Effect of post-weaning and post-mating/post-weaning shearing on ewe performance

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ABSTRACT

Lifetime performance data were collected from flocks of 200 mixed-age Romney, Coopworth and Perendale ewes at Whatawhata Hill Country Research Station which were shorn either once yearly in November or twice yearly in May and November beginning in 1978, together with the lifetime performance data of 2-year-old replacement ewes entering these flocks in 1979 and 1980.

Twice-shorn ewes were consistently heavier after shearing in November with an apparent carryover effect the following May. More of the twice-shorn ewes required dagging before shearing in November. There was a significant frequency-of-shearing x breed interaction for both total greasy and total clean wool production. Twice-shorn Romney and Perendale ewes grew more wool than once-shorn ewes. Wool growth of the Romney was greater following shearing in May compared with the other 2 breeds. Frequency of shearing did not affect ewe survival, number of lambs born, lamb survival, or weight of lamb weaned per ewe. Incidence of casting was insignificant. Average net wool returns were greater for once-shorn ewes.

Keywords Shearing; Romney; Coopworth; Perendale; live weight; lamb production; wool production.

INTRODUCTION

Approximately 70% of farmers in the northern half of the North Island (Livingston, 1983; Bigham and Sumner, 1982) and 30% of farmers in the southern North Island (Livingston, 1983) shear their breeding ewes more than once yearly. Reasons given by farmers for shearing more than once yearly include easier management with less dagging and crutching, fewer cast sheep, increased wool production of better colour, improved cash flow and, depending on the timing of the extra shearing, increased lambing performance (Livingston, 1983). Based on 2 years' data collected in the Wairarapa, Parker (1984) reported no consistent trend in profitabilty between once-yearly shearing (post-weaning) and twice-yearly shearing (post-mating and post-weaning). No longer term data on the effects of once *v* twice-yearly shearing on performance have been reported.

This paper reports 5 years' data on the effect of post-weaning *v* post-mating/post-weaning shearing policies on performance of breeding ewes on Waikato hill country.

EXPERIMENTAL

Trial Design

In 1978 flocks of approximately 200 individually indentified mixed-age Romney, Coopworth and Perendale ewes reared at Whatawhata Hill Country Research Station were randomly allocated to be shorn either once yearly post-weaning in November or twice-yearly post-mating in May and post-weaning in November. Lifetime performance data were collected for the ewes allocated to the shearing treatments in 1978 and for the 2-year-old replacement ewes entering the flocks in November 1978 and November 1979. Ewes were culled for age as 5-year-olds after shearing in November.

General Management

Trial ewes were grazed together throughout the year except over joining when they were divided into breeds and joined with rams of their own breed for 6 weeks beginning in late March. Day to day management reflected normal commercial practice. Both groups of ewes were crutched pre-mating. The once-shorn ewes only were crutched pre-lambing.

Measurements

All ewes were weighed and scored for dagginess in early May when the rams were withdrawn prior to the twice-shorn group being shorn. The ewes were again scored for dagginess at weaning in November before both groups were shorn, and weighed after shearing. Individual greasy fleece weight was recorded for all ewes at each shearing. Mean greasy weight of crutchings for each breed x shear treatment group was also recorded. Lines of shorn wool were assessed for New Zealand Wool Board type number and yield, and seasonal average prices for the respective types obtained from the New Zealand Wool Board.

TABLE 1 Adjusted means for live weight (kg) and lambing performance.

