The influence of pasture allowance on performance of autumn-shorn lambs

D. B. POWNALL and R. J. LUCAS

Plant Science Department
Lincoln College, Canterbury

M. ABRAHAMSON

Centre for Resource Management
Lincoln College, Canterbury

ABSTRACT

Weaned lambs are often shorn but the limited research on the practice does not demonstrate a clear advantage. As the level of feeding used in some trials may have led to the variable results, experiments investigated the possibility of an interaction between feeding level and lamb shearing. Pasture allowances of 1 kg and 2 kg DM/lamb/d were offered to shorn and unshorn Romney or Coopworth wether and ewe lambs (19 to 28 kg initial live weight) in 2 autumn trials on rotationally grazed irrigated pasture. In the 105-day 1982 trial the shorn and unshorn lambs were grazed together but in the 55-day 1983 trial they were grazed separately.

There was an interaction ($P<0.01$) in 1983 between feeding level and shearing for carcass weight where shorn lambs offered 1 kg DM pasture allowance produced carcasses which were 0.8 kg lighter than the 10.4 kg carcasses from unshorn lambs fed at the same level. Both shorn and unshorn lambs on 2 kg DM allowance produced 11.7 kg carcasses. In 1982 shorn lambs had a 10 g/lamb/d faster live-weight gain and 0.5 kg heavier carcasses than unshorn lambs. Carcass weights were 10.6 kg and 12.8 kg at the 1 kg and 2 kg DM feed allowances. The lack of an interaction in 1982, when shorn and unshorn lambs grazed together, may have been caused by shearing inducing an increased appetite in shorn lambs which resulted in competition for feed with the unshorn lambs. In 1982 rates of live-weight gain were 66 and 102 g/lamb/d and in 1983 40 and 110 g/lamb/d from the 1 kg and 2 kg DM allowances respectively.

These experiments suggest that while lamb shearing may have some management advantages, carcass weights of shorn lambs may suffer if their growth rates are restricted by limited pasture supplies.

Keywords Shearing; weaned lambs; pasture allowance; lamb growth; carcass weight

INTRODUCTION

It is common opinion amongst farmers that weaned lambs 'do better' if they are shorn. Wool price support schemes also encourage farmers to shear export lambs and in the 1981-82 season the level of supplementary minimum prices for wool appeared to result in more lambs than usual being shorn.

Sumner *et al.* (1982) discussed the effects of shearing on sheep production and suggested that contradictory results from shearing trials are due partly to the effects of different levels of feeding. The only published experiments (Wallace, 1960) supporting the belief that shorn lambs grow faster did not describe the level of feeding. The feed requirements of sheep after shearing were estimated by Elvidge and Coop (1974) to be 24% more than woolly sheep at 16 to 17°C and 76 to 78% more at 7 to 10°C when they were exposed in pens on an unsheltered site. Wodzicka-Tomaszewska (1964) demonstrated increased voluntary food intake by two-tooth ewes of up to 30% for 6 weeks after shearing.

It is therefore possible that at low pasture allowances shorn sheep would not be able to satisfy their increased feed requirement while at high pasture allowances their increased appetite would be met and productivity could be greater than that of unshorn sheep.

This paper describes 2 experiments conducted on the Lincoln College Research Farm to investigate the possible interaction between lamb shearing and feeding level.

EXPERIMENTAL

The 1982 experiment used 64 ewe and 64 Romney wether lambs with a live-weight range in late February of 19 to 28 kg. Half were shorn and grazed together with unshorn lambs on irrigated pasture at allowances of 1 kg or 2 kg DM/lamb/d in a 2^2 experimental design. There were 2 grazing replicates to give 32 lambs in each of 4 flocks. Fresh pasture breaks were measured and grazed each week. Herbage disappearance was calculated at the end of each grazing break after assessing residual herbage mass. Lambs were weighed each week before going onto new pasture

breaks. They were slaughtered in early June, 105 days after shearing.

The 1983 experiment was similar except that it avoided the possibility of competition for feed between shorn and unshorn lambs by grazing them in separate flocks. With the 2 grazing replicates there were 8 flocks of 16 Coopworth ewe lambs to be shifted to new pasture breaks each week. The trial was run for 55 days after shearing.

RESULTS

There were no significant interactions between feeding level and shearing in 1982. Shorn lambs grew 10 g/day faster and had carcasses which were 0.5 kg heavier than those of unshorn lambs. Lamb performance at the higher pasture allowance was superior to that at the lower (Table 1).

TABLE 1 Effect of pasture allowance (kg DM/lamb/d) on unshorn lambs grazed together (1982).

	Gain (g/d)	Carcass weight (kg)	GR (mm)
Allowance 1	66	10.6	5.1
	**	**	**
2	102	12.8	7.8
Unshorn	79	11.4	5.9
	**	**	**
Shorn	89	11.9	7.1

There was a significant interaction between feeding level and shearing in 1983. Shorn and unshorn lambs produced the same carcass weights at the higher pasture allowance but at the lower shorn lambs had 0.8 kg lighter carcasses than those unshorn (Table 2).

TABLE 2 Carcass weight (kg) 1983 trial.

