

Effect of beef breed type relative to feedlot performance, feeding behavior, and carcass characteristics

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Introduction

- Global climate change has and will continue to negatively impact cattle production in the United States and around the world.
- The world population is expected to exceed 9 billion by 2050; there is a need to improve production to conserve resources and meet production needs.
- Increasing *Bos indicus* (BI) genetics in the beef herd is one method to improve production efficiency.
- Compared to *Bos taurus* (BT) cattle, BI cattle are better able to withstand higher temperatures, are better adapted to nutritional stress, and consume less water.
- Despite these positive attributes, BI influenced cattle have a more excitable temperament, which has been linked to decreased production performance and carcass quality.
- More data is needed to better understand how the relationship between breed type and genetics contribute to production performance, feeding behavior and carcass quality.

Hypothesis

Increasing the percentage of BI genetics will improve production efficiency, but may compromise feeding behavior and carcass quality.

Objective

Examine steers of different breed types relative to feedlot performance, feeding behavior, and carcass quality.

Methods

- A total of 115 steers of two different breeds were utilized over a two year period: Angus (AN; n=83; 100% BT) and Santa Gertrudis-influenced (SG; n=32; 19% BI, 81% BT).
- The SG steers that were utilized in this study were offspring of SG bulls bred to commercial Angus dams.
- Steers were initially stratified by weight and randomly divided into one of four covered pens each equipped with two GrowSafe bunks.
- All steers were fed similar typical feedlot rations for 129 or 168 days (year 1 and year 2, respectively) and harvested commercially once industry average backfat standards were reached.
- Weight, ribeye fat thickness, marbling score, and USDA yield grade data were obtained from the plant.

Methods



- Throughout the study, individual dry matter intake and feeding behavior data were collected through the GrowSafe system and steers were weighed every 28 d throughout each trial.
- Bunk visits (BV) were classified as anytime a steer visited the bunk, whereas a feed bout (FB) was anytime the steer visited the bunk and consumed more than 10 g of feed. Both frequency and duration of FB and BV were recorded.
- Statistical analysis was done using the Mixed Procedure of SAS. Breed was a main effect in the model and pen and year were random variables. Least squares means were separated using Tukey-Kramer adjustments.

Results

Table 1. Feedlot performance of AN and SG-influenced steers¹

	Breed		SEM	P-Values
	AN	SG		
Steers (n)	83	32		
Average daily DMI (kg)	9.44	9.80	0.32	0.26
Average G:F	0.14	0.14	0.006	0.59
Overall ADG (kg)	1.38	1.38	0.08	0.98

¹AN (Angus, 100% BT); SG (Santa Gertrudis-influenced, 19% BI, 81% BT)

