

Effect of breed composition on phenotypic residual feed intake and growth in Angus, Brahman, and Angus x Brahman crossbred cattle

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Abstract :

The influence of additive and nonadditive genetic effects and temperament on 4 postweaning feed intake and growth traits was evaluated in a group of 581 bull, heifer, and steer calves born in 3 Florida herds in 2006 and 2007. Calves had breed compositions ranging from 100% Angus (A) to 100% Brahman (B). They were randomly allocated to 24 pens each year by herd (Brooksville, Gainesville, Marianna, FL), sire group (A, 3/4 A 1/4 B, Brangus, 1/2 A 1/2 B, 1/4 A 3/4 B, and B), and sex (bull, heifer, and steer) in a GrowSafe automated feeding facility at Marianna. Calves were fed a concentrate diet during the 21-d adjustment and the 70-d trial periods. Individual feed intakes were recorded daily, and BW, chute scores, and exit velocities were recorded every 2 wk. Traits were phenotypic daily residual feed intake (RFI), mean daily feed intake (DFI), mean daily feed conversion ratio (FCR), and postweaning BW gain. Phenotypic RFI was computed as the difference between actual and expected feed intakes. Calves were assigned to 3 RFI groups: high (RFI greater than 0.9 kg of DM/d), low (RFI less than -0.9 kg of DM/d), and medium (RFI between mean \pm 0.9 kg of DM/d; SD = 1.8 kg of DM/d). The mixed model included the fixed effects of contemporary group (herd-year-pen), RFI group (except when trait was RFI), age of dam, sex of calf, age of calf, B fraction of calf, heterozygosity of calf, mean chute score, and mean exit velocity. Brahman fraction and heterozygosity of calf were nested within sex of calf for RFI and within RFI group for DFI, FCR, and postweaning BW gain. Random effects were sire and residual. Feed efficiency tended to improve (decreased RFI) as the B fraction increased. However, calves required larger amounts of feed per kilogram of BW gain (larger FCR) as the B fraction increased. Postweaning BW gain tended to decrease as the B fraction increased. Temperament traits were unimportant for all traits except exit velocity for DFI, suggesting perhaps a lack of variation for temperament traits in this herd, or that calves became accustomed to the level of handling pre- and postweaning, thus decreasing behavioral differences among them.

Key Word :

calf, feed intake, multibreed, temperament

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