

Introduction

- Implants have routinely been used in beef production since the late 1950's
- Over 40 anabolic implants are approved by the FDA
 - Available for every sector of the industry
- Roughly 90% of beef on feed receive at least one implant
- Implants can be classified as: Estrogenic, Androgenic, or Combined Estrogenic and Androgenic
- Estradiol (E2) and trenbolone acetate (TBA) implants are routinely used in the beef industry
 - Enhances efficiency of muscle growth
- The mechanism that anabolic implants operate through to increase growth remains unclear
- Implanting during the feedlot phase increases:
 - Average Daily Gain: 18%
 - Feed Intake: 6%
 - Feed Efficiency: 6%
 - Carcass Weight: 5%
 - Ribeye Area: 4%
 - Economic Return: \$163/head¹

Objective

- To examine feedlot performance of steers receiving implants with different hormone composition

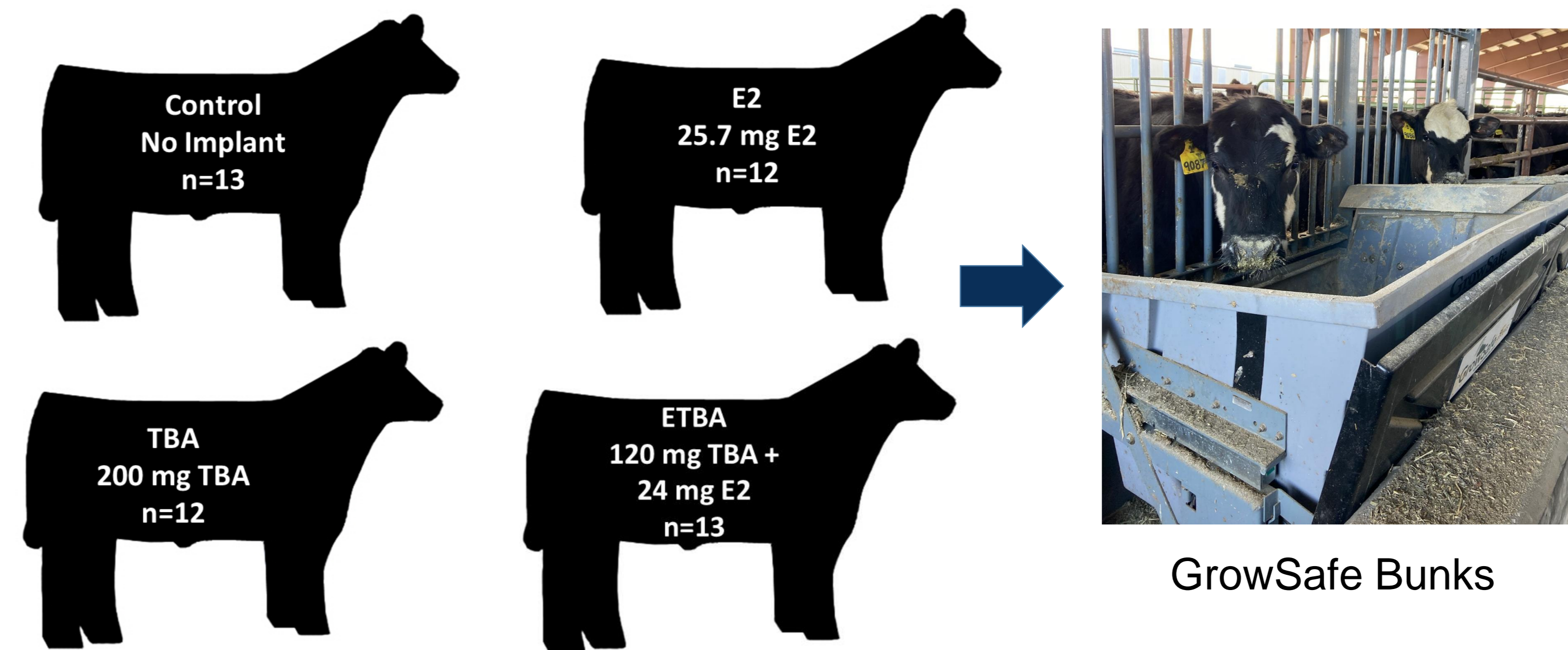
Hypothesis

- Steers implanted will have improved feedlot performance than non-implanted steers
- The combined (ETBA) implant will improve performance to the greatest extent

