Encore® Implant Use in Feedlot Steers

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Summary

A feedlot demonstration utilizing Encore®, a new long-term implant product, was completed at the Allee Demonstration Farm at Newell, Iowa in 1999. Seventy-one steers (697 lbs.) were allotted by weight and hide color and assigned to one of three treatments: 1) Encore® (43.9 mg estradiol = E) on day 0; 2) Encore® plus Component® TS (140 mg trenbolone acetate = ETS0) on day 0; or 3) Encore® on day 0 followed by Component® TS (ETS100) on day 100.

Due to wide standard deviation in the weight of steers at the beginning of the demonstration, cattle were harvested in two groups. Approximately half of each treatment group was sorted by visual appraisal as to market readiness. Statistical interactions existed within treatment group between first and second harvest dates, therefore data were split and analyzed accordingly.

In the first harvest group, ETS0 steers had higher marbling scores than ETS100 steers, and lower average daily gain than E steers and ETS100 steers. In the second harvest group, ETS0 steers had more fat at the 12th/13 rib than ETS100 steers, but did not differ from E steers. Marbling scores were also higher for ETS0 steers than either ETS100 or E steers in the second harvest group. Pooled data reveal that ETS0 steers had higher marbling scores than ETS100 steers and tended to have higher marbling scores than E steers. First harvest E and ETS100 steers had greater average daily gain than ETS0 steers. In the second harvest group, ETS0 steers had heavier final ending weights than E steers but did not differ from ETS100 steers. Final ending weights, rib eye area, fat thickness at the 12th/13th rib, KPH fat, and calculated yield grades did not differ among treatment groups in the pooled data.

Introduction

Hormone implants have an extensive history in the cattle feeding industry. Many more commercial hormone implant products are available to cattle feeders now as compared with several years ago. Implants contain estrogen or estrogen-like compounds, or trenbolone acetate, a synthetic androgen. Implants have been used successfully to improve average daily gain and feed efficiency in growing and finishing cattle. Implants that contain combinations of these hormones have also been developed and used with success. Literally hundreds of implant strategies have been used in the cattle feeding industry, and which ones are used depend on many factors. These factors include beginning weight, age, sex, days on feed, frame size, breed, and previous implants, among others. Research has suggested that for long-fed cattle, a combination of estrogen and trenbolone acetate (TBA) as an initial implant and reimplanting the combination 80 – 90 days later would likely optimize average daily gain and feed efficiency.

Due to equipment, facility needs, hesitancy to run heavier cattle through working facilities, and a shortage of labor, some cattle feeders may have an interest in a single, long-term implant in long-fed cattle. A new long-term implant by Vet Life known as Encore® was recently released. The objective of this feedlot demonstration was to examine the use of Encore® as a single implant compared with Encore® plus Component® TS administered together or Encore® as an initial implant with a reimplantation of Component® TS 100 days later.

Methods and Materials

Seventy-one mixed steers from the ISU Rhodes Farm were allotted by weight and breed type to three different groups: Encore® (43.9 mg estradiol = E) on day 0; Encore® plus Component® TS (140 mg trenbolone acetate = ETS0) on day 0; or Encore® on day 0 followed by Component® TS (ETS100) on day 100. The steers were fed at the ISU Allee Demonstration Farm near Newell, Iowa, from February 10 through two kill dates of June 20 (d 131) and July 13 (d 153). There was one treatment per pen, for a total of three pens. The pens consisted of total concrete floors, with fence-line concrete feed bunks. The steers had access to fresh water and free choice salt at all times. Pens had wind protection from the north. The steers were fed a 64 Mcal NE_g ration once daily consisting of corn, corn silage, alfalfa hay, soybean meal, and supplement. The implants were administered subcutaneously in the middle third of the animal's left ear. On d 100, the ETS100 group received their second implant.

The steers utilized in this demonstration were from a previous frame score study at the ISU Rhodes Farm. They varied widely in their shoulder height and beginning weights. Beginning live weight standard deviation per treatment was 75, 104 and 98 pounds for ETS0, ETS100, and E steers, respectively. This should be kept in mind when interpreting the data. As a result of these circumstances, half of each pen of steers was sorted for market readiness based on visual appraisal and sent to slaughter on d 131 to avoid possible discounts for

heavyweight carcasses. The remaining steers were sent to slaughter on d 153. The cattle were slaughtered at a commercial harvesting facility in Denison, Iowa, and carcass data was collected on all the steers 24 hours after their respective harvest dates. All data were analyzed using the Student's t-test.

Table 1. Influence of implant strategy on growth performance of feedlot steers (pooled data).

