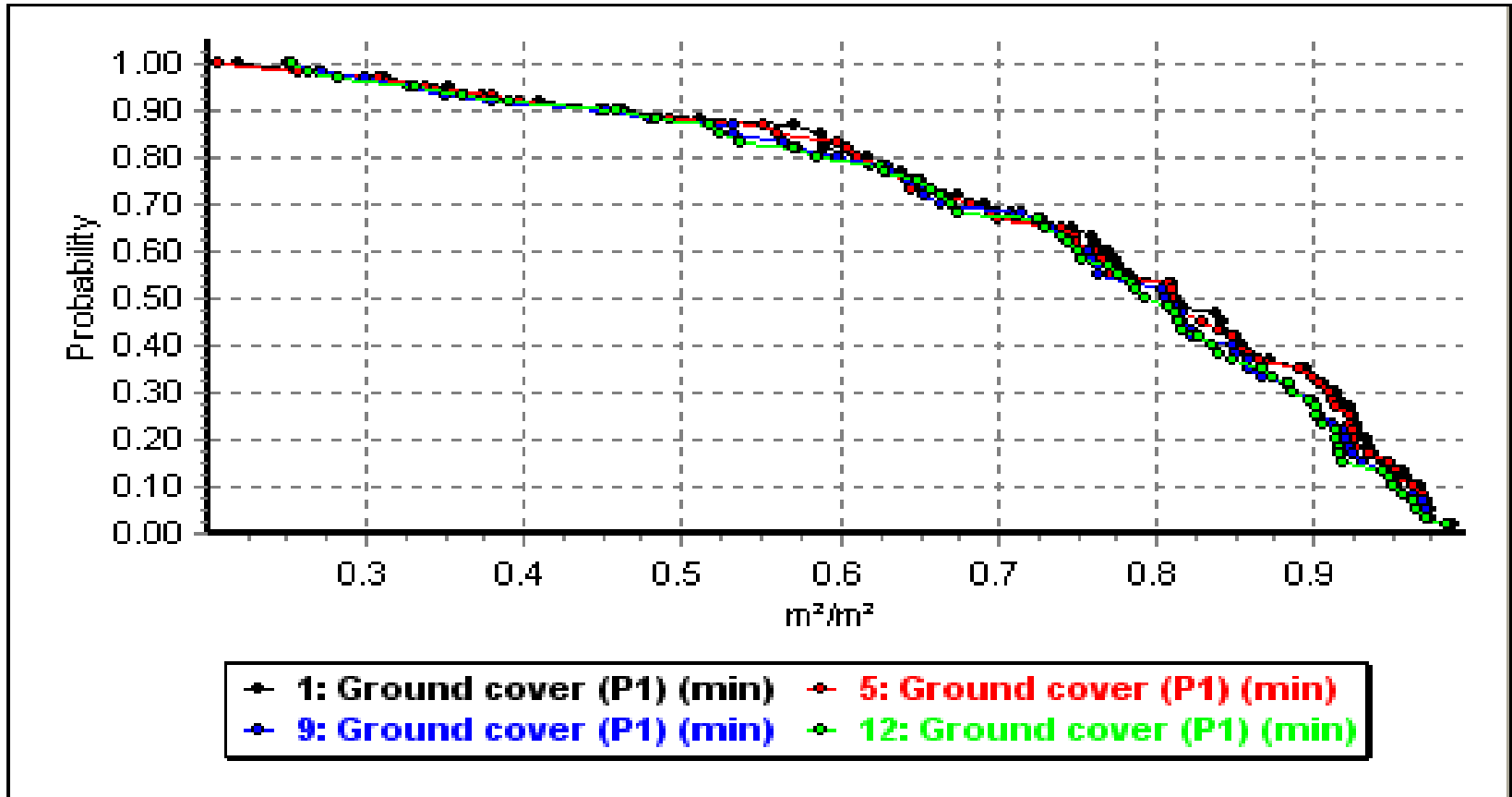
Description	Stony Chocolate soil of Basaltic Origin	
Soil albedo	0.17	
Soil evaporation	3.5 mm/d ^{1/2}	
	Topsoil	Subsoil
Cumulative depth (mm)	300	1000
Field capacity (m³/m³)	0.35	0.45
Wilting point (m³/m³)	0.22	0.37
Bulk density (Mg/m³)	1.16	1.20
Saturated conductivity (mm/hr)	500.00	500.00
Initial water (m³/m³)	0.18	0.42

Pasture composition (available green)



- Avail. herbage (Species 4 (P1) Annual Ryegrass) (av.)
- Avail. herbage (Species 3 (P1) Sub Clover - Seaton...) (av.)
- Avail. herbage (Species 2 (P1) Medic - Paraggio) (av.)
- Avail. herbage (Species 1 (P1) Phalaris) (av.)

Ground cover



Treatment	Lambing date	Stocking rate
1	1 Jul lambing	4.5/ha
5	1 Aug lambing	4.8/ha
9	1 Sep lambing	5/ha
12	1 Oct lambing	5/ha

Merino flock in CS3

Breed	Medium Merino	
Standard reference weight	55.0	kg
Greasy fleece weight	5.50	kg
Fibre diameter	19.0	microns
Fleece yield	70	%
Ram breed	Medium Merino (Mature ram: 77.0 kg)	
Death rate: adults	5.0	%/year
Death rate: weaners	10.0	%/year

Shearing

- Shear all weaners on 1st April regardless of their lambing time.
- Adults shorn on 1st February.

Feeding rules

All animals older than weaners	Feed in paddock, applying the rules:			
	If animal condition falls to 2.0 during 1 Jan to 1 Sep feed to maintain condition of average animals			
	If animal condition falls to 1.0 during 2 Sep to 31 Dec feed to maintain condition of the thinnest animals			
Supplement	Supplement: Barley, whole			
	Ingredient	Barley, whole		
	Proportion of mix (%)	100		
	Dry matter content (%)	89		
	Dry matter digestibility (%)	90		
	ME:DM (MJ/kg)	13.7		
	Crude protein (%)	12		
	Rumen-degradable protein (%)	85		
	Production Feeding rule: Weaners fed to reach 25 kg on 1 Mar			
Feeding weaners	Target, from 1 Sep to reach 25.0 kg on 1 Mar			
	Supplement: Barley, whole/Lupins			
Supplement	Ingredient	Barley, whole	Lupins	Overall mix
	Proportion of mix (%)	80	20	100
	Dry matter content (%)	89	88	89
	Dry matter digestibility (%)	90	80	88
	ME:DM (MJ/kg)	13.7	13.3	13.6
	Crude protein (%)	12	32	16
	Rumen-degradable protein (%)	85	75	81

Sheep sales

- CFA ewes sold at 6.5 yo on 2nd February.
- Excess young ewes sold on 2nd February.
- Weathers sold at 46 weeks of age to give ewes more pasture in their last 6 weeks of pregnancy.

