

# Comparison of serial real-time A-mode vs. B-mode ultrasound fat depth measures on prediction of final carcass value endpoints

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## Introduction

- Evaluation technology, such as ultrasound, can be used to predict terminal endpoints.
- Both A- and B- mode ultrasound were used to obtain rump fat thickness measurements for prediction of carcass attributes indicative of value.

## Methods

- Charolais x Angus steers (n=80; 271 ± 99 kg) were evaluated across a 378-day feeding period in response to administration of trenbolone acetate (TBA) and estradiol (E<sub>2</sub>).
- Steers were scanned at 42-d intervals (0, 42, 84, 126, 168, 210, 252, 294, 336, 378) during 10 separate ultrasound scanning sessions 24-h prior to harvest.
- Ultrasound B-mode rump fat images (BRFU) were obtained by a certified Ultrasound Guidelines Council (UGC) technician using an ALOKA 500V console equipped with a 17.2 cm carcass probe. Ultrasound A-mode values (ARFU) were obtained by a non-UGC certified technician using a RENCO Lean Meater.
- BRFU images were analyzed by the Centralized Ultrasound Processing lab whereas ARFU results were determined chute side by the scanning technician.
- Both rump fat thickness measurements were compared to carcass traits, including 12<sup>th</sup>-rib fat thickness (FTC), 12<sup>th</sup> rib ribeye area (REAC), marbling (MARB), and percentage of carcass fat (PCF).
  - FTC was measured at three-fourths length of the longissimus muscle at the 12<sup>th</sup> rib.
  - MARB score (small<sup>00</sup> = 40 and modest<sup>00</sup> = 50).
  - REAC of the longissimus muscle was measured in cm<sup>2</sup> at the 12<sup>th</sup> rib.
  - Carcasses were dissected into total lean, fat, and bone post-harvest to obtain PCF.

## Results

- Correlation between A- and B- mode rump fat ultrasound was 0.70 ( $P < 0.01$ ).
- ARFU and PCF ( $r = 0.80$ ), REAC ( $r = 0.76$ ), MARB ( $r = 0.79$ ), FTC ( $r = 0.69$ ).
- BRFU and PCF ( $r = 0.75$ ), REAC ( $r = 0.66$ ), MARB ( $r = 0.68$ ), FTC ( $r = 0.80$ ).

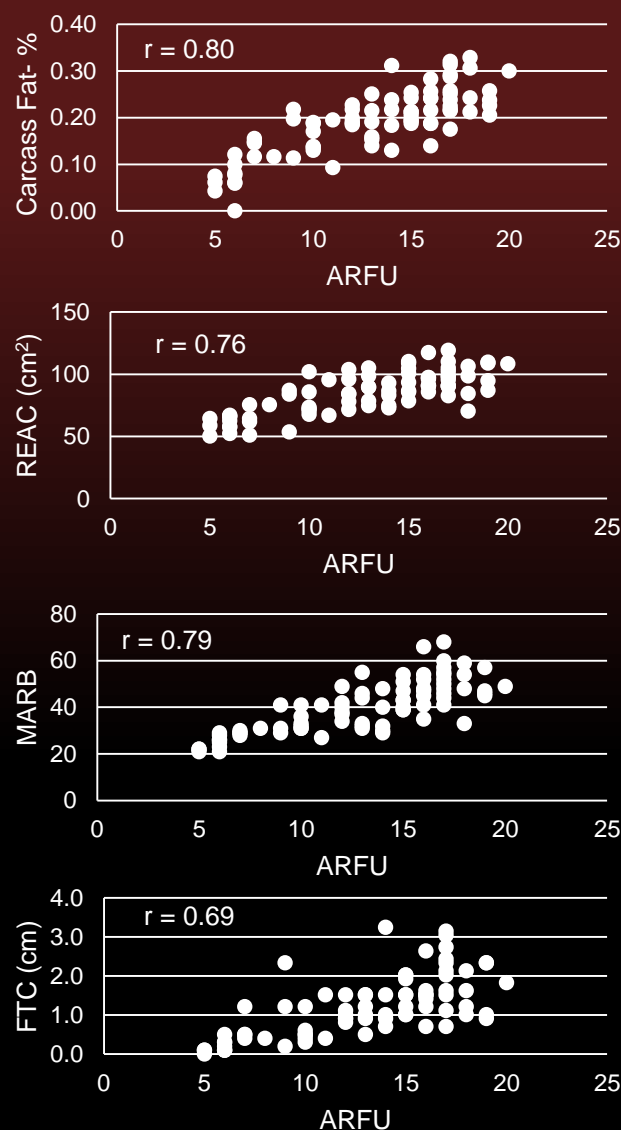


Figure 1: Calculated correlations between ARFU and carcass traits.

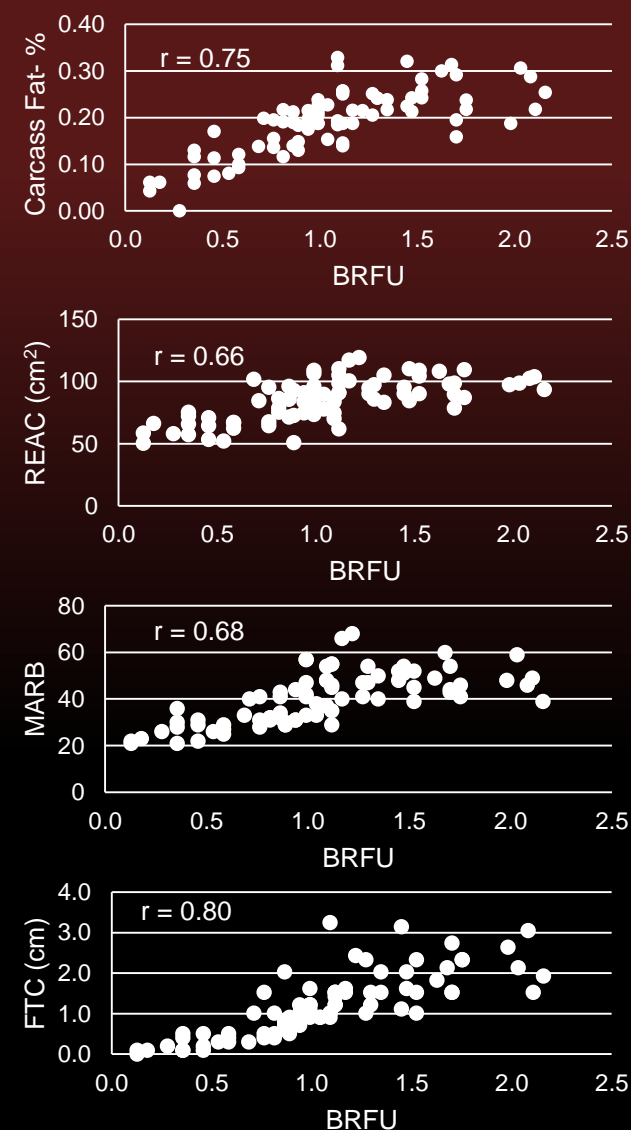


Figure 2: Calculated correlations between BRFU and carcass traits

## Discussion

- These data illustrate moderate relationships between ARFU or BRFU and carcass traits.
- A-mode assessment illustrated improved correlation to REAC, MARB, and PCF as compared to B-mode.

## Conclusion

- Results indicate A- and B-mode ultrasound measures of rump fat are adequate for estimation of carcass value endpoints.
- A- and B-mode ultrasound are likely of equal value in predicting most carcass endpoints from rump fat measures.



Figure 3: Different ultrasound techniques.