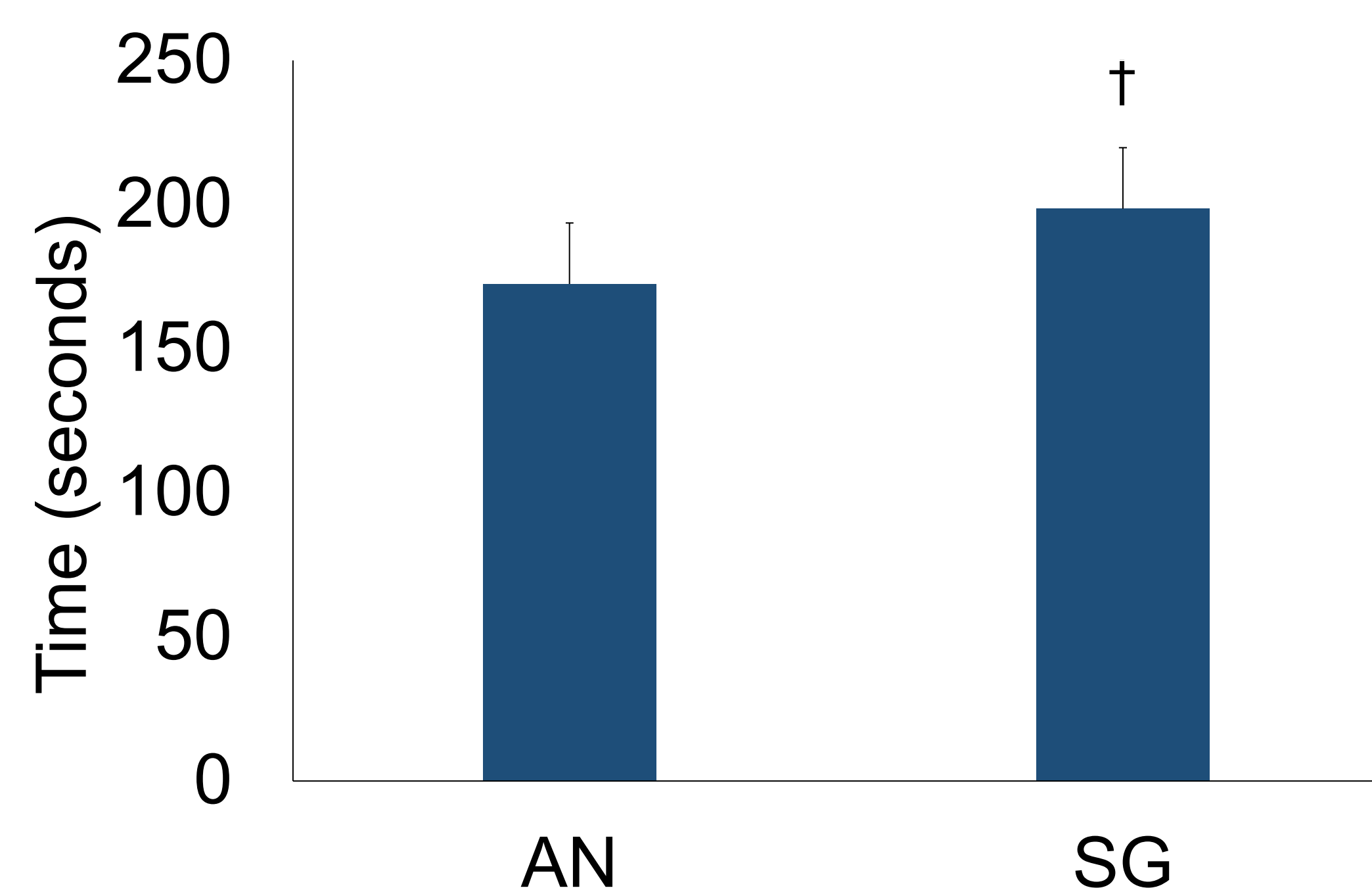


Figure 1. Average duration of each BV of AN or SG steers throughout the trial (P=0.09)

