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THE CONTROL OF INTERNAL PARASITES IN LAMBS BY GRAZING MANAGEMENT

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SUMMARY

The development of internal parasites in weaned lambs was examined under two grazing systems in two consecutive years. Lambs were grazed either on pastures not grazed by lambs in that season and later on pastures not grazed by lambs in the previous 12 weeks, or on pastures already grazed by lambs continuously in that season. Parasitism, as indicated by faecal egg count, developed similarly in both treatments and no difference in lamb liveweight gain was observed. The results can probably be attributed to a lack of real difference in larval contamination resulting from the grazing treatment and, in the first year, to the drenching schedule adopted which gave more protection to the second treatment.

INTRODUCTION

The 1974 Study Group on Internal Parasites and Animal Production (N.Z.S.A.P., 1975) proposed that internal parasites in sheep can be effectively controlled by integrating their grazing management with limited use of anthelmintics to restrict larval uptake and therefore reduce the rate at which young susceptible stock become infected. The procedure recommended is, in its simplest form, as follows:

- (1) At weaning, lambs are drenched and moved to pastures not previously grazed by lambs in that season.
- (2) After approximately 12 weeks these lambs are again drenched and moved to pastures not previously grazed by lambs since weaning.

This recognizes that lambs are the main source of their own infections and that prior grazing by non-susceptible stock, whether sheep or cattle, should reduce the larval build-up and hence the infection potential of the pasture.

Two experiments described here evaluate this procedure.

MATERIAL AND METHODS

Eight paddocks of permanent pasture, each 0.8 ha in area, were divided in half and allocated to either of two treatments:

- A. Continuous grazing by ewes and their lambs from tailing to weaning with the intention of producing a high level of larval infectivity originating from the lambs — “unsafe” pasture.
- B. Continuous grazing at the same time by barren ewes to establish a lower level of larval infectivity — “safe” pasture.

In 1977-8 both classes of ewes were drenched in early spring, but not in 1978-9.

The trials were divided into three phases of grazing:

- Phase I: as in A and B above, mid-October to late January.
- II. first post-weaning period of 12 weeks, February to May.
 - III: second post-weaning period of 5 weeks, May and June.

At the end of Phase I, pre-weaning stock were rejected and replaced with 128 weaned lambs allocated to A and B pastures in four replicates. The stocking rate was 38/ha, falling to 19/ha in Phase III when pasture production was declining in the autumn.

In 1977-8, anthelmintics were given to “safe” lambs in Phase II at 0 and 12 weeks, and to “unsafe” lambs at 0, 6 and 12 weeks. In 1978-9 both groups were drenched at 0, 8 and 12 weeks. Lambs were fasted and weighed before drenching.

Faecal samples were taken fortnightly to determine parasite egg counts, but no estimates of larval contamination of pastures were made. Pasture effects were estimated independent of parasitic effects from the liveweight gain of similar lambs in which parasites were suppressed by fortnightly drenching, run on separate half plots within the main plot treatments.

RESULTS

Changes in faecal egg count during each grazing phase for 1977-8 are shown in Fig. 1, and for 1978-9 in Fig. 2.

In 1977-8, adult sheep in both treatments showed consistently low mean counts from October to late January. Lamb counts did not rise appreciably until mid-January. In Phase II the counts of lamb in both treatments rose to 600 to 700 eggs per gram (e.p.g.) in the first 6 weeks of grazing. The collapse of the parasite popula-

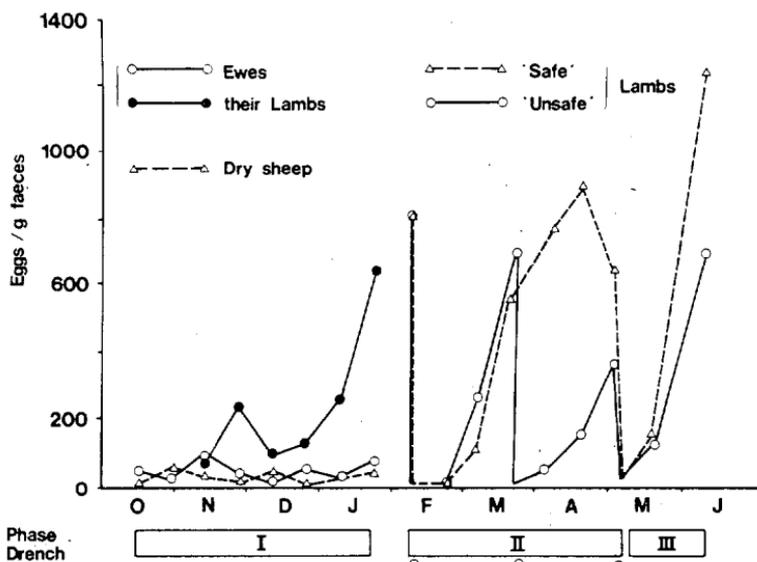


Fig 1: Mean faecal parasite egg count (e.p.g.) of ewes and lambs in Phases I, II and III, 1977-8.

