

Appendix 5

Statistical comparison between goat and sheep strongyle faecal egg counts and haematocrits at Kraaipan

Given that the goats and sheep at Kraaipan were kept under very similar if not the same managerial conditions (e.g. same access to pasture, herded together, kraalled together at night, more-or-less the same numbers of each, same samples taken on same dates), it seemed appropriate to compare the data between species. This appendix supplements the data presented in Chapters 4 and 7.

The Wilcoxon non-parametric two-sample procedure was used to compare the means for the strongyle faecal egg count (FEC) and haematocrit data of Kraaipan to test for statistical significance between the goat and sheep values. While Chapters 4 and 7 present the proportional strongyle FECs, the Wilcoxon procedure was applied to the total FECs. Values for the two-sided probability derived by the normal approximation to the test were examined.

Throughout the period of investigation, the egg counts and haematocrits of the sheep remained higher than those of the goats did (Fig. A5.1). On 12 out of the 20 visit dates, the sheep showed significantly higher egg counts than the goats did (using the Wilcoxon two-sample test) (Table A5.1). On almost all occasions, the mean haematocrits of the goats were lower than those of the sheep were. On eight occasions, this difference is statistically significant (Table A5.2).

The lower egg counts in the goats at Kraaipan are probably due to the differences in eating habits between the two species. In contrast to the goats, the sheep were observed to prefer grazing to browsing. They would therefore ingest more larvae than the goats, and would develop higher worm burdens. The lower haematocrit values in the goats are probably an inherent species difference. Schalm's Veterinary Hematology (Jain, 1986) sets the normal haematocrit range for sheep at 24-50% while that for goats is 19-38%. Dorny et al. (1995) have shown that in goats and sheep grazed under the same conditions, the mean haematocrit of the goats was almost always lower than that of the sheep. The mean haematocrit range of the sheep and goat flocks grazed together in their study were 22.3 – 29.2 and 19.1 – 24.8, respectively. The current results, then, seem to confirm the lower haematocrit range for goats when compared with sheep.

Fig A5.1 : Strongyle faecal egg counts and haematocrits for small ruminants at Kraaipan

