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LAMB GROWTH AND EWE PRODUCTION FOLLOWING ANTHELMINTIC DRENCHING BEFORE AND AFTER LAMBING

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Summary

Thiabendazole administered to ewes at Canberra prior to and/or shortly after lambing had no effect on ewe performance or on lamb growth to about 12 weeks. Such a result is to be expected where clean pastures cannot be provided.

I. INTRODUCTION

Treatment of pregnant ewes with an anthelmintic close to lambing and then moving them to clean pastures has often been advocated as an effective method for the control of nematode infection in young lambs. However, in the predominantly winter rainfall areas of southern Australia where *Trichostrongylus* spp. and *Ostertagia* spp. are the most important parasites of lambs, pastures are unlikely to be clean under most systems of management because infective larvae are able to survive on pasture for long periods during winter (Donald 1968). Reinfection may thus render treatment ineffective. This paper describes an experimental examination of these effects at the CSIRO Ginninderra Experiment Station, Canberra, A.C.T.

II. MATERIALS AND METHODS

Twenty-four flocks containing between 16 and 63 Merino and Border Leicester x Merino crossbred ewes of mixed ages were used. Twelve flocks were grazed on *Medicago sativa* cv. Hunter River pastures at low, medium and high stocking rates from 9 to 18 ewes ha^{-1}, and another 12 were similarly managed and stocked on *Phalaris tuberosa-Trifolium subterraneum* pastures. Each pasture was subdivided into three equal areas which were grazed in rotation. The sheep were moved at 3-weekly intervals.

On March 10, 1970, 12 (early lambing) flocks representing each combination of stocking rate and pasture type were joined with Merino or Border Leicester rams for 35 days. The rams were interchanged at 9-day intervals to spread ram effects evenly through all flocks. The remainder were similarly joined on April 7 (late lambing).

All sheep were given anthelmintic treatment (drenching) with 15 ml (13.3 per cent w/v) thiabendazole on January 15, 1970 and again at the start of their

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respective joining periods. Pre-lambing and post-lambing drenches were given to flocks such that all four possible combinations — a pre-lambing (DO) or post-lambing (OD) drenching only, drenching before and after lambing (DD), or no drenching (00) — were represented at each lambing time and each stocking rate. The pre-lambing and post-lambing drenches were given to the early lambing flocks on July 27 and October 10 and to the late lambing flocks on August 27 and October 19 respectively. At the post-lambing, treatment the lambs as well as the ewes were drenched in the appropriate flocks, although it was unlikely that most lambs had acquired worm burdens at that stage.

The ewes were weighed at drenching, and again when the lambs were weaned on November 17 (early) or December 3 (late). At shearing on December 7 fleeces were weighed. The lambs were weighed at the post-lambing treatment and again at weaning.

Faecal samples were collected from five Merino and five crossbred ewes from each early lambing flock on October 8 to estimate total nematode egg output,

During 1970, 802 mm of rain were recorded at Ginninderra compared with the 1962-1970 mean of 692 mm. Ample green feed was available on most plots throughout the year, and on all plots during spring.

III. RESULTS

Drenching pregnant or recently lambed ewes had no effect on lamb growth to weaning at about 12 weeks of age, and no interaction between drenching treatment and stocking rate was apparent (Table 1). Similarly, drenching did not influence fleece weights or liveweight change of ewes from lambing to weaning. Nor did it seem to interact with breed of, ewe or lamb, pasture type or time of lambing.

TABLE 1

Mean daily liveweight gain (kg) of ***lambs and ewes from approximately six weeks after the start*** of ***lambing until weaning, and mean annual fleece weight (kg)*** of ***ewes***

Stocking rate	Early lambing				Late lambing			
	DD	DO	OD	OO	DD	DO	OD	OO
	(a) Daily liveweight gain of lambs							
Low	0.22	0.18	0.19	0.20	0.18	0.22	0.22	0.18
Medium	0.15	0.19	0.19	0.19	0.19	0.18	0.20	0.19
High	0.19	0.14	0.16	0.15	0.16	0.16	0.19	0.20
Mean	0.19	0.17	0.18	0.18	0.18	0.19	0.20	0.19
	(b) Daily liveweight gain of ewes							
Low	0.03	0.08	—0.02	0.06	—0.01	—0.04	—0.05	0.00
Medium	0.01	0.03	0.14	0 05	0.00	0.02	0 06	0.03
High	0.12	0.13	0.17	0.16	0.07	0.01	0.08	0.01
Mean	0.05	0.08	0.10	0.09	0.02	0.00	0.03	0.01
	(c) Fleece weight of ewes							
Low	5.1	4.2	4.5	4.0	4.4	4.6	4.6	4.5
Medium	3.4	4.2	3.8	3.9	4.2	4.3	4.0	4.2
High	3.8	2.9	3.2	3.4	3.6	3.6	3.3	3.9
Mean	4.1	3.8	3.8	3.8	4.1	4.2	4.0	4.2

Faecal nematode egg counts are shown for the early lambing ewes in Table 2. Egg counts from drenched and undrenched ewes were similar, and unrelated to stocking rate.

