Genetic improvement of reproduction : time for deeds

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The reproductive performance of sheep can be changed by genetic selection within as well as among populations. The availability of diverse lines would facilitate selection among populations and serve as the basis for research to assess criteria to increase the accuracy of recognition of genetic merit and hence the rate of response within populations. The ability to measure prolificacy in males as accurately as in females could enable the response to selection to be increased by the order of 70 p. 100. The establishment of such lines and their investigation lends itself to cooperation between countries based on a common commitment as equals without prejudice to independence.

Relationship between ram testes weight and ewe fertility

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Data from a ram progeny testing program were analysed to estimate the heritability of testes weight and the relationship between testes weight and the reproductivity of genetically related ewes. The heritability of testes + epididymides weight, based on 695 ram lambs at weaning, was estimated as 0.48. The simple correlations between testes + epididymides weight and lambs born per ewe mated, in 13 sire groups, were 0.83, 0.18 and 0.02, and the genetic correlations were 1.36 ± 0.82, 0.26 ± 0.44 and 0.04 ± 0.49, for one, two and three year old ewes, respectively.

Selection for prolificacy in the *Cambridge* sheep

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The project was initiated with a foundation group of 54 ewes from *British* breeds, selected for prolificacy. Selection on the basis of an index, combining prolificacy and 50 days lamb weight has resulted in a 1.3 p. 100 per annum increase in prolificacy, associated with an increase in ewe lamb fertility and in advancing puberty in ram lambs.

A group breeding scheme structure has been a major feature of the development and the second phase of the project shows that crossbred ewes sired by *Cambridge* rams are more prolific and precocious than those sired by *Border Leicester* rams.