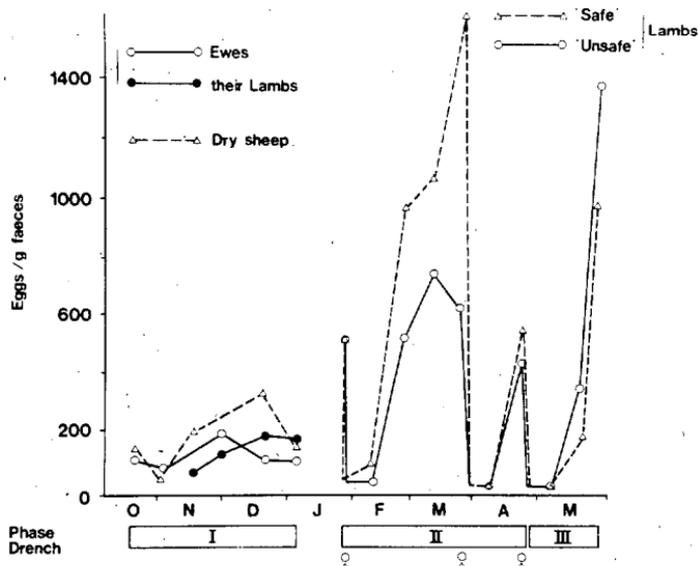


Fig 2: Mean faecal parasite egg count (e.p.g.) of ewes and lambs in Phases I, II and III, 1978-9.

TABLE 1: LIVELWEIGHT GAIN OF LAMBS (kg)

		<i>n</i>	<i>Phase II</i>	<i>Phase III</i>	<i>Total</i>	<i>SE Mean</i>
1977-8	A	28	1.54	1.43	2.96	2.88
	B	28	1.75	0.52	2.27	2.27
1978-9	A	28	5.59	-1.20	4.39	3.18
	B	30	2.62	2.61	5.23	2.92

tion in treatment A after the mid-phase drenching created a clear differential throughout the remainder of the phase.

No significant differences in lamb liveweight gain were observed between A and B treatments (Table 1).

In 1978-9, adult sheep in both treatments recorded relatively low mean counts in Phase I. No elevation of egg counts in lambs was observed. In Phase II, egg counts suggested that the parasite population established more readily in the B treatment, where they rose to about 1600 e.p.g. in the 8th week. No clear differential arose from the time of redosing to the close of that phase. In Phase III the parasite population appeared to establish rapidly in both groups without significant differences occurring.

At the end of Phase III no significant difference existed in lamb liveweight gain between A and B treatments, although at the end of Phase II, A lambs were 3.0 kg heavier than B lambs. However, a 2.2 kg superiority in the corresponding suppressed lambs at this point suggested that part at least of the advantage might be attributable to differences in pasture quality and quantity between the main treatments (Table 1).

DISCUSSION AND CONCLUSION

The anticipated advantages of the "safe" pasture treatment were not realized in either year. In Phase I the faecal egg counts of adult sheep were low and similar in both treatments. No subsequent differences in pasture infectivity could therefore be expected from this source. In Phase I the lambs in treatment A did not prove to be major contributors to larval contamination as their egg counts were low. In the first year elevated levels were not expressed until the last 2 weeks of grazing, and in the second year not at all. Given that the faecal output of lambs weighing 20 to 25 kg could be less than half that of ewes, their capacity to contaminate the pasture with eggs was probably no higher than that of ewes at equivalent stocking density. It is therefore not unexpected that in 1977-8 the grazing of "safe" pastures in Phase

II did not appear to delay the establishment of parasitic infections. The omission of a mid-phase drenching of these lambs then became critical, allowing the egg counts to rise above those of the "unsafe" lambs in the final 6 weeks of the trial. This could have led to an increase in larval intake in Phase III which may have adversely affected the growth rate of the lambs.

The evidence suggests that even on "safe" pastures it is unwise to leave lambs unprotected by drench for extended periods, particularly where climatic and grazing conditions favour rapid parasite development cycles.

In 1978-9, faecal egg counts in Phase II were appreciably higher in "safe" lambs immediately prior to the intra-phase drenching at 8 weeks. This effect is not readily explained unless the barren ewes in Phase I did in fact initiate a higher potential for infection than did the ewes and lambs combined. This may have occurred in late December (Fig. 2).

While the higher egg count in "safe" lambs in the first half of Phase II appears to be reflected in their lower liveweight gain, the matter is complicated by different rates of gain in suppressed lambs on the two classes of pasture, suggesting differences in pasture factors (yield, composition) between treatments. The confounding of parasite and pasture effects is at present an unresolved difficulty in interpreting these experiments.

It is concluded that because of the similarity in pre-weaning egg contamination of pastures grazed by ewes with lambs and by ewes alone, the exclusive use of the latter for pre-weaning pasture preparation is not in itself a satisfactory basis for post-weaning parasite control in the Otago region, especially if the frequency of drenching is reduced.

REFERENCE

- N.Z.S.A.P., 1975. *Internal Parasites and Animal Production*. New Zealand Society of Animal Production Occasional Publication No. 4.