LIVESTOCK CHANGE AND INTAKE OF LAMBS 
AS AFFECTED BY SEED INFESTATION

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Summary

The pattern of liveweight change associated with grass seed infestation was examined in shorn and unshorn Merino and crossbred lambs. Periods of liveweight loss coincided with seed fall of Erodium spp. in unshorn crossbred lambs and with Hordeum leporinum in all lambs. It is suggested that penetration of crowfoot seed was associated with liveweight loss in the unshorn crossbred lambs and that liveweight loss in all lambs was primarily due to the reluctance of the lambs to move about in a mature barley grass pasture. The observed small difference in intake between pen and paddock lambs would not indicate any great impairment in the ability of paddock lambs to eat due to seed infestation.

Shorn lambs had less (P<0.05) vegetable contamination in the wool and less (P<0.05) seeds penetrating into the skin than unshorn lambs. The more open type crossbred wool had more grass seed (P<0.05) and less medic burr (P<0.05) contamination than the denser type Merino wool.

I. INTRODUCTION

Grass seed infestation causes considerable losses in revenue and production to both the Australian and New Zealand sheep industries, due mainly to liveweight loss (Campbell, Robards and Saville 1972) and contamination of wool and skin (Hartley 1973; Cornish and Beale 1974).

Liveweight loss may result from a combination of seed-irritation causing reluctance to move and reduced availability of green material resulting from maturation of the pasture (George 1972; Campbell, Robards and Saville 1972). Shearing prior to seedhead maturation has been suggested as a means of reducing the amount of seed in wool and skin (Hartley 1973).

This paper describes the results of an experiment designed to examine the effects of seed infestation on liveweight change and intake of Merino and crossbred lambs during seed maturation and fall. The use of shearing prior to seedhead maturation as a means of reducing infestation was examined in the wool, skin and carcass of the lambs.

II. MATERIALS AND METHODS

The experiment was conducted at the Agricultural Research Station, Trangie, from October to December, 1973. The climate and pastures have previously been described by Campbell, Saville and Robards (1973).

Twenty-eight Merino (mean weight 17 kg) and twenty-eight Border Leicester x Merino (mean weight 22 kg) mixed sex weaners were randomly allocated within breed type to either pen or paddock treatments. Half

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the lambs from each group were shorn on October 8, 1973. Prior to the experiment— all lambs had been grazed on seed-free areas.

Pen lambs were placed in uncovered feeding yards and offered 700g/day hammermilled lucerne hay throughout the experiment. Paddock lambs were placed in the 0.8 hectare paddock heavily infested with barley grass (Hordeum Leporinum Link) and crowfoot (Erodium spp.) and offered a similar ration fed every three days, the lucerne being laid in trials through the pasture. Lambs were weighed on October 8, November 8 and then at weekly intervals (to coincide with commencement of seed fall) until December 18.

After seven weeks, when all seed had fallen, lambs were removed from the pasture and placed in feeding pens. A 10g greasy wool sample was then taken from the shoulder of all lambs and analysed for vegetable matter by the NaOH method (IWTO-19-71(E)). Percentage contamination by barley grass, crowfoot and medic burr (Medicago spp.) was determined. Two lambs from each paddock group and one lamb from each pen group (four pen lambs had died) were slaughtered. Seed penetration into a 15cm wide skin strip, removed from around the middle of the lambs, was assessed at two lateral sites by counting the number of seeds penetrating a 6cm² area. A count of seed in the carcase was made on the area underlying the 15cm wide skin strip.

The intakes of the remaining 20 pen and 20 paddock lambs were then measured over a 14 day period in early December. Rainfall during the latter part of December prevented further measurement of intake.

Height of barley grass and crowfoot was measured by two observers, each making ten observations, using a board with horizontal lines 10cm apart. Density of barley grass seedheads was determined in twenty 25cm x 25cm quadrats.

Vegetable matter percentages were transformed to arcsin values, Analysis of variance was used to analyse intakes, liveweight changes, vegetable matter and skin and carcase seed penetration.

III. RESULTS

Before seedhead fall, barley grass density was $264 \pm 194$ seedheads per m², with mean height of $36.2 \pm 9.7$ cm. Mean height of crowfoot was $32.1 \pm 21.7$ cm.