Price received

Prices: Merino prices - medium wool

Description	Fine wool prices 2002-07 (50%ile) 75-84mm, 35-39 N/ktex (Independent Commodity Services P/L)		
Wool prices for ewes			
	18 micron	1208	c/kg
	19 micron	1099	c/kg
	20 micron	1017	c/kg
	21 micron	1000	c/kg
	Av. Fleece Price	90	%
	Wool commission	5	%
Ewe sales			
	< 18.0 kg	300	c/kg
	> 18.0 kg	350	c/kg
	Dressing percentage	38	%
	Skin price	\$1.00	/head
Ewe lamb sales			
	Base price	450	c/kg
	Dressing percentage	42	%
	Skin price	\$0.00	/head
Wether lamb sales			
	< 16.0 kg	350	c/kg
	< 18.0 kg	400	c/kg
	> 18.0 kg	450	c/kg
	Dressing percentage	42	%
	Skin price	\$3.00	/head
Price scaling			
	Month	Scale	
	Jan	1	
	Feb	1.1	
	Mar	1.2	
	Apr	1.2	
	May	1.2	
	Jun	1.4	
	Jul	1.5	
	Aug	1.5	
	Sep	1.2	
	Oct	0.9	
	Nov	0.9	
	Dec	0.9	

Variable costs

Ewe Shearing		\$7.00 /head
Shearing Lambs		\$6.50 /head
Ewe Husbandry		\$3.00 /head
Lamb Husbandry		\$5.00 /head
Rams		\$1,000.00 /head
Sheep sales commission		5 %
Sheep sales cost		\$2.00 /head
Pasture costs	Fertility scalar = 0.70	\$25.00 /ha
Supplement costs	Barley, whole	\$500.00 /t
	Lupins	\$600.00 /t

Results

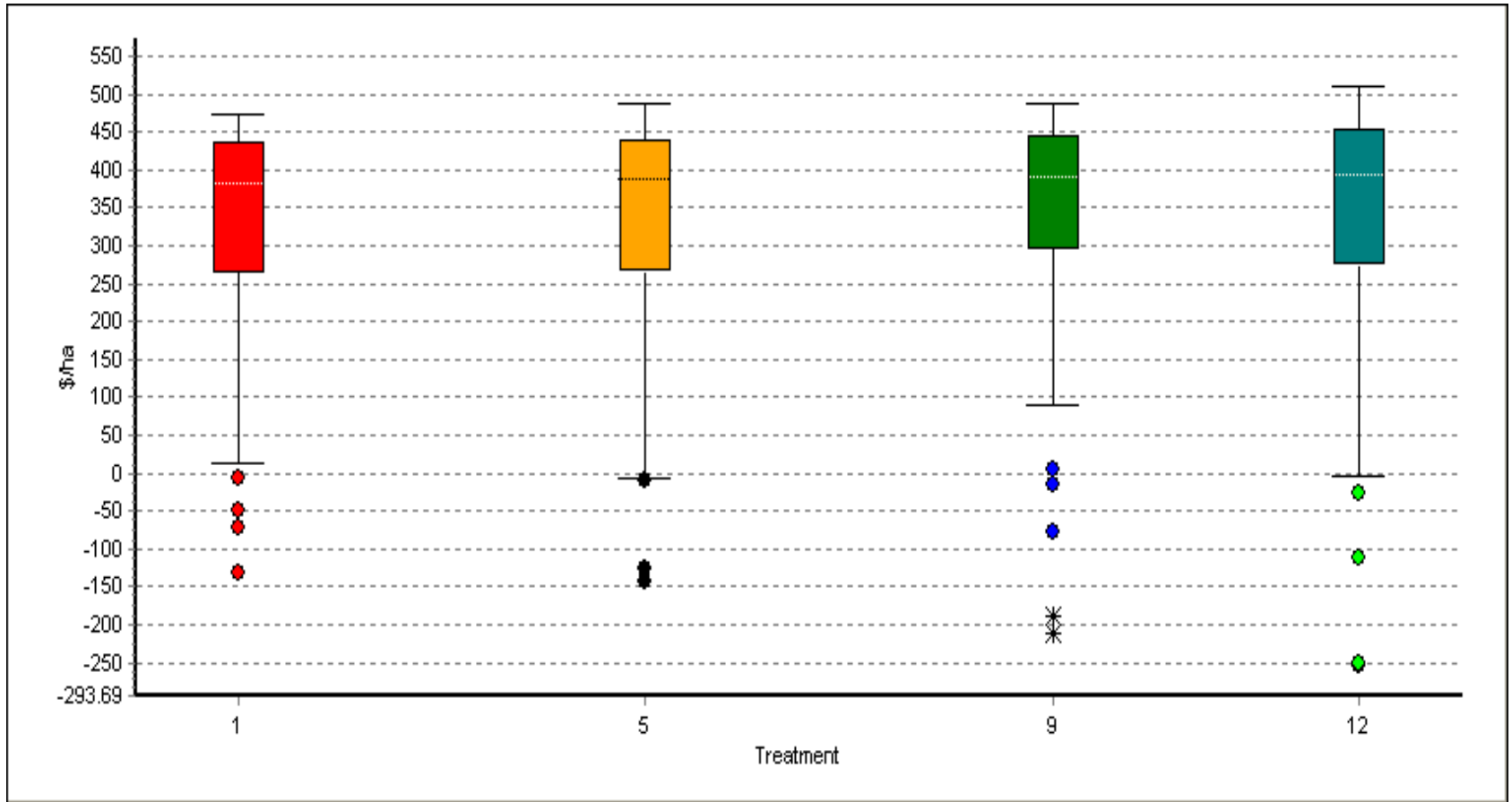
Gross margin table

Lambing date		1 Jul lambing	1 Aug lambing	1 Sep lambing	1 Oct lambing
Stocking rate		4.5/ha	4.8/ha	5/ha	5/ha
Net wool income - main flock	\$/ha	185	194	200	196
Net wool income - young stock	\$/ha	68	60	51	43
Sale income - young stock	\$/ha	220	226	238	254
Sale income - cast-for-age	\$/ha	49	52	53	52
TOTAL INCOME	\$/ha	522	531	542	546
Animal husbandry	\$/ha	33	34	36	37
Shearing costs	\$/ha	44	47	49	50
Rams purchased	\$/ha	21	23	24	24
Sale costs	\$/ha	19	20	21	22
Maintenance supplement	\$/ha	49	56	56	59
Weaner supplement	\$/ha	2	1	1	2
Pasture costs	\$/ha	25	25	25	25
TOTAL EXPENSES	\$/ha	194	205	211	218
GROSS MARGIN	\$/ha	329	326	331	327