Treatment	No. of ewes	Live weight May (Pre-shear)	Live weight November (Post-shear)	Dry ewes (Logit)	Ewes lambing multiples (Logit)	Lamb survival (Logit)	$\frac{LW^1}{EPM}$	Weight lamb weaned (kg)
Shearing frequency:								
Once-shorn	696	51.0	51.3	-2.54(7.3)[2]	-0.44(39)[2]	1.19(77)[2]	1.03	27.6
Twice-shorn	642	51.4	52.8	-2.37(8.6)	-0.60(35)	1.49(82)	1.04	28.2
SED	-	0.2	0.3	0.21	0.13	0.19	0.03	0.5
Breed:								
Romney	454	49.6	50.8	-2.42(8.2)	-1.33(21)	1.02(73)	0.88	24.9
Coopworth	456	52.5	53.3	-2.33(8.9)	0.04(51)	1.28(78)	1.13	29.9
Perendale	428	51.5	52.1	-2.62(6.8)	-0.28(43)	1.72(85)	1.11	28.8
SED	-	0.6	0.6	0.25	0.17	0.23	0.04	0.6
Shearing effect	-	*	***	NS	NS	NS	NS	NS
Breed effect	-	***	***	NS	***	*	***	***

Interaction terms not significant
[1]Lambs weaned/ewes present at mating
[2]Fitted proportion (%)

Costs of shearing, pre-mate crutching and pre-lamb crutching were assumed to be $1.20, 30c and 45c respectively.

Lambs were individually identified at birth, and weighed at weaning. Time and cause of death of both ewes and lambs were recorded where possible.

RESULTS AND DISCUSSION

Production data were analysed by either analyses of variance or deviance adjusting for imbalance in shearing treatment, breed, year born and year of record. There were significant interactions between breed x year born and breed x year of record for some parameters indicating inconsistent breed differences between years. Variation due to these interactions is incorporated in the standard error of breed differences.

Adjusted means for ewe live weight and lambing performance are given in Table 1. There were no interactions between breed and shearing treatment. Twice-shorn ewes were consistently heavier after shearing in November as a carryover effect from the May shearing. The twice-shorn ewes were in turn still slightly heavier than the once-shorn ewes the following May. While neither the proportion of ewes lambing multiples, lamb survival, lambs weaned/ewes present at mating nor total weight of lamb weaned was affected by second shearing in May, the trend within each of these parameters was commensurate with less embryos developing within the twice-shorn group. The Coopworth ewes were heavier, gave birth to more multiples with better overall survival and higher total weight of lamb weaned than the Romney. The Perendale was

TABLE 2 Adjusted means for wool production (kg).

Treatment	Greasy fleece weight Pre-mate crutch	May shear	Pre-lamb crutch	Nov. shear	Total	Total clean fleece wt	Required dagging in November (%)
Romney:							
Once-shorn	0.09	-	0.37	3.67	4.13	3.06	80
Twice-shorn	0.09	2.12	-	2.14	4.35	3.35	96
Coopworth:							
Once-shorn	0.07	-	0.32	3.35	3.74	2.78	69
Twice-shorn	0.07	1.94	-	1.71	3.72	2.87	79
Perendale:							
Once-shorn	0.05	-	0.29	3.00	3.34	2.48	41
Twice-shorn	0.05	1.79	-	1.63	3.47	2.68	57
SED	0.01	0.04	0.01	0.04	0.08	0.07	5
Shear effect	-	-	-	-	**	***	***
Breed effect	**	***	**	***	***	***	***
Interaction effect	-	-	-	**	**	**	NS

intermediate in lambing performance to the other 2 breeds, tending towards the Coopworth. Neither barrenness nor ewe survival was affected by either shearing treatment or breed. Overall 7.9% ewes were barren with ewe losses of 1.7% from weaning to May shearing, 2.3% from May shearing to lambing, 1.5% during lambing and 1.6% from lambing to weaning. The ewes were rotationally grazed during the winter with the number of cast ewes being less than 1%.

There was no interaction between shearing treatment and breed for dagginess (Table 2). Fourteen percent more twice-shorn than once-shorn ewes, required dagging before shearing in November. Under the management system used in this trial the labour requirement for dagging was thus increased following a second shearing post-mating, contrary to many claims. There were also marked differences between breeds in dagginess. The ranking for proportion of ewes requiring dagging in both May and November was consistently Romney, Coopworth, Perendale, with the Romney having the highest proportion of ewes requiring dagging.

