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Implant and Slaughter Time for Finishing Cattle

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Table 1. Effect of implant on steer performance

Variable	Treatment			
	Control	Synovex® S	Revalor® S	Synovex® Plus
Initial wt, lb	812	810	812	810
Final wt, lb ^a	1163 ^b	1185 ^c	1207 ^d	1217 ^d
Daily gain, lb ^a	3.11 ^b	3.32 ^c	3.50 ^d	3.60 ^d
DM intake, lb/day	22.85	23.16	23.86	23.41
Feed/gain ^a	7.36 ^b	7.00 ^{bc}	6.81 ^{cd}	6.50 ^d

^aBased on hot carcass weight assuming a common 62% dressing percentage.

^{b,c,d}Means within a row lacking a common superscript letter differ ($P < .05$).

Table 2. Effect of implant on steer carcass characteristics

Variable	Treatment			
	Control	Synovex® S	Revalor® S	Synovex® Plus
Hot carcass wt, lb	721 ^a	735 ^b	749 ^c	755 ^c
Dressing percentage	60.5	60.7	60.4	60.4
Fat thickness, in	.39	.41	.43	.37
Ribeye area, in ²	13.1	13.1	13.0	13.0
KPH fat, %	2.44 ^a	2.42 ^{ab}	2.27 ^{bc}	2.22 ^c
Marbling score ^{de}	530	542	535	527
Choice+, % ^e	64.6	60.4	59.5	58.3
Yield grade ^e	2.4	2.5	2.6	2.4
Liver abscesses, %	14.6	8.6	4.2	0
No. of dark cutters	0	2	3	0

^{a,b,c}Means within a row lacking a common superscript letter differ ($P < .05$).

^dModest = 600 to 699; small = 500 to 599; slight = 400 to 499.

^eAs determined by federal grader at slaughter plant.

age of kidney, pelvic, and heart (KPH) fat than non-implanted or Synovex® S implanted steers while no differences in KPH fat were detected between Revalor® S and Synovex®S implanted steers. Other carcass traits tended to be similar among treatment groups. Non-implanted steers had a numerically greater percentage of carcasses grading choice; although, marbling scores were similar among treatment groups. A numerically higher incidence of liver abscesses was also observed for the non-implanted steers.

Data indicate that Synovex® Plus, a combination product containing estradiol benzoate and TBA, is an effective implant for use in improving feedlot steer performance.

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Implant and Slaughter Time for Finishing Cattle

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Summary

Three hundred seventy-four British-breed, yearling steers were used to evaluate the influence of implants on finishing performance, and carcass characteristics, at two slaughter times (80 and 109 days on feed). Following a summer grazing period, steers were fed a common finishing diet and allotted to either an estradiol or trenbolone acetate/estrogen implant. Steers implanted with trenbolone acetate/estrogen gained 5.8% faster and 4.8% more efficiently than steers implanted with estradiol. Carcass measurements were similar between implant treatments within slaughter

time; however, trenbolone acetate/estrogen implanted steers had numerically heavier carcasses. Steers implanted with trenbolone acetate/estrogen and slaughtered at 109 days had the most desirable slaughter breakeven cost. Hormonal payout from a TBA/estrogen implant appears to remain above threshold limits required to stimulate a response in daily gain for a period of 109 days.

Introduction

The use of growth promoting implants with finishing cattle is common feedlot practice to increase weight gain. However, the payout of hormone from the implants decreases with time. As the concentration of hormone(s) in the blood decreases, it is not completely clear how the growth response of the cattle is affected. Trenbolone acetate (TBA, a synthetic

product of the male hormone testosterone) combined with estrogen may increase mature body size by increasing lean tissue growth. However, there is limited information available to determine if TBA/estrogen continues to stimulate weight gain throughout a four-month feeding period. Therefore, the objective of this research was to evaluate the influence of TBA/estrogen implants during the final 30 days of the finishing period on performance, carcass characteristics, and the economics of finishing yearling steers.

Procedure

Two finishing trials were conducted in consecutive years using 182 (843 lb, year 1) and 192 (883 lb, year 2) British-breed yearling steers. Steers were blocked by previous summer grazing treatment, randomly allotted to one of two implant treatments, and fed in separate pens (13 hd/pen, Year 1; 12

hd/pen, Year 2). Treatments consisted of steers in a pen receiving either 24 mg estradiol β -17 or 120 mg trenbolone acetate (TBA) and 24 mg estrogen. All steers were fed the same diets and were adjusted to the final diet using four adaptation diets containing (DM basis) 45 (3), 35 (4), 25 (7), and 15% (7 days) forage (alfalfa hay and corn silage mixture). The final diet contained 80.25% dry rolled corn, 5% liquid supplement, 4.75% dry supplement, 5% alfalfa hay, and 5% corn silage (DM basis) and was formulated (DM basis) to contain 12% CP, .7% Ca, .35% P, and, .7% K, and contained 25 g/ton Rumensin and 10 g/ton Tylan.

