



Relationship between Temperament and Performance Traits in Yearling Cattle

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Abstract

To examine relationships between exit velocity (EV, objective measure of temperament) and performance traits, calves were weighed 14 days prior to weaning, at weaning, 128 days post weaning, and at time of carcass measurements. Exit velocity obtained on day -14 and carcass ultrasound measurements (n = 6) obtained on day 208 and carcass harvest measurements (n = 12) obtained on day 349 were used to determine correlations between EV, performance and carcass measurements. Exit velocity showed a tendency to be negatively correlated ($P < 0.15$) with weaning weight ($r = -0.40$), but not correlated ($P > 0.05$) with average daily gain post 128 days. Exit velocity was not correlated ($P > 0.05$) with carcass ultrasound measurements or with yearling weight. Exit velocity was negatively correlated ($P = 0.04$) with carcass weight ($r = -0.65$). Although, EV was not correlated ($P < 0.05$) with carcass harvest traits of back fat and longissimus muscle area, results indicated more excitable cattle could have less back fat and smaller longissimus muscle area. Results suggest with additional numbers EV may be useful as an objective measure of temperament to sort calves into specific outcome groups that differ in carcass quality traits.

Introduction

Exit velocity is defined as the measurement of temperament based on the behavioral responses of cattle while confined in a squeeze chute. Cattle with an excitable temperament decline in their performance and carcass quality. Cattle with wilder temperaments exhibit lower BW (body weight) gain, produce tougher meat, have inhibited milk production, and yield increased amount of bruise trim due to injuries acquired during transportation (Curley et al., 2006). Cattle with a more excitable temperament also have elevated cortisol levels. If elevated cortisol levels are long-term, performance and the immune system can be negatively affected. This study was conducted to determine how temperament will affect performance in yearling cattle.

Objective

The objective of this study was to examine the value of using exit velocity as a predictor of future performance in yearling cattle.

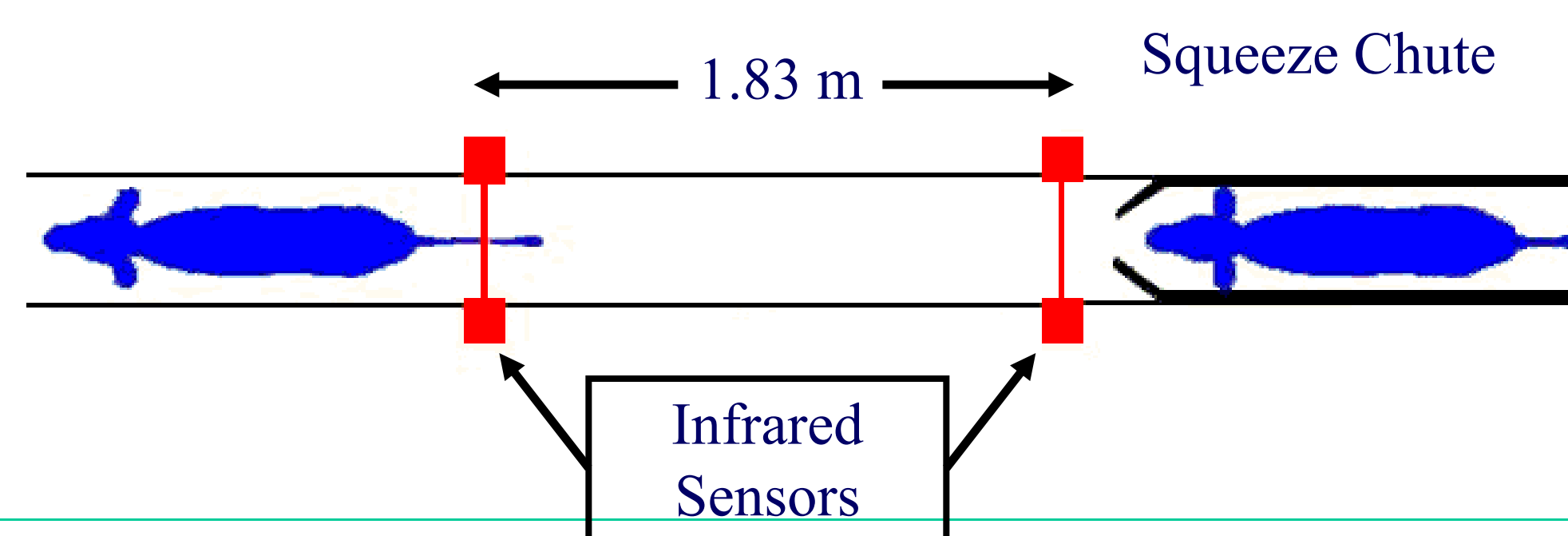


Figure 1. Diagram detailing measurement of exit velocity in cattle.

