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SUMMER ILL-THRIFT IN LAMBS

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SUMMARY

Suffolk x Romney lambs were offered herbage allowances of 1.7, 5.5 and 9.3 kg DM/lamb/d from mid January to late March on pastures containing either low (41%) or high (56%) proportions of dead material. Apparent intakes and herbage utilisations for low, medium and high herbage allowances were 1.0, 1.7 and 1.9 kg DM/lamb/d and 59%, 31% and 20% respectively. Liveweight gains for low, medium and high allowance lambs were 10, 113 and 127 g/d.

Spraying pastures with fungicides failed to improve weight gains and did not eliminate ryegrass staggers. Dosing lambs with Co, Fe, Zn, I and injected Cu also failed to improve lamb growth rate. It was concluded that ill-thrift was mainly a nutritional problem and that liveweight gains in excess of 150 g/d could be obained by offering high allowances of herbage containing a high proportion of green material.

INTRODUCTION

The failure of lambs to thrive during the summer on seemingly good pastures has been a problem in mid Canterbury for some time. The work described in this paper followed earlier investigations on a foothill property where lambs were growing less than 50 g/d in spite of fortnightly drenching with anthelmintic and selenium and had failed to respond to mineral dosing or to vitamin B12. Although substantial improvement was obtained by increasing herbage allowances, it was not known whether this was a result of reduced access to fungi in basal litter or to a greater opportunity for herbage selection.

EXPERIMENTAL

On January 15, 1980, nine groups of Suffolk x Romney mixed-sex lambs (20/group) weighing approximately 26 kg were offered three herbage allowances in a 3 x 3 factorial on pastures containing either low levels (<41%) or high levels (>50%) of litter. Low-litter pastures were prepared by close grazing with non-experimental ewes six weeks prior to grazing. High-litter pastures were lightly grazed with non-experimental ewes two weeks prior to each weekly grazing in an attempt to maintain comparable pasture yields between the two pasture types. High-litter pastures were either

sprayed with a mixture of benomyl (05. kg/ha), triadimefon (25 g/ha) and mancozeb (1.6 kg/ha) in 700 litres water/ha, or unsprayed. Pastures were sprayed 40 days and 14 days prior to each weekly grazing. Low-litter pastures were unsprayed.

All groups were shifted every seven days onto fresh pasture. Herbage allowances were adjusted by altering areas available and allowances included the pasture growth during grazing. Herbage yields were determined weekly by visual assessment corrected with 10 concurrent quadrat yields cut with a shearing machine. Cut samples were dissected into dead matter, ryegrass, clover and weeds. Pasture growth during grazing was measured by a frame-cutting technique using exclosure cages (Campbell, 1969).

Eighteen-hour fasted liveweights were recorded at the beginning and end of the 70-day experiment and all lambs were drenched fortnightly with levamisole and selenium. Half the lambs in each treatment were dosed concurrently with 20 mg Zn, 19 mg Co, 18 mg Fe and 99 mg I and injected intramuscularly with 12 mg Cu. A sample group of 20 wether lambs was slaughtered at the beginning of the trial and all remaining wethers (90) were slaughtered at the ending of the trial to provide data on carcass weights and grades. Pastures were sampled weekly before and after grazing for chemical analysis and *in vitro* digestibility. Pastures were also sampled for the presence of fungi using both visual and cultural methods of analysis. All ewe lambs were joined on March 25 and managed identically thereafter to determine carryover effects on liveweight performance.

In the statistical analysis, the allowance x pasture type interaction was used for error. For the animal data, mineral dosing was included as a subplot factor, with the three-factor interaction being used as subplot error.

TABLE 1: PASTURE YIELDS AND PASTURE COMPOSITION

Pasture treatment Main effects	*Yield*[1] *(DM t/ha)*	*Pre-Grazing pasture composition* *Grass (%)*	*Clover (%)*	*Weeds (%)*	*Dead Matter (%)*
Low-litter unsprayed	3.5 b	40 a	10 a	9 a	41 b
High-litter unsprayed	4.9 a	29 b	10 a	4 b	57 a
High-litter sprayed	5.2 a	31 ab	10 a	4 b	55 a
s.e. mean	0.22	3.1	1.4	1.2	3.3

[1] Mean of pre-grazing cuts.

RESULTS

The proportion of clover in available herbage was low (Table 1). Low-litter pastures contained less dead material and were lower yielding. Lambs offered a mean herbage allowance of 9.3 kg DM/d utilized only 20% of the available herbage and apparent dry matter intakes were not significantly different from those of medium allowance lambs (Table 2). Intake of dry matter and digestible organic matter in high-and low-litter unsprayed pastures were similar.

