THE ACCURACY OF LIVE-ANIMAL ESTIMATES TO PREDICT CARCASS CHARACTERS AND A COMPARISON OF TWO CARCASS FAT MEASURING TECHNIQUES

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Beef breeders need a thorough knowledge of the carcass weight and fatness requirements of the markets they supply, to assist in the definition of their breeding objectives. Producers must also be able to determine when their cattle are suitable for slaughter. Live-animal estimates of carcass weight and fatness can be incorporated into a selection program, but they must be easily and accurately determined. Easy and accurate methods of measuring carcass fat thickness must also be devised if beef producers are to be paid, and the industry is to trade, on the basis of measured fat thickness in addition to carcass weight. The results of a trial examining the accuracy of estimating carcass weight and of assessing the condition score on the live animal, together with a comparison of two techniques for measuring carcass fat, are presented.

Carcass measurements were taken on 476 young cattle over two days in a commercial abattoir. The cattle were mainly Hereford or Hereford cross, with approximately equal numbers of steers and heifers. The means for actual hot carcass weight (CW) and cold fat (CF) thickness (at the 12/13 rib on the unquartered carcass) were 167.2 ± 1.8 kg and 2.9 ± 0.1 mm, respectively. Five Assessors, three of whom had considerable experience in live-animal and carcass assessment and two with much less experience, estimated the carcass weight and used the Livestock Marketing Reporting Service categories (1 = very lean, to 5 = very fat; Forsythe, 1977) to condition score (CS) these cattle. Live weights were not taken at the time of assessment. The number of estimates ranged from 108 to 258 for different Assessors.

Multiple regression equations were fitted to examine the effects of day, sequence number, breed, sex, age, CW, CW^2, CF, CF^2 and a number of interactions on Assessor's estimates of CW. Day, sequence number, age, CW, CW^2 and several interactions had a significant ($P < 0.05$) effect on Assessor's estimates of CW, although not all of these effects were significant for all Assessors. Some Assessors were more accurate than others in estimating CW. One Assessor tended to consistently *underestimate* CW, whereas the others tended to *overestimate* CW, over the range of CW in this trial. The CW of older cattle and those slaughtered later in the trial, were consistently *overestimated* by some Assessors.

The effect of the same factors as above, on the CS given by each Assessor, was also examined. Day, sequence number, breed, sex, age, CW, CW^2 CF and several interactions had a significant ($P < 0.05$) effect on CS, although not all of these effects were significant for all Assessors. Some Assessors gave a higher CS to younger cattle, steers, Herefords and those slaughtered on the second day of the trial. Phenotypic correlations between CF and Assessor's estimates of CS ranged from 0.20 to 0.52.

Whilst visual estimates may be useful for marketing decisions, accurate measures of liveweight and condition are essential if beef breeders are to

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include these characters in selection programs. The results of this trial suggest that such measures are not possible using these techniques. They also highlight the need for thorough training and frequent monitoring of an Assessor's accuracy.

Two carcass fat measuring techniques were also compared in this trial. Hot fat thickness was measured on the unquartered carcass at the 12/13 rib, using an electrical Conductivity Probe (CP) (255 carcasses) and a simple 'Cut and Measure' technique (CM) (303 carcasses). The two techniques were similar in their precision of predicting CF; however, the CP tended to *overestimate* and the CM technique tended to *underestimate* CF on fatter carcasses. The results suggest that measuring hot fat thickness by the simple 'Cut and Measure" technique could be employed at least until the technical problems with the Conductivity Probe have been overcome.

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REFERENCE:

FORSYTHE, G.A. (1977) Improvements in livestock market price reporting. *Agric. Gaz. N.S.W.* 88(4): 19-21

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