Relationships among body weight, condition scores, back fat, and rump fat in mature beef cows

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Abstract

Body condition scoring is a useful and effective management tool in modern beef cow production. The purpose of this study was to further define potential relationship(s) among body condition score (CS) and weight (BW) and back (BF) and rump (RF) fat thickness in an attempt to develop an objective mechanism for establishing CS in mature beef cows. A total of 128 observations were made on 64 different beef cows ranging in age from 2-12 years of age. Cows were initially split into 3 different groups (GROUP; n = 20, 22 and 22, respectively). On each of two days (DAY; in the morning of day 1 and in the afternoon of day 2), cows in a group were weighed, condition scored and measured ultrasonographically for BF and RF. Subsequently, cows within a group and day were randomly split into two subgroups and a separate ultrasonographer and image interpreter (UI) used for each group. For the purposes to this analysis data included only those measurements recorded on mature cows aged 4 years and older (78 observations from 39 cows). Upon preliminary review, three measurements (1 BF and 1 set of RF measurements) were deemed to be outliers and subsequently removed from further analysis. DAY and UI did not significantly affect overall cow measurements. GROUP significantly affected (P < .05) average cow age, CS, BF and RF, but not BW. When data were averaged within individual animal, there were positive correlations (P < .03) among all combinations of CS, BW, BF and RF. With respect to linear correlations with CS, BF (.72) had a higher correlation than RF (.59) or BW (.48). Stepwise regression including linear and quadratic terms for BW, BF and RF suggest that the most significant predictor of CS was BF (R^2 = .51; SD = .60). Elements of RF and BW did not significantly (P > .15) contribute to this relationship. Body condition scores can be assigned objectively in mature beef cows utilizing ultrasonographically-derived backfat measurements. Further refinement of this technique may prove useful as a training tool for standardizing an objective body condition scoring system for beef cattle.