

EFFECTS OF IMPLANTS ON PERFORMANCE OF steers DRY-WINTERED ON NATIVE TALLGRASS PRAIRIE

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Story in Brief

Three hundred crossbred steers were used in a 164-day trial to determine the effect of various implants on weight gain of steers wintered on native tallgrass prairie. Steers were weighed on October 16, 1996, and received either no implant (Control), or Synovex-C® , Synovex-S® or Revalor-G® implant. Average initial weight was 406 ± 56 lb. During the trial, steers received 3 lb/ day of a 25% crude protein supplement that supplied 100 mg monensin. Intermediate weights were taken January 9, 1997 followed by final weights on March 29, 1997. Overall daily gains averaged .62, .70, .71 and .77 lb/day for Control, Synovex-C® , Synovex-S® or Revalor-G® implanted steers, respectively. Although gains were below 1 lb/day throughout the trial, implanted steers gained 14 to 25 lb more weight than control steers. Gross return was increased by \$11.74, \$13.41 and \$20.97/steer, respectively, for Synovex-C® , Synovex-S® and Revalor-G® implanted steers.

(Key Words: Beef Cattle, Implants, Winter Grazing.)

Introduction

Most of the beef cow herds in the United States are spring-calving herds; thus their calves are weaned in the fall. Large numbers of these calves are dry-wintered on dormant, low-quality native range or other forages prior to placement in summer grazing programs or the feedlot. When provided adequate protein supplementation, these calves will typically gain about 0.5 to 1.0 lb/day depending on type of cattle, severity of the winter, etc. Many people are of the opinion that growth promoting implants are efficacious only under conditions of some minimum energy intake and(or) minimum rate of gain. At the recent symposium, "Impact of Implants on Performance and Carcass Value of Beef Cattle", common opinion was that the likelihood of a weight gain response from implanting growing cattle decreases if energy intake and(or) weight gains are less than 1.5-times maintenance or 1.0 lb/day, respectively. Therefore, cattle placed in dry-wintering grazing programs are often not implanted. The objective of this study was to determine the effects of estrogenic and combination implants on rate of live weight gain of fall-weaned, dry-wintered beef calves.

Materials and Methods

Animals and Study Site. Three hundred crossbred steers (initial wt 406 ± 56 lb) owned by Sooner Cattle Company and DCC Stocker Feeder (Pawhuska, Oklahoma) were transported from Deseret Cattle Operations in central Florida to the Little Chief Ranch, located near Fairfax, Oklahoma. On October 16, 1996, steers were vaccinated, treated for internal and external parasites and received either no implant (Control) or were implanted with Synovex-C® , Synovex-S® or Revalor-G® implants resulting in 75 steers per treatment. Steers from each treatment were equally divided between two native tallgrass prairie pastures that were 900 or

1300 acres in size for the duration of the trial. Throughout the trial, steers received 3 lb/day of a 25% CP supplement, which was fed 3 times/week on a prorated basis. The supplement provided 100 mg monensin/steer/day. Five steers were removed from the trial due to poor performance and failure to eat the protein supplement. Steers were weighed on January 9, 1997 following a 4-6 hr shrink with the final weights taken on March 29, 1997 following a 3-5 hr shrink.

Data Analysis. Data were analyzed using least squares analysis (SAS, 1985) as a randomized complete block design with pasture used as a blocking factor. Treatment sums of squares were separated using non-orthogonal contrasts that compared Control vs. implanted, Revalor-G® vs. Synovex-C® (i.e., similar amounts of estrogenic activity) and Revalor-G® vs. Synovex-S® to make direct comparisons of implant effectiveness.

Economic Analysis. Gross returns to implanting (\$/steer) were calculated for each implant treatment by multiplying the increased weight gain of implanted steers, as compared with non-implanted steers, by the value of weight gain. The gross value of 100 lb of weight gain was calculated by using the ten-year, seasonal-adjusted average purchase price for 450-lb, medium-frame No. 1 steers in October (\$93.25/100 lb) and the average selling price for 550-lb steers in April (\$91.54/100 lb) at the Oklahoma City National Stockyards (Trapp, 1996). This calculated value of weight gain was \$83.84/100 lb, and includes the ability of winter grazing programs to benefit from the seasonality of stocker/feeder cattle prices (i.e., seasonal lows in the fall and seasonal highs in the spring).

Results

Control vs. Implanted. Initial BW was similar ($P=.41$; Table 1) for all implant treatments. From October 16 until January 9, weight gain averaged 80 lb across all treatments, with Control steers gaining less weight than implanted steers ($P<.01$). This resulted in lighter weights ($P=.03$) for non-implanted steers on January 9. During the second period, weight gain across all treatments was 34 lb, resulting in daily gains of .44 lb/day. This decreased performance during the second period may be attributed to poorer weather conditions, as well as reduced forage availability and quality. Non-implanted steers continued to gain less weight ($P<.01$) than implanted steers, resulting in lower final weights ($P<.01$). Overall weight gain and average daily gain was less ($P<.01$) for control steers, indicating that growing cattle will respond to exogenous hormones in winter grazing programs.