Gross margin variability

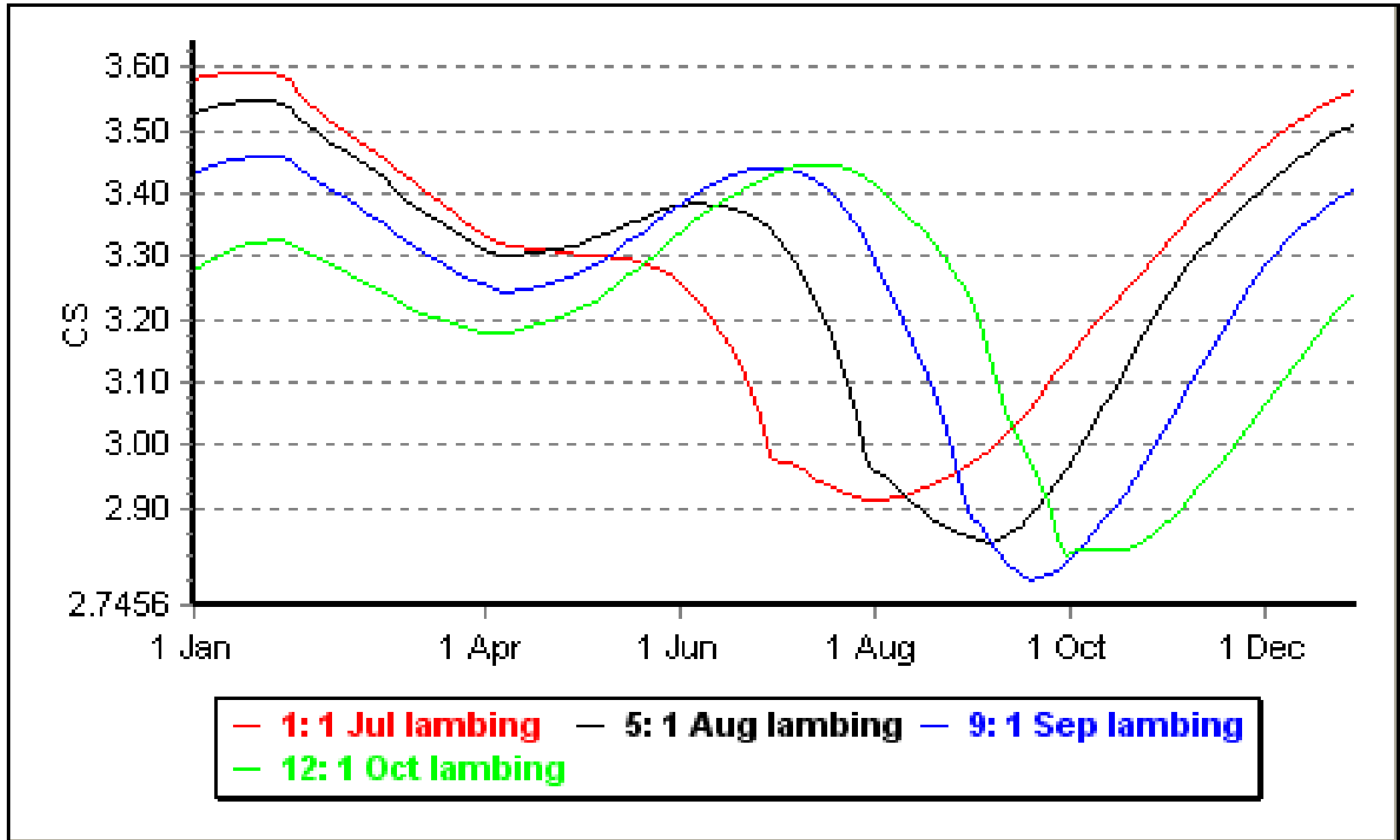
Lambing date		1 Jul lambing	1 Aug lambing	1 Sep lambing	1 Oct lambing
Stocking rate		4.5/ha	4.8/ha	5/ha	5/ha
Total income	\$/ha	79.68	78.75	78.72	84.09
Total expense	\$/ha	103.12	112.43	112.35	119.43
Gross margin	\$/ha	150.7	161.75	170.26	183.2

