












## APPENDIX A2



## A1 ADDITIONAL RESULTS

### A1.1 Age of Respondents

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	61	27	52	75	51	3	
GB & DD	24	25	44	69	47	5	
New England	169	16	50	76	51	2	
C & S Tablelands	180	24	48	78	50	2	
S NSW & N Vic	168	19	51	84	51	2	
Gippsland	12	20	44	73	47	8	
W Vic & SE SA	373	20	51	80	51	1	
S SA	69	25	52	83	52	3	
KI	42	26	50	81	51	3	
WA	201	18	51	81	52	2	
All Regions	1299	16	51	84	51	1	

Histogram class limits: 16-22.8-29.6-36.4-43.2-50-56.8-63.6-70.4-77.2-84  
 Anova:  $F=1.03$ ,  $d.f.=9$ ,  $p=0.416$ .

### A1.2 Gender of Respondents

Region	n	Proportion of respondents (%)	
		Male	Female
SW & S Qld	63	92	8
GB & DD	24	100	0
New England	174	93	7
C & S Tablelands	180	94	6
S NSW & N Vic	168	96	4
Gippsland	12	100	0
W Vic & SE SA	375	95	5
S SA	71	99	1
KI	42	93	7
WA	201	94	6
All regions	1310	95	5

$\chi^2 = 7.76$ ,  $d.f. = 9$ ,  $p = 0.559$ . 5 cells (25.0%) have expected counts less than 5.

### A1.3 Cattle DSEs in 2003 Compared to a Typical Year

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	54	44	<b>57</b>	71	22	35	48	0	7	14
GB & DD	12	22	50	78	1	25	50	1	25	50
New England	151	44	<b>52</b>	60	30	38	45	6	11	16
C & S Tablelands	91	39	49	60	30	40	50	5	11	17
S NSW & N Vic	90	28	38	48	35	46	56	9	17	24
Gippsland	7	0	29	62	20	57	94	0	14	40
W Vic & SE SA	215	21	<b>27</b>	33	51	<b>57</b>	64	11	16	21
S SA	43	9	21	33	34	49	64	17	<b>30</b>	44
KI	19	0	16	32	61	79	97	0	5	15
WA	43	7	<b>19</b>	30	46	60	75	9	21	33
All Regions	725	34	38	41	44	48	51	12	15	17

$\chi^2 = 66.01$ ,  $d.f. = 18$ ,  $p < 0.0005$ . 6 cells (20.0%) have expected counts less than 5.


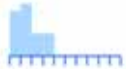

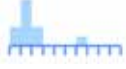





### A1.4 Length of Calving Period - Cows

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	43	1.0	3.0	12.0	4.4	1.1	
GB & DD	11	1.0	3.0	12.0	4.2	2.7	
New England	122	1.0	2.0	10.0	2.3	0.3	
C & S Tablelands	77	1.0	2.0	12.0	2.4	0.6	
S NSW & N Vic	70	1.0	2.0	12.0	3.3	0.7	
Gippsland	6	1.0	2.0	4.0	2.0	1.1	
W Vic & SE SA	175	1.0	2.0	12.0	2.7	0.3	
S SA	40	1.0	3.0	12.0	4.0	1.0	
KI	14	1.0	2.0	12.0	2.6	1.7	
WA	36	1.0	2.0	6.0	2.5	0.5	
All Regions	594	1.0	2.0	12.0	2.9	0.2	

Histogram class limits: 1-2.1-3.2-4.3-5.4-6.5-7.6-8.7-9.8-10.9-12

Anova:  $F=4.85$ ,  $d.f.=9$ ,  $p < 0.0005$ .

### A1.5 Length of Calving Period - Heifers

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	2	1.0	1.5	2.0	1.5	6.4	
GB & DD	0						
New England	19	1.0	2.0	4.0	2.2	0.5	
C & S Tablelands	10	1.0	2.0	10.0	2.8	2.0	
S NSW & N Vic	10	1.0	2.0	7.0	2.5	1.2	
Gippsland	0						
W Vic & SE SA	16	1.0	1.0	9.0	1.9	1.1	
S SA	5	1.0	3.0	6.0	3.4	2.6	
KI	4	1.0	2.0	3.0	2.0	1.3	
WA	3	1.0	1.0	1.0	1.0	0.0	
All Regions	69	1.0	2.0	10.0	2.3	0.4	

Histogram class limits: 1-1.9-2.8-3.7-4.6-5.5-6.4-7.3-8.2-9.1-10  
 Anova:  $F=0.80$ ,  $d.f.=7$ ,  $p = 0.593$ .

### A1.6 Cow Calving Months with Highest Proportion(s) of Respondents

Region	n	Months in which the highest proportion(s) of respondents report cows calving
SW & S Qld	43	September, October
GB & DD	11	October
New England	122	August
C & S Tablelands	77	August
S NSW & N Vic	70	August
Gippsland	6	August, October
W Vic & SE SA	175	May
S SA	40	March
KI	14	March
WA	36	April
All Regions	594	August

### A1.7 Heifer Calving Months with Highest Proportion(s) of Respondents












Region	n	Months in which the highest proportion(s) of respondents report heifers calving
SW & S Qld	2	August
GB & DD	0	
New England	19	August
C & S Tablelands	10	September
S NSW & N Vic	70	February, March
Gippsland	0	
W Vic & SE SA	16	March
S SA	5	February - May
KI	4	March
WA	3	March
All Regions	69	August

### A1.8 Sheep DSEs in 2003 Compared to a Typical Year

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	63	59	<b>70</b>	81	9	<b>19</b>	29	3	11	19
GB & DD	24	34	54	74	8	25	42	5	21	37
New England	179	45	<b>53</b>	60	31	38	45	5	9	14
C & S Tablelands	186	39	46	53	29	<b>36</b>	43	12	18	23
S NSW & N Vic	171	35	42	50	39	47	54	6	11	16
Gippsland	12	40	67	93	1	25	50	0	8	24
W Vic & SE SA	378	28	33	37	50	<b>55</b>	60	9	13	16
S SA	71	18	28	39	52	63	75	2	8	15
KI	42	9	21	34	52	67	81	2	12	22
WA	209	16	<b>22</b>	27	50	56	63	16	<b>22</b>	28
All Regions	1335	36	38	41	45	47	50	12	14	16

$\chi^2 = 113.50, df = 18, p < 0.0005.$

### A1.9 Wool Cut from Breeding Ewes, 2003 Clip (kg/head) - Merino











Region	n	Minimum	Median	Maximum	Mean*	95% CI	Histogram
SW & S Qld	30	3.4	4.5	6.8	4.7	0.4	
GB & DD	7	3.0	4.0	4.8	4.0	0.7	
New England	101	2.0	4.1	8.5	4.1	0.2	
C & S Tablelands	90	2.6	4.7	9.0	4.9	0.3	
S NSW & N Vic	81	3.0	5.1	8.0	5.4	0.2	
Gippsland	4	4.0	4.7	6.0	4.9	1.5	
W Vic & SE SA	163	2.5	5.0	8.7	5.1	0.2	
S SA	45	4.5	6.3	8.0	6.2	0.3	
KI	24	3.0	5.5	7.4	5.5	0.4	
WA	123	3.0	5.0	8.6	5.3	0.2	
All Regions	668	2.0	5.0	9.0	5.0	0.1	

Histogram class limits:2.0-2.7-3.4-4.1-4.8-5.5-6.2-6.9-7.6-8.3-9.0

Anova:  $F=16.15$ ,  $d.f.=9$ ,  $p<0.0005$ .

\* See section A1.11.1 for details on the calculation of the mean.

### A1.10 Fibre Diameter, Breeding Ewes, 2003 Clip ( $\mu$ ) - Merino












Region	n	Minimum	Median	Maximum	Mean*	95% CI	Histogram
SW & S Qld	28	17.5	20.1	21.8	20.1	0.4	
GB & DD	7	16.8	18.0	20.3	18.5	1.1	
New England	116	15.0	18.3	20.5	18.3	0.2	
C & S Tablelands	103	16.6	19.0	23.0	19.2	0.3	
S NSW & N Vic	92	15.6	20.0	23.5	20.2	0.3	
Gippsland	7	17.4	18.7	20.0	18.7	0.8	
W Vic & SE SA	193	16.5	20.0	28.5	20.0	0.2	
S SA	46	18.5	22.0	24.0	21.9	0.4	
KI	27	20.0	21.9	23.8	21.6	0.3	
WA	147	17.5	20.5	23.0	20.6	0.2	
All Regions	766	15.0	20.0	28.5	19.9	0.1	

Histogram class limits:15.0-16.4-17.8-19.2-20.6-22-23.4-24.8-26.2-27.6-29.0

Anova:  $F=43.05$ ,  $d.f.=9$ ,  $p<0.0005$ .

\* See section A1.11.1 for details on the calculation of the mean.