	Treatment		
Item	E	ETS0	ETS100
No. of steers	24	23	24
Beginning Wt.	691	705	697
Ending Wt.*	1197	1200	1210
ADG: 2/10/99 through 6/21/99, all steers	3.88	3.69	3.62
ADG: 2/10/99 through 7/13/99, second harvest group	3.37	3.51	3.40
ADG: Pooled averages	3.65	3.45	3.56

*Ending weight calculated from carcass weight to a common dressing percentage.

Results and Discussion

In this demonstration, there was no difference among groups in average daily gain. Differences in feed efficiencies were not measured in this demonstration because feed records were inconsistently kept, and an accurate analysis of the data was not feasible. There was no difference in hot carcass weights, fat thickness at the $12^{th}/13^{th}$ rib, rib eye area, KPH fat, or calculated yield grade among treatments in the pooled data. ETS0 steers, however, had significantly higher marbling scores ($P < .05$) than ETS100 steers and tended ($P = .07$) to have higher marbling scores than E steers. In addition, 96% of the ETS0 steers graded low choice or higher, compared with 75% for the E steers and 63% for ETS100.

The lower marbling score of the ETS100 group may be explained by the fact that the these steers were slaughtered within 30 days of the second implant in the first harvest group and within 52 days in the second harvest group. Late administration (less than 50 days prior to harvest) of Component ® TS reduced marbling scores in this demonstration.

Implications

In this demonstration, steers implanted with Encore® as a single implant performed as well as those containing both Encore® and Component® TS. More studies need to be completed examining the use of Encore® in younger and lighter steers during longer feeding periods as a single implant strategy.

Acknowledgments

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Table 2. Influence of implant strategy on growth performance of feedlot steers (first harvest group).

	Treatment		
	E (n=11)	ETS0 (n=11)	ETS100 (n=12)
No. of steers	11	11	12
Beginning Wt., lbs.	727	754	736
Ending Wt., lbs.	1221	1205	1242
ADG	3.97^{a}	3.39^{b}	3.71^{a}

^{a,b}Means with unlike superscripts differ ($P<0.05$).

Table 3. Influence of implant strategy on growth performance of feedlot steers (second harvest group).

	Treatment		
	E (n=13)	ETS0 (n=12)	ETS100 (n=12)
No. of steers	13	12	12
Beginning Wt., lbs.	661	659	657
Ending Wt., lbs.	1177	1197	1178
ADG	3.37	3.51	3.40

Table 4. Influence of implant strategy on carcass characteristics of feedlot steers (pooled data).

	Treatment		
Item	E	ETS0	ETS100
Hot carcass weight, lbs.	711	713	719
Fat thickness, 12th/13th rib, in.	0.41	0.36	0.32
Rib eye area, sq. in.	12.1	12.2	12.4
KPH fat, %	1.7	1.8	1.8
Marbling score*	1031[ab]	1072[a]	1013[b]
Percent choice	75%	96%	63%
Calculated yield grade	2.5	2.6	2.4

*Marbling score scale: 1000=Small 0; 900 = Slight 0; 1100 = Modest 0, etc.
[a,b]Means with unlike superscripts differ (P<0.05).

Table 5. Influence of implant strategy on carcass characteristics of feedlot steers (first harvest).

	Treatment		
Item	E (n=11)	ETS0 (n=11)	ETS100 (n=12)
Hot carcass weight, lbs.	725	715	738
Fat thickness, 12th/13th rib, in.	0.34	0.39	0.34
Rib eye area, sq. in.	12.1	12.3	12.6
KPH fat, %	2.0	2.1	1.9
Marbling score*	1057 [a]	1059[a]	1013[b]
Percent choice	82%	91%	75%
Calculated yield grade	2.6	2.7	2.5

*Marbling score scale: 1000=Small 0; 900 = Slight 0; 1100 = Modest 0, etc.
[ab]Means with unlike superscripts differ (P ≤ .05)

Table 6. Influence of implant strategy on carcass characteristics of feedlot steers (second harvest).

	Treatment		
Item	E (n=13)	ETS0 (n=12)	ETS100 (n=12)
Hot carcass weight, lbs.	699	711	700
Fat thickness, 12th/13th rib, in.	0.31[ab]	0.34[a]	0.30[b]
Rib eye area, sq. in.	11.7	12.2	12.1
KPH fat, %	1.5	1.5	1.8
Marbling score*	1008[a]	1083[b]	1013[a]
Percent choice	69%	100%	58%
Calculated yield grade	2.4	2.4	2.4

*Marbling score scale: 1000=Small 0; 900 = Slight 0; 1100 = Modest 0, etc.
[ab]Means with unlike superscripts differ (P ≤ .05)