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Effect of Winter Grazing Implant on Subsequent Summer Grazing and Feedlot Performance

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Story in Brief

Three hundred crossbred steers that previously received either no implant (Control), or were implanted with Synovex-C®, Synovex-S® or Revalor-G® during the dry-wintering phase were used to determine the effects of dry-winter implants on subsequent summer grazing and feedlot performance. Following winter grazing, all steers were reimplanted with Ralgro® and grazed a common tallgrass prairie summer pasture from March 29 to July 17 (110-d). Steers were then implanted with Revalor-S® and placed in the feedlot. Steers were harvested November 17, 1997 after a 123-d finishing period and individual carcass data were collected. Steers implanted during the dry-wintering phase entered the summer grazing phase 24 lb heavier than Control steers. Steers implanted during the winter grazing period maintained their weight advantage over non-implanted Control steers throughout the summer grazing and feedlot phases, despite similar management, with implanted steers weighing 30 lb more than Control steers at harvest. The increased weight gain of steers achieved during the dry-winter grazing phase was maintained through the summer grazing and feedlot phases of production.

(Key Words: Beef Cattle, Feedlot, Implant, Performance.)

Introduction

In a previous dry-wintering trial conducted with the same set of steers, daily gains of steers implanted with Synovex-C®, Synovex-S® and Revalor-G® were increased compared with non-implanted steers, despite the fact that mean daily gains were below 1.0 lb/d. The increased weight gain of implanted steers resulted in increased gross returns ranging from $11.74 to $20.97/steer over Control steers (Paisley et al., 1997). While implanting steers during the dry-wintering phase may improve weight gain, the effects of implanting on subsequent weight gain during summer grazing and feedlot phase is important to producers interested in retaining cattle ownership. The objective of this study was to determine the effects of estrogenic and combination implants on: 1) subsequent performance during summer grazing period on native range and 2) daily gains during the feedlot (finishing) phase. Carcass characteristics, including hot carcass weight, yield grade, marbling score, and overall carcass maturity are reported by Paisley et al. (1998) in a companion paper in this publication.

Materials and Methods

Summer Grazing Phase. Three hundred crossbred steers (initial wt 406 ± 56 lb) owned by Sooner Cattle Company and DCC Stocker Feeder (Pawhuska, OK) were transported from Deseret Cattle Operations in central Florida to the Little Chief Ranch, located in North Central Oklahoma near Fairfax, OK. The steers received either no implant (Control) or were implanted with Synovex-C®, Synovex-S® or Revalor-G® implants resulting in 75 steers per treatment. Management and performance of steers during the winter grazing period were described by Paisley et al. (1997). Following completion of the winter grazing trial, all steers were implanted with Ralgro®, treated for flies and lice with 1% permethrin[5] pour-on insecticide and internal parasites with fenbendazole[6], and placed on summer tallgrass prairie, located on the same ranch. Steers grazed a common pasture from March 29 until they were removed on July 17 (110 d).

Feedlot Period. Following the conclusion of the summer grazing period, steers were shipped to Supreme Cattle Feeders in Liberal, KS. Steers arrived at Liberal during late afternoon on July 17, and were placed in three separate feedlot pens with access to a medium quality prairie hay and water. Little, if any, prairie hay was consumed during the night, and the steers had

noticeable shrink prior to weighing. Steers were weighed starting at 8:00 a.m. July 18. They received Ivermectin[7], 3-way respiratory vaccine[8], and were implanted with Revalor-S®. Steers from each winter implant treatment were equally divided across four feedlot pens. Steers remained in their respective pens during the entire feedlot phase, and were not re-implanted. They were group weighed by feedlot pen at 7:30 a.m. on November 19 prior to being shipped to National Beef in Liberal, KS. Harvest times were staggered (9:45 a.m., 1:30 p.m., 5:00 p.m., and 7:30 p.m.) to allow time for collection of carcass data following the appropriate chill. Final live weights were calculated from hot carcass weights divided by an average dressing percentage for each pen. Average pen dressing percentages were used instead of overall dressing percentages to account for differences in shrink created by the staggered harvest times.

Data Analysis. Summer grazing data were analyzed using least squares analysis (SAS, 1990) as a completely randomized design with implant treatment as the only independent variable. 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. Feedlot performance was also analyzed as a randomized complete block design with feedlot pen as a blocking factor to adjust for pen differences in feedlot performance and dressing percentage.

Economic Analysis. Gross returns from 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 for each production phase by using the 10-yr (1986 through 1995) seasonal-adjusted average Oklahoma City National Stockyards prices (Trapp, 1996) for purchasing and selling steers. All calculations used the average purchase price for 450-lb, medium-frame No. 1 steers in October ($93.25/cwt). Average selling weights and prices correspond with the end of each production phase. Average prices were: Winter grazing - April selling price for 550-lb steers ($91.54/cwt); Summer grazing - July selling price for 750-lb steers ($79.74/cwt); Feedlot - November selling price for 1200-lb slaughter steers at Amarillo, TX ($71.83/cwt). Calculated value of weight gain was $83.84, $59.48, and $58.98/cwt, respectively, for the end of winter grazing, summer grazing, and feedlot phases. These values include 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 and Discussion