Steers within a pen were randomly selected for slaughter at two different times (1/2 at each slaughter) to facilitate data collection for a rate of finishing study (1995 Nebraska Beef Report, pp.46-49). The average time, for both years, steers were fed was 80 and 109 days for the early and late slaughter times, respectively.

Initial weights were the average of two weights taken on consecutive days following a 3-day feeding period of a 50% alfalfa hay and 50% corn silage (DM basis) diet. Intake during this period was limited to 2% (DM) of body weight. Final weights were estimated from hot carcass weight using a 62% dressing percentage. Daily gain for the last 29 days for steers in the second slaughter group was calculated using final live weight for the second slaughter time and calculated live weight at the time of first slaughter from steers slaughtered in the first group. Carcass measurements included hot carcass weight, liver abscess score, fat thickness, quality grade, and yield grade.

Costs of inputs associated with each implant treatment were used to calculate slaughter breakeven costs. Data were analyzed as a completely randomized design with animal as the observation unit. Individual animal data for dry matter intake and feed efficiency were not available, therefore, results for dry matter intake and feed efficiency are pen data.

Table 1. Effect of implant and time of slaughter on finishing performance.

Slaughter Time:		80 days on feed		109 days on feed	
Item	Implant:	Estradiol	TBA/estrogen	Estradiol	TBA/estrogen
Dry matter intake, lb/day ^a		27.34	27.67	27.51	27.73
Daily gain, lb		3.43 ^b	3.59 ^{bc}	3.43 ^b (3.39) ^d	3.67 ^c (3.78) ^d
Feed/gain ^{ac}		8.00 ^{bc}	7.71 ^{bc}	8.07 ^b	7.59 ^c
Carcass Characteristics					
Hot carcass weight, lb		704 ^b	713 ^b	760 ^c	777 ^c
Fat thickness, in		.34 ^b	.34 ^b	.43 ^c	.43 ^c
Yield grade		2.20 ^b	2.26 ^b	2.51 ^c	2.49 ^c
% Choice		51.1 ^b	41.1 ^b	77.3 ^c	70.1 ^c
Slaughter breakeven \$/100 lb ^f		68.73 ^b	68.17 ^b	68.36 ^b	67.20 ^c

^aValues based on pen data.

^{bc}Means within row with different superscripts differ ($P < .05$).

^dDaily gains in parentheses are estimated for the last 29 days of the trial.

^eFeed/gain analyzed as gain/feed. Feed/gain is reciprocal of gain/feed.

^fInputs include: \$70/100 lb purchase price, 9% interest, \$.06/lb DMI, \$.30/day yardage, \$.50/hd health & handling, \$1.80/estradiol implant, \$2.50/TBA-estrogen implant.

Results

Steers within a slaughter time were fed to a similar endpoint as noted with similar values for fat thickness, yield grade and number of steers grading Choice (Table 1). No differences in dry matter intake or feed efficiency were observed between implant treatments for steers slaughtered at 80 days. However, steers slaughtered at 80 days and implanted with TBA/estrogen gained faster ($P = .07$) and were numerically more efficient ($P = .18$) than steers implanted with estradiol. No differences were noted in any carcass measurements between implant groups for steers slaughtered at 80 days.

Steers fed for 109 days and implanted with TBA/estrogen gained 7% faster ($P < .05$) and 5.9% more efficiently ($P < .05$) than steers implanted with estradiol with no difference in dry matter intake between implant treatments. No differences were noted in any carcass measurements between implant groups for steers slaughtered at 109 days.

Daily gains for steers, during the 29-day period between the two slaughter times, was increased 11.5% in cattle receiving the TBA/estrogen implants compared with steers receiving an estradiol implant (data in parentheses). During the final 29 days response to the estradiol implant appeared to remain constant resulting in similar weight gains between steers

slaughtered at 80 or 109 days. However, response to the TBA/estrogen implant appeared to continue to elicit a positive response in daily gain. Although blood hormone levels of TBA and estrogen have been shown to decrease with time, it appears in this case that hormone levels remained above threshold limits required to stimulate a response in daily gain during the final 29 days of the 109-day finishing period.

Slaughter breakeven values were the most desirable for steers fed for 109 days and receiving a TBA/estrogen implant (Table 1). Similar slaughter breakeven values were noted between implants in the 80-day slaughter group and steers receiving estradiol in the 109-day slaughter group. The percentage of Choice steers was numerically lower for the TBA/estrogen implant groups in either slaughter time. However, based on estimated returns (data not shown), these steers were able to compensate for a reduced quality grade by increasing feed efficiency and hot carcass weight.

Results from this study indicate that hormonal concentrations of TBA and estrogen remain above threshold limits required to stimulate a response in daily gain for the final 30 days of the finishing period.

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