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Performance parameters in an autumn lambing ewe flock

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ABSTRACT

A flock of 350 to 400 Dorset x Romney ewes was split into autumn- and spring-lambing groups in each of 2 years, 1985-86 and 1986-87. Joining for autumn-lambing commenced at the end of October, with most mating occurring in late November to early December. Mean lambing date in autumn was 20 April in 1986 and 24 April in 1987. Spring-lambing ewes were joined with rams on 11 March 1986 and 1 April 1987. Mean lambing date in spring was 20 August in 1986 and 6 September in 1987.

Liveweight loss over lactation in autumn-lambing ewes was greater than in spring-lambing ewes. Liveweight gain prior to joining was rapid for autumn-lambing ewes, enabling them to reach a live weight of > 50 kg prior to joining to lamb in autumn the following year.

Number of lambs born per ewe lambing was 110% and 118% in autumn, and 146% and 120% in spring for 1986 and 1987 respectively. Survival of autumn-born lambs to weaning was 7 to 9 % higher than for spring-born lambs.

Lamb growth rates were lower between birth and weaning in autumn- than in spring-born lambs. Lamb weaning weights were approximately 17 kg for autumn-born and 19 kg for spring-born lambs. Autumn-lambing ewes produced up to 0.1 kg more wool than those lambing in spring.

Keywords Autumn-lambing; spring-lambing; live weight; reproduction; wool growth.

INTRODUCTION

Simulation studies suggest that lambing in autumn rather than in spring could increase efficiency in feed utilization on Northland farms (Rumball, 1980), extend the killing season (Taylor, 1982) and provide heavy-weight carcasses suitable for the chilled meat trade (Andrewes and Taylor, 1986). The performance of an autumn-lambing Poll Dorset flock has been reported (Andrewes, 1983) as have the performance of lambs born in autumn (Andrewes and Taylor, 1986; McQueen 1986). This paper compares some of the performance parameters of an autumn-lambing flock of Poll Dorset x Romney crossbred ewes, with those of their spring-lambing flock-mates in 1986 and 1987. Development of the lambing pattern for this flock is described elsewhere (McQueen and Reid, 1988).

lambled in spring that year and were joined with the rams at weaning. Rams were joined for 10 weeks in 1985-86 and 6 weeks in 1986-87. Approximately 70% of available mixed-age ewes were joined each year, along with 85% (1985-86) or all (1986-87) 2-tooths. The aim was to have 60 to 65% of the flock lambing in autumn. In 1985-86, 6 rams were used for the entire mating period, while in 1986-87, 12 rams were joined initially for 18 d before the flock was divided into 6 single sire mating groups for 4 further weeks.

Joining for spring-lambing (11 March 1986 and 1 April 1987) involved running the 6 rams used previously with all ewes (autumn- and spring-lambing), apart from those separated off to lamb in the first cycle. This allowed ewes not mated for autumn-lambing to have the opportunity to lamb the following spring.

EXPERIMENTAL

Mating Management

Immediately after shearing in late October in each of 2 years (1985 for 1986 lambing, and 1986 for 1987 lambing), rams were joined with ewes designated for autumn-lambing. In 1985 these ewes were randomly selected within each age group from the flock which had lambled in autumn the previous year (mean lambing date, 25 May). Ewes joined in October/November 1986 (n=328) included 46 which had

Grazing Management

Ewes were rotationally grazed throughout the year, including lambing. All ewes were run as 1 mob from the end of joining for autumn-lambing, until close to autumn-lambing in March when the pregnant ewes were separated off, and again between weaning of the autumn-born lambs in June-July until lambing in the spring.

Ewes were shorn in late October each year, when spring-lambing ewes were lactating, and again in early March. Individual greasy fleece weight was recorded in October 1986, March 1987 and October

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1987. Ewes were weighed before shearing, before and after tupping, before lambing and again at weaning. In addition, in 1986-87 ewes were weighed approximately monthly.

