

PRE-WEANING GROWTH AND BODY COMPOSITION OF LAMBS GENETICALLY DIFFERENT IN WEANING WEIGHT

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Selection of sheep for increased weight at weaning results in faster growing, larger mature size animals. The Trangie Merino selection experiments (Pattie and Williams 1966), where selection has been for (W+) and against (W-) weight at weaning, have resulted in divergence in weaning weight of 15-20% above and below that of sheep from a randomly bred (R) flock. These sheep are a useful model to determine if response to selection has resulted from increased growth per unit feed intake, or by other means.

Thirty two ram lambs (11 W+, 11 R and 10 W-) were removed from their mothers between one and two days of age and fed reconstituted milk powder to appetite. Intake was recorded daily and liveweight recorded twice weekly. Body composition was estimated with tritiated water (Searle 1970) at 28 d intervals. Nitrogen balance was determined at approximately 40 d and between 70 and 80 d of age.

W+ lambs gained more liveweight and drank more milk than R and W- lambs, although the conversion of feed to liveweight gain was similar in each genotype. Nitrogen (N) retention was greater in W+ lambs, reflecting intake, for there was no significant difference between the genotypes in N retention per unit N intake. Protein gain in fleece free body was significantly greater in W+ lambs, but fat gain was similar. W+ lambs retained a greater proportion of nitrogen balance in the fleece free bodyweight (described in table as N retained in body), and tended (P=0.1) to grow less wool per unit liveweight than the other genotypes (Wool/Liveweight; kg greasy fleece / kg fleece free liveweight at eight months of age). Results are shown in the table.

* = significant difference between genotypes (P<0.05).

	Genotype				sem
	W+	R	W-		
Liveweight gain (g/d)	240	171	132	15	*
Intake (g dry matter/d)	340	263	192	20	*
N retention (g/d)	6.6	5.7	5.0	0.63	*
Protein gain (g/d)	32	21	16	2.8	*
Fat gain (g/d)	17	23	17	7.5	NS
N retained in body	0.82	0.62	0.50	0.082	*
Wool/Liveweight	0.05	0.07	0.06	0.003	-

The superior weight gain of W+ lambs was partly due to increased milk intake, and partly to increased protein deposition in the fleece free body. Increased body protein deposition was associated with reduced wool growth efficiency of W+ lambs.

PATTIE, W.A. and WILLIAMS, A.J. (1966). Proc. A.S.A.P. VI: 305.
SEARLE, T.W. (1970). J. Agric. Sci. (Camb) 74: 357.

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