There was a significant frequency-of-shearing x breed interaction for both total greasy and total clean wool production (Table 2). Romney ewes grew proportionately more wool following shearing in May than the Perendale which grew slightly more than the Coopworth. The combined effect of this shift in the pattern of wool growth was that the twice-shorn Romney and Perendale ewes produced both more greasy and more clean wool than once-shorn Romney and Perendale ewes, twice-shorn Coopworth ewes produced a similar amount of greasy and slightly more clean wool than once-shorn Coopworth ewes. The interaction effect was consistent between years.

Feed requirements have been shown to increase significantly following shearing (Elvidge and Coop, 1974) with an associated increase in voluntary feed intake (Wodzicka-Tomaszewska, 1964) which can result in increased wool production at some times of the year (Bigham, 1974). The magnitude of the overall production responses of the Romney following twice-yearly shearing in this trial is similar to that reported by Parker (1984). There are however no reported data of comparative production responses for Coopworth and Perendale ewes following twice-yearly shearing to confirm if the effect shown by the Coopworth in this trial is typical of the breed as a whole. Other physical and gross data suggest the Coopworth responds more to changes in level of nutrition than do some other breeds or genotypes (Rattray *et al.*, 1981).

Despite between year variation in seasonal climatic conditions the assessed New Zealand Wool Board type numbers indicate second shear fleece wools shorn in May were longer and less discoloured (better style) than second shear fleece wools shorn in November (Table 3). Romney and Coopworth fleece wools were similar and allocated the same type numbers within each shearing treatment (Table 3). Perendale fleece wool was typed as being finer but of similar style to the other two breeds with the once-shorn fleece wool allocated to a shorter length bracket (75 to 125 mm *v* 100 to 150 mm). Perendale second-shear fleece wool, although also shorter than equivalent Romney and Coopworth second-shear fleece wools, was typed according to the same broad length categories of 75 to 100 mm for May second-shorn fleece wools and 50 to 100 mm for November second shorn fleece wools.

TABLE 3 Fleece wool type number.

Breed	Once-shorn November	Twice-shorn May	Twice-shorn November
Romney and Coopworth	37F3D	37F2J	37F3L
Perendale	35F3G	35F2J	35F3L

Net wool returns based on adjusted mean wool production and seasonal average wool prices during the trial showed a consistently higher net wool return from once rather than twice-shorn ewes. The higher net wool return for the once-shorn ewes was due to lower shearing costs combined with a premium for length (Wiggins and Beggs, 1979) partly offset by a small reduction in total wool production and a small premium for style (Wiggins and Beggs, 1979). Between July 1978 and the present the seasonal average price difference between equivalent types of crossbred second-shear and full-wool fleece wool has ranged from 4 to 8 c/kg clean between 50 to 100 mm and 75 to 100 mm wools, and from 10 to 22 c/kg clean between 75 to 100 mm and 100 to 150 mm wools. Similarly, the average price difference between average to good and good style grades of equivalent crossbred fleece wool has ranged from 3 to 8 c/kg clean (L.K. Wiggins, pers. comm.). The combined effect of these price differences on net wool returns ranged from an avantage of 15 c/ewe for the once-shorn Coopworth in 1981-82 to an advantage of 126 c/ewe for the once-shorn Perendale in 1982-83. With dagging normally being carried out by the farmer or his staff a direct cost for this operation has not been included. Similarly costs such as the extra time involved in mustering and droving full wool sheep have not been included.

CONCLUSIONS

Comparative production data for once-yearly and twice-yearly shorn Romney, Coopworth and Perendale ewes on Waikato hill country have been reported. The effects of shearing frequency were not statistically significant for any of the measured

production traits, other than wool growth, a small live-weight effect and occurrence of dags. However factors beyond the control of the farmer such as variable weather and wool price fluctuations can readily assume biological and financial significance in the short term affecting profitability in any one year for a particular shearing system. Nevertheless while this trial, based on 5 years' data, showed a consistently greater net wool return from once-yearly shearing, factors such as farm locality, stage of development, availability of labour, grazing management skills, breed of sheep and timing of shearing will influence the choice of an optimal shearing system for an individual farm.

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