

Genetic parameters for growth and carcass traits of Brahman steers^{1,2}

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Spring-born purebred Brahman bull calves (n = 467) with known pedigrees, sired by 68 bulls in 17 private herds in Louisiana, were purchased at weaning from 1996 through 2000 to study variation in growth, carcass, and tenderness traits. After purchase, calves were processed for stocker grazing on ryegrass, fed in a south Texas feedlot, and processed in a commercial facility. Carcass data were recorded 24 hours postmortem. Muscle samples and primal ribs were taken to measure calpastatin activity and shear force. An animal model was used to estimate heritability, genetic correlations, and sire EPD. Relatively high heritability estimates were found for birth weight at slaughter (0.59 ± 0.16), hot carcass weight (0.57 ± 0.15), ribeye area (0.50 ± 0.16), yield grade (0.46 ± 0.17), calpastatin enzyme activity (0.45 ± 0.17), and carcass quality grade (0.42 ± 0.16); moderate heritability estimates were found for hump height (0.38 ± 0.16), marbling score (0.37 ± 0.16), 12th-13th rib fat thickness (0.36 ± 0.17), feedlot ADG (0.33 ± 0.14), 7-day shear force (0.29 ± 0.14), and 14-day shear force (0.20 ± 0.11); relatively low heritability estimates were found for skeletal maturity (0.10 ± 0.10), lean maturity (0.00 ± 0.07), and percent KPH (0.00 ± 0.07). Most genetic correlations were between -0.50 and $+0.50$. Other genetic correlations were 0.74 ± 0.27 between calpastatin activity and 7-day shear force, 0.72 ± 0.25 between calpastatin activity and 14-day shear force, 0.90 ± 0.30 between yield grade and 7-day shear force, and -0.82 ± 0.27 between rib fat thickness and 7-day shear force. Heritability estimates and genetic correlations for most traits were similar to estimates reported in the literature. Sire EPD ranges for carcass traits approached those reported for sires in other breeds. The magnitude of heritability estimates suggests that improvement in carcass yield, carcass quality, and consumer acceptance traits can be made within the Brahman population.

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