SHEARING DOES NOT REDUCE BARLEY GRASS SEED EFFECTS ON SUMMER LAMB GROWTH

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SUMMARY

One hundred and fifty second cross lambs were allocated to either a barley grass infested pasture or to a barley grass free pasture in November for a 6 week exposure period. Thereafter the 2 groups were integrated and placed on a barley grass free lucerne pasture for 5 weeks until slaughter. A shearing treatment was imposed immediately prior to barley grass exposure so that lambs were either unshorn or shorn with a conventional comb or a cover comb.

Lambs on barley grass pasture grew significantly ($P < 0.001$) slower than those on barley grass free lucerne pasture, but improved significantly when they were also placed on lucerne pasture. The response to shearing varied with stage of experiment with a suggestion that a wool length and temperature interaction may be involved.

Skin damage resulting from barley grass seed penetration was highest in unshorn lambs. In shorn lambs no conclusion was reached on the effect of type of shearing comb because of the limited sample size.

Keywords: barley grass, shearing, lambs, skin.

INTRODUCTION

Barley grass (*Hordeum* spp) seed infestations of wool, muscle tissue and skin of lambs is a problem in both Australia and New Zealand (Shugg and Vivian 1973; Cornish and Beale 1974) and causes financial loss due to animal injury, slow growth and reduced product quality.

The seed problem is most severe at the time of seed shedding (Hartley and Atkinson 1972), about December in New South Wales, when many lamb producers are preparing their lambs for sale. Length of wool affects seed retention (Hartley and Atkinson 1973), therefore shearing is a strategy which may reduce the effects of seed if barley grass free pastures are not available. However shorter wool length at slaughter in these shorn sheep reduces skin values. The effects of shearing on feed intake and growth are known to be significant in winter and may be important in summer (Bray *et al.* 1985; Lane and Kemp 1990).

This paper presents growth and skin scarring data in lambs shorn at 14 weeks of age in November with either a conventional comb or a cover comb (Supershear Aust.), that leaves an additional 5 mm wool, and grazing them on barley grass infested pastures. It also compares growth in lambs grazing barley grass and lucerne pastures.

MATERIALS AND METHODS

Animals and treatments

One hundred and fifty Dorset x (Border Leicester x Merino) cryptorchid lambs, born in early August were weighed and allocated from liveweight strata to 3 shearing treatments (unshorn, shorn, shorn with cover comb) and 2 pasture types (barley grass, no barley grass) in a 2 x 3 factorial design with 25 lambs in each treatment group. The unshorn lambs were wigged to remove facial wool. The lambs were shorn on 10 November.

Pastures

The lambs grazed the barley grass pastures between 10 November and 21 December. The pasture available between 10 November and 7 December consisted of 19% barley grass, 33% subclover and 48% rye and soft brome on a dry weight basis. Total dry matter (DM) at the commencement of grazing was 4.4 t DM/ha. Nitrogen (N, % in DM) and metabolisable energy (MJ/kg DM) values of the barley grass were 1.5 and 8.0 respectively; and 1.8 and 8.6 for the combined legume and grass components.

By 7 December the barley grass inflorescences were less erect and a new pasture was grazed between 7 December and 21 December which consisted of 36% barley grass, 61% subclover and 3% brome. Total DM was 1.2 t/ha.

The lucerne pasture, used from 10 November to 21 December had no barley grass and had > 1.5 t/ha

green DM, 4.6% N and 11.6 MJ/kg. On 21 December all animals were grazed communally on a lucerne pasture of 1.8 t green DM/ha, 3.7% N and 10.7 MJ/kg, until slaughter on 30 January.

Measurements

Liveweight, shorn wool length, carcase weight and carcase tissue depth at the GR site(11 cm from the spinal midline on the 12th rib) were measured on each lamb. After slaughter the skins were identified with a tattoo, tanned and visually assessed for grass seed damage.

Daily minimum and maximum temperatures were collected from a meteorological station located 800 m distant from the lambs.

The liveweight, carcase weight and GR tissue depth data was analysed by a separate univariate unbalanced analyses of variance. Main effects were grass treatment and shearing treatment each fitted after the other followed by their interaction.

RESULTS

Liveweight and carcase

The effects of shearing and pasture treatments on lamb growth and carcase weight are presented in Table 1. Lambs grazing lucerne were heavier than the lambs grazing barley grass at all stages. In the final period when the lambs grazed continually on the lucerne the growth rates of lambs previously on barley grass increased relative to those on lucerne throughout ($P < 0.001$).

Table 1. Liveweights and carcase weights (kg) for lambs shorn, cover shorn or unshorn, grazed on pasture with or without barley grass (mean with se in parenthesis)

Pasture	Shearing	Liveweight[A]			Carcase[A] weight
		15 Dec	21 Dec	29 Jan	
No barley grass	Shorn	35.4(0.38)	37.2(0.40)	40.1(0.65)	17.9(0.27)
	Cover shorn	36.0(0.38)	38.4(0.39)	40.8(0.64)	18.5(0.28)
	Unshorn	36.1(0.35)	38.3(0.37)	39.9(0.60)	17.8(0.27)
Barley grass	Shorn	32.2(0.38)	30.9(0.39)	35.9(0.64)	15.2(0.17)
	Cover comb	32.8(0.38)	31.5(0.40)	36.4(0.65)	15.9(0.27)
	Unshorn	32.7(0.39)	31.6(0.41)	35.2(0.66)	15.1(0.28)
	Pasture	***	***	***	***
	Shearing	**	ns	ns	ns

[A]Adjusted to average liveweight of 31.1 kg on 10 November and wool length.
**P < 0.01; ***P < 0.001; ns not significant.