### A1.11 Wool Cut from Adult Dry Ewes and Wethers, 2003 Clip (kg/head) - Merino












Region	n	Minimum	Median	Maximum	Mean*	95% CI	Histogram
SW & S Qld	29	3.5	4.8	7.5	5.0	0.4	
GB & DD	12	3.2	4.6	7.0	4.5	0.7	
New England	86	2.5	4.2	7.0	4.3	0.2	
C & S Tablelands	73	3.0	5.0	8.0	5.1	0.3	
S NSW & N Vic	52	3.5	6.0	9.0	5.8	0.3	
Gippsland	4	4.1	5.6	7.5	5.7	2.3	
W Vic & SE SA	147	2.7	5.3	9.0	5.5	0.2	
S SA	20	4.0	6.0	8.0	6.0	0.5	
KI	20	3.0	6.0	8.0	6.2	0.5	
WA	81	1.2	5.5	8.3	5.6	0.3	
All Regions	524	1.2	5.0	9.0	5.3	0.1	

Histogram class limits: 1.10-1.89-2.68-3.47-4.26-5.05-5.84-6.63-7.42-8.21-9.00

Anova:  $F=11.05$ ,  $d.f.=9$ ,  $p<0.0005$ .

\* See section A1.11.1 for details on the calculation of the mean.

### A1.12 Fibre Diameter, Adult Dry Ewes and Wethers, 2003 Clip ( $\mu$ ) - Merino

Region	n	Minimum	Median	Maximum	Mean*	95% CI	Histogram
SW & S Qld	32	15.1	20.6	22.0	20.1	0.6	
GB & DD	12	17.0	18.0	21.0	18.6	0.8	
New England	101	15.5	18.1	21.0	18.2	0.2	
C & S Tablelands	88	16.0	19.0	22.0	19.0	0.3	
S NSW & N Vic	60	15.6	19.7	26.0	19.9	0.4	
Gippsland	7	17.8	19.5	21.0	19.2	1.1	
W Vic & SE SA	170	16.5	20.0	23.0	19.8	0.2	
S SA	20	18.5	20.9	23.5	20.9	0.7	
KI	23	20.0	22.0	23.0	21.7	0.3	
WA	92	17.0	20.6	23.0	20.5	0.3	
All Regions	605	15.1	19.5	26.0	19.6	0.1	












Histogram class limits: 15.0-16.1-17.2-18.3-19.4-20.5-21.6-22.7-23.8-24.9-26.0.

Anova:  $F=22.70$ ,  $d.f.=9$ ,  $p<0.0005$ .

\* See section A1.11.1 for details on the calculation of the mean.



### A1.13 Wool Cut from Weaners, 2003 Clip (kg/head) - Merino












Region	n	Minimum	Median	Maximum	Mean*	95% CI	Histogram
SW & S Qld	24	1.5	2.0	4.3	2.4	0.3	
GB & DD	6	1.4	2.7	3.5	2.6	0.8	
New England	92	1.0	2.5	8.7	2.7	0.2	
C & S Tablelands	85	0.7	2.5	5.3	2.6	0.2	
S NSW & N Vic	66	1.0	2.5	6.0	2.6	0.2	
Gippsland	5	1.2	2.2	3.2	2.1	0.9	
W Vic & SE SA	139	0.9	2.5	7.0	2.7	0.2	
S SA	36	1.0	2.0	7.0	2.8	0.5	
KI	22	1.0	2.5	5.1	2.8	0.6	
WA	113	0.6	2.0	6.0	2.4	0.2	
All Regions	588	0.6	2.5	8.7	2.6	0.1	

Histogram class limits:0.50-1.32-2.14-2.96-3.78-4.60-5.42-6.24-7.06-7.88-8.70.

Anova:  $F=0.79$ ,  $d.f.=9$ ,  $p=0.696$ .

\* See section A1.11.1 for details on the calculation of the mean.

### A1.14 Fibre Diameter, Weaners, 2003 Clip ( $\mu$ ) - Merino

Region	n	Minimum	Median	Maximum	Mean*	95% CI	Histogram
SW & S Qld	24	16.4	18.5	21.0	18.6	0.4	
GB & DD	3	15.3	16.0	18.0	16.4	3.5	
New England	102	13.7	17.0	19.0	16.8	0.2	
C & S Tablelands	92	15.0	17.5	24.0	17.6	0.3	
S NSW & N Vic	65	15.8	18.0	20.0	18.1	0.3	
Gippsland	7	16.0	17.3	18.5	17.3	0.8	
W Vic & SE SA	160	14.5	18.0	26.0	18.3	0.3	
S SA	34	15.5	19.0	26.0	19.7	0.8	
KI	24	17.0	19.4	21.0	19.4	0.4	
WA	124	15.4	18.6	24.0	18.7	0.2	
All Regions	635	13.7	18.0	26.0	18.1	0.1	

Histogram class limits:13.0-14.3-15.6-16.9-18.2-19.5-20.8-22.1-23.4-24.7-26.0.

Anova:  $F=22.25$ ,  $d.f.=9$ ,  $p<0.0005$ .

\* See section A1.11.1 for details on the calculation of the mean.

## A1.15 Proportion of Respondents (%) Shearing and Crutching Ewes Each Month

### A1.15.1 Shearing Ewes

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	53	8	4	8	9	11	15	17	17	6	11	4	8
GB & DD	13	23	0	15	8	0	8	8	15	8	15	15	0
New England	170	2	1	4	1	2	8	15	38	34	9	5	2
C & S Tablelands	176	5	9	10	8	10	9	14	17	18	15	18	9
S NSW & N Vic	158	6	15	15	13	6	7	5	18	22	11	10	4
Gippsland	12	17	0	8	0	0	0	8	17	17	0	33	0
W Vic & SE SA	352	8	11	10	9	6	7	11	13	19	19	20	13
S SA	69	0	4	6	7	0	1	3	19	26	22	17	6
KI	38	5	16	13	13	5	0	0	0	26	24	13	11
WA	197	15	16	15	11	3	5	8	11	20	12	8	7
All regions	1238	7	10	10	9	5	7	10	17	21	15	14	8

Note: percentages may sum to more than 100 as respondents could give more than one month.

### A1.15.2 Crutching Ewes

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	52	12	23	19	17	15	8	13	6	8	6	10	10
GB & DD	14	7	0	0	7	21	14	14	14	21	21	0	0
New England	168	12	27	41	45	34	26	29	14	4	2	3	4
C & S Tablelands	173	14	20	26	21	21	18	18	14	12	16	16	13
S NSW & N Vic	160	12	26	23	18	15	13	14	14	15	21	18	12
Gippsland	12	8	8	25	25	33	33	33	33	25	25	17	8
W Vic & SE SA	347	10	18	28	25	20	19	21	18	20	20	16	10
S SA	69	10	20	41	35	28	35	33	35	30	14	6	9
KI	39	3	5	13	33	21	21	21	21	41	23	15	5
WA	186	3	10	16	19	11	9	8	16	33	18	6	3
All regions	1220	10	19	26	26	21	18	19	17	19	16	12	8

Note: percentages may sum to more than 100 as respondents could give more than one month.

## A1.16 Proportion of Respondents (%) Shearing and Crutching Wethers Each Month

### A1.16.1 Shearing Wethers

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	48	8	8	8	13	19	19	21	17	19	10	2	8
GB & DD	20	35	15	20	15	10	10	15	25	35	35	35	10
New England	148	1	2	1	0	0	4	8	16	31	32	19	3
C & S Tablelands	131	6	6	7	8	8	8	8	13	22	18	18	7
S NSW & N Vic	88	6	15	14	13	8	8	10	18	18	7	13	7
Gippsland	9	0	0	0	0	0	0	11	22	11	11	44	0
W Vic & SE SA	253	6	13	9	7	7	11	9	16	22	17	19	9
S SA	38	3	5	5	8	3	5	0	18	13	18	21	5
KI	34	6	15	12	15	6	0	0	3	24	24	12	9
WA	141	8	11	8	8	3	4	11	20	23	13	9	6
All regions	910	6	9	8	7	6	8	9	16	23	18	16	7

Note: percentages may sum to more than 100 as respondents could give more than one month.

### A1.16.2 Crutching Wethers

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	44	20	25	25	18	16	9	9	7	9	7	14	16
GB & DD	20	15	15	15	20	50	40	40	25	20	30	10	5
New England	136	4	13	22	29	30	25	24	13	9	3	3	2
C & S Tablelands	129	11	16	19	19	15	19	16	18	14	16	12	12
S NSW & N Vic	87	13	28	22	16	15	13	16	13	10	20	22	15
Gippsland	9	11	11	22	22	22	33	22	0	11	0	0	0
W Vic & SE SA	245	10	16	21	22	20	20	20	21	17	18	13	10
S SA	36	14	11	28	28	19	22	19	17	31	19	11	19
KI	33	3	6	15	27	12	9	15	12	36	24	21	6
WA	130	1	7	18	25	8	8	8	12	24	12	4	1
All regions	869	9	15	21	23	19	18	17	16	17	14	11	9

Note: percentages may sum to more than 100 as respondents could give more than one month.

