A CO-OPERATIVE PROJECT TO SELECT FOR TWELVE-MONTH BODYWEIGHT

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Live sheep exports are a major aspect of the Merino industry in Western Australia. There is a strong trend towards lower average wether ages in the State flock, reflecting an increased demand for young, heavy lambs. A co-operative project involving the Animal Breeding and Research Institute and the Merino stud industry is described. This project has immediate industry benefit and at the same time provides a resource for research.

OBJECTIVES

(a) To provide for participants a source of sires that have been intensively selected for twelve-month bodyweight.
(b) To screen stud flocks for superior genotypes based on twelve-month bodyweight for use as the foundation of a selection flock.
(c) To provide a resource for the study of:
   (i) The genetic effects of screening.
   (ii) The effects of intense selection on the primary and correlated traits.
   (iii) Correction factors necessary to estimate breeding values at various ages.

METHOD

Twelve-month-old sheep are weighed in Merino stud flocks and the heaviest 2 per cent are contributed by the stud to the Institute’s selection flock. At the same time, 1 per cent of the ewes are taken at random to form a control flock. Any ram lambs born to the ewes at the Institute are returned to the studs, and the ewes are also returned when they have weaned a female lamb to replace themselves. Rams borrowed for use in the selection flock are chosen on their superiority in within-flock standard deviation units, and control sires are chosen at random. Both polled and horned selection flocks have been established.

Screening will continue until the selection flocks achieve a size of 300 breeding ewes (three to four years), when the flocks will be closed. This will allow a study of correlated responses, parameter estimates, and of the components of twelve-month bodyweight in a Mediterranean environment. Of particular interest will be factors affecting the efficiency of bodyweight maintenance during the summer dry period.

PROGRESS

The project is currently in its second year and more than 12,000 sheep have been weighed on twenty-six studs. Average ewe weights varied between 19.9 kg and 48.6 kg in the screened flocks, much of this variation being caused by feeding. Average screening differential achieved in the ewes was 2.37 standard deviation units, and 3.35 units in the rams. Given various assumptions, we can expect the first progeny of the Institute flock to be
4.5 kg to 4 kg heavier than the random controls at twelve months of age.

Because there is a wide variation in the within-flock standard deviation (3.3 kg to 8.8 kg), it is important that this be taken into account in any national recording scheme that includes bodyweight in selection index calculations. Undue emphasis will be given to bodyweight in flocks with high standard deviations if it is not standardised (Johnson et al. 1980).

**ACKNOWLEDGMENT**

This project is funded by the Australian Meat Research Committee.

**REFERENCE**