Ewe nutrition before and during mating

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Lambing percentages depend partly on the condition of ewes at mating. If it is practicable, ewes should be allowed to gain condition in the months before mating. Where this is not practical and ewes are in a store or backward-store condition at mating, flushing should improve their fertility.

THE period of several months from the time lambs are weaned until the ewes are mated again, has never been considered particularly important in the life of breeding ewes. Farmers have been advised not to allow ewes to get too fat or too thin at this stage, and stock-owners in general have been suspicious of over-fatness.

Recent experiments indicate that fattening ewes at this time improves fertility.

Experiments in New Zealand and South Australia

In two New Zealand experiments, Romney Marsh ewe flocks were divided into three groups after their lambs were weaned. The three groups were grazed on different paddocks, which were chosen so that one group fattened, the second group lost some condition and the third group became thin.

In mid-February the three groups were combined on the first paddock. So far as the two “thin” groups were concerned, this was flushing-quality feed and they gained weight rapidly. The fat group lost some weight.

Rams were introduced in early March, and the three flocks were not separated again until just before lambing.

In both experiments the “fat” group of ewes produced roughly 20 per cent more lambs than the two “thin” groups which were flushed. Figure 1 shows bodyweight changes of ewes in these two experiments, and Table 1 summarises the lambing results.

A South Australian experiment along the same lines gave similar results, so it is obvious that fatness or overfatness induced by good feeding between weaning and mating actually improves ewe fertility.

In practice the best pastures should be grazed by weaners and animals that are being fattened for sale, and with conventional grazing management, most farmers would reserve some paddocks for use in late summer. If the remaining feed on the property was good enough to fatten ewes before mating time this would improve their fertility and increase their wool production. The Western Australian summer could be relied upon to reduce overfat ewes to a forward store condition by late summer, so there should be no trouble due to overfatness in late pregnancy.

Western Australian Experiments

In the Western Australian wheatbelt, ewes do not usually get fat or overfat before mating, and it would be expensive and therefore unprofitable to fatten them at this time. However, a short period of special feeding to improve their conditions temporarily at mating time is quite likely to be profitable.
Four Western Australian experiments with Merino ewes under these circumstances, have given favourable results. In these experiments no efforts were made to reduce the condition of the ewes before mating, and flushing increased lamb-marking percentages by 15, 17, 7 and 8.5 per cent. compared with unflushed control groups of ewes. Details and results of these four experiments are shown in Tables 2a, 2b, 2c and 2d.

In the Wongan Hills experiment, the 15 per cent increase in lambing percentage was due mainly to extra pregnancies and there were very few twins. These details are not known for the other experiments, but in the experiments on A. K. Richard's property at Quairading (Tables 2b and 2c) we are fairly certain that flushing increased twinning rates but had no substantial effect on the proportion of dry ewes.

From these experiments I have formed the opinion that where ewes are normally in store condition or worse at mating time, flushing is likely to improve lambing percentages.

Two recent Western Australian experiments have given discouraging results. In both cases the experimental ewes were all given restricted grazing to get them down in condition before mating. Details and results of these two experiments are shown in Tables 3a and 3b.

In the 1961 Avondale experiment (Table 3a) the flushed group produced 10 per cent. more twins than the control group, but there were 10 per cent. more dry ewes in the flushed group. Thus the flushed and control groups both produced the same number of lambs. A third group of ewes was fed poorly during mating as well as before; this group produced 10 per cent. less lambs than the control or flushed group.

In the 1962 Avondale experiment (Table 3b) the experimental ewes were all brought down in condition before the experiment started. One hundred and twenty ewes in the best condition were selected and fed well; these (the "fat" group) cannot be considered a true experimental group as they were not initially chosen at random. The remaining 240 ewes were properly randomised into two experimental groups, of which one was flushed while the other was kept on poor pasture as a control group. The three groups produced about the same number of lambs, the same number of twins and the same number of empty ewes.

The two Avondale experiments indicate that flushing cannot be relied upon to increase lambing percentages. More particularly, they suggest that the practice of bringing ewes down in condition before mating might be the cause of these erratic results. No experiments have been done to test this idea.

Practical and Financial Considerations

On properties where ewes have a natural tendency to fatten between weaning and mating it costs nothing to allow them to do so. In fact, this can be expected to increase wool production. A possible argument against this is that allowing ewes to fatten between weaning and mating may use up pasture that is needed in late summer.

On properties where ewes have no marked tendency to become fat before mating, fattening them would generally be expensive or impracticable. Flushing of ewes in a store or backward-store condition should improve their fertility to some extent.

A suggested procedure for flushing is to provide special quality feeds, such as unharvested failed crops, particularly good paddock feed, mown-and-left pastures, or cereal grains for about eight weeks. Special feeding should probably begin about four weeks before mating and should be continued through the first four weeks of mating. The object is to improve the body condition of the ewes temporarily. No attempt should be made to bring them down in condition beforehand.

Obviously, costs of flushing should be considered. Where supplementary feeds are used, costs can be calculated, and it seems that extra lambs obtained by flushing will usually cost about thirty to forty shillings each. Where the special feed is cheaper (for example special pasture, unsaleable grain, failed crops, etc.,) the cost of extra lambs obtained by flushing will be reduced.

Tables 4a and 4b attempt to summarise the financial results of flushing with sheep nuts in the Wongan Hills experiment (see Table 2a), and of flushing with grain under average wheatbelt conditions.
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Summary
(1) If ewes have a natural tendency to fatten before mating, they should be allowed to do so.
(2) If ewes do not fatten before mating, flushing is likely to improve lambing results.
(3) The immediate object of flushing is to improve the body condition of ewes temporarily at mating time.
(4) Ewes should not be brought down in condition before mating.

