

Prediction model of a joint analysis of beef growth and carcass quality traits

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ABSTRACT. A joint growth-carcass analysis was conducted to develop equations for predicting carcass quality traits associated with variation in growth path of crossbred cattle. During a four-year period (1994-1997) of the Australian “Southern Crossbreeding Project”, mature Hereford cows ($r = 581$) were mated to 97 sires of Jersey, Wagyu, Angus, Hereford, South Devon, Limousin, and Belgian Blue breeds, resulting in 1141 calves. Data included body weight measurements of steers and heifers from birth until slaughter and four carcass quality traits: hot standard carcass weight, rump fat depth, rib eye muscle area, and intramuscular fat content. The model provides nine outputs: median and mean of carcass quality traits, predicted means, and lower and upper confidence intervals, as well as predicted intervals of carcass quality traits (95%) and economic values for domestic market and export markets. Input to the model consists of sex, sire breeds, age (in days)-weight (kg) pairs and slaughter age (500 days for heifer and 700 days for steers). The prediction model is able to accommodate different sexes across seven sire breeds and various management groups at any slaughter age. Its strength lies in its simplicity and flexibility, desirable to accommodate producers with different management schemes. In general, fat depth and intramuscular fat were found to be more affected

by differences in growth rate than hot carcass weight and eye muscle area. Also, export market value was more sensitive to growth rate modifications than domestic market value. This model provides a tool by which the producer can estimate the impact of management decisions.

Key words: Crossbred cattle; Prediction model; Growth; Carcass quality traits