Lambs were weighed, tagged and recorded at birth, and weighed again at weaning. Weaning occurred on 2 separate occasions for lambs born in autumn each year and in the spring of 1986. In each of these seasons, approximately half the lambs were weaned on the first occasion when they exceeded 16.5 kg and the remainder were weaned 3 to 4 weeks later.

Wool Growth

Wool growth in autumn- and spring-lambing ewes was measured on 30 ewes for each season using mid-side patches clipped each 6 to 8 weeks from ewes rearing 0, 1 or 2 lambs.

RESULTS AND DISCUSSION

Live weight of autumn-lambing ewes decreased over lambing and lactation in 1986, when there was little feed available for ewes during the first 3 to 4 weeks of lambing (Fig. 1). In 1987, most liveweight loss occurred during lactation. After weaning in 1987, autumn-lambing ewes continued to lose live weight until culling in August. Liveweight gain was then rapid and the ewes weighed over 50 kg by joining 2½ months later. Liveweight changes in spring-lambing ewes were much smaller than in those lambing in autumn, with live weight being lowest in July in 1986 and in March in 1987.

Because of the deliberate policy to retain some ewes for spring-lambing by restricting the period of

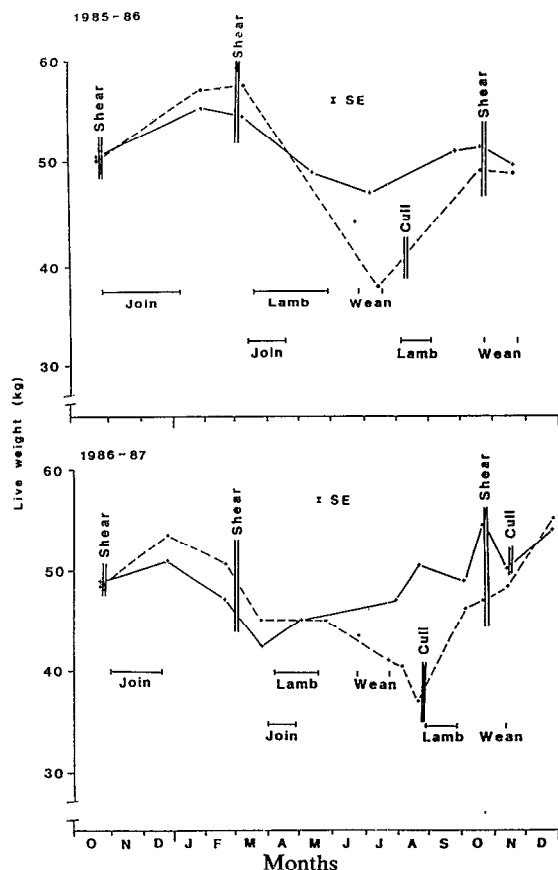


FIG. 1 Pattern of live weight of ewes lambing in autumn (---) or spring (+-----+).

TABLE 1 Reproductive performance of ewes lambing in autumn or in spring.

Parameter	Lambing season				
	Autumn	Spring			
	1986	1987	1986	1987	
Ewes joined	252	328	142	146	
Ewes culled or died	6	10	10	4	
Dry ewes	46 ¹	92 ¹	7	12	
Ewes lambed	200	226	125	130	
EL/EJ ²	0.79	0.69	0.88	0.89	
Lambs born	219	226	182	156	
Lambs weaned	201	239	153	125	
LB/EJ ²	0.87	0.81	1.28	1.06	
LB/EL ²	1.10	1.18	1.46	1.20	
LW/EJ ²	0.80	0.73	1.08	0.86	
LW/EL ²	1.01	1.06	1.22	0.96	
LW/LB ²	0.92	0.90	0.84	0.80	

¹ Ewes dry each autumn included in those joined to lamb in spring.

