

INFLUENCE OF SIRE GROWTH EBV ON EARLY LAMB GROWTH

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As part of the meat program of the Australian Sheep Industry CRC a resource flock was established at the NSW Department of Primary Industries, Centre for Sheep Meat Development, Cowra. The flock generated a second group of progeny in 2004 for use in strategic studies on fat and muscle development with a particular emphasis on the interaction between growth path and sire EBV. Sires were selected using LAMBPLAN EBVs for growth and muscle development and were linked to previous genetic studies. Poll Dorset sires selected for growth (PDg), for muscling (PDm), for growth and muscling (PDgm) and control sires were used across Merino ewes. The lamb types were generated by artificially inseminating ewes using 5 sires per sire group (i.e. 5 x 4 = a total of 20 sires). Progeny were weaned at either 20 or 30 kg and within each weaning group half the lambs were maintained at their weaning weight for 8 weeks or grown on full feed. After the maintenance period lambs were realimented. Lambs were slaughtered when each weaning/growth path group (n = 4) reached 45 kg on average. Data presented by Hall *et al.* (2002) indicated that the growth potential of the sire did not impact on birth weight of the progeny, but that at weaning there was an effect and that there was a change in the relationship between a sire's weight EBV and the weight of the progeny as the progeny become older. It is of interest at what stage in early growth the impact of sire EBV is evident in the progeny.

Ewes were separated into sire groups (n = 20) for lambing (July 2004). Lambs were tagged within 15 hours of birth and their birth weight, dam identification, sex, type of birth (number of lambs in the litter), and birth date were recorded. From birth to weaning lambs were run with their mothers at pasture. The lambs were weighed at marking (20 days after birth), the early weaners at 62 days after birth and the late weaners at 95 days after birth. Liveweight at each age was analysed using a linear mixed model in ASReML. The fixed effects in the model were sex (wether, ewe), birth type (1-4), rearing type (1-3) and the covariates sire post weaning weight (PWWT) EBV, sire post weaning eye muscle depth (PEMD) EBV, birth weight and animal age. Sire and dam identification were included as random terms.

Table 1. Impact of fixed effects and covariates on lamb weight at different ages

Terms	Birth weight	20 day weight	62 day weight – early weaned	95 day weight – late weaned
Birth weight	Not applicable	**	**	**
Birth type	**	**	n.s.	*
Rearing type	Not applicable	**	**	**
Gender	**	n.s.	**	**
Age	Not applicable	**	**	**
PWWT	n.s.	n.s.	n.s.	*
PEMD	n.s.	n.s.	n.s.	*

n.s.; not significant; *P<0.05; **P<0.001

The results suggest that the growth advantage in progeny from sires selected for high PWWT EBVs will not be evident within 2 months of birth, but by 3 months will be evident. The advantage of using sires with high EBVs for PWWT will not be evidenced in young lambs and as shown elsewhere becomes more apparent as progeny increase in weight/age (Hopkins *et al.* 2006). It is of interest that the PEMD EBV has a significant effect on weight in the older lambs and because the coefficient was negative indicates that sires with high EBVs for this trait will produce slower growing progeny consistent with the results of Hegarty *et al.* (2006). It is of importance that the sire PWWT EBV does not impact on birth weight confirming previous work (e.g. Hall *et al.* 2002) as this implies that lambing difficulty due to larger lambs should not occur if sires with high PWWT EBVs are used, whereas other factors such as gender and birth type will impact significantly on birth weight.

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