Revalor-G® vs. Synovex-C®. During Period 1, Revalor-G® implanted steers had superior ($P<.01$) weight gains, however, weight gains were similar ($P=.84$) between Revalor-G® and Synovex-C® during the second period. This may be due to the lower performance of all steers during Period 2. Overall weight gain was greater ($P=.04$) for Revalor-G® implanted steers. Since both implants contain similar levels of estrogenic activity (Table 2), the improved performance of Revalor-G® implanted steers may support the use of implants that have both estrogenic and androgenic activity in dry-wintering programs.

Revalor-G® vs. Synovex-S®. Weight gains of Revalor-G® and Synovex-S® implanted steers during Period 1 were similar ($P=.15$). Period 2 weight gains were also not different ($P=.26$), resulting in similar final weights ($P=.32$) for the Revalor-G® and Synovex-S® treatments.

However, overall gain of steers implanted with Revalor-G® tended to be greater (P=.10) than steers implanted with Synovex-S® . This may be related to differences in type of implant (i.e., presence of androgen in Revalor-G®) and(or) differences in payout rate of the two implants.

Effects of implants on Gross Returns. The results of this trial indicate that implants are efficacious in dry-wintering programs, improving weight gains of implanted by a 14 to 25 lb over the 5-6 month period. These increased weight gains resulted in \$11.74, \$13.41, and \$20.97/steer increases in gross returns (Table 3) over non-implanted cattle for Synovex-C® , Synovex-S® , and Revalor-G® implanted steers, respectively. The magnitude of these increased gross returns are sufficient to pay for a good portion of the interest cost on a steer during a 150-day grazing period or the initial processing cost for a steer.

Literature Cited

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Table 1. Weight gain of steers dry wintered on native tallgrass prairie receiving no implant (Control) Synovex C® , Synovex S® , or Revalor G® implants.

Item	Treatment ^b					SE ^c	Comparisons ^a		
	Control	Synovex-C	Synovex-S	Revalor-G	Implanted		Control vs. Implanted	Revalor-G vs Synovex-C	Revalor-G vs Synovex-S
No. of Steers	74	74	74	73					
Steer Wt, lb	Period 1								
10/16/96	401	407	407	408	6.5	.41	.86	.92	
1/9/97	474	485	490	497	6.5	.03	.20	.49	

Wt. Gain, lb/Steer	73	78	83	88	2.6	<.01	<.01	.15
ADG, 79 d	.85	.92	.97	1.04	.031	<.01	<.01	.15
Steer Wt, lb	Period 2							
1/9/97	474	485	490	497	6.5	.03	.20	.49
3/29/97	503	522	525	534	6.6	<.01	.19	.32
Wt. Gain, lb/Steer	29	37	34	38	1.9	<.01	.84	.26
ADG, 85 d	.36	.47	.44	.47	.025	<.01	.84	.26
Steer Wt, lb	Overall							
10/16/96	401	407	407	408	6.5	.41	.86	.92
3/29/97	503	522	525	534	6.6	<.01	.19	.32
Wt. Gain, lb/Steer	101	115	117	126	3.6	<.01	.04	.10
ADG, 164 d	.62	.70	.71	0.77	.022	<.01	.04	.10

^aObserved significance levels for comparison contrasts.

^bLeast squares means for each treatment.

^cStandard error of the least squares means.

Table 2. Hormone content of implants used in trial.			
Implant	Progesterone (mg)	Estrogen (mg)	Androgen (mg)
Synovex-	100	10 (Estradiol	---

C®		benzoate)	
Synovex-S®	200	20 (Estradiol benzoate)	---
Revalor-G®	---	8 (Estradiol -17B)	40 (TBA) ^a

^aTrenbalone acetate.

Table 3. Overall weight gain and gross returns from implanting steers dry-wintered on tallgrass prairie receiving no implant (Control), Synovex C® , Synovex S® , or Revalor G® implants.

Item	Control	Synovex-C®	Synovex-S®	Revalor-G®
No. of Steers	74	74	74	73
Overall Wt. Gain, lb/Steer ^a	101	115	117	126
Improvement over control steers, lb	0	14	16	25
Gross return to implanting, \$/steer ^b	0	11.74	13.41	20.97

^aTreatment least squares means.

^bCalculated by multiplying the increased weight gain of implanted steers by a \$83.84/100 lb value of weight gain. Value of weight gain was determined using the 10-year average Oklahoma City National Stockyard October purchase price for 450-lb steers (\$93.25/100 lb) and April selling price for 550-lb steers (\$91.54/100 lb).

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