## A1.17 Proportion of Respondents (%) Shearing and Crutching Weaners (Less than 12 Months) Each Month

### A1.17.1 Shearing Weaners

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	50	12	10	6	16	12	14	14	8	6	10	6	2
GB & DD	6	33	0	33	0	0	0	0	17	0	17	0	0
New England	147	4	4	3	1	2	5	8	19	37	35	12	3
C & S Tablelands	144	4	6	6	8	8	11	13	14	17	17	13	8
S NSW & N Vic	120	8	12	13	11	3	12	5	11	17	8	15	8
Gippsland	9	0	11	0	0	0	0	11	22	11	0	33	11
W Vic & SE SA	270	10	9	8	7	8	8	9	11	19	16	17	15
S SA	52	6	8	10	10	6	4	0	4	17	29	23	17
KI	37	3	11	8	14	3	0	0	0	16	19	24	16
WA	181	13	10	13	10	6	3	7	10	20	23	9	7
All regions	1016	8	9	9	8	6	7	8	12	20	19	14	10

Note: percentages may sum to more than 100 as respondents could give more than one month.

### A1.17.2 Crutching Weaners

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	43	16	19	23	19	14	5	7	5	7	2	9	12
GB & DD	4	0	0	0	0	50	0	25	0	0	25	0	0
New England	145	6	15	30	39	37	25	26	14	10	6	6	3
C & S Tablelands	126	20	26	34	22	21	19	15	14	11	11	13	11
S NSW & N Vic	103	12	22	20	15	14	9	11	8	10	14	12	10
Gippsland	9	11	0	11	11	11	11	22	11	22	22	11	0
W Vic & SE SA	236	8	16	22	25	24	21	21	21	16	18	13	9
S SA	38	8	16	24	21	16	18	16	18	34	16	5	16
KI	29	10	7	21	21	21	10	10	10	38	17	14	7
WA	118	3	9	22	30	8	5	5	8	22	8	7	2
All regions	851	10	17	25	25	21	16	16	14	16	12	10	8

Note: percentages may sum to more than 100 as respondents could give more than one month.

## A1.18 Proportion of respondents (%) putting rams with ewes each month of the year in 2003

### A1.18.1 Merino mated to Merino rams

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	39	13	15	21	23	18	3	3	0	0	3	3	0
GB & DD	7	0	0	14	14	43	29	0	0	0	0	0	0
New England	139	0	2	6	53	35	4	1	0	0	0	0	0
C & S Tablelands	113	6	10	34	21	2	0	0	0	0	2	12	14
S NSW & N Vic	93	13	15	27	8	1	0	0	0	0	4	15	17
Gippsland	7	0	14	29	14	14	0	0	0	0	0	0	29
W Vic & SE SA	215	8	12	20	15	1	0	0	1	0	3	17	20
S SA	45	18	18	2	2	0	0	0	0	0	9	29	22
KI	32	25	31	3	0	0	0	0	0	0	0	13	28
WA	173	26	20	2	0	1	0	0	0	0	2	16	34
All regions	863	12	13	15	17	8	1	0	0	0	2	13	18

$\chi^2 = 702.66$ , *d.f.* = 90,  $p < 0.0005$ . 62 cells (56.4%) have expected counts less than 5.

### A1.18.2 Merino mated to Meat breed rams

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	11	0	36	27	27	9	0	0	0	0	0	0	0
GB & DD	4	0	0	0	50	0	25	0	0	0	0	0	25
New England	47	0	4	15	62	17	0	0	0	2	0	0	0
C & S Tablelands	54	15	17	20	6	0	0	0	0	0	0	22	20
S NSW & N Vic	62	18	16	8	3	0	0	0	0	0	10	31	15
Gippsland	3	0	0	0	0	33	0	0	0	0	0	33	33
W Vic & SE SA	162	15	7	9	6	1	0	1	0	0	5	22	34
S SA	39	15	5	3	0	0	0	0	0	5	31	8	33
KI	24	25	21	0	0	0	0	0	0	0	0	17	38
WA	82	27	16	0	1	0	0	1	0	0	6	18	30
All regions	488	16	11	8	10	2	0	0	0	1	6	18	25

$\chi^2 = 511.52$ , *d.f.* = 90,  $p < 0.0005$ . 77 cells (70.0%) have expected counts less than 5.

### A1.18.3 Cross-bred ewes

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	4	0	50	0	0	25	0	0	25	0	0	0	0
GB & DD	1	0	100	0	0	0	0	0	0	0	0	0	0
New England	34	0	6	29	59	3	3	0	0	0	0	0	0
C & S Tablelands	47	17	15	13	2	0	2	0	0	0	2	28	21
S NSW & N Vic	47	26	11	4	0	0	0	0	0	0	13	26	21
Gippsland	4	50	0	0	0	0	0	0	0	0	25	25	0
W Vic & SE SA	137	15	13	7	3	1	0	0	0	0	6	18	38
S SA	17	12	6	6	0	0	0	0	0	0	12	24	41
KI	8	38	25	0	0	0	0	0	0	0	0	13	25
WA	7	14	29	0	0	0	0	0	14	0	0	14	29
All regions	306	16	13	9	8	1	1	0	1	0	6	18	27

$\chi^2 = 303.64$ , *d.f.* = 81,  $p < 0.0005$ . 82 cells (82.0%) have expected counts less than 5.

### A1.19 Marking percentages in 2003 compared to a typical year

#### A1.19.1 Merino ewes mated to Merino rams

Region	n	Proportion of respondents (%)													
		2003 < typical		2003 = typical		2003 > typical									
SW & S Qld	39	64	<b>77</b>	90	1	10	20	2	13	23					
GB & DD	5	0	40	83	0	40	83	0	20	55					
New England	136	36	44	52	20	27	35	21	29	36					
C & S Tablelands	118	63	<b>71</b>	79	9	16	23	7	<b>13</b>	19					
S NSW & N Vic	89	59	<b>69</b>	78	3	<b>9</b>	15	14	22	31					
Gippsland	7	20	57	94	0	14	40	0	29	62					
W Vic & SE SA	198	48	55	62	19	25	31	14	20	25					
S SA	41	26	41	57	11	24	38	20	34	49					
KI	28	21	39	57	15	32	49	12	29	45					
WA	167	19	<b>26</b>	32	24	<b>31</b>	38	36	<b>44</b>	51					
All Regions	828	47	51	54	20	23	26	23	26	29					

$\chi^2 = 100.43$ , *d.f.* = 18,  $p < 0.0005$ . 6 cells (20.0%) have expected counts less than 5.

A1.19.2 Merino ewes mated to meat breed rams

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	8	29	63	96	0	13	35	0	25	55
GB & DD	4	1	50	99	0	25	67	0	25	67
New England	39	28	44	59	12	26	39	16	31	45
C & S Tablelands	53	55	68	80	10	21	32	3	11	20
S NSW & N Vic	59	42	54	67	13	24	35	11	22	33
Gippsland	3	100	100	100	0	0	0	0	0	0
W Vic & SE SA	145	35	43	52	28	36	44	14	21	27
S SA	36	16	31	46	16	31	46	23	39	55
KI	22	16	36	56	29	50	71	0	14	28
WA	76	24	34	45	28	39	50	16	26	36
All Regions	445	41	46	50	27	32	36	19	23	27

$\chi^2 = 34.43$ , *d.f.* = 18, *p* = 0.011. 10 cells (33.3%) have expected counts less than 5.

A1.19.3 Cross-bred ewes

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	2	100	100	100	0	0	0	0	0	0
GB & DD	1	100	100	100	0	0	0	0	0	0
New England	31	28	45	63	13	29	45	10	26	41
C & S Tablelands	39	33	49	64	16	31	45	8	21	33
S NSW & N Vic	41	49	63	78	11	24	38	2	12	22
Gippsland	5	100	100	100	0	0	0	0	0	0
W Vic & SE SA	119	32	40	49	34	43	52	10	17	24
S SA	16	14	38	61	4	25	46	14	38	61
KI	6	0	17	46	0	33	71	10	50	90
WA	8	0	25	55	29	63	96	0	13	35
All Regions	268	40	46	52	29	35	40	14	19	24

$\chi^2 = 29.44$ , *d.f.* = 18, *p* = 0.043. 16 cells (33.3%) have expected counts less than 5.

