Body Condition Score and Rump Fat Depth of Female Beef Cattle in the Tropics

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Body condition scoring of beef cattle is a visual summation of overall body tissue reserves and differs from fat scoring which involves both palpation and visual assessment to estimate subcutaneous fat. A 6-point fat scoring system developed by AUS-MEAT in Australia has been used commercially for many years (Anon 1994). Gaden (2005) recently confirmed a trend for consolidation of body scoring systems into a 5-point scale. Relationships between body condition score and subcutaneous fat depth have not been reported for female cattle.

Female Brahman and tropical composite cattle weaned from 2000 to 2003 inclusive (n=2,181) were allocated after weaning to one of 5 research stations: Belmont and Brigalow in east central Qld, Brian Pastures in SE Qld, Swan's Lagoon in NE Qld and Toorak in NW Qld. All sites experience a seasonally-dry tropical climate. First calving for each group was at 3 years of age. After allocation and between 2000 and 2007, the cattle were visually assessed every 4 to 8 weeks for body condition score (BCS) on a 5-point scale (poor, backward, moderate, forward and fat) in 1/3rd score increments. At the same time, subcutaneous fat depth (mm) at the P8 site which is adjacent to the sacral crest (Johnson and Vidyadaran 1981) was measured using linear array real-time ultrasound. Fat depth was analysed as a function of breed, site and condition score using non-linear regression analysis. Each age group (0-1 to 6-7 years) was analysed separately. As measurement dates across stations did not match, the data were treated as independent for the analyses.

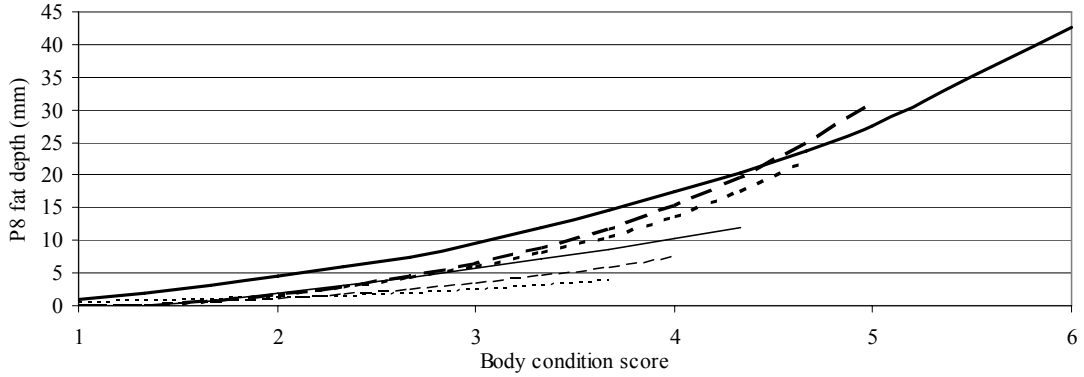

Figure 1. Relationship between P8 fat depth and body condition score for female beef cattle in the tropics
Cattle aged 0-1 years (2,503 assessments), 1-2 years (3,686 assessments), 2-3 years (4,700 assessments), 3-4 years (4,982 assessments) and 4-7 years (10,676 assessments) and AUS-MEAT fat score (Anon 1994) are represented as light dots, light dashes, a light line, heavy dots, heavy dashes, and a heavy line, respectively.

Breed and site had minimal impact on the relationship between P8 fat depth and condition score. The exponential relationships between fat depth and condition score for each age group up to 4 years of age are shown in Figure 1. As there was negligible difference in the relationships for females >3 years, a combined relationship was fitted for 4-7 years. Average fat depth was generally less than the AUS-MEAT standard, though was similar in fat mature cows. Score transformation was not used in analyses so as to derive accurate variation. Variation in P8 fat depth increased with age from a standard deviation (sd) of prediction of 0.9 mm in cattle aged 0-1 years to 3.0 mm in mature cows. Variation also increased with condition scores: at BCS <3.5, sd was approximately BCS - 0.6 mm; at higher BCS, sd was approximately BCS + 1.1 mm.

Although average trends for P8 fat depth by BCS relationships were demonstrated, the research also showed there is too much variability to use these relationships for reliable prediction of P8 fat depth from BCS in individual female Brahman and tropical composite beef cattle.

Anon (1994). "National Livestock Language Cattle: Bovine" (AUS-MEAT, Australia).
Gaden, B (2005). Final Report, Project LIVE.120, Meat and Livestock Australia, North Sydney.
Johnson, E. R. and Vidyadaran, M. K. (1981). *Aust. J. Agric. Res*. **32**:999.

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