Factors Associated with ELISA S/P Ratio Scores for Paratuberculosis in an Angus-Brahman Multibreed Herd of Beef Cattle

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Introduction

Dam and calf genetic and environmental factors were evaluated for their association with enzyme-linked immunosorbent assay (ELISA) s/p ratio scores for paratuberculosis in a multibreed beef cattle population.

Materials and Methods

The linear mixed model analysis used 359 ELISA s/p ratio scores from 340 dams: 52 Angus (A), 41 Brahman (B), 45 3/4 A 1/4 B, 34 1/2 A 1/4 B, 34 1/2 A 3/4 B and 34 Brangus (5/8 A 3/8 B). Dams were assumed to be unrelated. The MIXED procedure of SAS was used to perform computations.

Results

Year affected ELISA s/p ratio scores, but not age of dam, which was expected to be significant because of the chronic progressive nature of this disease. Important dam regression effects were: 1) B – A effect was positive, indicating an upward trend of ELISA scores towards 100% B dams and 2) weight change from before calving to the date of the blood sample in May, indicating a negative association between weight maintenance and ELISA scores. Relevant calf regression effects were: 1) birth weight, 2) calf gain from birth to the date of the dam blood sample and 3) calf age on the date of the dam blood sample. Dams with high ELISA s/p ratio scores produced smaller calves, gained less weight (or lost weight) during the preweaning season and produced less milk, which in turn may have caused calves to have smaller preweaning gains.

Significance

Factors identified here as associated with ELISA s/p ratio scores could help cattle producers with culling decisions related to paratuberculosis control and eradication efforts in beef cattle.