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EWE PERFORMANCE AND LAMB LIVEWEIGHT GAINS COMPARED FOLLOWING AUTUMN AND SPRING LAMBING

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Abstract

A flock of 370 Dorset x Romney ewes with up to 96% autumn lambing was developed without the aid of hormones. Data from flock and experimental records were used to compare the performance of autumn- and spring-born lambs and their dams. Preliminary findings for three seasons show that ewes lambed in autumn had a greater spread of lambing, lower litter size and fewer perinatal lamb deaths. Growth of suckling lambs was similar in winter and spring. After weaning, autumn-born lambs grew faster than spring-born lambs of the same age (104 v 34 g/hd/day). The proportion of lambs reaching killable weights by January was 90% and 10% for autumn and spring lambs respectively.

Keywords: **Lambing time, autumn, spring, lambing performance, lamb liveweight gain.**

INTRODUCTION

Rumba11 and Boyd (1980) suggested that sheep performance at Kaikohe, Northland, was restricted by a distribution of feed that was inappropriate for the needs of normal spring lambing. They proposed a better fit by reducing feed demand in spring and increasing that in autumn through lambing part of the flock in April/May. Production of out-of-season iambs could extend the killing season and increase the production of heavy-weight lambs (Taylor 1982).

Production of autumn lambs off pasture has sometimes been attempted elsewhere (e.g. McNeal, USA, 1978). Few data are available in New Zealand. Andrewes (1983) found that there was some decline in ewe fertility and in lamb growth rates as lambing dates moved from winter to autumn.

The Agricultural Research Division established a flock of 220 Dorset x Romney ewes at Kaikohe in 1978 to identify and investigate problems associated with autumn lambing. This flock was transferred to Trounson Kauri Park Farm in 1982 and increased to 370 ewes. Lambing dates were brought back from September in 1977 to May/June by 1982 through normal mating procedures and selection.

This paper summarises some observations on the productivity of autumn-born lambs and compares this with limited data from lambs born in spring in the same flock.

METHODS

Of the total ewes lambing in 1982 and 1983, 96% did so in autumn. In 1984, this was reduced to 87% to give more spring-born lambs for comparative purposes.

Generally, ewes and lambs were set-stocked from lambing to docking and then rotationally grazed. Mid-winter stocking rates ranged from 16-20 su/ha. Lambs were identified, weighed and tagged at birth with further weighings at docking, weaning, and as required. Weaning was usually at 12-15 weeks of age with a minimum weaning weight of 16kg.

Pasture samples were taken before each grazing for dissection into species. Changes in composition between spring and summer, shown as means for the two years, are indicated in Table 1. Pasture growth rates ranged from approximately 10kg DM/ha/day in July to 60kg/ha/day in October.

Within each of the years 1983 and 1984, weaned autumn and spring-born lambs were offered similar quantities of pasture under the same grazing management, In

TABLE 1: Percentage of Major Species in Pastures in Spring and Summer.

Species	Spring	Summer
Perennial ryegrass	53	41
Poa spp	8	2
Yorkshire fog	15	13
Other grasses (mainly Browntop)	11	20
White clover	10	17
Dead matter	1	5

TABLE 2: Mean Reproductive Performance of Autumn and Spring Lambing Ewes Over Years 1982-1984.

	Autumn (range)	Spring (range)
No. ewes lambing/year	310 (286.334)	26 (14-43)
Mean lambing date	25 May (16/5-9/6)	31 August (26/8-3/9)
Spread of lambing (days)	43	
% lambs born/ewes lambing	186 (111~118)	135 (114-145)
% lambs weaned/ewes lambing	93 (87-100)	103 (79-120)
% lambs born dying within 24 hours	7.3 (6.1-8.0)	15.2 (12.5-19.0)
% lambs born dying 24 hrs-weaning	10.4 (6.7-17.6)	5.2 (4.0-18.8)

1983, grazing was from an initial herbage mass of 2100kg DM/ha to 1500kg residual DM/ha. Treatments began on 2 September for autumn lambs and on 6 December the weaned spring lambs were added to the mob. The trial concluded on 14 February 1984.

In 1984, there were two grazing regimes. Both involved removal of about 600kg DM/ha but from different pre-grazing herbage masses (2100 and 1500kg DM/ha). As these treatments produced the same liveweight gain, they have been combined for the autumn versus spring comparison. This trial was conducted over a similar period to 1983.

RESULTS

Lambing

The mean lambing dates of ewes over the year 1982-1984 were reasonably consistent within autumn and spring lambing groups (Table 2). The greater spread of lambing in autumn was a reflection of the variation in acceptance of the ram by individual ewes at tupping. This resulted in 5-10% of ewes lambing in March and April and the remainder in May and early June.

Litter sizes (lambs born/ewes lambing) tended to be greater in spring-lambing ewes. This was partly offset by higher losses at birth among spring-born lambs, but there were still about 10% more spring than autumn-born lambs/ewe at weaning.

