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# Growth Implants for Steers

Terry Mader  
James Dahlquist  
Robert Botts<sup>1</sup>

## Summary

*In a 112-day experiment, feedlot steers (mean initial weight = 811 lb) that received a new estradiol benzoate + trenbolone acetate implant, Synovex® Plus, gained faster and more efficiently than non-implanted or Synovex® S implanted steers. Steers receiving Revalor® S implants also gained faster than control steers or Synovex® S treated steers, but were not found to be more efficient than Synovex® S implanted steers. No significant differences in gain and feed efficiency were found between Revalor® S and Synovex® Plus implanted steers. Dry matter intake differences were not detected among treatments. Hot carcass weights were heavier for steers receiving Synovex® S, Revalor® S, or Synovex® Plus compared with non-implanted steers. No differences were detected among treatments for dressing percentage, fat thickness, ribeye area, marbling score or yield grade. Steers receiving Revalor® S or Synovex® Plus had less kidney, pelvic, and heart fat percentage than non-implanted steers. Synovex® Plus is an effective implant for use in finishing feedlot steers.*

## Introduction

Trenbolone acetate (TBA), an implant (Finaplix®) with androgenic activity, stimulates growth and enhances feed efficiency much like implants with estrogenic activity (Ralgro®, Synovex®, Implus® and Compudose®). Because androgenic and estrogenic products tend to have different mechanisms of action, the combination of TBA and an estrogenic implant have been shown to be most beneficial. Revalor® S, a combination product

containing 24 mg estradiol (E2) and 120 mg TBA, is an effective implant, particularly when used in feedlot steers 100 to 120 days before slaughter. Other products and combinations of TBA and estradiol may be just as effective. The objective of this study was to evaluate Synovex® Plus, a new combination implant currently being considered for use in the beef cattle industry.

## Procedure

One hundred ninety-two British and British crossbred steers which had not received any previous implants were purchased near Oshkosh, Nebraska and shipped to the Northeast Research and Extension Center at Concord. After a two-week initial receiving period, steers were treated for parasites, weighed, eartagged, and vaccinated for IBR, PI<sub>3</sub>, BRSV, Haemophilus somnus, and clostridial infections. Steers were assigned to one of six weight blocks; within block, steers were stratified by weight and randomly allocated to four pens which were randomly assigned the following treatments: 1) control (no implant), 2) Synovex® S [20 mg estradiol benzoate (14 mg E2) + 200 mg progesterone], 3) Revalor® S (24 mg E2 + 120 mg TBA), and 4) Synovex® Plus [28 mg estradiol benzoate (20 mg E2) + 200 mg TBA].

On the day the trial began, steers were weighed, implanted according to treatment assignment, and placed in designated pens. Initial weight was based on the average of weights taken over two consecutive days. During the receiving period, steers were fed receiving diets and stepped up to a 56 NEg Mcal/cwt diet. Three days before the start of the study, steers were fed a 60 NEg Mcal/cwt diet and were subsequently adjusted to a 64.45 NEg Mcal/cwt finishing diet which contained on a DM basis: 28.00% snapped ear corn, 60.61% dry rolled corn, 4.22% soybean meal, 5.14% liquid supplement, and 2.03% dry supplement. Diets

contained 13.5% crude protein (DM basis), 25 g/ton Rumensin®, and 10 g/ton Tylan®. During the trial, two steers receiving the Revalor® S implant were treated for prolapsed prepuce. At the end of the 112-day feeding period, steers were weighed and shipped for slaughter. Liver abscess score and hot carcass weight were recorded the next day during slaughter. Additional carcass data were obtained after a 48-hour chill. Adjusted final weights used for performance calculations were determined from hot carcass weight assuming a 62% dressing percentage.

Data were analyzed as a randomized complete block design using analysis of variance procedures with weight block and implant treatment as independent variables in the model. Protected LSD's were used as the mean separation technique.

## Results

Steers that received Revalor® S or Synovex® Plus had greater ( $P < .05$ ) gains and final weights than Synovex® S implanted steers which in turn had greater ( $P < .05$ ) gains and final weights than non-implanted steers (Table 1). No dry matter intake differences were detected among treatment groups; however, steers implanted with Revalor® S or Synovex® Plus had lower ( $P < .05$ ) feed to gain ratios than non-implanted steers. Only Synovex® Plus steers had lower ( $P < .05$ ) feed to gain ratios than Synovex® S. No difference in feed efficiency was detected between Revalor® S and Synovex® Plus implanted steers.

Implanted steers had greater ( $P < .05$ ) carcass weights than non-implanted steers (Table 2), while steers implanted with Revalor® S and Synovex® Plus had greater ( $P < .05$ ) carcass weights than steers implanted with Synovex® S. Steers that received Synovex® Plus implants had a lower ( $P < .05$ ) percent-

*(Continued on next page)*

**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 <sup>a</sup>	1163 <sup>b</sup>	1185 <sup>c</sup>	1207 <sup>d</sup>	1217 <sup>d</sup>
Daily gain, lb <sup>a</sup>	3.11 <sup>b</sup>	3.32 <sup>c</sup>	3.50 <sup>d</sup>	3.60 <sup>d</sup>
DM intake, lb/day	22.85	23.16	23.86	23.41
Feed/gain <sup>a</sup>	7.36 <sup>b</sup>	7.00 <sup>bc</sup>	6.81 <sup>cd</sup>	6.50 <sup>d</sup>

<sup>a</sup>Based on hot carcass weight assuming a common 62% dressing percentage.

<sup>b,c,d</sup>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 <sup>a</sup>	735 <sup>b</sup>	749 <sup>c</sup>	755 <sup>c</sup>
Dressing percentage	60.5	60.7	60.4	60.4
Fat thickness, in	.39	.41	.43	.37
Ribeye area, in <sup>2</sup>	13.1	13.1	13.0	13.0
KPH fat, %	2.44 <sup>a</sup>	2.42 <sup>ab</sup>	2.27 <sup>bc</sup>	2.22 <sup>c</sup>
Marbling score <sup>de</sup>	530	542	535	527
Choice+, % <sup>e</sup>	64.6	60.4	59.5	58.3
Yield grade <sup>e</sup>	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

<sup>a,b,c</sup>Means within a row lacking a common superscript letter differ ( $P < .05$ ).

<sup>d</sup>Modest = 600 to 699; small = 500 to 599; slight = 400 to 499.

<sup>e</sup>As 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