SELECTION CRITERIA FOR SALE WEIGHT OF LAMBS

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For Australian prime lamb crossbreeding systems, genetic improvement of growth rate of terminal sire breeds is a potential method of improving sale weight of prime lambs. Established performance recording schemes facilitate this improvement.

One hundred and seventy-six lambs were produced by mating singly, 10 Poll Dorset rams (adjusted weaning weight ranged from 14.8 kg to 25.8 kg) with mixed age Merino ewes. The lambs were weaned at day 120, fed on pasture residue and stubble until day 209, after which they were fed a diet of lupins and barley *ad libitum* in the paddock until day 266.

Regressions of birth weight (B), weaning weight (W) and weight at three subsequent times (1, 2, 3) with adjusted and unadjusted sire weaning weight were not significant. Half-sib heritabilities of these five weights were calculated by analysis of variance (Table 1). The model fitted included sires, sex and type of birth and rearing as main effects with age of lamb as a linear covariate. Sires were treated as a random effect, whereas other effects were treated as fixed.

TABLE 1: Heritability of Liveweight and rg with Sale Weight (3)

Weight	B	W	1	2	3
Day of weighing	0-50	120	139	209	266
Mean weight	3.92	26.78	30.08	30.52	41.14
h^2	0.19±0.19*	0.06±0.14	0.08±0.15	0.16±0.18	0.27±0.22
rg with 3	-0.44±0.57	1.19±0.41	0.94±0.41	0.95±0.18	1.000

* Standard error

While the standard errors of the estimates are high, the heritability estimates are in broad agreement with other half-sib estimates. For example, Wolf *et al*, (1981) found a heritability of 0.04 for 120 day weight of crossbred lambs and Baker *et al*, (1979) showed heritabilities of 0.08 and 0.22 respectively for weaning weight and February liveweight in Romneys.

The additive genetic variance was a small component of the weaning weight variance. Poor perinatal environment, a high proportion of twins and the mothering characteristics of the Merino ewes may have caused the heritabilities of these weights to be lower than would have been the case otherwise. However, the additive genetic variance became a progressively larger component of later weights, indicating that improvement of sale weight (3) by genetic means is possible.

The results suggest that where the aim is to improve sale weight of lamb, it would be better to base selection in pure bred terminal sire flocks on weights taken well after weaning in preference to weaning weight.

REFERENCES

WOLF, B.T., SMITH, C., KING, J.W.B., and NICHOLSON, D. (1981). *Animal Production* 32: 1-7.

BAKER, R.L., CLARKE, J.N., CARTER, A.H. and DIPROSE, G.D. (1979). *New Zealand Journal of Agricultural Research*. 22: 9-21.