FAILURE TO CONTROL THE ACQUISITION OF WORM BURDEN BY LAMBS MATERNAL ANTHELMINTIC TREATMENT DURING PREGNANCY

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Abstract. It has been shown that elimination of the post parturient rise in faecal egg count of ewes by anthelmintic treatment reduces the chances of acquisition of a heavy worm burden by their lambs and improves their rate of weight gain. An attempt was made to do this by treating ewes with thiabendazole at the rate of 100 mg per kg during late pregnancy. Ostertagia spp. were not completely removed and in consequence the pasture became infected with larvae of Ostertagia spp. As a result the lambs acquired substantial worm burdens and their rate of weight gain was retarded. The investigation demonstrated that when Ostertagia spp. are present treatment of the ewes during pregnancy may not completely control the post parturient rise of faecal egg count in the ewes and additional measures may be required to control worm infection in their lambs.

The rise in faecal egg count which takes place in ewes about six weeks after parturition is considered to be an important source of infection to young lambs and several workers have attempted to control the acquisition of worms by lambs by anthelmintic treatment of the ewes during pregnancy. The present experiment was an attempt to do this in a small flock of sheep kept under a rotational grazing system.

MATERIALS AND METHODS

The pasture used in this investigation was 0.6 hectares in area and was divided into six small paddocks B – G which were grazed in rotation. The land had been free from stock since the previous October. On March 22nd six ewes were treated with thiabendazole at the dose rate of 100 mg per kg and on May 16th they were placed along with their ten lambs in paddock B of the rotational system. After one week they were moved to paddock C and weekly movement continued throughout the experiment. Faecal samples were collected each week from the ewes and the lambs, and the lambs were weighed weekly. The faecal samples were examined by the salt flotation method or by the modified McMaster technique as appropriate. Samples of herbage were collected at the beginning of each week from the paddock into which the sheep were about to be moved. Herbage larval counts on these samples, therefore, gave a measure of the hazard the animals would experience during the following week. Weekly counts on all paddocks would have yielded additional information on the
ecology of the larvae but the labour involved precluded this. The samples were collected and examined by the technique described by Parfit (1955). At the end of the investigation the lambs were slaughtered and the number of worms in their gastro-intestinal tracts was ascertained by the usual dilution technique.

RESULTS

Fig. 1 shows the average faecal egg counts of the ewes and the lambs used in this experiment. The anthelmintic treatment given to the ewes about three weeks before lambing resulted in low faecal egg counts (average 11 e.p.g.) when they were turned out to pasture. A gradual increase in egg count followed until 27th June. Following a check on 4th July the count continued to increase and reached a maximum (average 490 e.p.g.) on 28th July. Fig. 1 also shows that eggs first appeared in the faeces of the lambs on the 6th March and a gradual rise took place until the 11th July when a steep rise occurred to a maximum of 1155 e.p.g. on 1st August. Fig. 2 shows the fluctuations in pasture larval count encountered by the grazing animals. Larvae were first recovered from the pasture herbage on 27th June. Following this date the general trend was for larvae to increase in number throughout the observation period. It will be observed that the majority of these larvae were those of Ostertagia sp. Fig. 3 shows the changes in the total weight of the ten lambs. Weight gain was steady until 27th June when a check occurred but weight
gain continued at a slower rate until 28th August. No further increase in weight took place after that date. By the end of the experiment only one of the lambs had

![Graph showing larval count over time.](image)

**Fig. 2.** The fluctuations in pasture larval count on the paddocks grazed by the sheep from May 15th to October 3rd, 1966. The letters B, C–G indicate the paddock from which the sample was taken.

![Graph showing weight fluctuations.](image)

**Fig. 3.** The fluctuations in the total weight of the ten lambs from May 16th to October 3rd, 1966.
reached 38.5 kg, the weight at which fat lambs are usually slaughtered. Table 1 shows the weight gain of the individual lambs during the experiment and their worm burdens at the end. There is, in general, no correlation between worm burden and weight gain.

<table>
<thead>
<tr>
<th>Lamb Number</th>
<th>Initial weight kg</th>
<th>Weight gain kg</th>
<th>Type</th>
<th>No. of Ostertagia spp. at P. M.</th>
<th>No. of other nematodes at P. M.</th>
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</thead>
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<tr>
<td>3996</td>
<td>13.75</td>
<td>24.75</td>
<td>Single</td>
<td>650</td>
<td>2,750</td>
</tr>
<tr>
<td>4000</td>
<td>11.5</td>
<td>17.75</td>
<td>Twin</td>
<td>36,186</td>
<td>7,464</td>
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<td>4001</td>
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<td>17.5</td>
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<td>47,058</td>
<td>10,152</td>
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<tr>
<td>4011</td>
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<td>20.5</td>
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<td>27,070</td>
<td>7,280</td>
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<td>Twin</td>
<td>4,630</td>
<td>8,870</td>
</tr>
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</table>

**DISCUSSION**

Although anthelmintic treatment in late pregnancy reduced the faecal egg counts of the experimental ewes to a low level it did not prevent a rise in their egg counts beginning about seven weeks after parturition. Since the larvae which subsequently developed on the herbage and the worms which developed in the lambs were predominately Ostertagia spp. there is little doubt that the rise in faecal egg count observed in the ewes in the first six weeks of the experiment was due to the maturation of larvae of Ostertagia spp. which had been inhibited in their development and which had not been removed by anthelmintic treatment given in late pregnancy. The subsequent sequence of events is easily explained. Eggs, passed by the worms which developed in the ewes, developed and caused pasture contamination which the lambs encountered on the second and subsequent pasture rotations. The lambs rapidly built up a worm burden and themselves increased pasture contamination. As a result the lambs rapidly acquired a worm burden which slowed down their rate of weight gain. This sequence of events is similar to that described by Gibson and Everett (1968a) and can be prevented
by a move to fresh pasture, accompanied by anthelmintic treatment, as demonstrated by Gibson and Everett (1968b).

These results contrast with those of Nunns, Rawes and Shearer (1965), Helle (1966) and Gibson and Everett (1967) who were able to control the post parturient rise in faecal egg count in ewes by anthelmintic treatment. The success achieved by these workers was probably referable to the absence of inhibited forms of nematodes in their ewes at the time of dosing.

Whilst there is evidence of the value of anthelmintic treatment to prevent the post parturient rise in faecal egg count in ewes the present experiment shows that such treatment may not always be entirely successful.

If the post parturient rise in faecal egg count is successfully eliminated rapid growth of the lambs is achieved and as demonstrated by Nunns, Rawes and Shearer (1965) and Gibson and Everett (1967) the majority will reach slaughter weight by the end of July. Failure to control the post parturient rise in faecal egg count will almost inevitably result in a failure to reach the fat lamb stage by the end of July and in such instances further steps to control the worm burden on the lines advocated by Gibson and Everett (1968b) should be taken.

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REFERENCES


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