Lamb Growth to Weaning

Mean birth weights and growth rates of autumn and spring-born lambs in each of the years 1981-1984 are shown in Table 3. Small differences were present from time-to-time between season of lambing and between years but these were not statistically significant.

The low lamb growth rates in winter 1983 followed a **severe** drought and restricted winter feed supplies. Weaning age was influenced by the time taken to achieve adequate liveweights.

TABLE 3: Lamb Growth Rates From Birth to Weaning According to Season of Birth.

Year	Autumn Born n	Birth wt (kg)	Age weaned (days)	LWG/day (g)	Spring Born n	Birth wt (kg)	Age weaned (days)	LWG/day (g)
1981	201	3.6 (0.9)	86	209 (58)	37	4.3 (1.1)	70	229 (59)
1982	334	4.6 (0.8)	107	158 (48)	22	4.4 (1.1)	80	178 (79)
1983	270	3.8 (0.8)	101	126 (33)	11	4.5 (0.6)	97	154 (38)
1984	258	4.2 (0.9)	82	174 (48)	47	4.2 (0.9)	93	155 (35)

(Standard deviations in parenthesis)

TABLE 4: Growth of Autumn and Spring-Born Lambs.

Year	Autumn NO.	Period (days)	LWG/day (g)	Spring No.	Period (days)	LWG/day (g)
A. At similar ages						
1983	29	62	134	11	69	79 ***
1984	58	71	104	30	71	34 ***
B. From November-February						
1983/84	14	69	124	11	69	79 ***
1984/85	30	a4	66	30	84	42 ***

Post-weaning Liveweight Gains

Autumn lambs performed better than spring lambs when compared over the same time period and also when gains were considered over the same age range (Table 4), Within each of these years, both autumn and spring lambs were exposed to the grazing regimes described previously.

Ewe Hogget Liveweights

Spring born lambs were culled either at weaning or in late summer, preventing comparison with autumn-born iambs within the flock in most years. In Table 5, live-weights of autumn-born hoggets are compared with the target liveweights advocated by Advisory Services Division for spring-born hoggets.

The 8kg advantage to autumn-born hoggets in January was reduced to 2kg by October. October is the time for comparing the pre-tup weight of 46kg for autumn-born 18-month ewes with the target weight of 50kg in February for spring-born 18-month ewes recommended by Advisory Services.

TABLE 5: Ewe Hogget Liveweights (Kg/Hd) 1982-1984.

		Month January	March	August	October
Autumn born	$\bar{x}$	31	31	38	46
	s.d	3	2	4	3
Spring born	$\bar{x}$	23	NA	NA	NA
	s.d.	1			
ASD target (for spring lambs)		23	27	39	44

DISCUSSION

Over 90% of the ewes lambing did so in autumn. Andrewes (1983) reported lower proportions in a pure Poll Dorset flock, in which there had been no selection for out-of-season lambing. The Dorset × Romney ewes had been culled for time of lambing, spring-born ewe lambs were discarded in later years, and autumn-born ram lambs were selected for breeding. The converse of the high proportion of autumn-lambing ewes was the low numbers available in the spring-lambing groups for comparison purposes (Table 2). Allowance has to be made for this in interpreting results.

Litter sizes were similar to those achieved by Andrewes (1983) but the lower litter size in autumn compared with spring was the reverse of the results reported by McNeal (1978). Day-length may influence ovulation rate and hence prolificacy (Dunstan et *al.* 1977, Vesely and Bowden 1980).

Lamb deaths to weaning were fewer among autumn than spring-born lambs and of a similar order to those of McNeal(l978). The difference in perinatal mortalities has to be viewed with caution. Factors such as litter size and 'year-born'effects proposed by Dalton et *al.* (1980) may well operate between autumn and spring lambing. Nevertheless, in each of the three years quoted, there were more perinatal losses among spring-born lambs in the Dorset × Romney flock.

The net effect of 10% more lambs weaned per ewe lambing in spring requires verification. It has obvious economic significance. Against this effect must be set the superior liveweight gains after weaning of the autumn-born lambs. This superiority was achieved on the same quantities of pasture and is presumed to be due to qualitative factors arising from changes in pasture composition (Table 1) and seasonal decline in digestibility (Rattray 1977). However, the liveweight gain of the spring lambs was very low and may have been partly due to competition with the autumn lambs.

The propositions of Taylor (1982) regarding spreading the lamb kill or producing heavy-weight lambs remain to be tested. What does appear from the results reported *in* this paper, is the advantage of autumn lambing to farm management, especially where droughts are common. Not only were autumn-born ewe lambs 8kg heavier by January (and therefore better able to withstand adversity) but a much higher proportion of wether lambs (90% v 10%) were at killable weights. The reduction in the number of tail-end lambs exposed to droughts, and probably not draftable until late autumn or even winter, would simplify the management of other stock.

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