## A1.20 Proportion of respondents (%) weaning lambs each month of the year in 2003

### A1.20.1 Merino mated to Merino rams

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	38	13	18	13	8	3	0	5	0	0	0	11	29
GB & DD	7	0	14	43	29	0	0	0	0	0	0	0	14
New England	145	39	28	9	2	2	0	0	1	1	3	3	12
C & S Tablelands	127	12	2	0	1	2	2	2	7	12	11	20	31
S NSW & N Vic	96	2	2	0	0	0	1	6	9	17	19	30	14
Gippsland	9	0	0	0	11	0	0	0	0	22	11	22	33
W Vic & SE SA	227	7	3	1	0	0	2	4	16	14	17	17	19
S SA	46	0	0	0	0	0	9	20	9	20	26	17	0
KI	32	0	0	0	0	0	0	0	0	34	53	6	6
WA	186	2	1	0	0	1	1	4	11	26	28	24	4
All regions	913	11	7	3	1	1	1	4	9	15	17	17	15

$\chi^2 = 768.96$ , *d.f.* = 99,  $p < 0.0005$ . 70 cells (58.3%) have expected counts less than 5.

### A1.20.2 Merino mated to Meat breed rams

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	7	29	0	0	0	29	0	0	0	0	0	14	29
GB & DD	3	33	33	33	0	0	0	0	0	0	0	0	0
New England	43	33	30	9	5	2	0	0	0	5	0	5	12
C & S Tablelands	59	8	3	0	0	2	2	2	3	8	19	24	29
S NSW & N Vic	67	0	1	0	1	0	1	9	15	18	18	25	10
Gippsland	3	0	0	0	0	0	0	0	0	67	33	0	0
W Vic & SE SA	155	5	2	1	1	0	1	5	14	22	17	16	19
S SA	42	2	0	0	0	0	5	17	17	24	21	14	0
KI	23	0	0	0	0	0	0	0	0	26	48	13	13
WA	82	2	0	0	0	0	2	6	5	23	29	24	7
All regions	484	7	4	1	1	1	1	5	9	19	19	18	14

$\chi^2 = 398.54$ , *d.f.* = 99,  $p < 0.0005$ . 88 cells (73.3%) have expected counts less than 5.



A1.20.3 Cross-bred ewes












Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	3	33	33	0	0	33	0	0	0	0	0	0	0
GB & DD	1*												
New England	32	25	34	13	0	0	0	0	0	3	0	3	22
C & S Tablelands	43	9	0	0	0	0	0	2	5	7	16	26	35
S NSW & N Vic	42	2	0	0	2	0	2	10	10	19	24	26	5
Gippsland	5	0	0	0	20	0	0	0	0	0	20	20	40
W Vic & SE SA	119	5	1	0	0	0	1	4	7	6	16	36	24
S SA	18	0	0	0	0	0	0	0	11	44	28	17	0
KI	8	0	0	0	0	0	0	0	0	38	50	13	0
WA	12	0	0	0	0	0	0	0	0	17	33	17	33
All regions	283	7	5	1	1	0	1	4	6	11	18	26	21

$\chi^2 = 358.73$ ,  $d.f. = 99$ ,  $p < 0.0005$ . 104 cells (86.7%) have expected counts less than 5.

\* Figures for this single respondent have been omitted for confidentiality reasons. The respondent's data is included in the figures for all regions and the chi-square statistics.

## A1.21 Duration of feeding period (months)












### A1.21.1 Ewes

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	20	2	4	7	4	1	
GB & DD	8	2	5	9	5	2	
New England	110	1	3	12	4	0	
C & S Tablelands	123	1	5	12	5	0	
S NSW & N Vic	132	1	4	12	5	0	
Gippsland	5	2	6	12	6	5	
W Vic & SE SA	248	1	5	12	5	0	
S SA	43	1	3	12	4	1	
KI	32	1	4	6	4	0	
WA	186	1	5	12	5	0	
All Regions	907	1	4	12	5	0	

Histogram class limits: 1.0-2.1-3.2-4.3-5.4-6.5-7.6-8.7-9.8-10.9-12.0.

Kruskal-Wallis:  $\chi^2=46.25$ ,  $d.f.=9$ ,  $p < 0.0005$ .

### A1.21.2 Weaners

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	12	2	4	7	4	1	
GB & DD	5	2	5	6	4	2	
New England	69	1	4	12	5	1	
C & S Tablelands	103	1	5	12	5	0	
S NSW & N Vic	94	1	5	9	5	0	
Gippsland	6	4	5	12	7	4	
W Vic & SE SA	187	1	5	12	5	0	
S SA	20	1	5	12	5	1	
KI	27	3	4	7	4	0	
WA	159	1	5	12	5	0	
All Regions	682	1	5	12	5	0	

Histogram class limits: 1.0-2.1-3.2-4.3-5.4-6.5-7.6-8.7-9.8-10.9-12.0.

Kruskal-Wallis:  $\chi^2=18.50$ ,  $d.f.=9$ ,  $p=0.030$ .

## A1.22 Proportion of Respondents (%) Feeding Ewes and Weaners Each Month of the Year

### A1.22.1 Ewes

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	20	5	5	15	20	30	65	80	90	55	40	20	10
GB & DD	8	0	0	13	13	50	88	100	88	88	75	25	0
New England	110	8	8	13	18	27	55	86	95	65	21	10	8
C & S Tablelands	123	33	50	63	74	72	58	54	42	23	5	4	7
S NSW & N Vic	132	27	63	77	86	78	55	34	20	6	4	3	5
Gippsland	5	20	20	40	80	60	80	80	80	80	20	20	20
W Vic & SE SA	248	36	64	82	88	79	56	35	24	9	2	3	7
S SA	43	19	42	65	79	79	49	21	9	5	5	2	5
KI	32	38	81	84	81	59	13	0	0	0	0	0	9
WA	186	40	61	83	93	87	58	18	5	1	1	2	5
All regions	907	30	52	68	75	71	55	40	31	17	7	4	7

Note: percentages may sum to more than 100 as respondents could give more than one month.

### A1.22.2 Weaners

Region	n	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	12	8	17	17	17	25	67	75	83	58	25	8	8
GB & DD	5	0	0	0	0	40	80	100	80	80	60	0	0
New England	69	12	14	19	28	38	70	94	97	71	26	12	10
C & S Tablelands	103	52	70	80	83	73	51	39	28	17	5	3	11
S NSW & N Vic	94	48	74	80	79	66	41	26	16	5	5	5	16
Gippsland	6	50	50	67	67	67	67	67	67	67	50	33	33
W Vic & SE SA	187	56	80	89	91	77	51	31	19	7	2	6	17
S SA	20	60	70	70	90	85	40	15	10	5	5	5	10
KI	27	52	89	100	96	70	15	0	0	0	0	4	19
WA	159	53	72	87	91	83	50	14	4	1	2	8	20
All regions	682	48	67	77	79	71	50	34	25	15	6	7	16

Note: percentages may sum to more than 100 as respondents could give more than one month.

## A1.23 Worm Control, September 2002 – December 2003

### A1.23.1 Proportion of treatments (%) of unweaned lambs in each month of the year

Region	n*	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	16	0	19	0	6	0	0	0	0	6	6	6	56
GB & DD	10	20	30	0	0	0	0	0	0	0	10	20	20
New England	126	17	13	1	4	0	0	0	1	1	8	24	32
C & S Tablelands	84	5	2	1	2	1	7	11	11	14	20	17	8
S NSW & N Vic	55	2	4	2	4	2	5	20	9	20	9	18	5
Gippsland	5	0	0	0	0	0	0	0	60	0	20	0	20
W Vic & SE SA	167	2	4	1	1	2	9	17	11	20	10	8	15
S SA	22	0	0	0	5	0	14	45	5	27	0	0	5
KI	24	0	0	0	0	4	0	38	13	33	13	0	0
WA	28	4	0	0	4	4	11	14	21	21	4	0	18
All regions	537	6	6	1	2	1	6	13	9	15	10	13	17

\* number of treatments.

### A1.23.2 Proportion of treatments (%) of weaners in each month of the year

Region	n*	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	54	11	19	9	13	4	11	6	7	6	6	7	2
GB & DD	23	9	4	13	13	4	9	4	17	0	9	9	9
New England	360	12	11	11	13	8	8	5	8	8	5	5	6
C & S Tablelands	303	5	12	9	4	4	7	5	5	9	7	15	18
S NSW & N Vic	244	5	15	3	3	7	3	10	7	9	8	15	14
Gippsland	22	9	5	9	5	5	5	9	5	9	5	27	9
W Vic & SE SA	561	8	11	8	6	7	6	5	7	6	9	11	17
S SA	90	9	7	7	2	1	6	16	2	16	6	16	14
KI	78	14	13	4	5	4	6	6	1	14	13	6	13
WA	255	12	5	5	5	2	3	2	5	9	14	16	20
All regions	1990	9	11	8	7	6	6	6	6	8	8	12	14

\* number of treatments.