Gross margin box plots

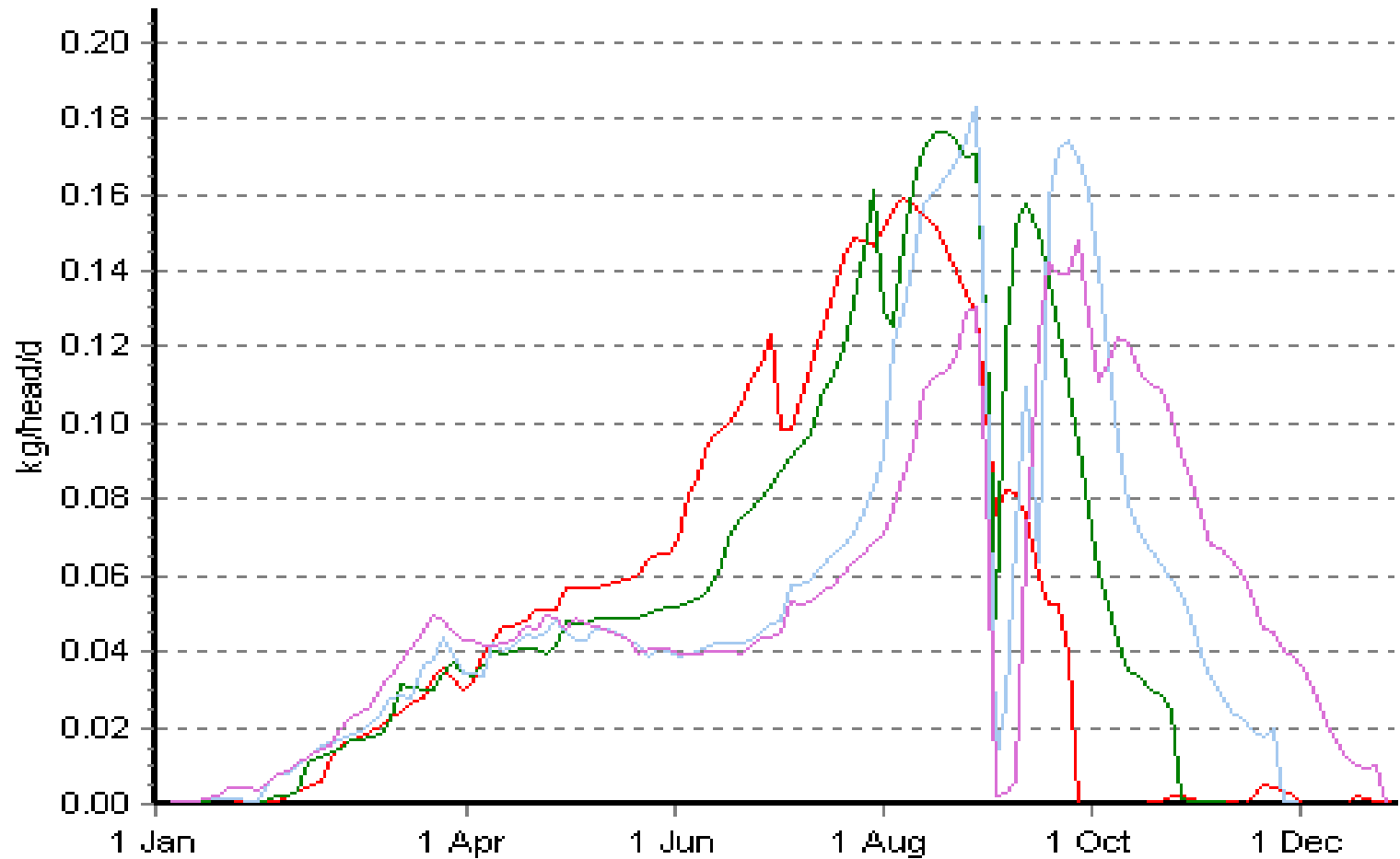


Treatment	<i>Lambing date</i>	<i>Stocking rate</i>
1	1 Jul lambing	4.5/ha
5	1 Aug lambing	4.8/ha
9	1 Sep lambing	5/ha
12	1 Oct lambing	5/ha

Body condition of mature ewes

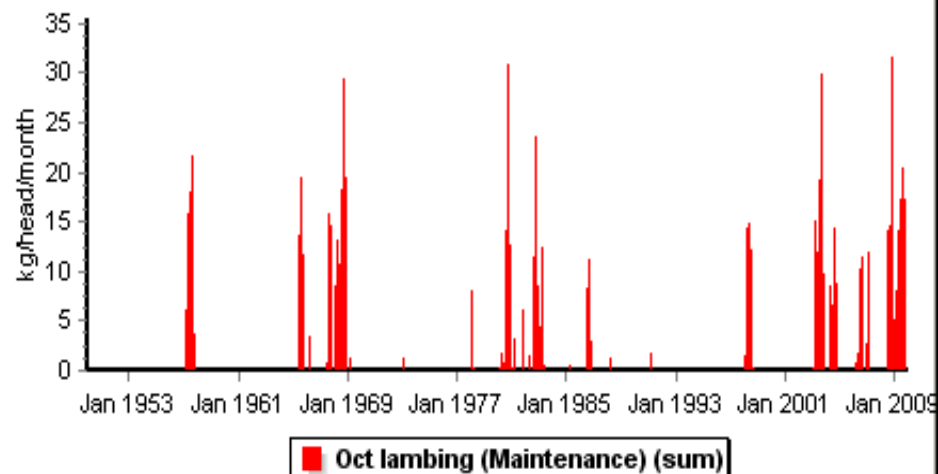
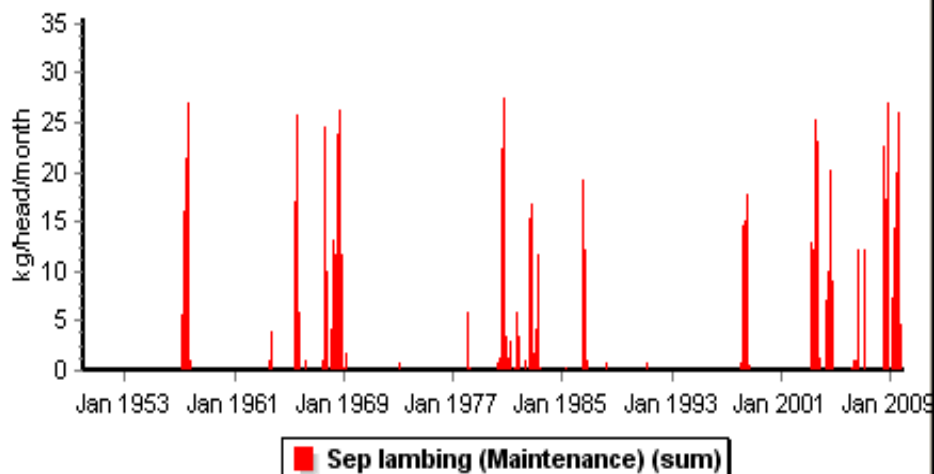
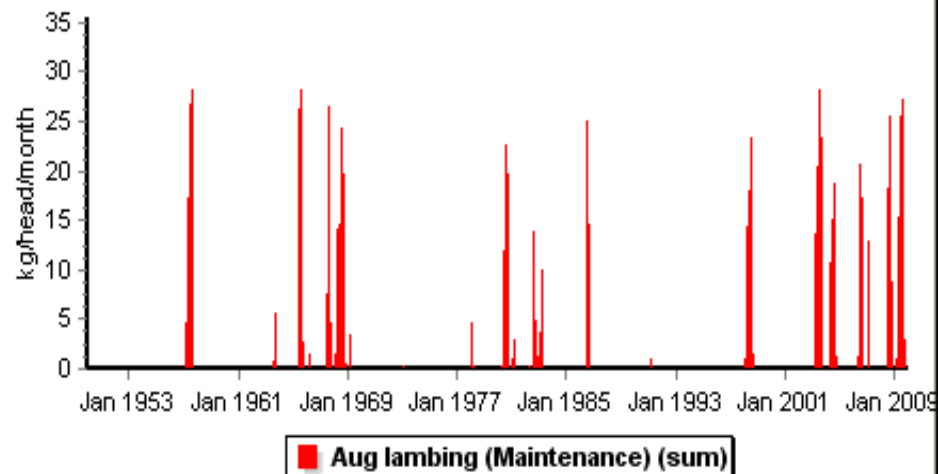
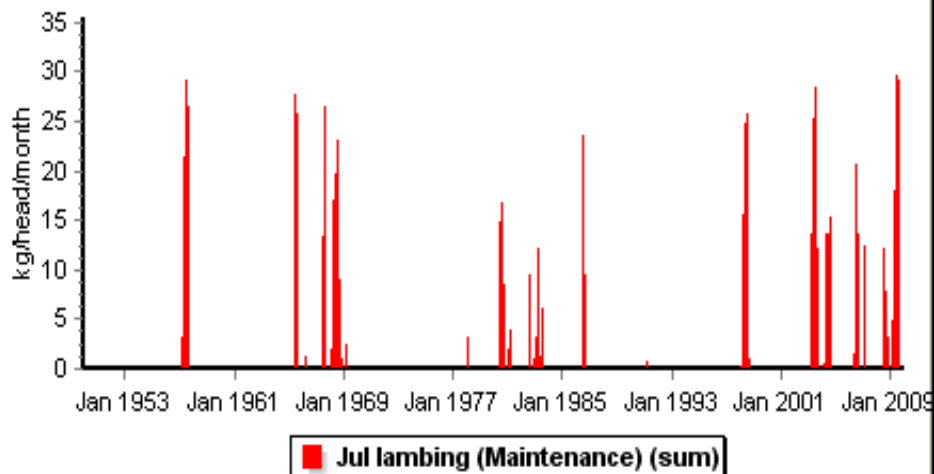