² EJ Ewes joined, EL ewes lambing; LB Lambs born; LW Lambs weaned.

joining for autumn-lambing there was a higher proportion of dry ewes in autumn than in spring (Table 1). These dry ewes were subsequently joined for spring-lambing. The shortened joining period for autumn-lambing in 1987 compared with autumn 1986, resulted in 10% fewer ewes lambing. This policy of restricting the mating period for autumn-lambing reduced the proportion of ewes lambing in autumn from over 95% in 1981-83 to 70% (McQueen and Reid, 1988). Twelve to 13% of ewes mated for spring-lambing failed to lamb. In 1987 this included 12 dry ewes (8.2%). These relatively high proportions of dry ewes reflect the short joining period for spring lambing, and the low live weight at mating in 1987.

In 1986, more lambs were born per ewe mated in spring than in autumn, but in 1987 there was very little difference between the seasons. The differences in 1986 are similar to those observed in earlier years within this flock, (McQueen, 1986) but involved a greater number of spring-lambing ewes than previously. The relatively low lambing performance in spring 1987 reflected the low live weight at joining following a prolonged spell of dry weather. Lamb deaths between birth and weaning were 7 to 9% lower in autumn- than in spring-born lambs in both years even when the lambing percentages in the 2 seasons were similar in 1987.

The proportion of ewes lambing per ewe joined for autumn-lambing was higher than described by Andrewes (1983) for a Poll Dorset flock lambing at a similar time. Although lambs born per ewes lambing were lower in this flock than in Andrewes' (1983) flock, the higher success rate at mating and the lower rate of death in lambs resulted in a higher ratio of lambs reared per ewe joined.

The reproductive performance of this flock in these 2 years was similar to that reported for earlier years (McQueen, 1986). Lambing performance in the spring-lambing component of this flock has

generally been higher than the Northland average of 90 to 95% (R.D. Thomson, pers. comm.).

Autumn-lambing in 1986 was prolonged (Table 2) reflecting both the unexpected early start of mating in November 1985, and the slowness of 2-tooth ewes to be mated. The slow onset of mating and lambing in 2-tooth ewes had been a characteristic of this flock in previous years. Spring-lambing was restricted to 2 cycles in both years, although in 1987, lambing was deliberately delayed, to allow for greater spring pasture growth. This change in lambing time was reflected in higher lamb growth rates in 1987, compared with 1986. However, difficulty was experienced with a delayed mating of the spring-lambing ewes to lamb in autumn the following year. Because of the restricted joining period adopted for autumn lambing in this flock it is important to mate a proportion of spring-lambing ewes to lamb in autumn the following year, to ensure sufficient ewes continue to lamb in autumn.

Spring-born lambs were heavier at birth (0.4 kg) and at weaning (2.5 to 4.9 kg) respectively than autumn-born lambs although their ages at weaning were similar in 1986 and less in 1987. The low weaning weights and low growth rate of autumn-born lambs in 1986 reflected the dry conditions and low feed availability in early lactation, especially for the earliest lambs, in late March.

Liveweight gain and age at weaning varied greatly in this flock up to 1984 (McQueen, 1986), but in 1986 and 1987, the practice was to wean lambs at a relatively young age of 9 to 10 weeks. Lamb growth rates to weaning have been lower than those reported by Andrewes (1983).

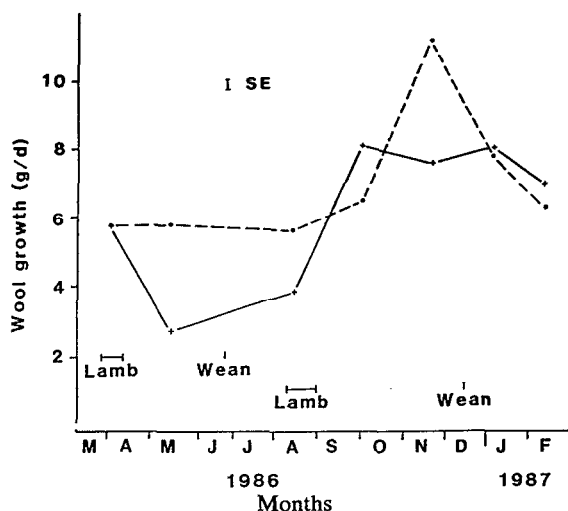
Greasy fleece weight of autumn-lambing ewes was higher than spring-lambing ewes at all 3 shearings (Table 3). The only period in which wool growth rate was higher in spring-lambing than autumn-lambing ewes was in September and early October, after weaning autumn-lambing ewes and

TABLE 2 Mean (\pm standard deviation) birth and growth rate data for lambs born in autumn or in spring.

