Effect of breed composition, temperament, and ELISA scores for paratuberculosis on phenotypic residual feed intake and growth in an Angus-Brahman multibreed herd

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SUMMARY

The effects of additive and nonadditive genetic effects, temperament, and paratuberculosis on residual feed intake (RFI) and growth traits were evaluated in a group of 215 bull, heifer, and non-pregnant cows of various Angus x Brahman (AxB) crossbreeds. Cows were born in Gainesville, FL (2006 and 2007), and moved to a GrowSafe automated feeding facility in Marianna, FL. After weaning, animals were randomly allocated to pens by sire group (1 = 2 A x B; 3 = 3 B; 5 = 5 A x B; and 7 = 7 B), and randomly assigned to a group of 20 cows each. Daily feed intake, weighings, chute score, and exit velocities were measured from week 1 onward. Phenotypic RFI was computed as the difference between the actual feed intake and the expected feed intake (Koch et al., 2006). High residual feed intake (RFI) and growth traits were associated with higher Brahman fraction, and to decrease with higher Brahman fraction. Increased average daily gain was associated with Brahman fraction across breeds. Residual feed intake increased with Brahman fraction and heterozygosity. Phenotypic RFI was affected by ELISA scores for paratuberculosis in dams. Residual feed intake (RFI), daily feed intake (DFI), and postweaning gain (PWG) traits were analyzed using mixed models. Fixed effects were contemporary group (mean year), breed group of sire (A or B), breed group of dam (A or B), group of sire, and group of dam. Random effects were sire and residual. Sire and dam ELISA scores for paratuberculosis did not affect postweaning feed efficiency or growth.

INTRODUCTION

Breed composition, temperament, and subclinical paratuberculosis in dams are factors that may have an effect on growth and feed efficiency in beef cattle. To determine the influence of breed composition, temperament, and paratuberculosis on feed intake and growth traits in beef cattle, a study was designed to evaluate the effects of genetic and environmental factors on residual feed intake, daily feed intake, and postweaning gain. The objective of this study was to assess the effects of genetic and environmental factors on residual feed intake (RFI), daily feed intake (DFI), and postweaning gain (PWG) in beef cattle. The study included a group of 215 bulls, heifers, and steers from the University of Florida (UF) and the Florida A&M University (FAMU). Animals were from the Angus and Brahman breeds. These breeds usually are considered to be the most efficient and least efficient, respectively, for feed conversion.

MATERIALS AND METHODS

Animals and breeding management. Animals were from the Angus-Brahman crossbreed line at the University of Florida (UF). There were 325 calves born in 2006 and 2007 (Table 1). In addition, 148 calves were born from 6 groups (Table 2). Calves were born in Gainesville, FL (2006 and 2007), and moved to a GrowSafe automated feeding facility in Marianna, FL. After weaning, animals were randomly allocated to pens by sire group (1 = 2 A x B; 3 = 3 B; 5 = 5 A x B; and 7 = 7 B), and randomly assigned to a group of 20 cows each. Daily feed intake, weighings, chute score, and exit velocities were measured from week 1 onward. Phenotypic RFI was computed as the difference between the actual feed intake and the expected feed intake (Koch et al., 2006).

RESULTS AND DISCUSSION

Breed Composition. The largest fraction of calves belonging to the low RFI group (least efficient) was from Brahman dams, whereas a large fraction of calves in the high RFI group (efficient) was from Angus dams. The negative impact of Brahman dams on RFI was significant only for heifers (-1.4 ± 0.7 kg, P < 0.02), similar trends existed for additive and dominance effects (significant only for heifers: -1.4 ± 0.7 kg, P < 0.02). The negative impact of Brahman dams on RFI was significant only for dams (1 = 2 A x B; 3 = 3 B; 5 = 5 A x B; and 7 = 7 B), and for additive and dominance effects (significant only for dams: -1.4 ± 0.7 kg, P < 0.02). The negative impact of Brahman dams on RFI was significant only for dams (1 = 2 A x B; 3 = 3 B; 5 = 5 A x B; and 7 = 7 B), and for additive and dominance effects (significant only for dams: -1.4 ± 0.7 kg, P < 0.02). The negative impact of Brahman dams on RFI was significant only for dams (1 = 2 A x B; 3 = 3 B; 5 = 5 A x B; and 7 = 7 B), and for additive and dominance effects (significant only for dams: -1.4 ± 0.7 kg, P < 0.02).

LITERATURE CITED