Supplementary intake of mature ewes

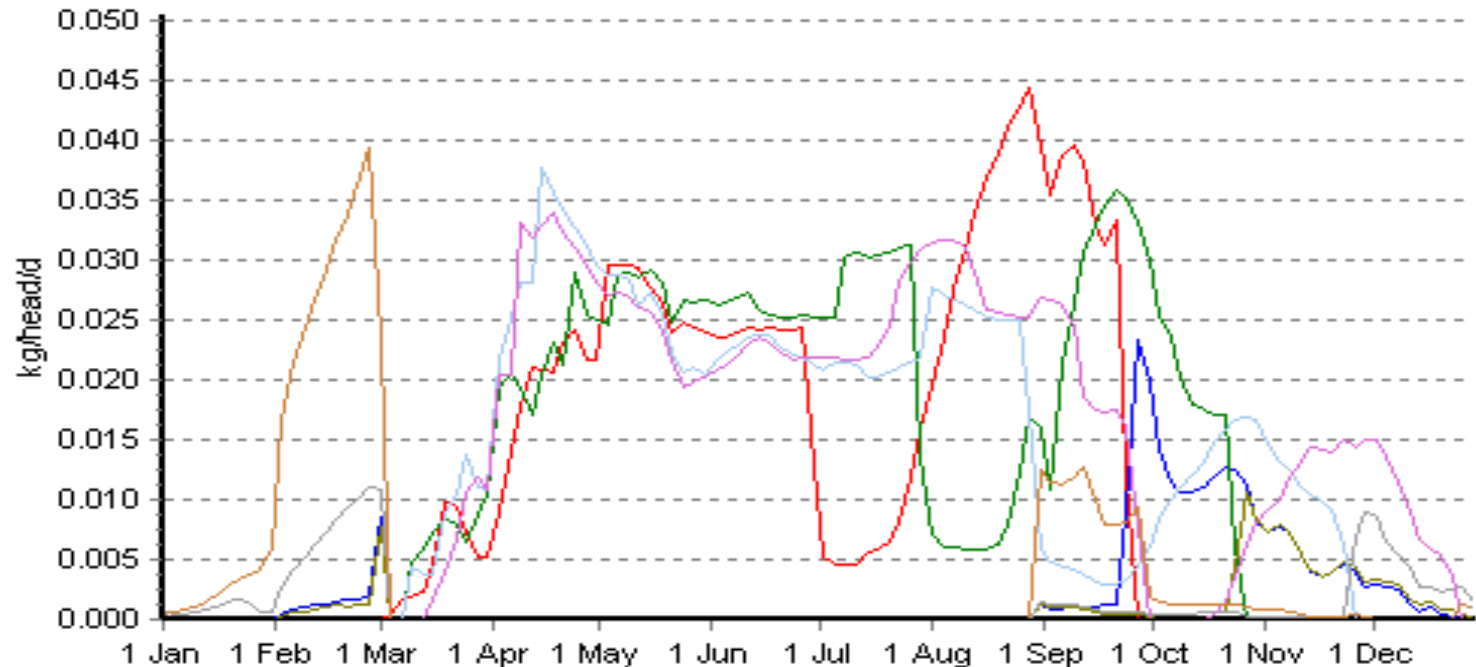


— 1: Jul lambing — 5: Aug lambing — 9: Sep lambing — 12: Oct lambing

Adult supplementary feed intake by month

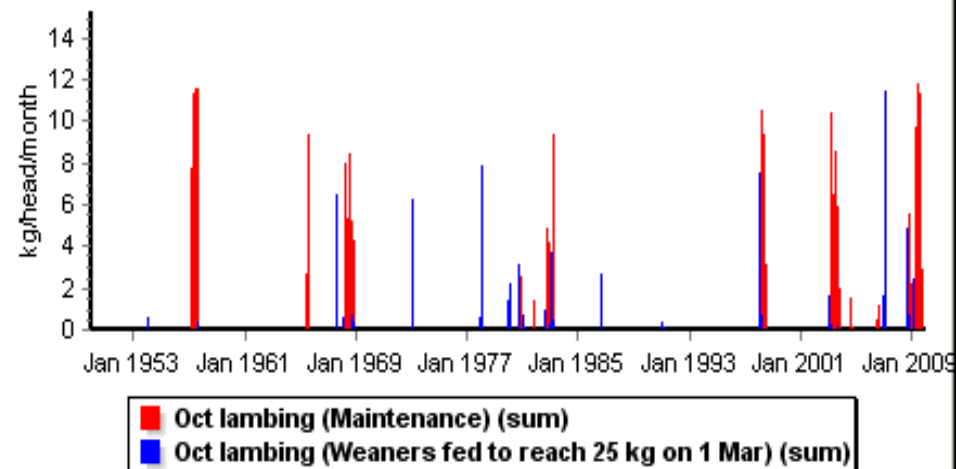
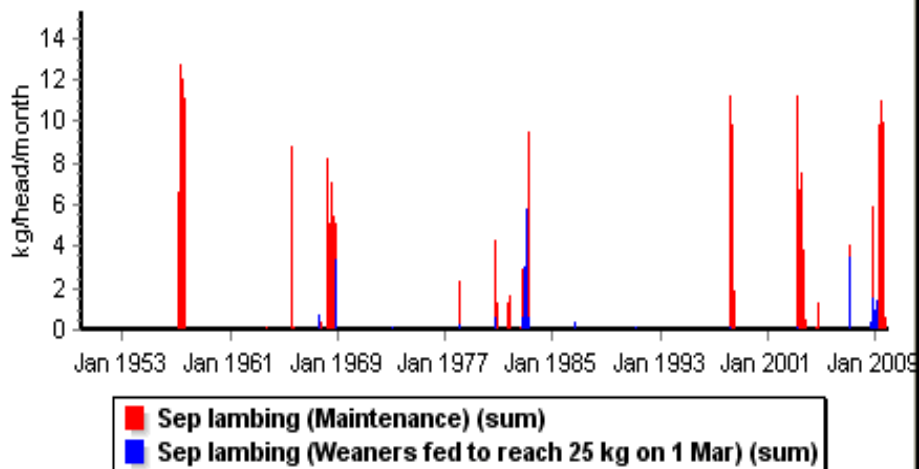
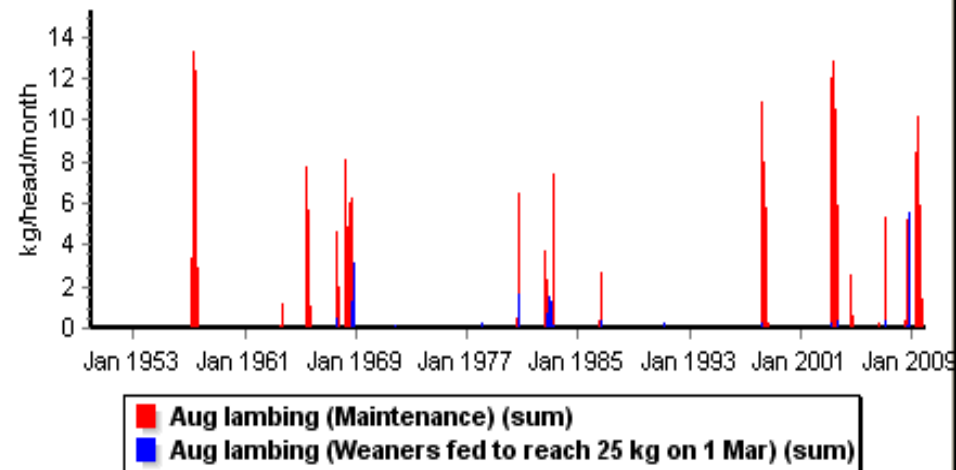
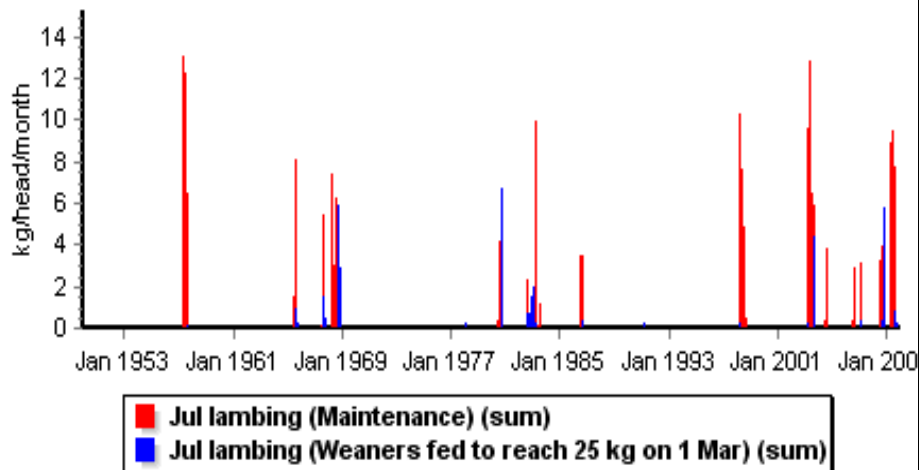