Materials and Methods

- 14 days prior to weaning, crossbred calves (n = 18) were weighed and exit velocity was measured.
- Exit velocity (m/sec) was measured as the time calves transversed a distance of 1.83 m after release from a squeeze chute (Figure 1).
- Calves remained with their dams until weaning (~205 days of age).
- At weaning, calves were removed from their dams and given access to dry hay and water for 30 days and then placed on bermuda grass pasture.
- All calves were weighed at 128 days post weaning.
- At 365 days of age, a portion of the calves (n = 12) were shipped to a feedyard in Kansas.
- The other portion of calves (n = 6) remained at SFA and were ultrasounded for carcass traits (backfat (BF), longissimus muscle area (REA) and intramuscular fat (IM)) at 208 days post weaning.
- The calves in the feedyard were fed a high-grain diet until time of harvest.
- At 349 days post weaning, calves (n = 12) were harvested at a commercial slaughter facility and carcass quality measurements of backfat, longissimus muscle area and intramuscular fat were obtained.

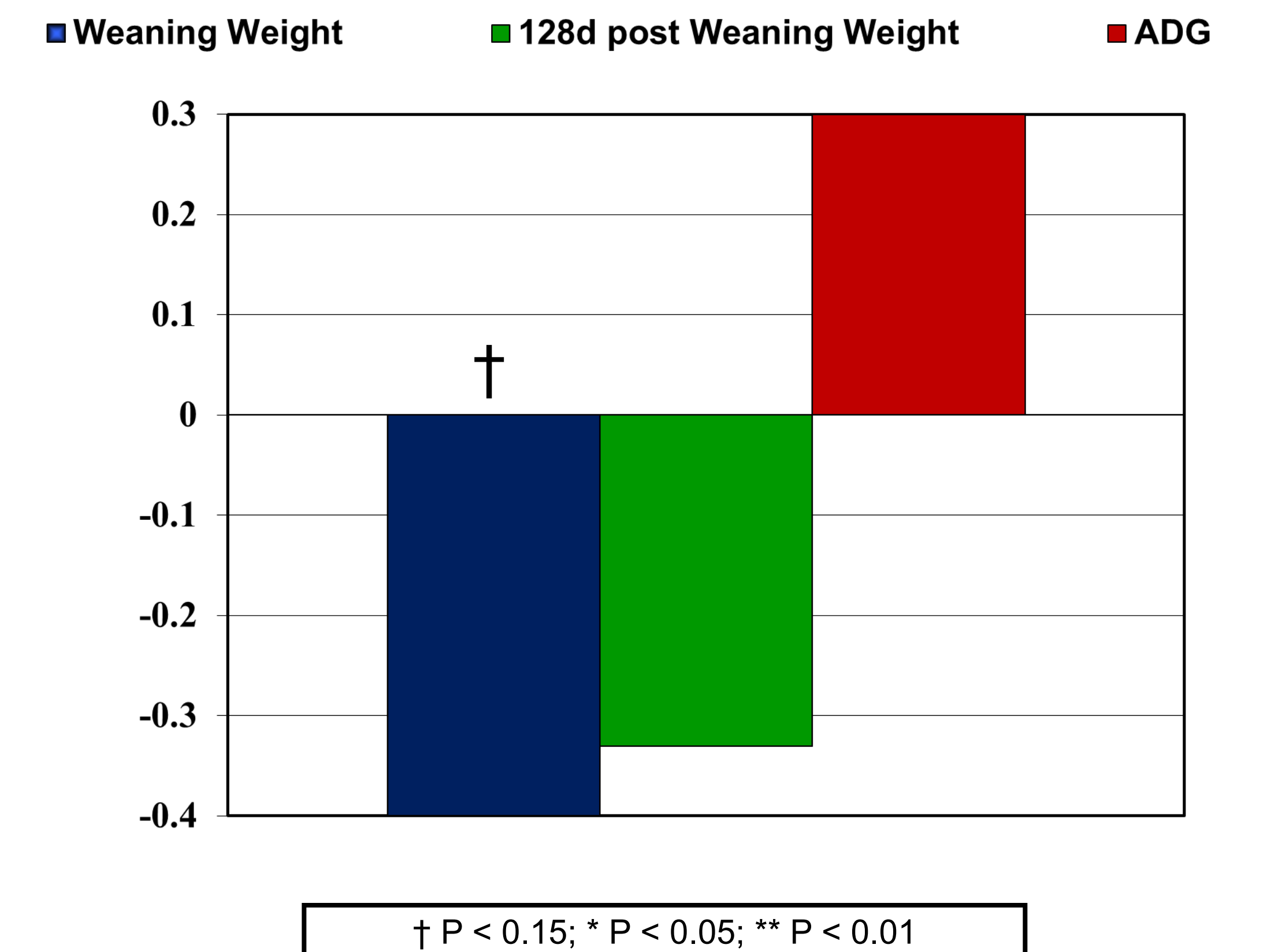
Calculations and Statistical Analysis:

- Partial correlation and least squares means were determined using Proc Corr and GLM functions of SAS.
- Calves were ranked by EV, separated into slow, medium and fast groups that were < 0.5 SD, ± 0.5 SD and > 0.5 SD, respectively, from the mean EV, and data analyzed with a model that included EV group as the main effect.