Pasture Allowance	Unshorn	Shorn
1	10.4	9.6
2	11.7	11.7
Interaction	**	
	LSD 5% = 0.3	

The main effects of pasture allowances and shearing treatments in 1983 are shown in Table 3. Live weight gains in response to the feeding levels were similar to 1982 with the lower allowance lambs gaining weight at about half the rate of the higher allowance. The main effect difference in carcass weights between unshorn and shorn lambs was due solely to their performance at the lower level of allowance (Table 2). Although the interaction between feed allowance and shearing for live-weight gain was not significant, the means of the 4 treatments showed similar trends to the significant interaction for carcass weight.

TABLE 3 Effect of pasture allowance (kg DM/lamb/d) on unshorn and shorn lambs grazed separately (1983).

	Gain (g/d)	Carcass weight (kg)	GR (mm)
Allowance 1	40	10.0	5.6
	**		**
2	110	11.7	7.4
Unshorn	74	11.0	6.8
		**	
Shorn	75	10.6	6.2
Interactions		**	

Mean herbage disappearance calculated from pasture cuts taken before and after the 8 grazing breaks suggested apparent pasture intakes of about 0.6 and 0.8 kg DM/lamb/d for the 1 and 2 kg DM allowance treatments respectively. The technique did not detect differences in apparent intake between unshorn and shorn lambs.

GR measurements of tissue depth over the twelfth rib 11 cm from the midline were closely related to carcass weight. Carcasses of similar weight from shorn and unshorn lambs had similar GR values.

DISCUSSION

Lambs in the 2 Ruakura trials reported by Wallace (1960) had mean growth rates of about 60 and 100 g/d and the December shorn lambs were 1.5 kg heavier than unshorn lambs by mid February. These results were similar to the 1982 trial described here where shorn lambs grew 10 g/d faster than unshorn and growth rates were 66 and 102 g/d on the 1 and 2 kg DM/d pasture allowances respectively.

Shorn and unshorn lambs were grazed together for over 3 months in these 3 trials. It seems reasonable to expect that shorn lambs would actively compete for feed with unshorn lambs when they are grazing together under conditions of limited feed supply. The greater feed requirement of shorn sheep (Elvidge and Coop, 1974) and increased voluntary intake for 6 weeks after shearing (Wodzicka-Tomaszewska, 1964) would lead to higher pasture intakes and leave a smaller share for unshorn lambs. The faster growth rates of shorn lambs in these 3 trials may therefore be related to the manner in which the shearing treatments shared the same pasture. Misleading results from trials where treatments induce differences in voluntary intake would be less likely if pasture of high quality was offered to lambs in sufficient quantity to achieve high growth rates, as the competitive effect would then be less important.

Sumner (1984) reported 12 shearing trials with weaned lambs from North Island hill country farms. The only trial where shorn lambs were clearly superior had a mean lamb growth rate of over 200 g/d. Ten other trials where growth rates were under 150 g/d showed no financial advantage to shearing. In the

twelfth trial at Whatawhata Hill Country Research Station where shorn and unshorn lambs were grazed together at 2 feed allowances lamb growth rates were low. There was no interaction between feed allowance and shearing and no advantage in lamb performance to shearing.

The feed allowance × shearing interaction for carcass weight in the 1983 trial (Table 2) demonstrated that when shorn and unshorn lambs are grazed separately the poorly fed shorn lambs may be disadvantaged. If a higher pasture allowance had been offered so that growth rates of 200 g/d could be achieved then shorn lambs may have had higher growth rates than unshorn lambs.

The increase in lamb appetite after shearing is unlikely to last much longer than 6 weeks so the time between shearing and slaughter may influence the magnitude of the shearing effect. Similarly the location and season will determine the temperatures experienced. Lower temperatures probably increase appetite. The North Island trials reported by Wallace and Sumner were conducted during summer at mean temperatures of about 17 °C while the Lincoln College trials were done in autumn at a mean temperature of 13 °C during the 6 weeks after shearing.

Although increased financial returns resulting from shearing have been shown only where lamb growth rates are high, farmers may still prefer to shear for management reasons. Some of these are discussed by Wallace (1960).

There is a need to study the effect of shearing weaned lambs under a wider range of feed allowances in order to achieve high lamb growth rates. An investigation into the validity of grazing animal treatments together when they have potentially different appetites is also required. In the meantime, the limited evidence suggests that carcass weight increases resulting from shearing weaned lambs are unlikely unless feed supplies support high lamb growth rates. If feed is restricted, shearing may result in lower carcass weights.

ACKNOWLEDGEMENTS

The authors acknowledge the assistance of N. S. Mountier and A. J. Lister for statistical analyses, A. M. Nicol, B. R. Wilkinson and K. F. Thompson for useful discussion and Sandra Hines for pasture assessment.

REFERENCES

Elvidge D. G.; Coop I. E. 1974. Effect of shearing on feed requirements of sheep. *New Zealand journal of experimental agriculture* **2:** 397-402.

Sumner R. M. W.; Bigham M. L.; Knight T. W.; McMillan W. H.; Wiggins L. K. 1982. Shearing—its effects on production. *Proceedings of the Ruakura farmers' conference* 31-34.

Sumner R. M. W. 1984. Effect of shearing on meat and wool production from export lambs reared on hill country. *Proceedings of the New Zealand Society of Animal Production* **44:** pp. 45-48.

Wallace L. R. 1960. Shearing weaned lambs. *Proceedings of the Ruakura farmers' conference* 52-55.

Wodzicka-Tomaszewska M. 1964. The effect of shearing on the appetite of two-tooth ewes. *New Zealand journal of agricultural research* **7:** 654-62.