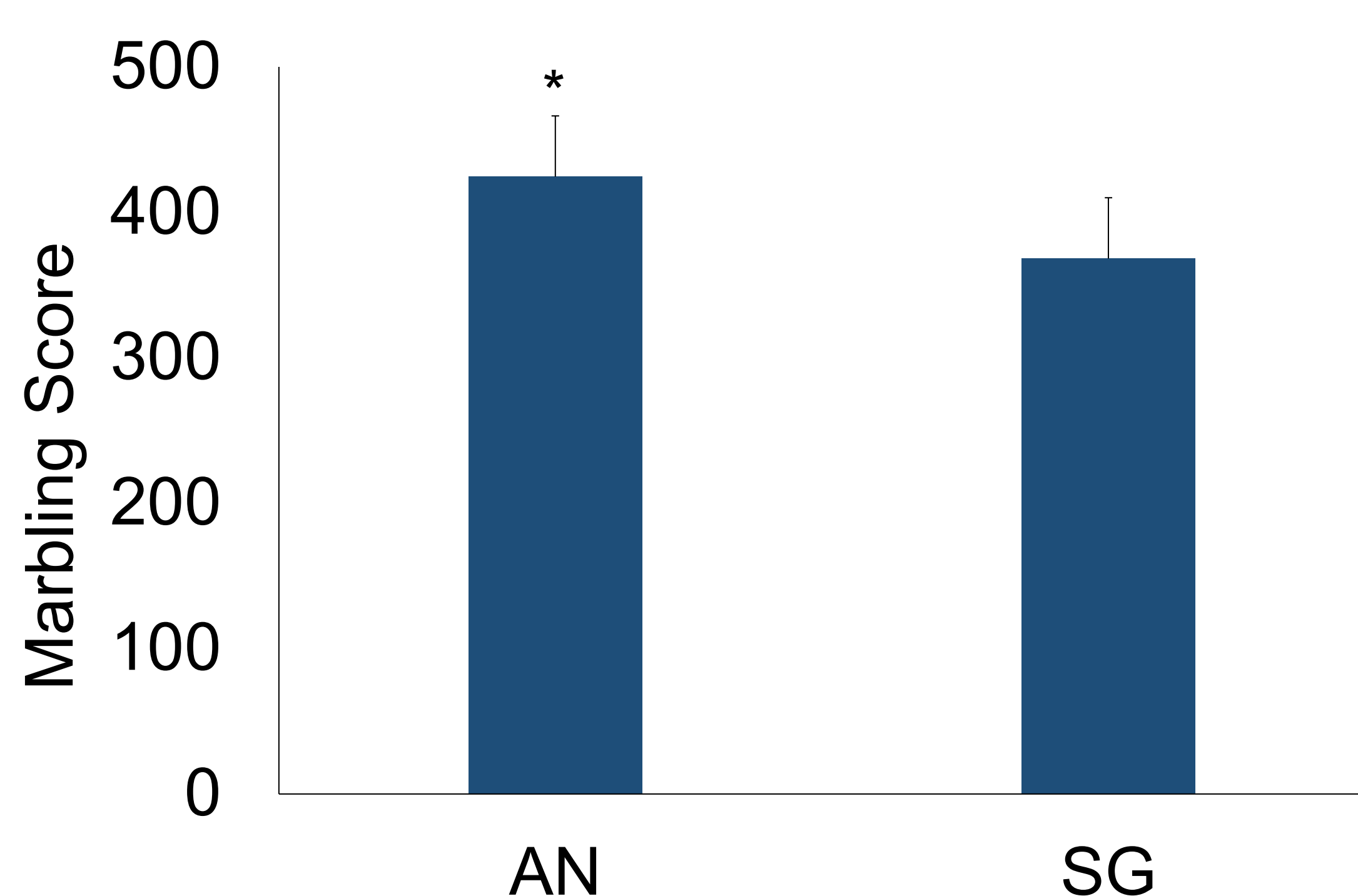


Figure 2. Relative marbling scores of AN and SG influenced steers (P=0.0019)

Results

Table 2. Carcass characteristics of AN and SG steers

	Breed		SEM	P-Value
	AN	SG		
Steers (n)	83	32		
Hot Carcass Weight (lbs)	723.07	736.68	14.04	0.34
Ribeye Fat Thickness (mm)	9.02	8.89	0.50	0.81
USDA Yield Grade	2.90	2.95	0.12	0.66

¹AN (Angus, 100% BT);

SG (Santa Gertrudis-influenced, 19% BI, 81% BT)

Conclusions

- Breed did not have an effect (P > 0.10) on feedlot performance or most carcass characteristics
- DMI, ADG, G:F, ribeye fat thickness, hot carcass weight, nor USDA yield grade differed between cattle of different breed types
- AN steers had an improved (P=0.0019) marbling score compared to SG steers
- Differences in feeding behaviors were observed such that SG steers tended (P=0.09) to spend more time with their heads down during BV
- Marbling score was increased (P = 0.0019) in AN compared to SG steers

These data demonstrate that most economically important production traits are not altered when BI genetics are introduced into a BT herd in a temperate climate

Future Studies

- Conduct genomic analysis to better understand the relationship between breed type and production performance characteristics.
- Further increase the percentage of BI genetics to determine if it will improve production efficiency and feedlot performance without compromising carcass quality characteristics.

Acknowledgements

The authors of this study would like to thank the Utah State University beef farm crew and the USU veterinary team for their assistance with the animals. This work is supported by the Agriculture & Food Research Initiative Competitive Grant no. 2018-67016-27498 from the USDA National Institute of Food and Agriculture, as well as a USU ADVS Graduate Research Opportunity Grant, a seed grant from the AG2PI, and Santa Gertrudis Breeders International.