AUTUMN AND SPRING-LAMBING OF MERINO EWES IN SOUTH-WESTERN VICTORIA

J. W. McLAUGHLIN*

Summary
In each of four years, ewes lambing in the spring (September-October) had a higher proportion of multiple births than ewes lambing in the autumn (April-May). In only one year was there a difference between flocks in the proportion of non-pregnant ewes.

The survival of lambs varied between seasons and years. Because of the low survival of lambs from multiple births, there was little difference between the flocks in average weaning percentages. The percentage of lambs weaned ranged from 65% to 86% for autumn lambing ewes, and from 61% to 100% for spring lambing ewes.

The lambs born in the spring were heavier at birth and grew faster to weaning than those born in autumn, but, in three of four years, both groups of progeny were of similar liveweight at 18 months of age.

The wool productions of ewes lambing in the spring was greater than that of ewes lambing in the autumn.

I. INTRODUCTION
The time of the year at which lambs are born is likely to affect the production of both ewes and lambs.

The number of lambs born may vary because, in general, fertility and fecundity vary with season of year (Watson 1953; Alden 1956; Dun, Ahmed and Morrant 1960) although exceptions have been reported (Davies 1962; Mullaney 1966; Watson and Radford 1966).

Variation in ewe nutrition and weather conditions between seasons is likely to affect lamb survival (Alexander 1964). Differences in nutritional conditions between seasons may also affect ewe liveweight and wool production, and the growth of lambs.

The experiment reported here compares the performance of Merino ewes and the growth of their progeny, when lambing occurred either in April-May or in September-October in south-western Victoria.

II. MATERIALS AND METHODS

(a) Location
The observations were made at Hamilton, in the Western District of Victoria, between November 1961 and March 1966. The environment has been described by McLaughlin (1966).

(b) Animals
The animals were medium wool (64s-70s quality count) Merino ewes born and reared in the Western District of Victoria. They were divided into two equal flocks on the basis of age and liveweight. Maiden ewes, three years old, comprised approximately 70% of both flocks in 1963 and 30% in 1964. The ewes in 1962 and the non maidens in 1963 were Saxon strain; all others were Peppin strain.

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The ewes were joined to Peppin strain Merino rams in early November (early December in 1963) for the autumn lambing group (autumn flock), and in mid April for the spring lambing group (spring flock).

(c) Experimental

The ewes grazed as one flock, except for mating and lambing, at 7.5 per hectare and were given no supplementary feed. Ewe stocking rate was increased to 12.5 per hectare four months before the ewes lambing in the spring were shorn in March 1966.

The flocks were joined to three rams fitted with “Sire Sine” crayon (Radford, Watson and Wood 1960), and matings were recorded weekly over the mating period of eight weeks. Only rams with apparently normal semen were used and, in each year, the same rams were joined to both flocks.

At lambing, the ewes were inspected daily and their new born lambs were weighed and identified. All lamb deaths were recorded, and the lambs weighed each month until they were weaned at an average age of 12 weeks. The weaned lambs from each flock were run together on a separate area, weighed regularly, and their greasy fleece weights were recorded at shearing.

The ewes were weighed at monthly intervals except during late pregnancy when they were weighed each fortnight. The autumn flock was shorn each September, and the spring flock each March, and greasy fleece weights recorded.

Ewe reproductive performance and lamb survival data were examined by chi square test. Ewe greasy fleece weights and lamb weights were examined by “t” test.

III. RESULTS

(a) Mating performance

There was no difference between the flocks in the average number of services per ewe lambing (Table 1). For ewes that mated, this indicates no difference between the flocks in the ability of the ewes to conceive. Relative to the first two years, fewer services were required per ewe that conceived in the last two years of the experiment. In 1964, the proportion of ewes not mated was higher in the autumn than in the spring flock \( P<0.05 \). In all years except 1962, the spring lambing ewes mated earlier in the joining period than the autumn lambing ewes.

(b) Lambing performance

The percentage of ewes lambing was similar in each flock except in 1964 when 15% and 1% of ewes did not lamb in the autumn and spring flocks respectively \( P<0.001 \) (Table 1). In all years, the percentage of multiple births was significantly higher in the spring flock. An average of 116.8 and 99.8 lambs were born per 100 ewes joined in the spring and autumn respectively.

