REPRODUCTIVE PERFORMANCE OF MERINO SHEEP,
FED A DROUGHT RATION OF WHEAT AT TIME
OF MATING

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Summary

Merino ewes and rams were fed a drought ration of wheaten grain for the first five months of 1968. Despite the prevailing drought conditions that existed in northern Victoria at that time, the ewes held to service to give a lambing in the following spring of 83 per cent.

Ewe liveweights at mating appeared to be the main criterion affecting the reproductive performance of breeding ewes fed wheaten grain. Ewes mated in the first 17 days of joining apparently conceived readily when ewe liveweight at mating exceeded 40 kg.

Only 38 per cent of ewes with a mating liveweight of less than 38 kg at first service lambed within the first 17 days of lambing. However, 70 per cent of those ewes that apparently did not conceive to first service conceived within the following eight weeks despite no evident change in their mean liveweight. Delay in lambing was therefore associated with low liveweight at joining.

I. INTRODUCTION

Ewes may be successfully joined when fed barley under drought conditions (Guerin and Mulhearn 1968). There appears to be no field information available on the reproductive performance of breeding ewes fed a drought ration of wheaten grain.

Grazing studies involving the relationship between ewe liveweight over a six-week joining period and ewe fertility have shown a critical mating weight within the range of 36 to 45 kg (Coop 1962, 1966; Killeen 1967; McLaughlin, personal communication). Below this weight, the proportion of barren ewes increases markedly, whereas above this weight there is an increase in the incidence of twin lambs.

Abnormally dry conditions prevailed in northern Victoria during 1967 and until May 1968. In January 1968, it was decided to feed ewes and rams wheaten grain only and to observe the mating and subsequent lambing performance of the ewes.

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II. MATERIALS AND METHODS

(a) Location and trial history

Observations relating rate of stocking and performance of breeding ewes were in progress at Murphy’s Creek, 160 km north-west of Melbourne, Victoria. The sheep were 4½ year old medium wool (64’s quality count) Merino ewes that had been grazing on the plots since the spring of 1966. There were 15 ewes/plot, and stocking rates ranged from 3.7 to 8.7 ewes/ha.

The total rainfall for 1967 was only 250 mm compared with a mean annual rainfall for the area of 460 mm. By July 1967, the liveweight of the ewes had declined to a mean of 43 kg and all had to be fed hay and oaten grain during the remainder of the year.

(b) Wheat Feeding

Daily feeding of wheaten grain commenced on January 16 at a rate of 0.4 kg/sheep/week. Feed limestone was mixed with the grain (1 per cent of ration) and the mixture trailed out on the virtually bare ground. The quantity of wheat was increased during the next four weeks and, by February 22, all sheep were being offered 2.7 kg (6 lb) weekly. This wheat was fed out at half-weekly intervals (Franklin et al. 1955; Hill, Watson and McClymont 1968; McInnes 1965).

With the introduction of the rams on February 26, an extra 3 kg/week/ram was added to the ration.

Following the onset of cold wet weather, the wheat ration was increased to 3.2 kg/sheep/week from April 21 to May 4. With the commencement of pasture growth in May, not all the wheaten grain being offered was consumed and the ration was decreased to 1.8 kg/sheep/week. Wheat feeding was discontinued on May 27.

(c) Mating Management

Six Merino rams were conditioned to a diet of wheaten grain in an area set apart from the ewes. On February 26, the rams were fitted with “Sire Sine” crayons (Radford, Watson and Wood 1960) and put with the ewes. Matings were recorded weekly over the mating period of ten weeks. Rams were removed on May 9.

(d) Lambing Groups

All ewes were removed from plots on June 6 and grazed together as one mob through the lambing period which commenced on July 26. The ewes were drift-lambed and all those that had conceived to first service were identified by August 12. On September 16, barren ewes and late lambers were identified on the basis of udder development. These were again checked at a later date.

(e) Statistical Analysis

As ewe liveweights, and liveweight change as from January 31, were not related to the original rates of stocking, it was possible to analyse the mating and lambing performance of the ewes as one group.

Ewes were ranked in order according to mean liveweight over the mating period. The number lambed and time of lambing above and below the median weight at mating were compared by Chi Square test using Yates correction.

III. RESULTS

(a) Mating and Lambing Observations

Sixty-four out of the 67 ewes that were mated accepted the ram in the first 17 days. Of these 64 ewes, 38 apparently conceived to first service, 23 returned
to service at a later date and 16 of these subsequently lambed. Altogether, 57 (or 83 per cent) of the 69 ewes lambed.

(b) Lambing in Relation to Bodyweight at Mating

Liveweights at mating were 40.7±4.7 kg and 35.7±4.5 kg respectively for ewes conceiving and failing to conceive to first service. Those that returned to service to conceive within the next seven weeks had increased in mean liveweight by only 0.2 kg.

The apparent relationship of lambing (and conception) dates to mating weights was highly significant by the Chi Square test (Table 1). Most ewes that failed to conceive in the first 17 days of mating had a mean mating weight of less than the median weight of 38 kg (Figure 1).

IV. DISCUSSION

The observations showed little problem in conditioning breeding ewes to wheat feeding when the ration of wheaten grain is increased gradually over a period of about four weeks. The number of ewes that lambed compared favourably with lambing results for normal years of pasture growth.

The critical weight at mating in this observation was 36 to 40 kg. Conception
TABLE 1
Mean ewe liveweight at mating and time of lambing

<table>
<thead>
<tr>
<th>Mating Liveweight (kg)</th>
<th>Of ewes mated in first 17 days, numbers which lambed by August 12</th>
<th>Number of ewes that lambed after August 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;38</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>≥38</td>
<td>25</td>
<td>4</td>
</tr>
</tbody>
</table>

$\chi^2 = 8.4, \quad P < 0.01$

at first service readily took place if ewe liveweights exceeded 40 kg. At ewe liveweights below 38 kg, the ewes were still mated but only 38 per cent held to service within the first 17 days of mating. However, 70 per cent of those ewes that apparently did not conceive to first service did conceive to later services in the ten week mating period even though there had been virtually no change in their mean liveweight.

The relationships of low mating liveweight and barrenness cited by Coop (1966) and Milleen (1967) have been derived from observations over mating periods of only about six weeks. In this study, 16 per cent of the ewes conceived in the last four weeks of a ten week mating period. While low liveweight may reduce the chance of conception, it does not necessarily eliminate it.

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VI. REFERENCES