The liveweight response to shearing varied with stage of experiment. Initially, the conventionally shorn lambs grew slower ($P < 0.001$) than those lambs shorn with the cover comb or unshorn. In the period from 21 December, when all lambs grazed on lucerne, shorn lambs grew faster than unshorn lambs ($P < 0.05$). Temperatures over the period show a transition from cool to warm weather (Figure 1).

Pasture type affected carcase weight and GR with the heaviest lambs having more fat at the GR site ($P < 0.001$).

Skins

Lambs shorn with a cover comb had an additional 5 mm of wool at the midside post shearing, than lambs shorn with a conventional comb. Wool length of the shorn lambs at slaughter was estimated to be 36 mm.

Not all tattoos were legible. From the reduced sample size of 8-14 per group, the percentage of skins with scars from barley grass seed in the shorn, unshorn and cover shorn groups was 8, 43 and 21% for barley grass free pasture and 20, 80 and 0% for barley grass pasture.

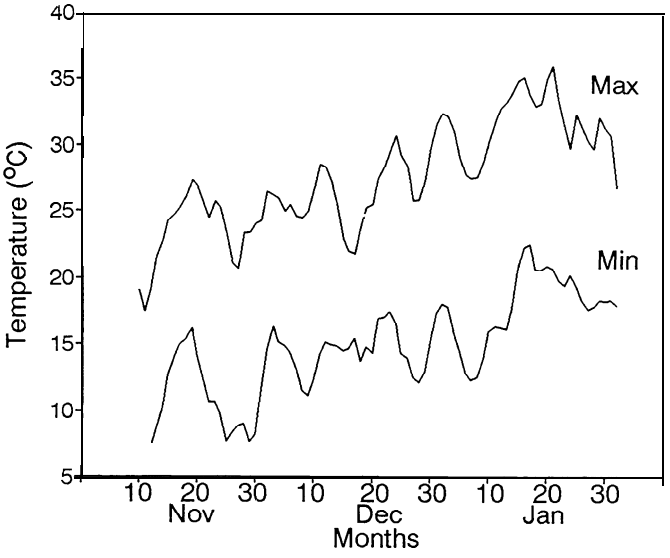

Figure 1. Daily maximum and minimum temperatures recorded at Cowra from November 1992 to January 1993

DISCUSSION

Growth rate of the lambs was significantly less on clover dominant barley grass infested pastures than on lucerne pastures free of barley grass. Much of this difference may be attributed to the clover mix pasture being of inferior nutrient status to the lucerne. Over the 5 week period following removal from barley grass pasture the lambs grew at 113 g/day compared with the lambs continuously grazed on lucerne pastures that grew at 58 g/day. This increase reflects a compensatory increase in nutrient intake by lambs previously on the barley grass pasture, however it is not possible to say whether nutrient intake increased as a result of superior nutrient density in the sward or simply because grazing could occur without the deterence by barley grass seed (Hartley and Atkinson 1972). The greatest effect of barley grass on growth rate is at seed shed and thought to be associated with injury to the eyes (Hartley and Atkinson 1972). In our experiment the lambs were frequently being treated for seed about the eyes (even though wigged at shearing) which suggests that the presence of barley grass was sufficient to affect grazing and intake.

Shearing and type of comb had an effect on growth rate similar for both pasture treatments, and depending on date of weighing. In the period of grazing barley grass pasture, lambs shorn with a conventional comb had a slower growth rate ($P < 0.001$) than unshorn lambs or lambs shorn with a cover comb. This differential growth response to shearing may have been due to an interaction between wool length and temperature. The critical temperature for a shorn lamb before it has to increase heat production by thermoregulatory means, is above 20°C (17°C dry; 28°C wet, calm conditions) and dependent on breed, wind and rain (Holmes and Sykes 1984). This critical temperature is lowered with wool growth (unshorn -7°C dry, 1°C wet) and use of a cover comb (Holmes *et al.* 1992). For all of November and early December the daily minimum ambient temperature was below 17°C, presumably increasing metabolic rate and lowering growth rates in lambs shorn with a conventional comb. However, in the period between 21 December and 29 January, lambs shorn with either conventional or cover comb, and wool length about 40 mm, grew faster than unshorn lambs which had about 80 mm of wool. At 40 mm length, wool provides an effective barrier to radiant heat (MacFarlane *et al.* 1956; Thwaites 1967), whereas less is known of the effect of longer wools on temperature balance. The upper critical temperature in unshorn sheep is about 30°C and the daily food intake decreases as the ambient temperature rises above 25°C to 30°C (Holmes and Sykes 1984). Daily maximum temperatures in January exceeded 30°C in the last 3 weeks of the experiment which may explain the observed differences in growth rate. This suggestion is not supported by Bray *et al.* (1985) and Lane and Kemp (1990), however, as they found no benefit of summer shearing on lamb growth rate.

Some of the skins of lambs from the lucerne pasture were seedy and the effects of shearing on degree of scarring was not consistent between pasture types. Combining the results for lambs from both pasture types suggested that unshorn lambs had more skin damage and shearing may reduce this effect. Skin values, however, are dependent on wool length, either for fellmongering or for wool-on skin, therefore price would be increased by the extra wool left by a cover comb. An early scheduled shearing precedes knowledge of whether pastures will be seedy and lambs may be shorn unnecessarily.

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