crossbreeding for increasing multiple births in sheep

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Since the net profit in any sheep enterprise is largely dependent on the number of lambs produced and marketed, multiple birth has always been an important factor in sheep production. The importance of multiple births has increased recently with the intensification of sheep production, by early weaning and artificial rearing of lambs.

Factors affecting multiple birth in sheep can be divided into two broad categories – environmental and genetic. The environmental factors known to affect multiple births include age and weight of ewe, age of ram, type of birth of both ewe and ram, as well as the general nutritional status of the flock before the breeding season and during gestation. Differences among breeds in their tendency for multiple birth is the main genetic factor. Breeds of sheep are known to differ widely in the frequency of multiple births.

Scientists have shown that selection for improving the percentage of multiple births is only moderately effective because the inherited part of this trait is small and is often offset by the many uncontrollable environmental factors. Crossing different breeds might be expected to improve the tendency for multiple births through the exhibited phenomenon of heterosis.*

The following results on multiple births in sheep were obtained from a crossbreeding experiment conducted at the Lennoxville Research Station during the period from 1956 to 1966.

1) The frequency of multiple births. A total of 941 lamb births were used in the present study, of which 456 (48.5%) were twins and 26 (2.8%) were triplets. Multiple births referred to in this study are those in which the ewe gave birth to more than one lamb (twins or triplets).

*Hybrid vigour.
2) Effect of crossing. The number and percentage of multiple births by Oxford, Suffolk and Cheviot breeds and their different crosses are presented in Table 1. Oxford crossbred ewes (Cheviot X Oxford, and Suffolk X Oxford) had 22.4% more multiple births than purebred Oxford, and purebred Suffolk had 12% more multiple births than crossbreds (Cheviot X Suffolk, and Oxford X Suffolk).

The comparison of the percentage of multiple births by purebred and crossbred rams. The results also showed that within breed of ewe (Oxford or Suffolk), the use of rams not belonging to the same breed (or crossbred rams) increased the incidence of multiple births.

Matings producing three-breeds crosses showed higher percentages of multiple births than those producing two-breeds crosses — those in turn were slightly superior to backcrossing.

3) Effect of age. The influence of age of ewe and age of ram on multiple birth percentage is shown in Table 2. The results indicated that the tendency for multiple births increases gradually with age of ewe, with the maximum occurring from the fourth to the sixth year of age. The effect of age on ram is less evident, but showed the same trend.

4) Effect of type of birth. The percentage of multiple births for ewes and rams which were themselves born twins is higher (about 4.5%) than for those born single, as shown in Table 3. Type of birth of ram seemed more important as type of birth of ewe.

5) Effect of weight of dam. Within different groups of dams (Oxford, Suffolk, and crossbred) the tendency for multiple births increased with the increase in weight of the ewe. This trend is shown in Table 4 for the three groups pooled together.