LIFETIME WOOL. 13. CALIBRATION OF CONDITION SCORING BETWEEN OPERATORS

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Accurate and consistent assessment of the condition score (CS; Russel *et al.* 1969) of flocks of Merino ewes is a critical activity in Lifetime Wool, a national project to formulate ewe management guidelines that optimise ewe and progeny performance and systems profitability (Thompson and Oldham 2004). On 4 occasions, a subset of 8 operators involved in the project estimated the CS of a number of sheep (n = 28-50, with 3 records/sheep). The aim was to correct for differences between operators in condition scoring across the project.

Table 1. Details on condition score calibration exercises in the Lifetime Wool project.

	Exercise 1	Exercise 2	Exercise 3	Exercise 4
Location:	Kendenup (WA)	Ballarat (Vic)	Kendenup (WA)	Coleraine (Vic)
Date:	January 2003	June 2003	July 2003	August 2003
Number of sheep:	50	30	28	28
Number of operators	5	4	7	6

Actual CS for each sheep was estimated. A simple average of all condition scores recorded for each sheep was not appropriate because each exercise was attended by different operators and differences in measurement of CS between Western Australia (WA) and Victoria (VIC) were expected. Instead, the CS for each sheep was estimated from the 5 operators who attended exercises in both States in a way that gave equal weighting to each state:

$$CS_{Act} = [CS_{Operator\ 1,WA} + CS_{Operator\ 4,WA} + CS_{Operator\ 7,WA}]/6 + [CS_{Operator\ 3,VIC} + CS_{Operator\ 5,VIC}]/4$$

Some of these operators were absent from the first 2 exercises, so their condition scores were estimated from relationships obtained by multiple regressions from the last 2 exercises where all 5 operators were present. Having obtained comparable estimates of actual CS for the sheep in all exercises, a linear mixed model with the following fixed terms was fitted to operator condition scores:

$$Operator + Operator.CS_{Act}$$

Residual variance was allowed to differ for each operator enabling the estimation of a 95% confidence interval about the mean condition score for each operator (Figure 1).
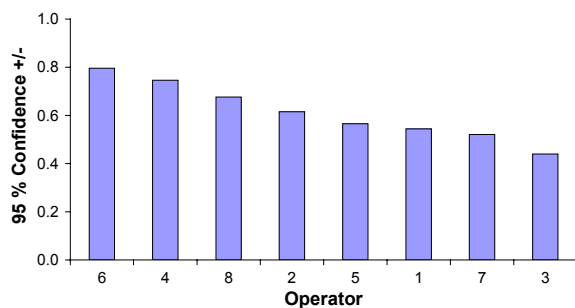

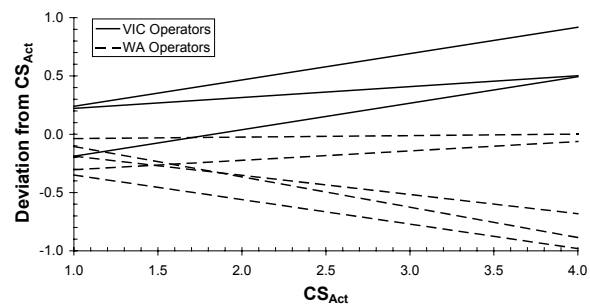**Figure 1. Ninety five% confidence intervals (±).**

Figure 2. Operator condition score corrections.

All terms in the model were significant (P<0.001), indicating differences between operators, and that these differences changed as the level of CS varied. Correction equations obtained from the model for each operator are illustrated in Figure 2. The distance between each line and the horizontal axis can be interpreted, as the estimated correction required at different CS to bring the operators in line with the actual CS. The distance between 2 lines can be interpreted as the correction required to bring the CS of 2 operators in line with each other.

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