Supplementary intake of young sheep

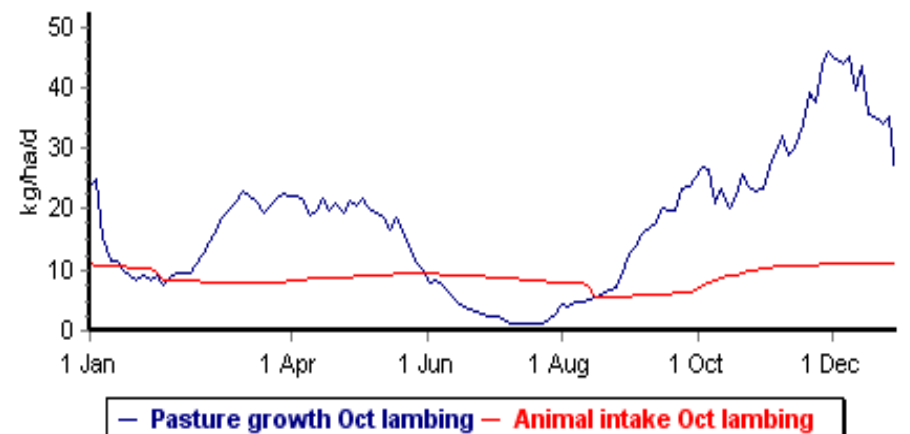
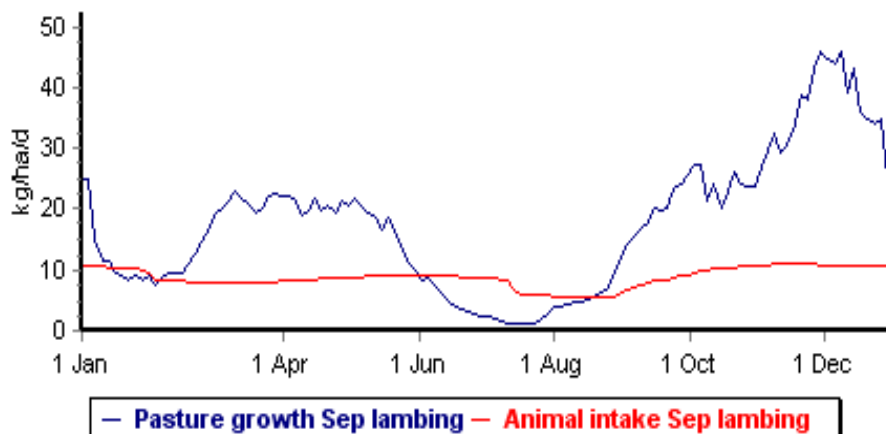
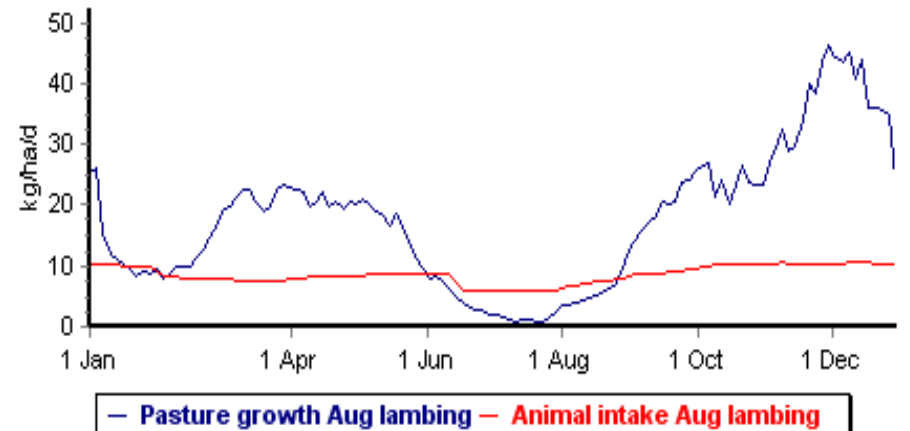
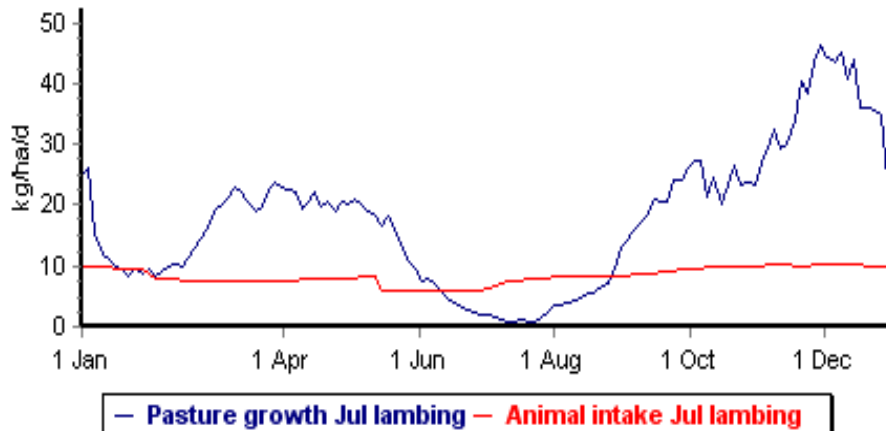


