

**GRAIN FEEDING FOR INCREASING VALUE OF CAST-FOR-AGE MERINO SHEEP**

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When culled from a wool production system, Merino sheep will often have very low body weights and little meat value. Intensive grain feeding of older sheep prior to sale could be used to improve carcass weight and fatness to add value to mutton carcasses. Grains differ in their ability to stimulate the rate of lipogenesis according to predicted level of starch digestion in the small intestine (Pethick *et al.* 1995), and carcass composition could be manipulated through varying type of grain and processing. The magnitude of weight gain needed for a meaningful change in carcass value and the importance of grain type and processing remain to be determined. The aim of this trial was to examine the effect of type of grain and processing on growth response, feed conversion ratio and carcass characteristics of cast-for-age Merino sheep.

Ninety cast-for-age Merino wethers 7 years of age and weighing 32.2 kg ( $\pm$  s.d. 3.4), were stratified by liveweight, and randomly allocated to 1 of 3 diets: 1) *ad libitum* wheat and oaten chaff (Control), 2) *ad libitum* whole sorghum grain plus chaff (400 g/animal/day), or 3) *ad libitum* steamed flaked sorghum plus chaff (400 g/animal/day). A commercial mineral and vitamin premix containing urea and ammonium sulphate (9:1 by weight) was added to the feed at the rate of 10 g/kg, and virginiamycin (20 mg/animal/day) was also included. Animals were individually penned on 8 September 2003, and gradually introduced to the high grain diets over 4 weeks. Grain and chaff were fed in the same feeder at around 0900 h. Feed intake was calculated daily. Liveweight was recorded weekly prior to feeding, and condition score was assessed every 14 days for 12 weeks. Final weight was recorded and all sheep were slaughtered. Average daily gain, DM intake, feed/gain ratio, and carcass weight and dressing percentage determined. Eating quality (overall liking scores) was assessed on the *m. longissimus dorsi* from 10 carcasses from each of the control and flaked sorghum groups, and commercially purchased lamb samples, using the Sheep Meat Eating Quality consumer testing protocol with 40 untrained consumers. Three animals in each of the grain-fed groups were removed from the trial because of abscess formation, pink eye or low intake.

**Table 1. Effect of grain feeding and grain processing on sheep performance and carcass characteristics.**

	Control	Whole sorghum	Steamed flaked sorghum	SE
Initial liveweight (kg)	32.2 <sup>a</sup>	32.3 <sup>a</sup>	31.9 <sup>a</sup>	0.65
Final liveweight (kg)	39.4 <sup>b</sup>	44.5 <sup>a</sup>	45.0 <sup>a</sup>	0.78
Initial condition score (1-5)	1.9 <sup>a</sup>	1.8 <sup>a</sup>	1.8 <sup>a</sup>	0.10
Final condition score	3.0 <sup>c</sup>	3.8 <sup>b</sup>	4.0 <sup>a</sup>	0.09
Average daily gain (kg/animal) <sup>A</sup>	0.10 <sup>b</sup>	0.19 <sup>a</sup>	0.21 <sup>a</sup>	0.012
Dry matter intake (kg/ animal/day) <sup>A</sup>	1.25 <sup>a</sup>	1.26 <sup>a</sup>	1.18 <sup>a</sup>	0.050
Feed / gain (kg DM/ kg LWG)	13.7 <sup>a</sup>	7.8 <sup>b</sup>	6.3 <sup>b</sup>	0.72
Hot carcass weight (kg)	14.1 <sup>b</sup>	17.6 <sup>a</sup>	18.3 <sup>a</sup>	0.34
Dressing (%)	35.8 <sup>b</sup>	39.3 <sup>a</sup>	40.7 <sup>a</sup>	0.47
Overall Liking taste panel score	54.1 <sup>a</sup>	-	50.0 <sup>a</sup>	3.61

<sup>A</sup> High grain period. Values with the same superscript are not significantly different at P<0.05

Feeding high grain diets significantly increased weight gain, condition score, and carcass weight (Table 1). It is interesting that although growth rates and feed conversion were marginally improved by steam flaking, performance was not significantly better than for sheep fed whole sorghum grain, with the exception of an increased condition score. Given the cost of the steam flaking process, these results have implications for feeding sorghum to mature sheep. There was no indication that grain feeding improved eating quality at the current slaughter weights. Further experimentation involving feeding for longer periods to achieve higher carcass weights is needed.

PETHICK, D.W., ROWE, J.B. and MCINTYRE, B.L. (1995). 'Feeding systems for increasing marbling in cattle.' (Meat Research Corporation, Final Report DAW.053, Murdoch University, Perth.)

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