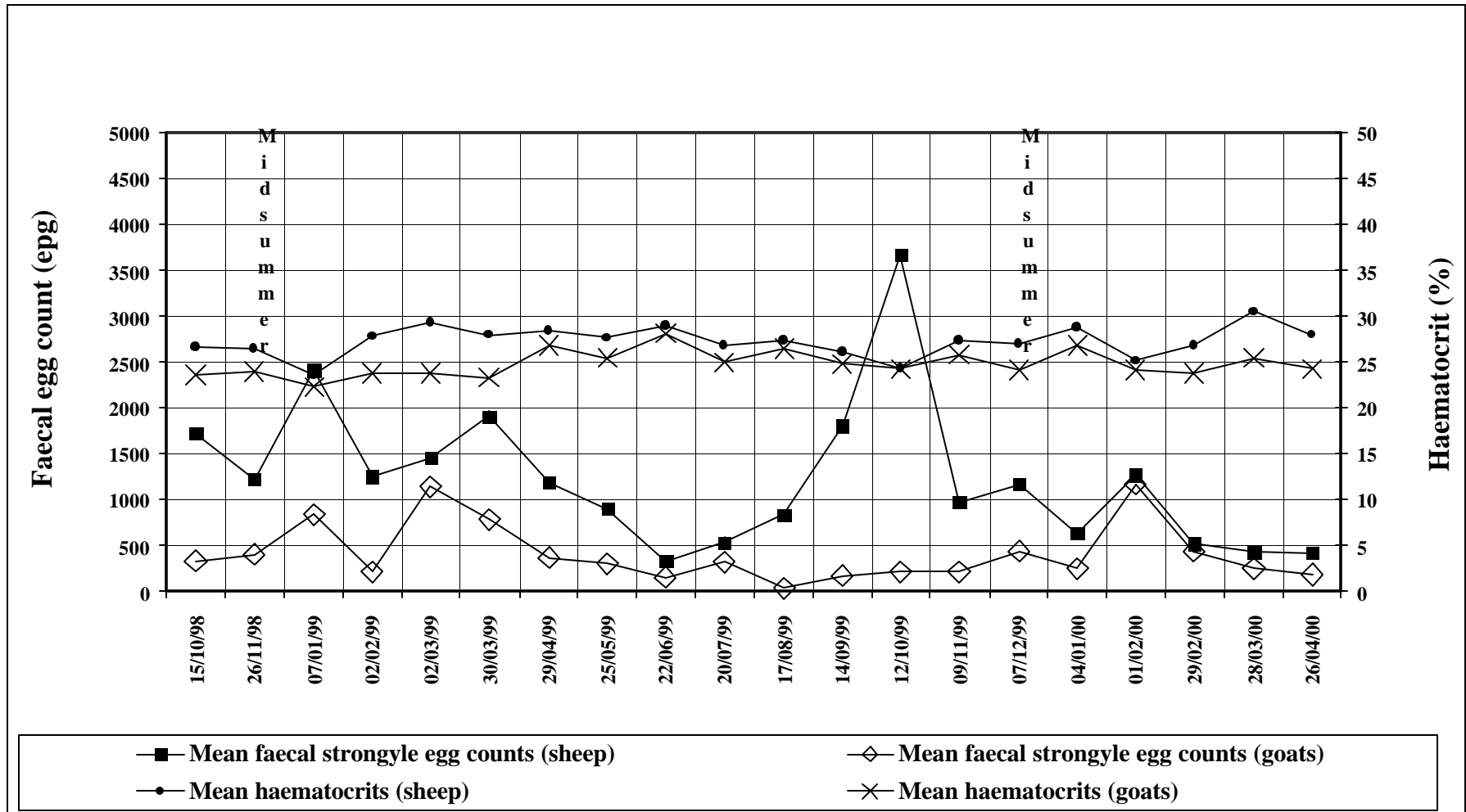


Table A5.1

Results of Wilcoxon two-sample test for comparing mean faecal strongyle egg counts between goats and sheep of Kraaipan

Date	Goats			Sheep			Probability
	Mean	SD	n	Mean	SD	n	
15-Oct-98	339	304	23	1,729	1,554	21	<0.0001
26-Nov-98	395	338	20	1,222	886	18	<0.01
07-Jan-99	829	996	17	2,400	2,033	4	<0.05
02-Feb-99	211	270	18	1,256	1,211	18	<0.0001
02-Mar-99	1,144	1,236	18	1,459	1,629	17	NS
30-Mar-99	786	788	14	1,900	1,519	17	<0.05
29-Apr-99	371	576	14	1,183	1,182	12	NS
25-May-99	306	496	17	900	857	15	<0.05
22-Jun-99	153	255	17	335	304	17	NS
20-Jul-99	317	477	18	541	555	17	NS
17-Aug-99	385	65	13	835	737	17	<0.001
14-Sep-99	171	149	17	1,800	1,387	15	<0.0001
12-Oct-99	224	217	17	3,669	3,127	16	<0.0001
09-Nov-99	212	209	17	964	1,112	14	<0.01
07-Dec-99	429	455	17	1,163	1,436	16	<0.05
04-Jan-00	247	314	15	631	497	13	<0.05
01-Feb-00	1,173	1,021	11	1,271	1,469	7	NS
29-Feb-00	440	591	10	517	436	6	NS
28-Mar-00	250	190	10	433	731	6	NS
26-Apr-00	190	185	10	417	436	6	NS

SD: standard deviation.

n: sample size.

NS: not significant.

Table A5.2

Results of Wilcoxon two-sample test for comparing mean haematocrits between goats and sheep of Kraaipan

Date	Goats			Sheep			Probability
	Mean	SD	n	Mean	SD	n	
15-Oct-98	23.5	3.2	23	26.8	2.8	21	<0.01
26-Nov-98	23.9	2.3	20	26.1	2.4	18	<0.01
07-Jan-99	22.0	3.3	17	23.3	6.5	4	NS
02-Feb-99	23.8	3.2	18	27.7	3.5	18	<0.01
02-Mar-99	23.8	3.4	18	28.9	2.4	17	<0.001
30-Mar-99	23.3	2.8	14	27.9	2.9	17	<0.001
29-Apr-99	26.8	2.1	14	28.4	3.1	12	NS
25-May-99	25.5	3.2	17	27.5	4.1	15	NS
22-Jun-99	28.1	3.6	17	29.0	2.2	17	NS
20-Jul-99	25.0	2.5	18	26.7	2.6	17	NS
17-Aug-99	26.5	3.1	13	27.0	2.6	17	NS
14-Sep-99	24.7	3.2	17	26.1	3.2	15	NS
12-Oct-99	24.3	3.3	17	24.3	3.7	16	NS
09-Nov-99	25.8	2.5	17	27.2	4.2	14	NS
07-Dec-99	24.1	2.8	17	26.9	2.8	16	<0.01
04-Jan-00	26.7	3.3	15	28.5	2.4	13	NS
01-Feb-00	24.0	4.0	11	25.1	4.1	7	NS
29-Feb-00	23.8	2.6	10	26.7	3.2	6	NS
28-Mar-00	25.4	1.8	10	30.4	1.7	6	<0.01
26-Apr-00	24.2	3.5	10	28.0	2.4	6	<0.05

SD: standard deviation.

n: sample size.

NS: not significant.