In general, lambing was much more concentrated in the spring than in the autumn flock (Figure 1). An average of 83 % and 49% of the pregnant ewes lambed within 150 and 170 days of the introduction of the rams in the spring and autumn flocks respectively.

(c) Lamb survival

Survival of singles was considerably higher than that of twins in all cases (Table 2). The survival of twins in autumn was higher than that in spring in 1962 and 1964, and lower in 1963 and 1965. There was no significant difference between the autumn and spring flocks in the survival of singles in 1962 and 1965.
<table>
<thead>
<tr>
<th>Year</th>
<th>Time of Lambling</th>
<th>Number of Ewes Joined</th>
<th>Mating Performance</th>
<th>Lambing Performance (% of Ewes Joined)</th>
<th>Greasy Fleece Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1962</td>
<td>Autumn</td>
<td>116</td>
<td>2</td>
<td>1.32</td>
<td>93.1</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>114</td>
<td>1</td>
<td>1.42</td>
<td>90.4</td>
</tr>
<tr>
<td>1963</td>
<td>Autumn</td>
<td>107</td>
<td>1</td>
<td>1.32</td>
<td>91.6</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>111</td>
<td>0</td>
<td>1.35</td>
<td>90.9 (0.9)</td>
</tr>
<tr>
<td>1964</td>
<td>Autumn</td>
<td>111</td>
<td>11***</td>
<td>1.09</td>
<td>84.7</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>108</td>
<td>0</td>
<td>1.13</td>
<td>99.1</td>
</tr>
<tr>
<td>1965</td>
<td>Autumn</td>
<td>109</td>
<td>1</td>
<td>1.11</td>
<td>93.6 (1.8)</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>103</td>
<td>0</td>
<td>1.17</td>
<td>96.1 (1.9)</td>
</tr>
</tbody>
</table>

Figures in brackets refer to % ewes dead between mating and lambing.

†† Months shearing interval.

* <P < 0.05.

** <P < 0.01.

*** <P < 0.001.
The survival of singles was higher in spring than in autumn in 1963 and lower in spring than in autumn in 1964.

As a consequence of this variability in survival rate and in the incidence of twins and of ewes which failed to mate, the weaning percentage (Table 1) varied between 65% and 86% in autumn and 61% and 100% in spring, and there was little difference between the flocks in the combined results for the four years involved (77% and 80% respectively).

(d) Lamb growth and wool production

In all years except 1964, mean birth weights of lambs from single and multiple births were higher (P<0.01) for spring born than for autumn born lambs (Table 2). The mean weaning weight for spring born lambs was greater in all years than that of autumn born lambs (P<0.001). The mean weaning weights varied between 17.6 and 19.7 kg and between 11.6 and 16.5 kg for spring and autumn born lambs respectively. Although their growth rate to weaning was superior, the spring born lambs had a smaller liveweight gain from weaning to 1½ years of age, and in three of four years the liveweight of both groups of progeny was similar at this time (Table 2). The 1965 spring born lambs were 4.5 kg heavier than the 1965 autumn born lambs at 1½ years (P<0.001).

As the progeny were shorn at different ages no direct comparison of greasy fleece weight was possible. However, wool production per week for all progeny up to their third shearing was similar for the spring and the autumn born sheep (autumn 68.6 g per week; spring 65.8 g per week).
<table>
<thead>
<tr>
<th>Year</th>
<th>Time of Lambing</th>
<th>% Survival</th>
<th>Mean Birth Weight (kg)</th>
<th>Mean Weaning Weight (kg) (all lambs)</th>
<th>Mean Liveweight c. 1½ years (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Singles</td>
<td>Multiples</td>
<td>Singles</td>
<td>Multiples</td>
</tr>
<tr>
<td>1962</td>
<td>Autumn</td>
<td>86.3</td>
<td>75.0</td>
<td>3.90</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>88.5</td>
<td>34.4</td>
<td>4.31</td>
<td>3.72</td>
</tr>
<tr>
<td>1963</td>
<td>Autumn</td>
<td>70.6</td>
<td>33.3</td>
<td>3.81</td>
<td>2.32</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>90.2</td>
<td>50.0</td>
<td>4.04</td>
<td>3.31</td>
</tr>
<tr>
<td>1964</td>
<td>Autumn</td>
<td>86.4</td>
<td>58.3</td>
<td>4.04</td>
<td>3.36</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>65.1</td>
<td>23.8</td>
<td>4.00</td>
<td>3.13</td>
</tr>
<tr>
<td>1965</td>
<td>Autumn</td>
<td>92.5</td>
<td>45.5</td>
<td>4.00</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>86.2</td>
<td>63.1</td>
<td>4.27</td>
<td>3.45</td>
</tr>
</tbody>
</table>