A1.23.3 *Products used – unweaned lambs*

Active constituent(s)	Proportion of treatments (%)
Drench not specified	0.93
Cobalt	0.19
Selenium	0.19
Broadspectrum	0.19
BZ unspecified	2.04
Albendazole	5.57
Fenbendazole	0.37
Oxfendazole	0.19
Clear not specified	1.11
Levamisole	5.38
ML not specified	0.74
Abamectin	1.67
Ivermectin	13.54
Moxidectin	31.91
Naphthalophos	0.19
Closantel	2.78
Triclabendazole	0.56
White + tape	0.19
Clear + tape	0.19
Levamisole + BZ	10.95
Firstdrench® + tape	0.37
Moxidectin + tapeworm	0.93
Moxidectin + selenium	1.11
Moxidectin + Levamisole	0.37
Mineral drench + Ivermectin	0.19
Naphthalophos + BZ	0.56
Naphthalophos + Albendazole	0.56
Naphthalophos + Levamisole	0.37
Closantel + Albendazole	1.30
Closantel + Oxfendazole	0.37
Praziquantel + Abamectin	6.31
Praziquantel + Levamisole	6.12
Triton® + Moxidectin	0.19
Triton® + Closantel	0.37
Ivermectin + Levamisole + BZ	1.48
Ivermectin + Praziquantel + Levamisole	0.19
Naphthalophos + Levamisole + BZ	0.37

418 respondents, 539 treatments

A1.23.4 Products used – weaners

Active constituent(s)	Proportion of treatments (%)
BZ unspecified capsule	0.15
Albendazole	2.49
Albendazole –capsules	0.36
Fenbendazole	0.36
Mebendazole	0.05
Oxfendazole	0.05
Clear not specified	1.12
Levamisole	5.80
ML not specified	1.27
Abamectin	2.44
Ivermectin	19.60
Ivermectin – capsule	0.81
Moxidectin	32.79
Naphthalophos	1.88
Closantel	2.19
Triclabendazole	1.17
Combination unspecified	0.31
Oxyclosanide + Levamisole	0.10
Levamisole + unspecified	0.05
Levamisole + BZ	9.01
Levamisole + Albendazole	0.10
Levamisole + Fenbendazole	0.56
Firstdrench® + tape	0.05
Ivermectin + white	0.05
Ivermectin + Fasinex®	0.05
Moxidectin + combination unspecified	0.20
Moxidectin + tapeworm	0.15
Moxidectin + selenium	0.56
Moxidectin + Closantel	0.05
Moxidectin + Fasinex®	0.25
Moxidectin + Naphthalophos	0.05
Moxidectin + Levamisole	0.15
Mineral drench + Ivermectin	0.10
Naphthalophos + combination unspecified	0.51
Naphthalophos + BZ	1.63
Naphthalophos + Albendazole	0.87
Naphthalophos + Levamisole	1.93
Naphthalophos + Oxfendazole	0.10
Closantel + Albendazole	0.56
Closantel + Oxfendazole	0.10
Closantel + Levamisole	0.10
Praziquantel + Abamectin	1.99
Praziquantel + Levamisole	0.97
Ivermectin + Naphthalophos + white	0.20
Ivermectin + Levamisole + BZ	2.24
Moxidectin + BZ +Levamisole	0.15
Naphthalophos + Moxidectin + Levamisole	0.05
Naphthalophos + Levamisole + BZ	0.76
Closantel + Levamisole + BZ	0.05
Praziquantel + Levamisole + Fenbendazole	0.05
Abamectin + Albendazole + Levamisole + Closantel	0.20

914 respondents, 1964 treatments

**A1.23.5 Proportion of treatments (%) of maiden ewes in each month of the year**

Region	n*	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	48	4	13	8	6	2	10	6	10	10	8	13	8
GB & DD	19	16	0	11	16	0	0	5	21	5	5	11	11
New England	299	13	12	8	7	6	3	2	8	16	7	8	9
C & S Tablelands	280	6	13	9	4	4	5	8	6	6	9	15	14
S NSW & N Vic	180	11	15	7	6	4	3	6	7	3	2	21	17
Gippsland	18	0	6	11	6	6	6	6	0	11	6	28	17
W Vic & SE SA	479	11	11	8	6	4	8	7	7	5	4	14	16
S SA	72	15	15	11	6	3	6	4	3	7	0	8	22
KI	70	23	11	4	4	6	9	16	6	10	3	3	6
WA	179	20	9	6	8	4	5	2	3	6	5	10	22
All regions	1644	12	12	8	6	4	5	6	6	8	5	13	15

\* number of treatments.

**A1.23.6 Proportion of treatments (%) of adult ewes in each month of the year**

Region	n*	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	64	6	13	8	6	2	8	8	11	9	9	6	14
GB & DD	27	15	4	7	15	7	0	4	19	4	7	11	7
New England	399	11	11	7	10	6	3	2	9	16	6	9	10
C & S Tablelands	323	4	12	9	4	3	6	9	7	7	9	14	16
S NSW & N Vic	220	11	15	10	5	4	2	4	6	5	2	19	18
Gippsland	29	3	7	10	3	3	7	7	3	7	3	34	10
W Vic & SE SA	627	10	10	8	6	5	7	9	7	4	5	13	16
S SA	101	18	11	11	7	4	7	6	0	9	2	9	17
KI	84	20	12	4	5	6	8	14	5	13	4	4	6
WA	199	19	8	9	10	4	4	4	4	7	4	6	24
All regions	2073	11	11	8	7	5	5	6	7	8	5	12	15

\* number of treatments.

A1.23.7 *Products used – maiden ewes*

Active constituent(s)	Proportion of treatments (%)
Drench not specified	0.74
Alternative	0.31
Cobalt	0.06
Broadspectrum	0.06
BZ unspecified	1.43
BZ unspecified capsule	0.25
Albendazole	1.86
Albendazole –capsules	0.25
Fenbendazole	0.25
Oxfendazole	0.06
Clear not specified	1.24
Levamisole	6.64
ML not specified	1.12
Abamectin	1.80
Ivermectin	17.94
Ivermectin – capsule	1.12
Moxidectin	31.91
Naphthalophos	1.99
Closantel	3.41
Triclabendazole	1.55
Combination unspecified	0.06
Oxyclosanide + Levamisole	0.12
Levamisole + BZ	10.74
Levamisole + Albendazole	0.31
Levamisole + Fenbendazole	0.68
ML + Closantel	0.06
Ivermectin + combination unspecified	0.12
Moxidectin + combination unspecified	0.25
Moxidectin + tapeworm	0.19
Moxidectin + selenium	0.43
Moxidectin + Closantel	0.06
Moxidectin + Fasinex®	0.12
Moxidectin + Naphthalophos	0.19
Moxidectin + Levamisole	0.87
Naphthalophos + combination unspecified	0.37
Naphthalophos + BZ	1.30
Naphthalophos + Albendazole	0.68
Naphthalophos + Levamisole	2.17
Naphthalophos + Oxfendazole	0.12
Naphthalophos + Closantel	0.06
Closantel + Albendazole	0.68
Closantel + Oxfendazole	0.31
Closantel + Levamisole	0.12
Closantel + Triclabendazole	0.06
Closantel + Abamectin	0.06
Closantel + Fasinex®	0.12
Praziquantel + Abamectin	1.12
Ivermectin + Naphthalophos + white	0.31
Ivermectin + Levamisole + BZ	2.61
Moxidectin + BZ +Levamisole	0.06

*table continued on next page*

*Products used –maiden ewes (contd)*



Active constituent(s)	Proportion of treatments (%)
Naphthalophos + Moxidectin + Levamisole	0.06
Naphthalophos + Levamisole + BZ	1.06
Naphthalophos + Levamisole + Closantel	0.06
Naphthalophos + BZ + Closantel	0.12
Closantel + Levamisole + BZ	0.06
Praziquantel + Abamectin + Levamisole	0.06
Abamectin + Albendazole + Levamisole + Closantel	0.19

768 respondents, 1611 treatments

#### A1.23.8 Products used – adult ewes

Active constituent(s)	Proportion of treatments (%)
Drench not specified	0.74
Alternative	0.31
Cobalt	0.06
Broadspectrum	0.06
BZ unspecified	1.43
BZ unspecified capsule	0.25
Albendazole	1.86
Albendazole –capsules	0.25
Fenbendazole	0.25
Oxfendazole	0.06
Clear not specified	1.24
Levamisole	6.64
ML not specified	1.12
Abamectin	1.80
Ivermectin	17.94
Ivermectin – capsule	1.12
Moxidectin	31.91
Naphthalophos	1.99
Closantel	3.41
Triclabendazole	1.55
Combination unspecified	0.06
Oxyclosanide + Levamisole	0.12
Levamisole + BZ	10.74
Levamisole + Albendazole	0.31
Levamisole + Fenbendazole	0.68
ML + Closantel	0.06
Ivermectin + combination unspecified	0.12
Moxidectin + combination unspecified	0.25
Moxidectin + tapeworm	0.19
Moxidectin + selenium	0.43
Moxidectin + Closantel	0.06
Moxidectin + Fasinex®	0.12
Moxidectin + Naphthalophos	0.19
Moxidectin + Levamisole	0.87
Naphthalophos + combination unspecified	0.37
Naphthalophos + BZ	1.30
Naphthalophos + Albendazole	0.68
Naphthalophos + Levamisole	2.17
Naphthalophos + Oxfendazole	0.12