There were significant liveweight losses (P<0.05) in unshorn cross-bred lambs in the paddock during the second week of November and in all paddock lambs in the fourth week of November (figure 1). During the same period pen lambs gained an average of 0.07 kg day⁻¹. From the fourth week of November to the second week in December all lambs gained an average of 0.09 kg day⁻¹. No treatment or time effects were significant over this period.

Over the two week period when intakes were recorded, average intake for all lambs was 587 g day⁻¹. Pen lambs ate more feed (P<0.05) than paddock lambs (609 g day⁻¹ vs 561 g day⁻¹) but there were no differences between breeds or shearing groups and no interactions were significant.
Crossbred lambs had more barley grass and crowfoot seed but less medic burr (P<0.05) in the wool than Merino lambs. Shorn lambs had less barley grass, crowfoot and medic burr (P<0.05) in the wool compared with unshorn lambs (Table 1). Shorn lambs had less seed penetrating the skin than unshorn lambs (P<0.05) but there were no differences in seed penetration between breeds. Shearing and breed had no effect on penetration of seed into the carcase (Table 1).

### Table 1

<table>
<thead>
<tr>
<th>Component</th>
<th>Merino</th>
<th>Crossbred</th>
<th>Significance of difference between breeds</th>
<th>Significance of shearing</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Barley grass</td>
<td>Shorn 0.1</td>
<td>Unshorn 0.7</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>% Crowfoot</td>
<td>Shorn 0.1</td>
<td>Unshorn 1.0</td>
<td>0.6</td>
<td>3.1</td>
</tr>
<tr>
<td>% Medic burr</td>
<td>Shorn 1.7</td>
<td>Unshorn 23.2</td>
<td>0.6</td>
<td>16.9</td>
</tr>
<tr>
<td>Skin penetration</td>
<td>Shorn 0.0</td>
<td>Unshorn 5.7</td>
<td>0.7</td>
<td>7.0</td>
</tr>
<tr>
<td>Carcase penetration</td>
<td>Shorn 0.0</td>
<td>Unshorn 1.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

* differences significant at P<0.05  
n.s. - not significant  
* no interactions were significant (P<0.05)

### IV. DISCUSSION

It was observed that unshorn crossbred lambs lost weight when crowfoot seed was falling, a result similar to that of Campbell, Robards and Saville (1972). It is suggested that the more open type fleece of the crossbred lambs allowed greater amounts of seed to penetrate the wool than in the denser type Merino fleece. This is contrary to the results of Hartley (1973) where seed contamination was observed to be greater in denser type wool. However in this study the higher levels of medic burr observed to be concentrated in the tip of the Merino wool may have formed
an effective barrier against seed penetration. However, as previously reported (Hartley and Atkinson 1973), the detrimental effect of crowfoot infestation appeared to be only temporary, as these lambs gained weight in the following week.

It was also observed that all paddock lambs lost weight when barley grass seed was falling. However only unshorn lambs suffered any degree of skin penetration, and as an ample feed supplement was available, it is suggested that liveweight loss was primarily due to observed reluctance of the lambs to move about in the pasture, rather than a direct effect of poor nutrition as was suggested by Campbell, Robards and Saville (1972). It is also unlikely that barley grass seed greatly impaired the ability of the lambs to eat, as when placed in pens the paddock lambs ate only 7.8 percent less feed than lambs that had been fed in pens for a period of seven weeks.

By incorporating an early-spring shearing into a lamb management system on natural pasture it is possible to considerably reduce seed contamination of wool and skin, although no effect on seed penetration into the carcase was noted. This may have been due to the relatively low levels of seed penetrating the skin, as other results obtained at Trangie show a definite relationship between skin penetration and carcase contamination (r = 0.53; P<0.01) at much higher levels of grass seed infestation (J. M. Thompson, unpublished data).

The results from this experiment would indicate that liveweight loss in lambs is primarily due to penetration of seed into the skin, reluctance of the animal to move about in the seed infested pasture. Shearing would appear to reduce the liveweight loss associated with penetration of crowfoot seed but has little affect on the reluctance of the animal to move about in a mature barley grass pasture.

V. ACKNOWLEDGEMENTS

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VI. REFERENCES