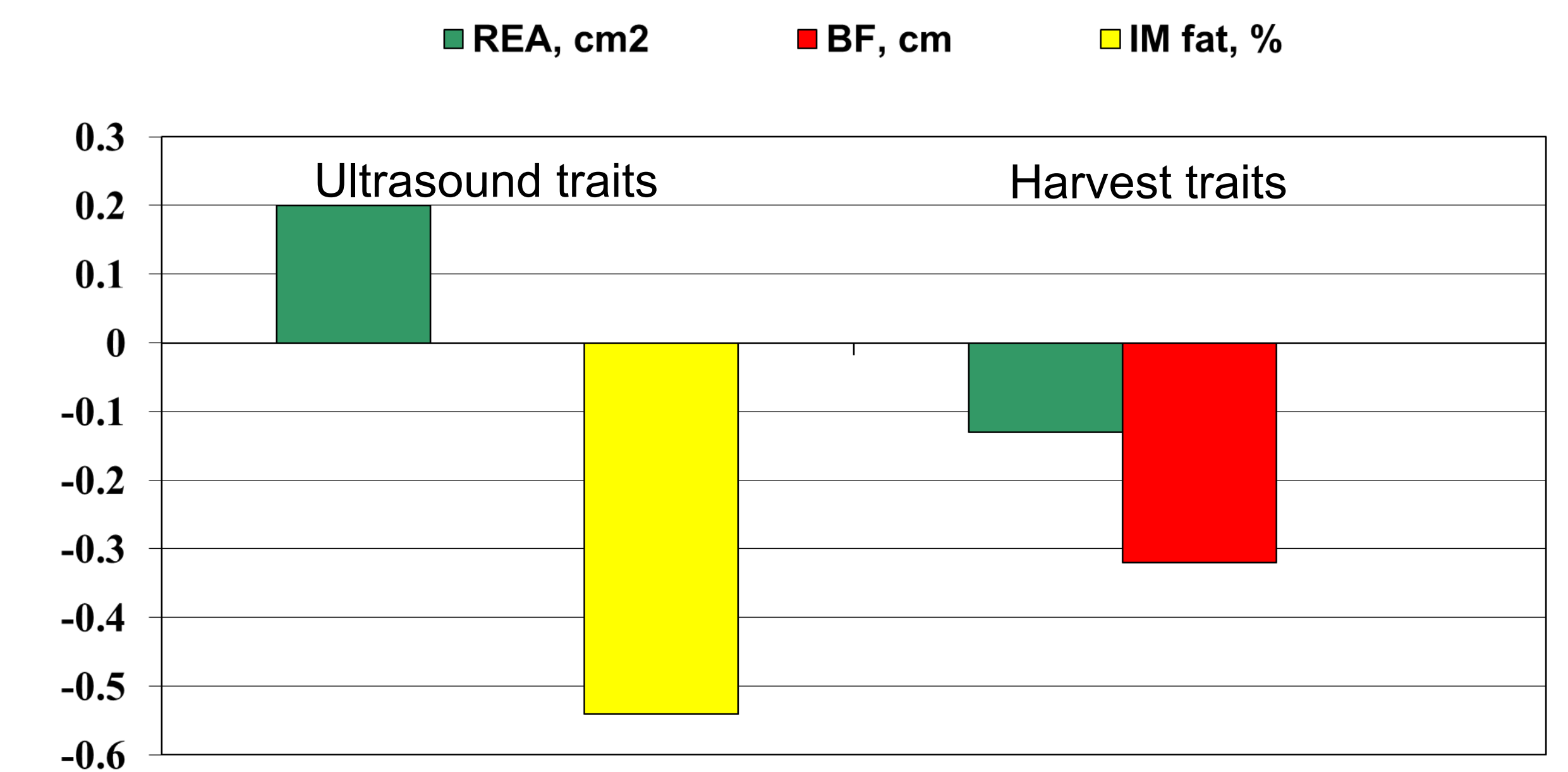
Results

- Weaning BW showed a tendency to be negatively correlated with EV ($r = -0.40$; $P < 0.15$).
- Yearling BW (128 d post weaning) was not correlated with EV ($r = -0.33$; $P < 0.20$).
- Carcass weight at harvest was negatively correlated with EV ($r = -0.65$; $P = 0.04$).
- Exit velocity was not correlated with average daily gain (weaning to 128 d post weaning), carcass ultrasound measurements, or carcass harvest traits ($P > 0.05$).

Results



Partial correlations between EV and performance (top) and carcass (bottom) traits in yearling calves



Summary

Exit velocity was negatively correlated with weaning weight, but there was no correlation with carcass ultrasound measurements or yearling weight. Exit velocity was negatively correlated with carcass weight, but not correlated with carcass harvest weights, such as back fat and longissimus muscle area. More research is warranted to determine if exit velocity can be used as an objective measure to sort calves into specific outcome groups that have differing carcass quality traits.

Acknowledgements

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