- 1: Jul lambing (Maintenance) (av.)
- 1: Jul lambing (Weaners fed to reach 25 kg on 1 Mar) (av.)
- 5: Aug lambing (Maintenance) (av.)
- 5: Aug lambing (Weaners fed to reach 25 kg on 1 Mar) (av.)
- 9: Sep lambing (Maintenance) (av.)
- 9: Sep lambing (Weaners fed to reach 25 kg on 1 Mar) (av.)
- 12: Oct lambing (Maintenance) (av.)
- 12: Oct lambing (Weaners fed to reach 25 kg on 1 Mar) (av.)

Young sheep supplementary feed intake by month



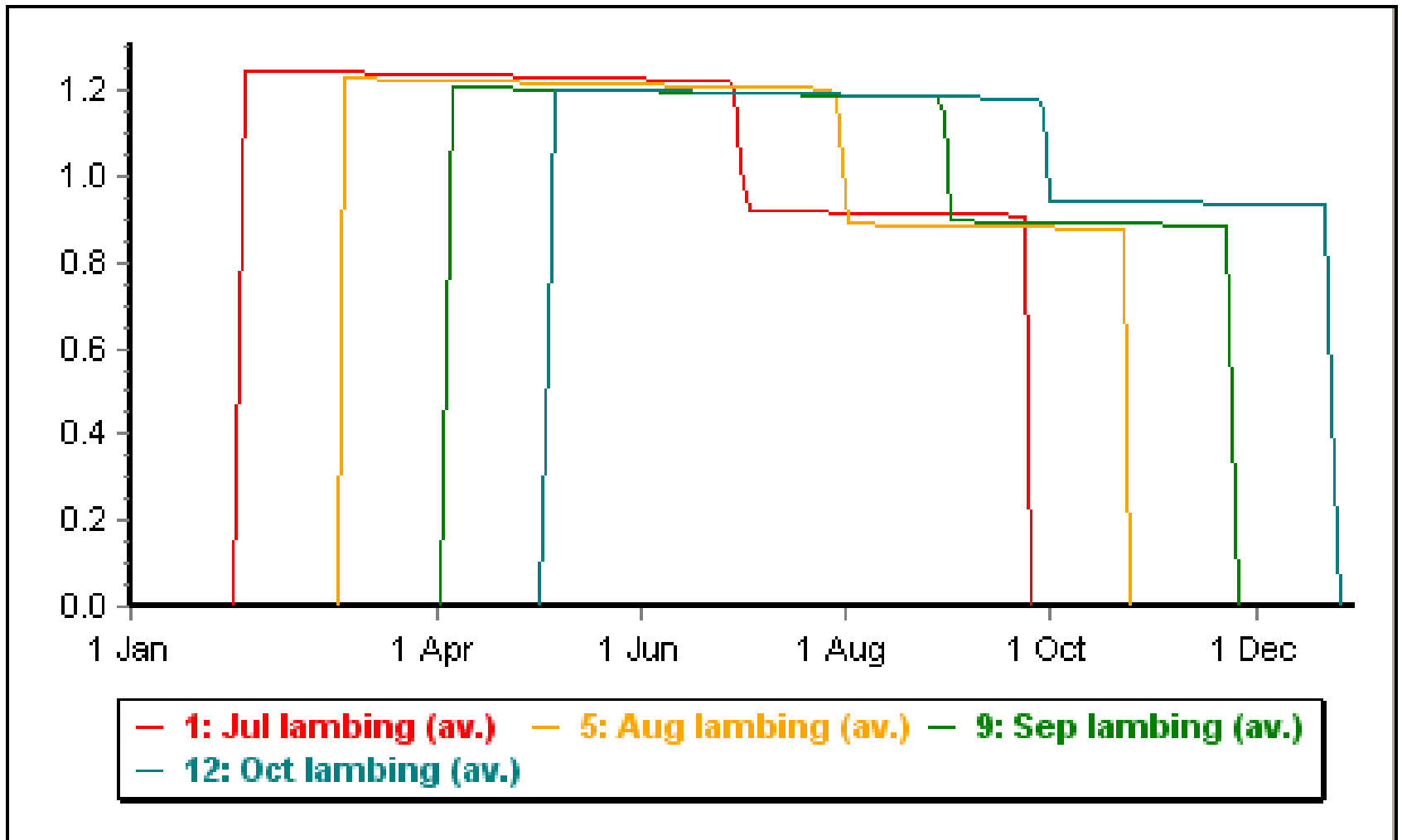
Feed supply v animal intake



Utilization rate

Lambing date	Stocking rate	Utilization rate
		%
1 Jul lambing	4.5/ha	47
1 Aug lambing	4.8/ha	49
1 Sep lambing	5/ha	50
1 Oct lambing	5/ha	50