Parameter	Lambing season			
	Autumn		Spring	
	1986	1987	1986	1987
Mean birth date	20 April	24 April	20 August	6 Sept
Range	15 Mar-25 May	3 Apr-16 May	5 Aug-2 Sept	2 Aug-24 Sept
Birth weight (kg)	4.0 (\pm 0.9)	4.0 (\pm 0.9)	4.4 (\pm 0.9)	4.4 (\pm 1.1)
Weaning date	23 June, 14 July	23 June, 21 July	23 Oct, 19 Nov	10 Nov
Weaning weight (kg)	14.4 (\pm 5.1)	17.2 (\pm 2.5)	19.3 (\pm 3.3)	19.7 (\pm 3.5)
Growth rate to weaning (g/d)	151 (\pm 76)	182 (\pm 48)	314 (\pm 48)	237 (\pm 40)
Weaning age (d)	72 (\pm 13)	75 (\pm 14)	71 (\pm 13)	64 (\pm 6)

TABLE 3 Mean (\pm standard deviation) fleece weight (kg) of autumn- and spring-lambing ewes.

Shearing	Lambing season	
	Autumn	Spring
October 1986	1.66 (± 0.35)	1.56 (± 0.32)
March 1987	1.32 (± 0.23)	1.28 (± 0.24)
October 1987	1.70 (± 0.32)	1.63 (± 0.38)

**FIG. 2** Wool growth rate of ewes lambing in autumn (—) or spring(+ — +).

during lactation in those lambing in spring (Fig. 2). Wool growth rate in winter was higher in lactating autumn-lambing ewes than in their pregnant spring-lambing counterparts. The peak wool growth rate in late spring was higher in dry autumn-lambing ewes than in lactating spring-lambing ewes. Liveweight loss and wool growth in spring-lambing ewes were less during periods of restricted feeding in winter than in lactating autumn-lambing ewes. Autumn-lambing ewes were thus able to maintain wool growth while they were lactating and losing live weight. This would suggest that autumn-lambing ewes are able to repartition protein and energy to production at the expense of live weight over autumn and winter. At that time spring-lambing ewes exhibited minimum wool growth and were not lactating.

Lambs born in April have been shown in this work to grow at adequate growth rates to weaning in June-July. Lamb growth rates can be very high in September and October on high quality spring pasture. This enables heavy-weight lambs to be available for killing in October or November.

Liveweight variation through the year is greater in autumn- than spring-lambing ewes. However, given that they are not rearing lambs or pregnant in spring, liveweight gain prior to joining at the end of

October was rapid with a continuing weight, gain over joining. In spring-lambing ewes in Northland, it is difficult to ensure a high mating live weight as joining often follows and extended period of hot, dry weather commonly resulting in liveweight loss.

Using this cross-bred flock for autumn-lambing, the use of hormone treatment is avoided, and a short lambing period is possible. Experience with the flock has shown that autumn-lambing is a practical proposition in Northland. While litter sizes can be lower in autumn than in spring, high survival and post-weaning liveweight gains for autumn born lambs mean well-grown lambs are available to meet the early market requirements.

Traditionally, it has been very difficult to maintain good growth rates of spring-born lambs over summer and autumn. The use of autumn-lambing lessens the consequences of this problem as these lambs are killable before the summer period, and autumn-born replacements are 5 months older in autumn than their spring-born counterparts.

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