RESULTS OF W.A. TRIALS

TABLE 1
Lambing Results—New Zealand Experiments.
Average of Two Years.

<table>
<thead>
<tr>
<th></th>
<th>Flattened</th>
<th>Restricted Grazing Before Flushing</th>
<th>Very Restricted Grazing Before Flushing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage Dry Ewes</td>
<td>2.7</td>
<td>4.3</td>
<td>6.7</td>
</tr>
<tr>
<td>Percentage Ewe Deaths</td>
<td>5.5</td>
<td>6.5</td>
<td>6.1</td>
</tr>
<tr>
<td>Percentage Lamb Deaths (up to 28 days)</td>
<td>13.7</td>
<td>11.2</td>
<td>16.6</td>
</tr>
<tr>
<td>Lambs Marked, percentage</td>
<td>120</td>
<td>107</td>
<td>98</td>
</tr>
<tr>
<td>Greasy Wool Production per Ewe (lb.)</td>
<td>9.13</td>
<td>8.74</td>
<td>8.18</td>
</tr>
</tbody>
</table>

Significance of Results
There were significantly fewer empty ewes in the flushed flock than in the other two flocks (p ≤ 0.001).
TABLE 2B
Sheep—417, 4-tooth to full-mouth Bungaree type ewes.
Lambed—Mid-April onwards.
Flushed by transferring to a trash-sown oat crop that had been grazed hard during winter.
Control group remained on ordinary pasture.

Ewes present at mating time
Mean body condition score before flushing
Mean body condition score at end of flushing
Lambs born
Lamb carcases
Lambs surviving
Lambs marked, percentage

Flushed 213 2.6 3.5 256 38 218 102 213 214 2.6 3.5 256 9 186 87
Control 214 2.6 2.0 251 40 211 99

Significance of Results
See Table 2c.

TABLE 2C
Sheep—418, 4-tooth to full-mouth Bungaree type ewes.
Lambed—Mid-June, 1961, onwards.
Flushed group moved into 400 acres of oat stubble with some patches unstripped, in early-January.
Control group kept on normal pastures.

Ewes present at mating time
Mean body condition score before flushing
Mean body condition score at end of flushing
Lambs born
Lamb carcases
Lambs surviving
Lambs marked, percentage

Flushed 213 2.4 2.74 238 14 224 71.5 314 1.57 238 19
Control 214 2.4 2.33 220 22 198 63

Significance of Results
Assuming that there were about 25 dry ewes per group, and considering the two experiments together (Tables 2b and 2c), there were significantly more twin pregnancies in the flushed groups than in the control groups ($x^2 = 78.7, p < 0.001$).

TABLE 2D
Sheep—627 mixed-age Merino ewes.
Lambed—Mid-April onwards.
Flushed group moved into a mown-and-left trash-sown grazing oats crop, in early November.
Control group kept on normal farm pastures.

Ewes present at mating time
Mean body condition score in fifth week of mating
Lambs born
Lamb carcases
Lambs surviving
Lambs marked, percentage

Flushed 314 1.57 238 14 224 71.5 314
Control 313 1.34 220 22 198 63

Significance of Results
The difference in percentage lamb drop was statistically non-significant.

TABLE 3A
Location—Avondale Research Station, Beverley.
Sheep—360 Border Leicester x Merino crossbred ewes, 4-tooth to full-mouth, reduced to store condition before the experiment began.
Flushed group moved to good pasture mid-December and fed grain, 1 lb. per head per day for eight weeks. Gained weight rapidly.
Control group moved to partly grazed-out pasture in mid-December. Gained weight.
Underfed group remained on eaten-out pasture and lost weight.
Significance of Results

There were fewer empty ewes in the control group (p<0.01). Other differences were not significant.

**TABLE 3B**

Location—Avondale Research Station, Beverley.

Sheep—360 mixed-age Border Leicester x Merino ewes, brought down in condition before the experiment began. One hundred and twenty ewes in the best condition were allocated to the “well fed throughout” group and the remaining 240 ewes were randomised into two groups, of which one was flushed by hand-feeding on good pasture, and the other was poorly fed throughout.


<table>
<thead>
<tr>
<th></th>
<th>Well Fed. Through-</th>
<th>Flushed. Through-</th>
<th>Poorly Fed. Through-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewes</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Twin pregnancies</td>
<td>26</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Single pregnancies</td>
<td>82</td>
<td>103</td>
<td>83</td>
</tr>
<tr>
<td>Empty ewes</td>
<td>12</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Lambs born</td>
<td>133</td>
<td>135</td>
<td>113</td>
</tr>
<tr>
<td>Lambs marked, percentage</td>
<td>100</td>
<td>100</td>
<td>88</td>
</tr>
</tbody>
</table>

**Significance of Results**

Cost Analysis, Wongan Hills Experiment (Table 2a)

Cost of Flushing 164 Ewes—

- 2½ tons sheepnuts: £75
- Feeding out over 8 weeks: £5
- Total: £80

Nett cost of flushing 164 ewes: £55

Number of extra lambs from 164 flushed ewes: 24

Nett cost per extra lamb: £2.5

**TABLE 4A**

Forecast of Costs and Returns of Flushing under Typical Wheatbelt Conditions

Cost of Flushing Per 100 Ewes—

- Grain, 30 lb. per ewe: £25
- Feeding out over 8 weeks: £5
- Total cost: £30

Less value of extra wool produced: £10

Nett cost of flushing per 100 ewes: £20

Number of extra lambs from 100 ewes—between 5 and 20.

Cost per extra lamb—between £1 and £4.