Lambs per ewe

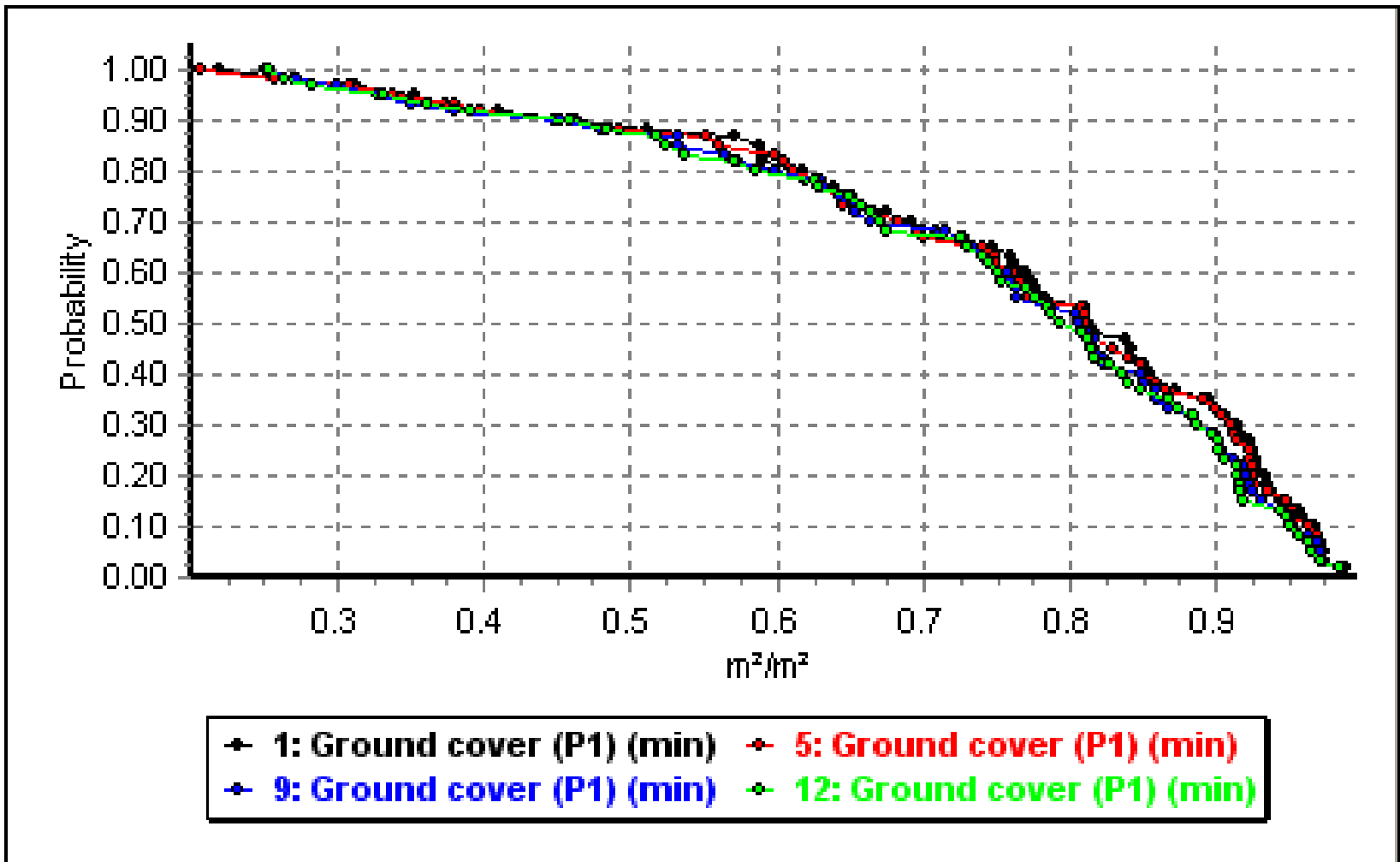


Ave sale weights for young sheep

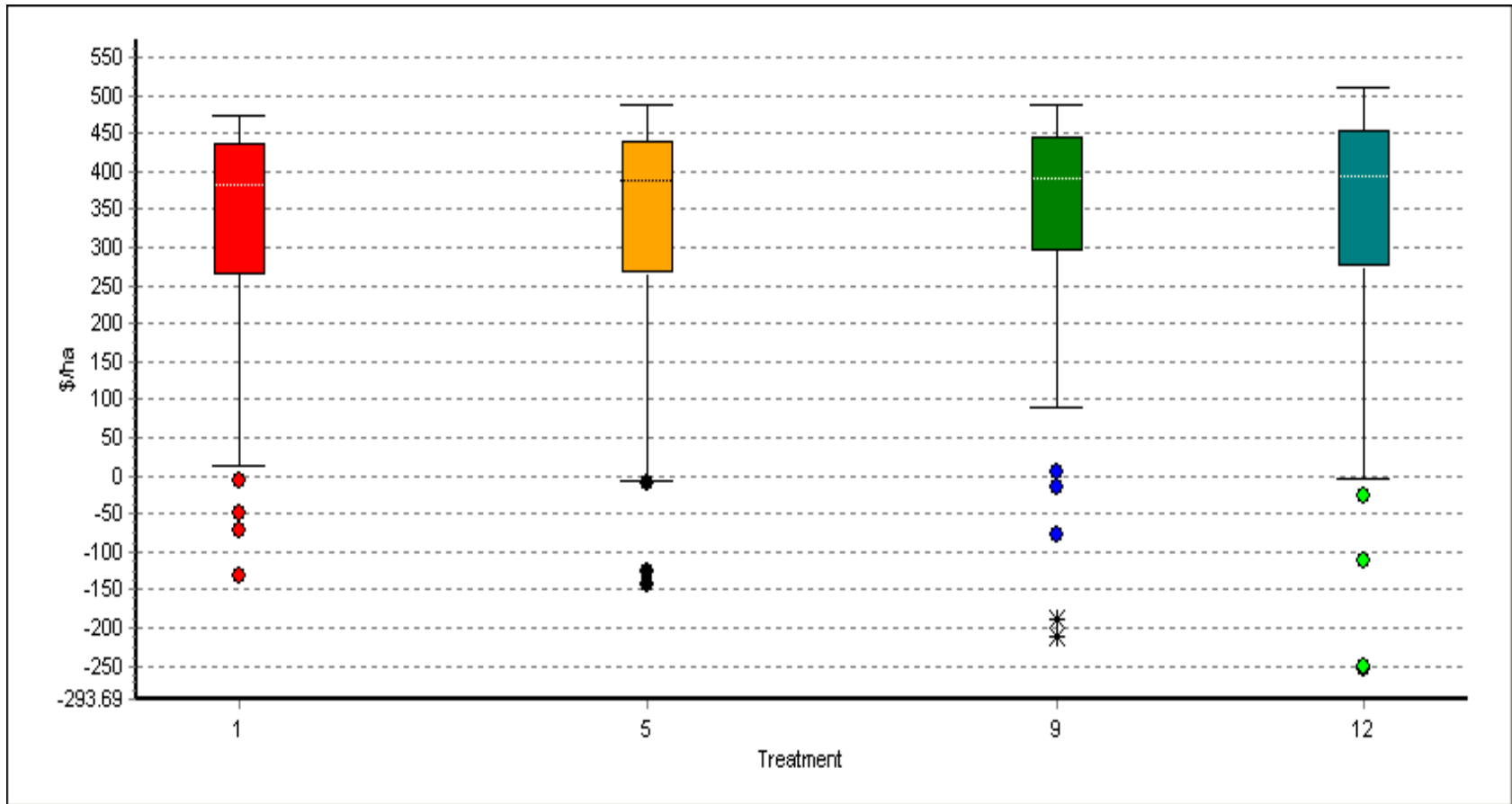
Lambing date	Stocking rate	Wether Lambs	Ewe Lambs
		kg	kg
1 Jul lambing	4.5/ha	49.05	60.89
1 Aug lambing	4.8/ha	50.07	59.95
1 Sep lambing	5/ha	50.64	58.89
1 Oct lambing	5/ha	50.64	57.74

Summary

Environmental sustainability



Economic sustainability



Treatment	<i>Lambing date</i>	<i>Stocking rate</i>
1	1 Jul lambing	4.5/ha
5	1 Aug lambing	4.8/ha
9	1 Sep lambing	5/ha
12	1 Oct lambing	5/ha