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*Products used – adult ewes (contd)*

Active constituent(s)	Proportion of treatments (%)
Naphthalophos + Closantel	0.06
Closantel + Albendazole	0.68
Closantel + Oxfendazole	0.31
Closantel + Levamisole	0.12
Closantel + Triclabendazole	0.06
Closantel + Abamectin	0.06
Closantel + Fasinex®	0.12
Praziquantel + Abamectin	1.12
Ivermectin + Naphthalophos + white	0.31
Ivermectin + Levamisole + BZ	2.61
Moxidectin + BZ + Levamisole	0.06
Naphthalophos + Moxidectin + Levamisole	0.06
Naphthalophos + Levamisole + BZ	1.06
Naphthalophos + Levamisole + Closantel	0.06
Naphthalophos + BZ + Closantel	0.12
Closantel + Levamisole + BZ	0.06
Praziquantel + Abamectin + Levamisole	0.06
Abamectin + Albendazole + Levamisole + Closantel	0.19

768 respondents, 1611 treatments

*A1.23.9 Proportion of treatments (%) of wethers in each month of the year*

Region	n*	J	F	M	A	M	J	J	A	S	O	N	D
SW & S Qld	49	4	16	4	8	6	10	4	12	14	6	8	6
GB & DD	39	13	8	13	10	5	3	3	13	13	5	13	3
New England	270	11	11	8	8	8	5	2	7	13	8	11	9
C & S Tablelands	202	4	15	11	4	3	4	5	2	6	9	15	19
S NSW & N Vic	113	12	19	6	6	3	2	5	4	3	1	19	20
Gippsland	16	0	0	13	6	6	6	0	6	13	0	38	13
W Vic & SE SA	310	10	12	11	4	4	3	4	4	5	4	18	21
S SA	26	19	8	0	4	4	4	4	4	8	0	0	46
KI	50	30	14	4	2	4	6	8	10	6	6	2	8
WA	96	18	8	7	6	4	3	2	4	7	3	8	28
All regions	1171	11	13	9	6	5	4	4	5	8	5	14	17

\* number of treatments.

A1.23.10 Products used – wethers

Active constituent(s)	Proportion of treatments (%)
Drench not specified	1.57
Alternative	0.17
Broadspectrum	0.09
BZ unspecified	0.96
BZ unspecified capsule	0.09
Albendazole	2.18
Fenbendazole	0.09
Oxfendazole	0.09
Clear not specified	1.39
Levamisole	9.23
ML not specified	1.31
Abamectin	2.09
Ivermectin	15.59
Moxidectin	31.97
Naphthalophos	2.53
Closantel	4.62
Triclabendazole	2.00
Combination unspecified	0.17
Oxyclosanide + Levamisole	0.35
Levamisole + BZ	9.49
Levamisole + Albendazole	0.17
Levamisole + Fenbendazole	0.52
Levamisole + Fasinex®	0.09
Ivermectin + combination unspecified	0.17
Moxidectin + combination unspecified	0.26
Moxidectin + selenium	0.44
Moxidectin + Closantel	0.61
Moxidectin + Fasinex®	0.26
Moxidectin + Naphthalophos	0.17
Moxidectin + Ivermectin	0.09
Moxidectin + Levamisole	0.52
Naphthalophos + combination unspecified	0.26
Naphthalophos + BZ	1.22
Naphthalophos + Albendazole	0.96
Naphthalophos + Levamisole	1.66
Naphthalophos + Oxfendazole	0.17
Closantel + Albendazole	0.52
Closantel + Oxfendazole	0.26
Closantel + Levamisole	0.09
Closantel + Fasinex®	0.09
Praziquantel + Abamectin	1.39
Ivermectin + Naphthalophos + white	0.35
Ivermectin + Levamisole + BZ	2.09
Moxidectin + BZ +Levamisole	0.09
Moxidectin + Closantel +Ivermectin	0.09
Naphthalophos + Levamisole + BZ	1.22
Naphthalophos + BZ + Closantel	0.09
Closantel + Levamisole + BZ	0.09
Abamectin + Albendazole + Levamisole + Closantel	0.09
Drench not specified	1.57

608 respondents, 1148 treatments

### A1.23.11 Drenching of newly introduced sheep

Region	n	Proportion buying sheep (%)		
SW & S Qld	62	63	74	85
GB & DD	22	79	91	100
New England	172	51	58	66
C & S Tablelands	177	50	58	65
SW NSW & NE Vic	166	55	63	70
Gippsland	12	30	58	86
W Vic & SE SA	369	57	62	66
S SA	69	43	55	67
KI	41	49	63	78
WA	200	42	<b>49</b>	55
All regions	1290	57	59	62

$\chi^2 = 27.12$ , *d.f.* = 9, *p* = 0.001.

### A1.23.12 Products used to drench newly introduced sheep

Active constituent(s)	Proportion of respondents (%)
Drench not specified	4.82
Alternative	0.16
Broadspectrum	0.64
BZ unspecified	0.32
Albendazole	0.80
Thiabendazole	0.16
Clear not specified	0.64
Levamisole	1.29
ML not specified	3.05
Abamectin	0.64
Ivermectin	22.83
Moxidectin	38.75
Naphthalophos	0.48
Closantel	0.80
Triclabendazole	0.16
Fasinex® + Oxytoclosanide + Levamisole	0.16
Combination unspecified	1.29
Oxytoclosanide + Levamisole	0.16
Levamisole + BZ	1.13
Levamisole + Fenbendazole	0.16
ML + Fasinex®	0.16
ML + BZ	0.16
Ivermectin + combination unspecified	0.16
Ivermectin + Fasinex®	0.48
Ivermectin + Levamisole	0.16
Ivermectin + Closantel	0.48
Moxidectin + combination unspecified	1.13
Moxidectin + selenium	0.64
Moxidectin + Closantel	0.48
Moxidectin + Fasinex®	0.32





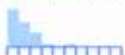






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*Products used to drench newly introduced sheep (contd)*

<b>Active constituent(s)</b>	<b>Proportion of respondents (%)</b>
Moxidectin + mineral	0.16
Moxidectin + Naphthalophos	0.80
Moxidectin + Ivermectin	1.61
Moxidectin + Levamisole	1.45
Moxidectin + Triton®	0.16
Mineral drench + Ivermectin	0.16
Naphthalophos + BZ	0.80
Naphthalophos + Levamisole	0.32
Naphthalophos + Oxfendazole	0.16
Closantel + Albendazole	0.48
Closantel + Fasinex®	0.16
Praziquantel + Abamectin	1.13
Triton® + Naphthalophos	0.16
Triton® + Fasinex®	0.16
Triton® + Q drench®	0.16
Ivermectin + Levamisole + BZ	5.47
Moxidectin + Naphthalophos + BZ (eg Valbazen)	0.32
Moxidectin + Naphthalophos + BZ (eg Valbazen) +se	0.16
Moxidectin + BZ +Levamisole	0.96
Moxidectin + Closantel +Ivermectin	0.16
Naphthalophos + BZ + Closantel	0.16
Ivermectin + Naphthalophos + BZ + Fasinex®	0.16
Abamectin + Albendazole + Levamisole + Closantel	1.45
Moxidectin + Naphthalophos + BZ + Levamisole	0.64

*595 respondents, 622 treatments*

### A1.23.13 Number of times worm egg counts typically monitored – weaners





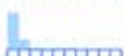






Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	22	1	2	7	2.3	0.7	
GB & DD	3	2	3	6	3.7	5.2	
New England	87	1	3	43	4.3	1.1	
C & S Tablelands	77	1	2	26	3.4	0.8	
S NSW & N Vic	53	1	2	12	2.2	0.5	
Gippsland	6	1	2	3	2.0	0.7	
W Vic & SE SA	127	1	2	12	2.8	0.3	
S SA	21	1	2	12	3.1	1.5	
KI	14	1	3	10	3.4	1.4	
WA	61	1	2	8	2.1	0.4	
All Regions	471	1	2	43	3.0	0.3	

Histogram class limits: 1.0-1.9-2.8-3.7-4.6-5.5-6.4-7.3-8.2-9.1-10.0.

Kruskal-Wallis:  $\chi^2=37.29$ ,  $d.f.=9$ ,  $p<0.0005$ .

**Note:** respondents monitoring more than 10 times (12) have been excluded from the histograms (and **only** from the histograms) to prevent the size distribution being reduced to a single bar, due to the influence of the small number of respondents monitoring very frequently.