*P<0.05.  
**P<0.01.  
***P<0.001.
(e) Ewe liveweight and wool production

In all years, autumn lambing ewes were joined at a lower liveweight and lost more weight during lactation than spring lambing ewes.

The mean greasy fleece weights were higher for spring lambing ewes in all years except 1965 (Table 1). The lack of difference in 1965 possibly be ascribed to the increase in stocking rate towards the end of observations.

IV. DISCUSSION

Mullaney (1966) found no difference in the fertility of ewes lambing in the autumn and the spring in the Western District of Victoria. In the observations reported here, there was a significant difference in fertility between the flocks in only one year. Thus, in most years, the changing of lambing time from autumn to spring for Merino ewes in south-western Victoria is unlikely to increase ewe fertility.

However, the higher proportion of multiple births recorded in spring differs from Mullaney’s (1966) results and strongly suggests that differences between strains of sheep and/or environment are important in seasonal reproductive ability. Because the two environments are similar, the former appears the more likely explanation.

In this experiment, the average advantage in the number of lambs born in the spring (117 vs. 100%), which was due almost entirely to the higher incidence of multiple births, was offset by a higher proportion of lambs dying in the spring. There is little doubt that in the spring bad weather was a major factor in the high loss of multiple lambs. Certainly the climatic limits for homeothermy in small lambs, suggested by Alexander (1964), are often exceeded in bad weather in winter and spring in south-western Victoria.

Observations on the incidence of lambing indicated that ewes from the spring flock conceived earlier in the joining period than ewes from the autumn flock. Since there was no difference within years in the ability of ewes from each flock to conceive, this delay in lambing and the delay noted in mating indicates that some of the autumn lambing ewes were in anoestrus when the rams were introduced in November. Many workers report that a low incidence of oestrus is a normal occurrence in the spring months.

The higher birth weights and growth rates to weaning of the spring born lambs and the lower liveweight loss during lactation and the greater wool production of their mothers indicate that there was a higher level of nutrition available to the spring than to the autumn flock during late pregnancy and lactation. These advantages in lamb growth and ewe production suggest a greater potential for increasing stocking rate when lambing occurs in the spring. This is in accord with the results of Davies (1962) who found that higher stocking rates of ewes were possible with spring than with autumn lambing.

Despite their faster growth while being suckled, the weaned spring born lambs normally entered the period of dry pasture at a lower liveweight than autumn lambs. It is possible that this lower weight at pasture maturity could affect subsequent performance (McLaughlin 1966). However, the progeny born in all years except 1965 were at a similar liveweight at 1 1/2 years of age and the mean weekly wool production of both groups of progeny was similar.
The results of this experiment indicate that, in at least some flocks of Merino ewes in south-western Victoria, considerable gains in the number of lambs born can be achieved by lambing in the spring instead of the autumn. However, the full potential of this gain will not be realized unless the survival rate of lambs from multiple births is improved. Watson (1953) and Watson and Elder (1961) have stressed the importance of high survival of multiple lambs in achieving a high reproductive performance with spring lambing.

Despite the lack of effect on the percentage of lambs weaned, the advantages' associated with spring lambing, namely faster lamb growth, higher ewe wool production and the potential for increasing ewe stocking rate, are reasons for recommending a widespread adoption of the practice in south-western Victoria.

V. ACKNOWLEDGMENTS

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VI. REFERENCES