

GROWTH PATH AFFECTS THE CARCASE COMPOSITION OF LAMBS

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The physiological processes regulating lamb growth make it difficult to produce heavy lean lambs (carcase weight > 22 kg; fat score < 4) in current farming systems (McLaughlin 1992). Nutritional strategies, such as periods of restricted feeding, modify body composition in lambs (Hodge and Star 1984) and may have application in producing heavy lean lambs. As part of an experiment evaluating nutritional strategies to promote lean growth, studies were made of the effect of a restricted feeding period and realimentation on the carcase composition of lambs.

Wether lambs from a commercial property (n = 128; Border Leicester x Merino ewes, Poll Dorset sires) approximately 4 months of age with a mean liveweight (LW) of 28.1 kg were individually penned and fed according to a 2x4x4 factorial design. The 3 factors were as follows: (1) Intake level in the initial 18 week feeding period (maintenance at 35 kg LW (LO) or *ad-libitum* to 50 kg liveweight (HI). (2) Total level of intake (including rumen escape protein supplement; REP) in the final 12-15 week feeding period (0,500, 850, 1200 g as fed/day: 10 MJ ME and 123 g crude protein in dry matter of basal diet). (3) Level of REP supplementation in the final 12-15 week feeding period (0, 30, 60, 90 g formaldehyde-treated casein/day). A 4 week dietary adjustment period was allowed between initial and final feeding periods. Groups of lambs were slaughtered throughout the trial with 96 lambs being slaughtered at the conclusion of the experiment. All carcasses and samples of non-carcase tissues were weighed and kept for protein, fat and ash analysis (Table 1).

Table 1. Carcase weight and percentage of fat, protein and ash in the carcase of lambs fed to maintenance (LO) or fed *ad-libitum* (HI) for 18 weeks then finished on a range of intakes and levels of supplementary rumen escape protein (REP) before slaughter (REP effects not included)

Attribute	Initial intake group	Final intake (g/day as fed)				sd
		500	850	1200	1500	
Chilled carcase (kg)	LO	16.7	20.5	22.3	24.9	4.4
	HI	22.6	25.9	28.2	30.3	
Carcase fat (%)	LO	22.7	27.7	27.2	28.3	5.9
	HI	32.1	33.8	36.3	37.4	
Carcase protein (%)	LO	16.4	15.7	15.4	14.9	1.6
	HI	14.6	14.2	13.4	13.3	
Carcase ash (%)	LO	4.56	3.93	4.39	4.41	0.68
	HI	4.31	4.24	3.83	3.57	

REP did not significantly affect the percentage of protein, fat or ash in the carcase at the conclusion of the experiment. Intake level in both the initial and final periods significantly affected the percentage of fat (P < 0.001) and protein (P < 0.01) in the carcase. At the same carcase weight, carcasses from LO lambs contained less fat (P < 0.01) and more protein (P < 0.1) than did those of HI lambs, indicating the potential for restricted feeding and realimentation to reduce fatness in lambs.

HODGE, R.W. and STAR, M. (1984). *Aust. J. Exp. Agric. Anim. Husb.* 24: 150-5.
McLAUGHLIN, J.W. (1992). *Proc. Aust. Soc. Anim. Prod.* 19: 173-5.