

## EXTREME EWES: UNDERSTANDING THE WOOL/MEAT TRADE-OFF

P.G. REFSHAUGE<sup>AC</sup>, S. HATCHER<sup>B</sup>, G. HINCH<sup>C</sup>, D.L.HOPKINS<sup>A</sup> and S. NIELSEN<sup>B</sup>

<sup>A</sup>NSW Department of Primary Industries, Centre for Sheep Meat Development, Cowra N.S.W 2794

<sup>B</sup>NSW Department of Primary Industries, Orange Agricultural Institute, Forest Road, Orange N.S.W 2800

<sup>C</sup>University of New England, School of Rural Science and Agriculture, Armidale N.S.W. 2351

Historically the Merino has been selected primarily for wool growth and quality, but selection has also been associated with changes elsewhere in the 'whole ewe' (Hatcher *et al.* 2004). For example, there is a negative genetic correlation between clean fleece weight (CFW) and body fat (Fogarty *et al.* 2003). The relative importance of this relationship may be more apparent during times of nutritional stress, such as lactation and drought, which questions the fitness of the Merino (Adams *et al.* 2006). This paper reports on preliminary data from a 2 year field study relating the consequences of CFW on fatness through a full reproduction cycle.

Based on hogget performance 314 adult medium wool Haddon Rig Merino ewes were selected for high (H) or low (L) CFW and high (H) or low (L) bodyweight (BWT), creating 4 representative phenotypes HH, HL, LH and LL. The ewes were randomly allocated into 2 replicated stocking rate treatments, at 10 (High nut) and 15-30 dse/ha (Low nut) to impose feed intake restrictions based on pasture estimates. Fortnightly body weights were recorded in conjunction with monthly fat scores (GR site). The 5 week joining was completed by mid-April for an August lambing and November weaning. Mid-pregnancy (Day 90) ultrasound scanning confirmed pregnancy status. Stocking rate treatments persisted from the end of joining to Day 140 of gestation, and again from marking to joining. Linear mixed models using restricted maximum likelihood (REML) were used to analyse these data using ASReml. Bodyweight was included as a covariate among the main effects of pregnancy status, time, stocking rate, and phenotype.

Full data analysis requires improved sophistication. BWT fitted as a covariate requires a further fleece-free adjustment. Nevertheless, these results suggest that fat score is affected negatively among extreme phenotypes when intake is restricted in the field using higher stocking rates (Figure 1). At higher stocking rates, twin-scanned HH ewes are leaner than HL and LL ewes.

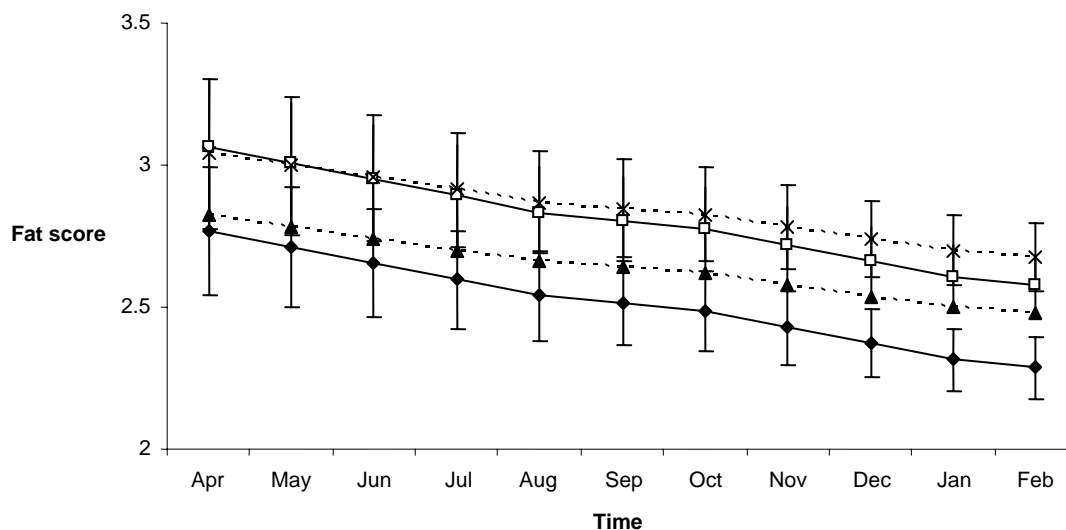


Figure 1. Fat score among low nutrition ewes scanned as twin-bearing, ♦ HH, □ HL, ▲ LH, × LL

The differences are subtle and yet may impact on ewe fecundity and fertility, which will be quantified in 2006. It is note worthy that sheep selected for high productivity deplete fat reserves when stocking rate begins to limit potential feed intake. The findings imply precision management may lift the productivity of such sheep.

ADAMS, N.R., BRIEGEL, J.R., GREEFF, J.C. and BERMINGHAM, E.N. (2006). *Aust. J. Agric. Res.* **57**: 27-32.

FOGARTY, N.M., SAFARI, E., TAYLOR, P.J and MURRAY, W. (2003). *Aust. J. Agric. Res.* **54**: 715-22.

HATCHER, S., ATKINS, K.D. and THORBERRY, K.J. (2004). *Anim. Prod. Aust.* **25**: 81-4.

Email: gordon.refshaug@dpi.nsw.gov.au

This work is funded by the Australian Sheep Industry CRC