Summer Grazing. At the end of the dry-winter grazing period, implanted steers weighed an average of 25 lb more than non-implanted steers (Table 1). Weight gain of the implanted and non-implanted steers during the 110-d spring/summer grazing period was not affected by implant treatment (P³ .61), with all groups having similar ADG. Steers implanted during the winter grazing period ended the summer grazing period with a 22 lb weight advantage over winter period control steers, even though all groups received similar implants in the spring. There were no differences in weight gains between comparisons of Revalor-G® vs Synovex-S® or Synovex-C® (P³ .75). Due to the increased weight of implanted steers, gross returns of steers implanted during the winter grazing phase were increased by $7.14, $7.73, and $13.09/steer, respectively, for Synovex-C®, Synovex-S® and Revalor-G® implanted steers at the end of the summer grazing period (Table 2). These results suggest that implanting steers during the winter is beneficial whether the cattle are to be sold in the spring or retained through a summer grazing period, and that implant type does not affect subsequent performance immediately following the winter grazing period.

Feedlot Performance. During the finishing phase, overall weight gain and daily gains were similar for all winter grazing period treatment groups (P³ .50). In addition, there were no differences between comparisons of Revalor-G® vs Synovex-C® (P=.74) or Revalor-G® vs Synovex-S® implanted cattle (P=.21) during the feedlot period. Final weights of implanted steers were heavier (P=.05) than non-implanted controls. Steers implanted during the winter grazing period entered the feedlot period an average of 22 lb heavier than control steers, and slaughter weights for winter-implanted steers were 30 lb heavier than control steers. The increased slaughter weight translates to increased gross returns to implanting of $6.49, $19.46,

and $14.75/steer, respectively, for Synovex-C®, Synovex-S® and Revalor-G® implanted steers if steers were sold on a live weight basis.

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Table 1. Subsequent summer grazing and feedlot weight gain of steers receiving no implant (Control), Synovex-CÒ , Synovex-SÒ , or Revalor-GÒ implants during the dry-winter grazing phase.

						Comparisons[a]		
	Treatment[b]					Control vs Implanted	Revalor-G vs Synovex-C	Revalor-G vs Synovex-S
Item	Control	Synovex-C	Synovex-S	Revalor-G	SE[c]			
	----------Summer----------							
No. of Steers	74	73	73	71				
Wt 3/29/97, lb	503	522	526	535	6.7	<.01	.18	.38
Wt 7/17/97, lb	762	779	783	789	8.0	.01	.37	.56
Wt Gain, lb/Steer	259	257	256	256	3.9	.61	.75	.87
ADG, 110 d	2.33	2.32	2.31	2.30	.035	.61	.75	.87
	----------Feedlot----------							
No. of Steers	73	72	71	71				
Wt 7/18/97, lb	762	779	783	789	8.0	.01	.18	.38
Wt 11/19/97, lb[d]	1206	1224	1249	1237	13.3	.05	.49	.55

Wt Gain, lb/Steer	446	445	466	449	9.2	.50	.74	.21
ADG, 123 d	3.63	3.62	3.79	3.65	.075	.50	.74	.21

[a]Observed significance levels for comparison contrasts.
[b]Least squares means for each treatment.
[c]Standard error of the least squares means.
[d]Calculated from average dressing percentages for each feedlot pen.

Table 2. Overall weight gain and gross returns from implanting steers dry-wintered on tallgrass prairie receiving no implant (Control), Synovex-CÒ , Synovex-SÒ , or Revalor-GÒ implants.

Item	Control	Syn-CÒ	Syn-SÒ	Rev-GÒ
No. of steers	74	74	74	73
Winter grazing improvement over control steers, lb	0	14	16	25
April gross return to implanting, $/steer[b]	0	11.74	13.41	20.97
Overall wt gain, 3/29/97 to 7/17/97 lb/Steer[a]	259	257	256	256
July 17 improvement over control steers, lb	0	12	13	22
July gross return to implanting, $/steer[c]	0	7.14	7.73	13.09
Overall wt gain, 7/18/97 to 11/19/97 lb/Steer[a]	446	445	466	449
Nov. 19 improvement over control steers, lb	0	11	33	25
Nov. gross return to implanting, $/steer, live weight basis[d]	0	6.49	19.46	14.75

[a]Treatment least squares means.
[b]Calculated by multiplying the increased weight gain of implanted steers by a $83.84/cwt value of weight gain. Value of weight gain was determined using the 10-yr average Oklahoma City National Stockyards October purchase price for 450-lb steers ($93.25/cwt) and April selling price for 550-lb steers ($91.54/cwt).
[c]Calculated by multiplying the increased weight gain of implanted steers by a $59.48/cwt value of weight gain. Value of weight gain was determined using the 10-yr average Oklahoma City National Stockyards October purchase price for 450-lb steers ($93.25/cwt) and July selling price for 750-lb steers ($79.74/cwt).
[d]Calculated by multiplying the increased weight gain of implanted steers by a $58.98/cwt value of weight gain. Value of weight gain was determined using the 10-yr average Oklahoma City National Stockyards October purchase price for 450-lb steers ($93.25/cwt) and November selling price in Amarillo, TX for 1200-lb steers ($71.83/cwt).

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