### A1.23.14 Number of times worm egg counts typically monitored – wethers

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	19	1	2	12	3.1	1.3	
GB & DD	13	1	5	25	5.7	3.7	
New England	61	1	3	12	3.0	0.6	
C & S Tablelands	42	1	2	13	2.4	0.7	
S NSW & N Vic	27	1	1	24	2.4	1.8	
Gippsland	5	1	1	3	1.6	1.1	
W Vic & SE SA	73	1	2	12	2.4	0.5	
S SA	5	1	2	5	2.4	2.1	
KI	11	1	2	5	2.5	0.8	
WA	23	1	2	4	2.0	0.4	
All Regions	279	1	2	25	2.7	0.3	

Histogram class limits: 1.0-1.9-2.8-3.7-4.6-5.5-6.4-7.3-8.2-9.1-10.0.

Kruskal-Wallis:  $\chi^2=28.34$ ,  $d.f.=9$ ,  $p=0.001$ .

**Note:** respondents monitoring more than 10 times (6) have been excluded from the histograms (and **only** from the histograms) to prevent the size distribution being reduced to a single bar, due to the influence of the small number of respondents monitoring very frequently.

A1.23.15 Number of times worm egg counts typically monitored – adult ewes

Region	n	Minimum	Median	Maximum	Mean	95% CI	Histogram
SW & S Qld	24	1	2	12	3.1	1.0	
GB & DD	7	2	3	7	3.7	1.9	
New England	94	1	3	15	3.4	0.6	
C & S Tablelands	76	1	2	17	2.7	0.5	
S NSW & N Vic	51	1	1	6	1.6	0.3	
Gippsland	8	1	2	3	1.8	0.6	
W Vic & SE SA	131	1	2	12	2.5	0.3	
S SA	24	1	2	7	1.9	0.6	
KI	14	1	3	5	2.9	0.8	
WA	57	1	1	6	1.8	0.3	
All Regions	486	1	2	17	2.6	0.2	

Histogram class limits: 1.0-1.9-2.8-3.7-4.6-5.5-6.4-7.3-8.2-9.1-10.0.

Kruskal-Wallis:  $\chi^2=56.07$ ,  $d.f.=9$ ,  $p<0.0005$ .

Note: respondents monitoring more than 10 times (6) have been excluded from the histograms (and **only** from the histograms) to prevent the size distribution being reduced to a single bar, due to the influence of the small number of respondents monitoring very frequently.

A1.23.16 Monitoring frequency in 2003 compared to typical frequency – weaners

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	19	0	5	15	76	89	103	0	5	15
GB & DD	1	0	0	0	100	100	100	0	0	0
New England	85	0	1	3	97	99	101	0	0	0
C & S Tablelands	76	0	0	0	94	97	101	0	3	6
S NSW & N Vic	49	0	2	6	94	98	102	0	0	0
Gippsland	6	0	17	46	54	83	113	0	0	0
W Vic & SE SA	125	4	10	15	85	90	96	0	0	0
S SA	20	0	0	0	85	95	105	0	5	15
KI	14	0	0	0	100	100	100	0	0	0
WA	57	0	2	5	92	96	101	0	2	5
All Regions	452	2	4	6	93	95	97	0	1	2

$\chi^2 = 32.10$ ,  $d.f. = 18$ ,  $p = 0.021$ . 21 cells (70.0%) have expected counts less than 5.

**A1.23.17 Monitoring frequency in 2003 compared to typical frequency – wethers**

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	17	0	6	17	83	94	105	0	0	0
GB & DD	11	0	9	26	74	91	108	0	0	0
New England	60	0	2	5	92	97	101	0	2	5
C & S Tablelands	41	0	2	7	93	98	102	0	0	0
S NSW & N Vic	27	0	0	0	100	100	100	0	0	0
Gippsland	5	0	0	0	100	100	100	0	0	0
W Vic & SE SA	73	0	4	9	89	95	100	0	1	4
S SA	4	0	0	0	100	100	100	0	0	0
KI	11	0	0	0	100	100	100	0	0	0
WA	22	0	9	21	79	91	103	0	0	0
All Regions	271	1	3	5	94	96	98	0	1	2

$\chi^2 = 8.25$ , *d.f.* = 18, *p* = 0.975. 22 cells (73.3%) have expected counts less than 5.

**A1.23.18 Monitoring frequency in 2003 compared to typical frequency – adult ewes**

Region	n	Proportion of respondents (%)								
		2003 < typical			2003 = typical			2003 > typical		
SW & S Qld	23	0	13	27	67	83	98	0	4	13
GB & DD	5	0	20	55	45	80	115	0	0	0
New England	93	0	1	3	97	99	101	0	0	0
C & S Tablelands	75	0	3	6	92	96	100	0	1	4
S NSW & N Vic	50	0	0	0	100	100	100	0	0	0
Gippsland	8	0	0	0	100	100	100	0	0	0
W Vic & SE SA	128	2	5	9	91	95	98	0	0	0
S SA	23	0	0	0	87	96	104	0	4	13
KI	14	0	0	0	100	100	100	0	0	0
WA	53	0	2	6	94	98	102	0	0	0
All Regions	472	2	3	5	94	96	98	0	1	1

$\chi^2 = 31.86$ , *d.f.* = 18, *p* = 0.023. 21 cells (70.0%) have expected counts less than 5.



### A1.23.19 Recency of adoption of drench resistance testing

Region	n	Proportion of respondents who have tested for drench resistance in 2000 or more recently (%)		
SW & S Qld	11	74	91	100
GB & DD	8	15	50	85
New England	79	64	73	83
C & S Tablelands	73	56	67	78
SW NSW & NE Vic	59	49	61	73
Gippsland	8	45	75	100
W Vic & SE SA	153	59	67	74
S SA	32	36	53	70
KI	16	46	69	91
WA	100	52	62	72
<b>All regions</b>	<b>539</b>	<b>62</b>	<b>66</b>	<b>70</b>

$\chi^2 = 10.01$ , *d.f.* = 9, *p* = 0.350.

### A1.23.20 Explanatory descriptions of worm control treatments and techniques

#### Prepare pastures by 'Smart grazing' – all regions

Explanatory description	Proportion of respondents (%)
Provide or move treated sheep to clean/ low risk pastures	14
Graze first/ in rotation/ alternate with cattle	23.3
Graze first with cattle & provide crop stubbles	4.7
Graze first with cattle &/ or dry sheep	4.7
Graze first with dry sheep	7.0
Paddocks grazed by sheep given a capsule	4.7
Use rotational grazing incl. cell grazing	9.3
Spell pasture/ paddock	11.6
Shift after treatment onto crop stubbles	11.6
Can't use any grazing techniques	2.3
Nutrition/ grazing management/ good quality pasture	4.7
Give pre-lambing drench	2.3

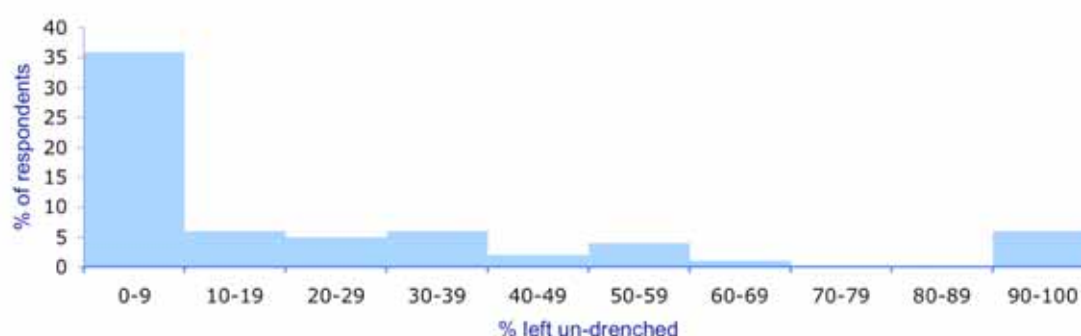
*n*=43

Prepare pastures by other grazing techniques – all regions

Explanatory description	Proportion of respondents (%)
Provide or move treated sheep to clean/ low risk pastures	9.8
Graze high risk pastures with dry sheep	2.0
Graze first/ in rotation/ alternate with cattle	25.5
Graze first with cattle & provide clean pastures	2.0
Graze first with cattle & provide crop stubbles	2.0
Graze first with cattle &/ or dry sheep	9.8
Graze cattle & sheep together	2.0
Graze first with dry sheep	13.7
Paddocks grazed by sheep given a capsule	2.0
Use rotational grazing incl. cell grazing	5.9
Spell pasture/ paddock	9.8
Change pasture/ paddock after treatment	2.0
Shift after treatment onto crop stubbles	3.9
Use/ shift after treatment onto fodder or standing crop	2.0
Avoid drenching onto crop stubbles	2.0
Use hay paddock	2.0
Avoid high stocking rate/ use low stocking rate	2.0
Use native pasture	2.0

*n*=51

Proportion of sheep left un-drenched at summer treatments – all regions



*n*=66, *mean*=21.29%

Feeding strategy – all regions

Explanatory description	Proportion of respondents (%)
Graze first/ in rotation/ alternate with cattle	7.7
Change pasture/ paddock after treatment	7.7
Shift after treatment onto crop stubbles	7.7
Keep feed availability high	7.7
Maintain condition score	38.5
Supplementary feed/ start feeding early	15.4
Feed in troughs	7.7
Nutrition/ grazing management/ good quality pasture	7.7
Graze first/ in rotation/ alternate with cattle	7.7
Change pasture/ paddock after treatment	7.7

*n*=13

Proportion respondents who used rams selected for worm resistance and rams were EBV tested

Across all regions, and among those respondents who used rams selected for worm resistance, 72.5 per cent indicated that the rams were EBV tested (n=120). There was no significant difference between regions.