TABLE 2

Mean faecal egg counts *(g^{-1})* for ***early lambing ewes on October 8, 1970 shortly after the end of lambing***

Stocking rate	Pre-lambing drench	Not drenched
Low	474	744
Medium	934	348
High	420	546
Mean	609	546

IV. DISCUSSION

Infective larvae surviving on pasture from the previous autumn and larvae arising from the deposition of nematode eggs by pregnant or lactating ewes in late winter and early spring are the main sources of roundworm infestation of young lambs. However, Connan (1968a), and Salisbury and Arundel (1970) concluded that over-wintered infective larvae are of little significance for spring-born lambs compared with larvae arising from the post-parturient rise in faecal egg counts. Connan (1968a) recommended control of the rise by anthelmintics, and suggested that if reinfection of the ewes after drenching was inevitable, treatment should either be delayed as long as possible or repeated at intervals. Delaying treatment might be inadvisable, since Dunsmore (1965) and Brunsdon (1967, 1970) found the rise started about four weeks before the start of lambing, and Connan (1968b) and O'Sullivan and Donald (1970) also found evidence of an increase in egg output shortly before lambing. Arundel (197 1) drenched ewes at varying intervals before lambing and observed a rise in egg counts in all groups after lambing; unfortunately he moved his ewes to a common infected irrigated pasture during lambing, which could well have resulted in reinfection. Our results show no advantage from delaying treatment until after -lambing, or from a pre-lambing plus a post-lambing drench.

After weaning on to relatively clean pastures on November 17, a random sample of lambs was used in other studies of parasitism. Lambs which were not dosed with anthelmintic at weaning developed clinical symptoms within two months, and some deaths occurred. Faecal nematode egg counts (mainly *Ostertagia* spp. and *Trichostrongylus* spp.) were approximately 2000 g^{-1} throughout December, January and February. Obviously these lambs had acquired significant worm burdens while grazing with the ewes, but their growth rate before weaning was not increased by anthelmintic treatment. Other workers, Gordon (1953), Dunsmore (1965) and Salisbury and Arundel (1970) have shown that *Ostertagia* spp. can reach large numbers early in the life of lambs, but growth rate to weaning is usually not affected (Thomas and Boag 1968; Lewis and Stauber 1969; Arundel and Ford 1969; Salisbury and Arundel 1970), provided weaning takes place no

later than about 12 weeks of age. Furthermore, Southcott and Corbett (1966) showed that early weaning at 4-6 weeks helped to control subsequent nematode infection in lambs, but apparently the greater degree of parasitism in lambs weaned at 11 weeks did not influence growth rates at least until after weaning, and even then the later weaned lambs were still heavier some five months later. Where drenching ewes close to lambing has given better lamb growth rates, the lambs have either not been weaned by 12 weeks or have continued to graze pastures contaminated by lactating ewes (Nunns ***et al.*** 1965; Brunsdon 1966; Salisbury and Arundel 1970). Leaning ***et al.*** (1970) reported improved lamb performance when ewes were drenched near to lambing and then moved to pastures which had been spelled for about 11 weeks. However, this result was found only once in a two year experiment, and then the difference in growth rates was evident in the lambs at six weeks of age. Ewe faecal egg counts were lower than in the previous year when no effect was observed, and the authors suggest that treatment may have influenced the milk production of the ewes rather than the development of parasitism in the lambs.

Our results, and those from the literature, suggest that clinical symptoms are not expressed until some weeks after lambs have been infected with *Ostertagia* spp. and ***Trichostrongy*** *lus* spp., so that growth rates to weaning may not be affected by heavy burdens of these parasites. By increasing milk production, treatment of ewes may improve lamb growth rates provided that reinfection can be avoided. However, this is unlikely to be achieved under most management systems. Consequently drenching of ewes near lambing must be considered of doubtful value.

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