OVULATIONS IN MERINO EWES MOVED BY ROAD OR RAIL IN QUEENSLAND

D. R. LANG*

I. INTRODUCTION

In Queensland, ewes slaughtered at coastal abattoirs come from widely separated localities; they provide a promising source of material for the assessment of the current sexual activity of ewes in various localities. However, it was observed by Braden and Moule (1964) that anoestrous ewes transported for prolonged periods ovulated within a week of the commencement of the journey. In addition, Shorthorn heifers moved by motor transport ovulated soon after the journey (Lamond 1962).

In this paper the effect of transportation on ovarian changes in Merino ewes is described and related observations are presented as a further contribution to defining the sexual season of the ewe in Queensland.

II. MATERIALS AND METHODS

(a) Animals

The observations were made on Merino ewes brought for slaughter to the Queensland Meat Industry Board abattoirs, Cannon Hill, Brisbane, between July 1963 and January 1964.

Sheep arrived by train or motor transport directly from Queensland properties or indirectly through country and city saleyards. Accurate information on their movements from mustering until loading was often difficult to obtain, and the interval used in the analysis refers to the time the animals were loaded on to the respective transport until slaughter.

Age, assessed by examination of teeth, varied widely and carcass weights ranged from 25-45 lb (11.5-21 kg.). However, quality tended to be uniform amongst ewes from the same property.

(b) Collection of material

The animals were usually slaughtered on the day of arrival at the abattoirs, but some large groups were held over for varying times in the yards or grazing paddocks adjacent to the slaughterhouse. Where possible, entire rams, carrying pigmented crayon on the brisket, were placed with ewes to detect oestrus.

The entire reproductive tract was removed from at least 50 ewes randomly selected from each group and the ovaries were closely examined for the presence of corpora lutea (C.L.) and follicles. The ovaries were not sliced open to locate submerged C.L.

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Classification of Ovaries

The ovaries were subdivided into three groups:- those with (i) no recognizable C.L.; (ii) C.L. not more than three days old in appearance; and (iii) C.L. apparently older than three days.

Age of C.L., counted from the time of ovulation was assessed from the appearance of the ovulation site according to the following criteria. Up to 24 hours: - small almost indistinguishable rupture point, colourless fluid extruded when gently squeezed; 24 to 48 hours: - obvious rupture point, bright red and rosette, expressible as a pulp; 48 to 72 hours:— small, visible, easily expressible entity.

Hard, small, yellowish-white bodies (corpora albicans) expressed only after extreme pressure were regarded as C.L. from the previous cycle and were not included in the analysis.

Method of analysis

The number of ewes not in anoestrus was estimated from the presence of normal C.L. more than three days old. Assuming that the average length of the oestrous cycle is about 16.5 days, 18% of these ewes would be expected to ovulate over a period of three days. The difference between the observed number of ewes with C.L. less than three days old and the expected number has been assumed to represent the number of ewes with induced ovulations. The incidence of induced ovulations was expressed as a percentage of ewes estimated to be in anoestrus.

The percentage of twin ovulation was derived from examination of all C.L., including normal and induced.

RESULTS

Records of ovarian activity were obtained from ewes railed to Brisbane from Dirranbandi, Blackall, Longreach, Wyandra and Richmond or carried by motor transport from Goondiwindi and Dalby. The maximum time spent in transit (from Richmond to Brisbane) was 72 hours, while the minimum time (from Dalby to Brisbane) was 8 hours.

The proportion of ewes with a C.L. over three days old was extremely variable. The proportion was lower in November than in the remaining months examined; peak numbers were recorded in January. Ovarian activity of groups of ewes brought from the same region at the same time, but from different properties, differed markedly (Groups 6 and 7; 13 and 14).

The percentage of induced ovulations in each group ranged from 84.5 to 0. The least difference between the expected and observed proportion of ovulations, occurred in January in Groups 13 and 14 (0%) but in the same month another group, Group 12, recorded 82% induced ovulations (Figure 1).

The results in Groups 3, 4 and 5, in each of which slaughterings took place over three consecutive days, are plotted in Figure 2 against the number of hours from the time that the ewes were loaded on a train until slaughter. After arrival the ewes were held in yards until slaughter. These three groups were slaughtered within 14 days of each other. In each group the proportion of induced ovulations increased over a three day period (Figure 2).
Fig. 1.—The percentage of induced ovulations in Merino ewes transported to Brisbane between July 1963 and January 1964.

The percentage of twin ovulations was variable and ranged from 0 to 50. There was no obvious regional or seasonal pattern.

Fewer ewes showed oestrus than would be expected from the number of ovulations. In Group 5, for example, oestrus was detected in only five ewes in the

Fig. 2.—Incidence of induced ovulations related to the time between loading for transportation and slaughter.
last two days of the slaughter period. The ovulation rate increased almost three fold during this period.

IV. DISCUSSION

When the numbers of corpora lutea older than three days are considered, the data (Table 1) suggest that there is a peak incidence of anoestrus in November. This is in rough agreement with the observations of Kelley and Shaw (1943) on the incidence of oestrus in Queensland; they found a tendency for the breeding season to commence in early January. In the present study, the proportion of ewes with

<table>
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<tr>
<th>Group No.</th>
<th>Source and Date†</th>
<th>Sample No.</th>
<th>No. of C.L. &gt;3 Days</th>
<th>No. Expected</th>
<th>No. Observed</th>
<th>No. Induced</th>
<th>% Induced</th>
<th>% Twin</th>
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<tr>
<td>1</td>
<td>Dirranbandi 30-31/7/63</td>
<td>271</td>
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<td>44</td>
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<td>60</td>
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<td>143</td>
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<td>133</td>
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†Flock sizes—
Groups 1, 3, 4, 5 and 14 over 2,000
Groups 2, 8, 11 and 13 1,000-2,000
Groups 6, 7, 9, 10 and 12 500-1,000

*Spent a brief period in district saleyards.
quiescent ovaries varied markedly between groups over the seven month period, and appeared to be more a peculiarity of the flock than of the region. It appears that local conditions contribute considerably to the variability in breeding activity.

There was no clear seasonal trend in the incidence of twin ovulations (Table 1) although Radford (1959) showed a seasonal peak in May and June in Merinos held on a constant nutritional plane.

The present series of observations show that the use of abattoir material for assessment of sexual activity of ewes, may be misleading unless allowance is made for ovulation induced by transportation. Some of the variability in the incidence of induced ovulation may possibly be explained by differing susceptibility according to the stage of the anoestrous period.

V. ACKNOWLEDGMENTS

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VI. REFERENCES