Acknowledgements

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Methods



- Measurements collected every 28 d:
 - Weights, ADG, BackFat (ultrasound)
- Carcass Data:
 - HCW, yield grade, marbling score, REA, dressing percentage
- Statistical Analysis
 - Proc Mixed (SAS) was used to analyze the fixed effect of treatment with pen serving as a random variable. Variables that were measured over time were analyzed with repeated measures.

Results

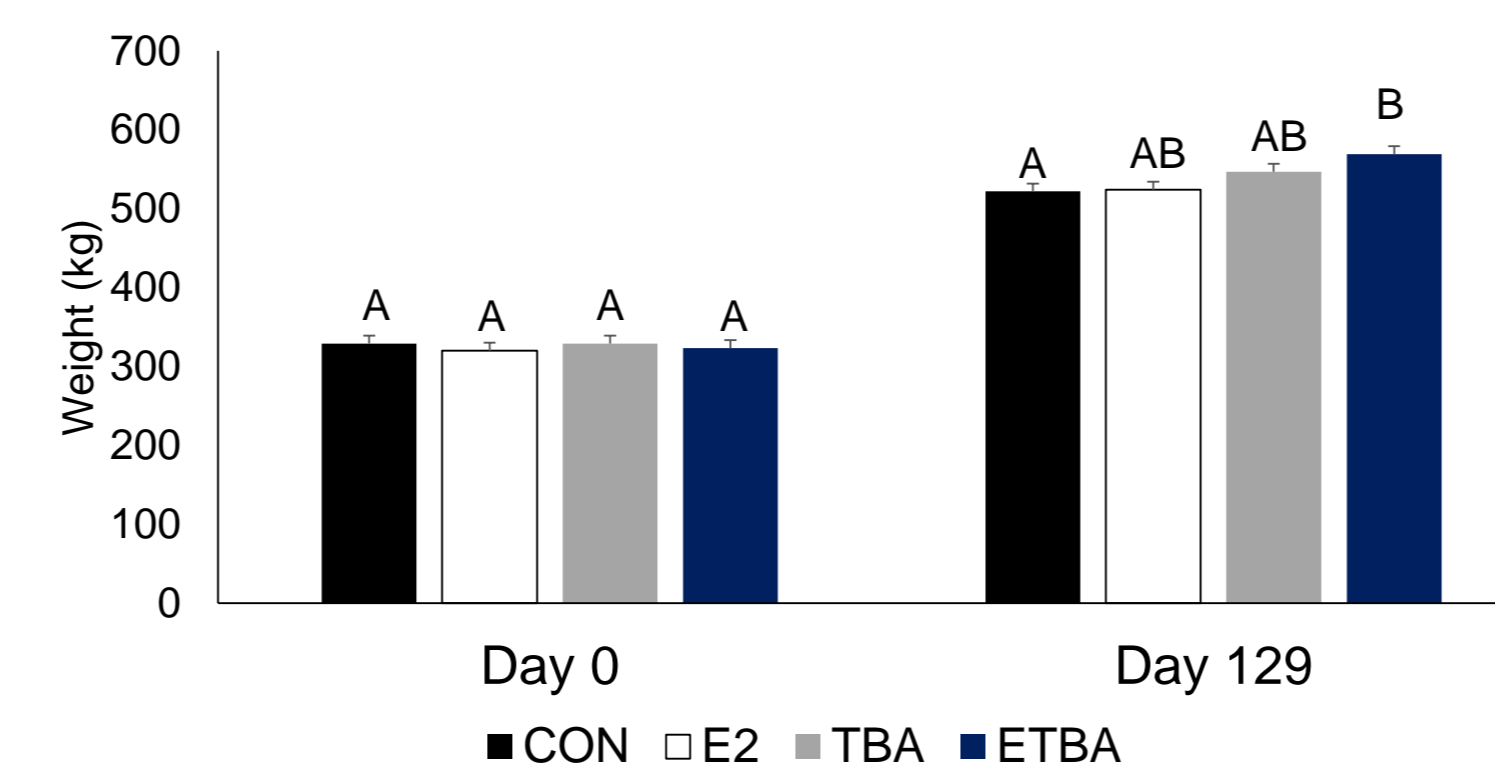


Figure 1: Initial (Day 0) and final (Day 129) weights of steers implanted with E2, TBA, ETBA, or Con. Bars with different letters differ by $P < 0.05$.

| | Average Daily Gain (kg) | | | | | SEM | P-Value |
|-------------------|---------------------------------|---------------------|----------------------|---------------------|------|-------|---------|
| | Implant treatments ¹ | | | | | | |
| Steers (n) | CON | E2 | TBA | ETBA | | | |
| Day 0 - Day 28 | 0.93 ^a | 1.32 ^{ab} | 1.41 ^b | 1.46 ^b | 0.12 | 0.01 | |
| Day 28 - Day 56 | 1.34 | 1.39 | 1.32 | 1.69 | 0.18 | 0.14 | |
| Day 56 - Day 84 | 2.44 | 2.07 | 2.5 | 2.20 | 0.18 | 0.25 | |
| Day 84 - Day 112 | 1.21 | 1.53 | 1.49 | 1.80 | 0.20 | 0.09 | |
| Day 112 - Day 129 | 1.70 | 1.87 | 2.00 | 2.24 | 0.27 | 0.49 | |
| Total ADG | 1.49 ^a | 1.61 ^{ab} | 1.69 ^{ab} | 1.88 ^b | 0.07 | 0.002 | |
| Total Gain (kg) | 193.07 ^a | 208.18 ^a | 217.87 ^{ab} | 241.83 ^b | 8.8 | 0.002 | |

¹Implant treatments administered on d 0 include: no implant (CON), Compudose (E2; 25.7 mg estradiol), Finaplix-H (TBA; 200 mg trenbolone acetate), and Revalor-S (ETBA; 120 mg trenbolone acetate + 24 mg estradiol).