TABLE 2: HERBAGE ALLOWANCE, UTILISATION AND APPARENT INTAKE FOR LAMBS IN MIDSUMMER

Main Effects	*Herbage allowance (kg DM/lamb/d)*		*Apparent DM intake (kg/d)*	*Utilisation (%)*	*Apparent DOM Intake (kg/d)*
	Total DM	*Green DM*			
Herbage Allowance					
Low	1.7 c	0.8 c	1.0 b	59 a	0.7 c
Medium	5.5 b	2.6 b	1.7 a	31 a	1.2 b
High	9.3 a	4.4 a	1.9 a	20 c	1.6 a
s.e. mean	0.07	0.22	0.05	0.66	0.06
Pasture Type					
Low-litter unsprayed	5.7 a	3.2 a	1.5 b	26 a	1.1 a
High-litter unsprayed	5.4 ab	2.2 b	1.4 b	26 b	1.1 a
High-litter sprayed	5.3 b	2.3 b	1.7 a	32 a	1.3 a
s.e. mean	0.07	0.22	0.05	0.66	0.06

Increasing herbage allowances resulted in increased liveweight and carcass weight gains (Table 3) although differences failed to attain significance between medium and high allowances. Less than 14% of wether lambs fed a low herbage allowance graded prime, compared with 57% and 67% for medium and high allowance wether lambs respectively. There was little effect of pasture type on carcass grades.

Spraying pastures with fungicides or dosing lambs with a mineral mixture failed to improve animal performance. Sprayed pastures contained less mycelial fungi but higher yeast and bacterial populations. *Penicillium* spp. were recovered from herbage and soil samples but only traces of *Pithomyces chartarum*. No clinical signs of facial eczema were observed.

Fifty-five percent of low-allowance lambs grazing sprayed pastures showed symptoms of ryegrass staggers compared with 5% for both medium-and high-allowance lambs grazing similar

TABLE 3: EFFECT OF PASTURE TYPE, HERBAGE ALLOWANCE AND MINERAL DOSING ON LIVEWEIGHT GAIN AND CARCASS WEIGHT GAIN (kg)

Main plot factors	*Liveweight gain 15.1.80-26.3.80*	*Post-treatment liveweight gain 26.3.80-4.12.80*	*Carcass weight gain 15.1.80-26.3.80*
Herbage allowance			
Low	0.7 b	24.1 a	0.2 b
Medium	7.9 a	18.9 b	4.1 a
High	8.9 a	16.9 c	5.2 a
s.e. mean	0.32	0.20	0.27
Pasture type			
Low-litter unsprayed	8.3 a	18.1 b	4.5 a
High-litter unsprayed	4.8 b	20.9 a	2.5 b
High-litter sprayed	4.5 b	20.9 a	2.5 b
s.e. mean	0.32	0.20	0.27
Mineral dosing (subplot factor)			
Control	5.8 a	20.2 a	3.1 a
Dosed	5.9 a	19.8 a	3.2 a
s.e. mean	0.16	0.47	0.04

The (allowance x dosing) and (pasture type x dosing) interactions were not significant.

pastures. The incidence of ryegrass staggers was significantly higher in pastures containing high levels of litter (sprayed 21.7%), unsprayed 15.0%) than in low-litter pastures (1.7%). Growth rates of affected lambs were similar to non-affected lambs.

Post-treatment liveweight gains from March to December favoured low-allowance lambs and by December mean liveweights of all lambs were similar (50-52 kg).

DISCUSSION

Although high-allowance lambs were offered 9.3 kg DM/d, which is higher than allowances used by Jagusch *et al.* (1979), pastures contained 41 to 56% dead material resulting in green DM allowances of 0.8 kg and 4.4 kg/d for low and high allowance lambs respectively. The 41% dead material in low-litter pastures was higher than originally planned and indicates the difficulty in managing pastures in late spring to ensure leafy, vegetative pastures in summer.

The higher liveweight gains of lambs grazing low-litter pastures (Table 3) cannot be ascribed to pasture type alone as herbage yields were significantly lower than high-litter pastures. Rattray *et al.* (1978) reported higher proportions of dead material in high yielding pre-grazed herbage, although Jagusch *et al.* (1979) con-

cluded that herbage yields were not a major factor affecting growth rates of weaned lambs. The consistently better performance of lambs grazing pastures containing a lower proportion of dead material emphasises the importance of early pasture control. Early weaning could be a means of facilitating this control.

While lambs fed high allowances were 8 kg heavier than low-allowance lambs in March, the advantage did not persist and by December differences were non-significant. However Moore and Smeaton (1980) have shown post-weaning nutrition to affect subsequent fertility over and above the effects of liveweight at mating.

Spraying pastures with fungicides did not reduce the incidence of ryegrass staggers and the significance of the increased levels of yeasts and bacteria in high litter pastures is unknown. Avoiding a build-up of dead ryegrass and ensuring low herbage utilisation as a means of minimising ryegrass staggers supports the work of Byford (1979).

It is concluded that under the experimental conditions imposed, reasonable liveweight gains can be achieved by offering lambs high allowances of pasture, preferably containing low levels of dead matter. Spraying pastures with fungicides appears of little value in alleviating ill-thrift problems.

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