Drenching – all regions

<b>Explanatory description</b>	<b>Proportion of respondents (%)</b>
Provide or move treated sheep to clean/ low risk pastures	4.7
Shift after treatment onto crop stubbles	4.7
Use minerals	2.3
Use strategic/ summer drenches	18.6
1-summer drench	7.0
2-summer drenches	7.0
Don't summer drench	2.3
Drench frequently	4.7
Drench as needed	9.3
Use correct dose rates	2.3
Use higher dose rates	2.3
Rotate chemicals	9.3
Monitor egg counts before drench	7.0
Assess when to drench visually (appearance of the sheep)	7.0
Don't drench much/ worms not a problem	4.7
Only drench weaners or lambs/ don't drench adult sheep	4.7
Give quarantine drench	2.3

n=43

Other treatments and techniques - all regions

<b>Explanatory description</b>	<b>Proportion of respondents (%)</b>
Provide or move treated sheep to clean/ low risk pastures	7.7
Graze first/ in rotation/ alternate with cattle	4.5
Graze first with cattle & provide crop stubbles	1.3
Graze first with dry sheep	0.6
Paddocks grazed by sheep given a capsule	1.9
Use rotational grazing incl. cell grazing	1.9
Spell pasture/ paddock	8.4
Spell lambing paddock	0.6
Change pasture/ paddock after treatment	0.6
Shift after treatment onto crop stubbles	13.5
Use/ shift after treatment onto fodder or standing crop	0.6
Use hay paddock	0.6
Graze crop stubbles	9.0
Avoid high stocking rate/ use low stocking rate	3.9
Use high stocking rate	0.6
Nutrition/ grazing management/ good quality pasture	5.2
Use minerals	8.4
Nutrition - especially vitamins	0.6

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#### Other treatments and techniques - all regions (contd)

<b>Explanatory description</b>	<b>Proportion of respondents (%)</b>
Nutrition - organic	1.9
Monitor BWt	0.6
Use strategic/ summer drenches	2.6
Leave some sheep untreated at summer drench	0.6
Don't summer drench	0.6
Give pre-lambing drench	1.3
Use 'smart drenching' (~12 hrs off feed)	1.3
Rotate chemicals	3.2
Monitor egg counts before drench	1.9
Assess when to drench visually (appearance of the sheep)	1.9
Only drench tail of mob	0.6
Don't drench much/ worms not a problem	2.6
Only drench weaners or lambs/ don't drench adult sheep	2.6
Use some form of genetic strategy	1.9
Cull daggy sheep	0.6
Select low worm count sheep	0.6
Flock structure limits other control measures	1.3
Disaster & chaos - no other control possible	3.2

*n=153*

#### *A1.23.21 Other advisors on worm control*

Other advisors were nominated by 14 respondents. Of these 10 nominated a Rural Lands Protection Board vet. Multiple un-named sources, other family members, the sheep, and university researchers were nominated as advisors by the remaining four respondents.

#### **A1.24 Blow Fly Control**

##### *A1.24.1 Other methods of blow fly control*

<b>Method of control</b>	<b>Proportion of respondents (%)</b>
Mulesing	25.79
Buy mulesed sheep	0.09
Crutching	47.58
Drench/worm control	1.06
Pasture/nutritional management	1.40
Selection	0.02
Breeding	0.19
Select resistant sheep	4.65
Cull struck or prone sheep	5.53
Insecticides	0.86
Jet (including spray race)	1.87
Dip	2.73
Backline	5.47
Mulesing/ marking treatment	0.06
Baits	0.35
Time of shearing	24.96
Fly traps	3.47
Breed choice	3.21
Carcase disposal	1.4
Other	0.19

*n=764. Note: percentages are adjusted for non-response bias as described in Appendix A1.10. Percentages may sum to more than 100 as respondents could give more than one method.*

#### A1.24.2 People who performed mulesing for respondents

Person performing mules operation	Proportion of respondents (%)		
Use a mulesing contractor	3.0	4.2	5.4
Use an accredited mulesing contractor	37.1	39.9	42.7
Another local farmer	1.1	1.9	2.7
Self, member of family, farm staff or family friend	0.0	0.2	0.5
Self	32.9	35.7	38.5
Member of family	1.7	2.6	3.5
Staff	1.4	2.3	3.2
Family friend	0.0	0.3	0.6
Don't mules	7.2	8.8	10.5
Have merinos but <i>elect</i> not to mules	0.0	0.3	0.6
Used to mules - don't any longer	0.0	0.1	0.3
Purchase mulesed sheep	1.8	2.7	3.6
Purchase mulesed merino ewes	0.0	0.4	0.8
Purchase mulesed merino wethers	0.0	0.3	0.6
Purchase mulesed 1st cross ewes	0.0	0.3	0.6

n=1166

#### A1.25 Lice Control

##### A1.25.1 Treatment frequency

Typical frequency of lice treatment	Proportion of respondents (%)		
Annually	36.3	39.0	41.7
Annually - biennially	0.0	0.3	0.6
Biennially	3.0	4.1	5.2
Between biennially and triennially	0.8	1.4	2.0
Every three – four years	2.1	3.0	3.9
Every four - five years	0.0	0.1	0.3
Every Five to 10 years	3.5	4.6	5.7
Intervals greater than 10 years	3.0	4.1	5.2
Treat for lice but interval unspecified	1.2	2.0	2.8
Never	15.6	17.7	19.8
When lice detected on respondent's sheep	17.5	19.7	21.9
When neighbour has lice	0.5	1.0	1.5
When stray sheep found/sheep purchased	0.6	1.2	1.8
Other/not defined	1.2	1.9	2.6

n=1280

*Products used in lice control*

<b>Product groups and products</b>	<b>Proportion of treatments (%)</b>
Organophosphate (not otherwise specified)	0.09
Diazinon	7.30
Di Jet	5.02
Dip Jet	2.60
Diprite	0.05
Topclip	1.19
Eureka gold	0.55
Ectomort	0.73
Cypermethrin (not otherwise specified)	0.41
Baclash	0.27
Cypon	0.05
Outflank	0.14
Clout	1.87
Clout S	0.91
Duracide	0.18
Vanquish	1.09
Insect Growth Regulator (IGR) (not otherwise specified)	0.68
Fleececare	2.87
Strike	0.73
Magnum	25.55
Triflumuron (not otherwise specified)	0.09
Zapp	37.09
Clipguard	1.05
Vetrazin	1.37
Spinosad/Extinosad	2.14
Flockmaster	0.87
Splash	0.05
Paramax	0.18
Jetamec	0.09
Sulphur	0.27
Not Specified/Unknown	4.52

*743 respondents, 2192 treatments*

#### **A1.25.2 Other forms of lice control**

##### Off-shears

Fourteen respondents provided information on other forms of off-shears lice control they used in the period 2001 – 2003. Five of these used hand jetting, five used a spray race and the remaining four used various other forms of treatment such as a mechanical plunge dip. Products use reported by respondents included Fleececare, Di-jet, Diazinon, and Vetrazin.

##### Long wool

Seven respondents provided information on other forms of long wool lice control. Three of these respondents used long wool dipping, two used a spray race and the remaining two used supplementary nutrition (elementary sulphur) and a machine jetter. Products used included Extinosad, Vetrazin and Diazinon.

A1.25.3 *Products to which resistance may have occurred*

<b>Product groups and products</b>	<b>Proportion of respondents (%)</b>
Organophosphate (not otherwise specified)	0.7
Diazinon	10.0
Di Jet	1.3
Dip Jet	0.7
Topclip	0.7
Eureka gold	0.7
Synthetic pyrethroids (not otherwise specified)	5.3
Baclash	1.3
Outflank	3.3
Clout	15.3
Clout S	8.0
Duracide	2.7
Vanquish	2.0
Grenade	2.7
Insect Growth Regulator (IGR) (not otherwise specified)	1.3
Fleececare	0.7
Magnum	17.3
Zapp	24.7
Flockmaster	0.7
Not Specified/Unknown	14.0

*n=150*

*Note: percentages may sum to more than 100 as respondents could give more than one product.*