^aTreatments with different letters are significantly different ($P < 0.05$) from one another within each row.

| | Carcass Data | | | | | SEM | P-Value |
|--------------------------------|---------------------------------|---------------------|---------------------|---------------------|------|-------|---------|
| | Implant treatments ¹ | | | | | | |
| Steers (n) | CON | E2 | TBA | ETBA | | | |
| Dressing Percentage | 60.1 | 59.3 | 60.4 | 60.2 | 0.46 | 0.32 | |
| Hot Carcass Weight (kg) | 316.7 ^a | 311.3 ^a | 329.9 ^{ab} | 342.91 ^b | 7.14 | 0.009 | |
| Marbling Score | 486.08 | 468.22 | 482.92 | 422.55 | 35.7 | 0.48 | |
| Ribeye Area (cm ²) | 10.96 ^a | 11.26 ^{ab} | 12.1 ^b | 11.48 ^{ab} | 0.33 | 0.04 | |
| Yield Grade | 2.99 | 2.91 | 2.65 | 3.08 | 0.16 | 0.13 | |

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^aTreatments with different letters are significantly different ($P < 0.05$) from one another within each row.

Conclusions

- Steers implanted with a combined implant had a heavier final live weight than those not implanted ($P < 0.05$)
- Implanting had no effect on marbling score or yield grade ($P > 0.05$)
- Steers implanted with an ETBA implant had a **7%** heavier carcass than CON steers ($P < 0.05$)
- TBA steers had ribeye areas **9.4%** larger than CON steers ($P < 0.05$)

Future Directions

- Examine the transcriptional and post-transcriptional mechanisms that improve growth of steers implanted with E2, TBA, or ETBA implants
- Plasma and liver trace mineral concentrations of the steers presented by E.M. Messersmith

References