# Relationship of Various Culling Criteria in Ewes to Subsequent Lamb-Marking Percentages

By J. F. BARRETT*

Lambing results over a four years' period were analysed for a flock of 478 fine wool merino ewes to determine what effect culling of ewes at the end of the first and second years would have on the subsequent lamb-marking percentages.

Ewes were theoretically culled at the end of the first year on the following criteria: (a) failed to rear a lamb, (b) lambed but lost lamb before marking, (c) did not lamb, (d) defective udder, (e) failed to rear a lamb plus defective udder. At the end of the second year they were culled for (a) failed to rear a lamb in both years, (b) lambed but lost all lambs in both years.

The relationship between culling and the subsequent lamb-marking percentages is shown in the accompanying Table. This Table has been divided into two sections, A and B. Section A is for groups culled at the end of the first year.

An example of the way in which the Table (Section A) was constructed is:

The unculled flock had a lamb-marking percentage of 66.18 over the three years 1949-51. If the 168 ewes (35.15%), which failed to rear a lamb in 1948 are excluded the marking percentage of the remainder for 1949-51 was 71.83. This is an increase of 5.65% (7 1.83-66.18), and is equivalent to a gain of 0.161% for each 1% of ewes culled.

In Section B the groups were not culled until the end of the second year but the results can be interpreted in a similar manner to that outlined for Section A.

The column "Mark % of culls" gives the lamb-marking percentage of the culled ewes subsequent to culling. In Section A this is for the three years 1949-51 and in Section B for the two years 1950-51.

The results show that no marked improvement in lamb-marking percentages was achieved in subsequent years by excluding the various groups of ewes listed above.

## DISCUSSION

Dr. DUNLOP: Recent analyses of Strain Trial Data by Mr. E. M. Roberts, of the N.S.W. University of Wool Technology, confirm the low repeatability of lambing performances shown by Mr. Barrett's data. This implies that not only will culling not be very effective in increasing lambing percentages in future years, but also the heritability of this characteristic is low so that in this economically important trait selection will be relatively ineffective.

Miss TURNER: Does "lost all lambs" mean dropped and lost?

ANS.: Yes.

Mr. P. R. KNIGHT: Have figures been taken out for the effect on subsequent lamb marking percentages of culling ewes dry for both the first and second lambings? A further point, at Chiswick where husbandry is good, it appears there was no disadvantage in ewes having only one teat. In larger paddocks this may be important. It had been found an advantage to segregate these ewes and give them better treatment.

ANS.: Only six ewes did not lamb in either of the first two years so this factor was of little importance in the flock that was studied. The usual experience at "Chiswick" was that ewes with one blind teat did rear less lambs than ewes with sound udders. However, on our results the culling of such ewes would have little effect on subsequent lamb marking percentage.

Miss TURNER: Mr. Barrett's last answer is supported by evidence we have obtained from Badgery's Creek.

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## RELATIONSHIP OF VARIOUS CULLING CRITERIA IN EWES TO SUBSEQUENT LAMB-MARKING PERCENTAGES

| Groups culled | No. of ewes in group | % of ewes in group | Mark. % 1948 | Mark. % 1949-51 | | Gain in mark. % per 1% cull | | Mark. % of culls |
|---|---|---|---|---|---|---|---|---|
| | | | | Whole flock | Flock minus culls | 1949-51 | 1950-51 | |
| **Section A** | | | | | | | | |
| **Ewes culled after first year** | | | | | | | | |
| 1. No culling | 478 | 100.00 | 65.27 | 66.18 | — | — | — | — |
| 2. No lamb reared first year | 168 | 35.15 | — | — | 71.83 | 0.161 | — | 55.75 |
| 3. Lambed and lost lamb first year | 132 | 27.62 | — | — | 69.36 | 0.115 | — | 57.83 |
| 4. Did not lamb first year | 36 | 7.53 | — | — | 67.65 | 0.195 | — | 48.15 |
| 5. Defective udder first year | 57 | 11.92 | 54.39 | — | 66.59 | 0.034 | — | 63.16 |
| 6. No lamb reared plus defective udder first year | 26 | 5.44 | — | — | 67.04 | 0.158 | — | 51.28 |
| **Section B** | | | | Mark. % 1950-51 | | | | |
| **Ewes culled after second year** | | | | | | | | |
| 1. No culling | 478 | 100.00 | 65.27 | 62.13 | — | — | — | — |
| 2. No lambs reared in two years | 67 | 14.02 | — | — | 65.45 | — | 0.237 | 41.97 |
| 3. Lost all lambs in two years | 61 | 12.76 | — | — | 65.90 | — | 0.295 | 41.80 |

Mr. DUN: Observations on the Trangie flock indicate that culling 5% of twice dry ewes would theoretically increase the lambing percentage by 1%. In actual fact, this culling necessitates an increase of 5% in the maiden portion of the flock. Maiden ewes do not lamb as well as twice dry ewes, so that the final effect may mean a drop in lambing percentages.

Mr. RITCHIE: Under conditions where the plane of nutrition might be a factor causing the ewe not to lamb in any one year, might not that ewe have an advantage over the ewe which lost considerable condition through lambing when both ewes lamb the following year?

ANS.: The results would probably be influenced by the nutritional level during the second year when both ewes were pregnant, particularly during the last few weeks prior to lambing. If this level were adequate it is doubtful if there would be any marked differences between the two classes of ewes in their ability to rear lambs.