

Feedlot

Reimplanting Studies with Feedlot Cattle

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Story in Brief

Two feedlot studies were conducted to determine the response to reimplanting with a growth promoter during the finishing period. In both trials, high concentrate rations were fed. In trial 1, there were 36 Angus x Hereford feeder steers fed for 171 days. All steers were implanted at the beginning of the trial with Synovex-S. After the first 113 days on feed, the steers were then allotted into two treatments such that there would be equal average daily gains for each treatment during the first 113 days. Half of the steers received only the initial implant (were not reimplanted) and the other half were reimplanted with Synovex-S. Daily gains were 3.35 lb/day for both groups during the first 113 days, but during the last 58 days (period of reimplanting) the reimplanted steers gained 3.55 vs. 3.24 lb. for those not reimplanted. This represented a 9.6% improvement in gain with a 5.7% improvement in feed efficiency.

In trial 2, yearling crossbred steers were fed for 142 days. There were 3 treatments: T₁) one Synovex-S implant at the beginning of the trial, T₂) two Synovex-S implants at the beginning of the trial and T₃) one implant initially, followed by reimplanting after 77 days. Daily gain showed a 9.4 and 11.3% improvement for T₂ and T₃ over T₁ (control) and feed efficiency was 3.3 and 8.6% better on T₂ and T₃, respectively during the 142 day feeding period.

In general, blood estrogen levels, obtained by monthly blood sampling and radioimmunoassay, increased following initial implanting and after reimplanting, and coincided with the feedlot response data.

Introduction

Many experiments have been conducted illustrating the beneficial effects of growth promoters on improved rate of gain and feed efficiency in growing and/or finishing beef cattle. Some growth promoters can be fed (e.g. DES for steers and heifers or MGA for heifers). The common ones used as implants are DES, Synovex and Ralgro. In general, many experiments have shown that gain can be increased from 8-15% and feed efficiency from 6-10% by using growth promoters. The average improve-

ment obtained with DES, for example, in finishing cattle is about 12-15% for gain and 8-10% in efficiency. Many producers implant cattle only one time, assuming the implant will be effective for as long as they own the cattle or until the cattle are slaughtered. Some studies have been conducted on the merit of reimplanting, but most of these have been confined to implanting during one phase (e.g. growing), followed by reimplanting in another phase (e.g. finishing or feedlot). Very few studies have been conducted, however, on reimplanting midway through the finishing or feedlot phase.

Recent studies by scientists at the Agricultural Research Service (ARS) in Beltsville, Maryland indicate that approximately 80% of the DES implanted in the ear disappears (is absorbed and metabolized) by 84 days after implanting. This suggests that reimplanting may be beneficial in providing continued stimulation for improved gain and feed efficiency in cattle which are in a feedlot for rather long feeding periods. Therefore, two studies were conducted to investigate the value of reimplanting during the finishing phase.

Materials and Methods

Trial 1.

Thirty-six Angus x Hereford feeder steer calves with an initial weight of 487 lb (about 8 mo old) were placed in the feedlot and fed a high concentrate ration (Table 1) for 171 days. At the beginning of the trial all calves were implanted with 1 Synovex-S implant in the ear. The two treatments were as follows: 1) Calves received one Synovex-S implant at the beginning of the trial and 2) Calves received one Synovex-S implant at the beginning of the trial and then were reimplanted with a second Synovex-S implant after 113 days on feed. The calves were fed in 12 pens of 3 calves each, providing 18 calves per treatment.

Table 1. Ration Used in Implant Trial 1.

Ingredient	Percent
Wheat	85.0
Cottonseed hulls	5.0
Alfalfa meal	5.0
Cottonseed meal	3.4
Urea	0.5
Salt	0.4
Calcium carbonate	0.4
Dicalcium phosphate	0.4
Aureomycin	+
Vitamin A	+
	100.0

After the steers were on feed 113 days, the calves were divided (based on pen performance during first 113 days) into treatments 1 or 2 cited above, such that the average daily gain would be the same for both treatment groups during the first 113 days on feed. To reiterate then, the cattle in both treatments were handled the same during the first 113 days, but after 113 days, the cattle in one treatment were reimplanted and the others were not.

Blood samples were obtained from all steers prior to implanting, one week after implanting, and again every 4 weeks after initial implanting throughout the trial to measure blood estrogen level (Synovex-S contains estradiol benzoate) via radioimmunoassay techniques.

Trial 2.

Twenty-seven Hereford x Angus-Holstein feeder steers (initial weight of 638 lb) were fed for 142 days on a high concentrate finishing ration (Table 2). After adaptation to the high concentrate ration, the steers were randomly allotted to 9 pens with 3 steers/pen and 3 pens/treatment. The three treatments were:

$T_1 = 1$ Implant (Synovex-S implant given at beginning of trial-not reimplanted)

$T_2 = 2$ Implants (two Synovex-S implants given at beginning of trial-not reimplanted).

$T_3 = 1+1$ Implant (one Synovex-S implant initially, followed by reimplanting with Synovex-S after 77 days on feed).

Table 2. Ration Used in Implant Trial 2.

Ingredient ¹	Percent
Corn, rolled	88.00
Cottonseed hulls	6.00
Soybean meal	3.34
Urea	0.69
Dehydrated alfalfa	0.38
Wheat midds	0.18
Calcium carbonate	0.54
Dicalcium phosphate	0.54
Salt, T M.	0.33
Aureomycin	+
Vitamin A	+
	100.00

¹ All ingredients other than corn and cottonseed hulls were combined into a pelleted supplement which was included at 6.0% of the ration.

Table 3. Feedlot Performance in Implant Trial 1.

Item	Treatment		Advantage over con- trol group
	No Reimplant (control)	Reimplanted after 113 days	
No. of steers/treatment	18	18	
Initial Wt, lb	487	487	
Reimplanted Wt, lb	864	864	
Final Wt, lb	1050	1070	+20
Performance first 113 days (Prior to reimplanting)			
Daily dry matter intake, lb	15.40	15.54	
Daily gain, lb	3.35	3.35	
Feed/lb gain, lb	4.60	4.64	
Total feed, lb	1740	1754	
Performance last 58 days (After animals in one group were reimplanted)			
Daily dry matter intake, lb	18.24	18.86	
Daily gain	3.24	3.55	+ 9.6%
Feed/gain	5.63	5.31	+ 5.7%
Total feed, lb.	1058	1093	
Performance entire 171 days			
Daily dry matter intake, lb	16.36	16.65	
Daily gain, lb	3.28	3.42	
Feed/gain	5.00	4.88	
Total gain, lb	563	583	
Total feed, lb	2798	2847	

Results and Discussion

Trial 1.

Feedlot performance data for trial 1 are shown in Table 3. During the first 113 days, the steers gained 3.35 lb/day in both treatments. Feed intake and feed/gain were also quite similar. During the last 58 days, cattle in the reimplanted group gained 3.55 vs. 3.24 lb/day for those which were not reimplanted. This represented an increase of 9.6% in daily gain during the last 58 days. Feed/gain was improved 5.7% during this time. Overall, the reimplanted group gained a total of 20 lb/steer more during the entire feeding period and consumed 49 lb more feed. If gain was valued at 40¢/lb and feed at 6¢ the extra gain would be worth \$8.00 and the extra feed cost would be about \$3.00. This does not account for cost of the second implant or any added labor expense, etc. which might be incurred in a commercial feeding operation.

In general, blood data indicated a rise in plasma estrogen levels following the initial implanting with some subsequent decline in blood levels after about 12 weeks (84 day bleeding). Steers which were reimplanted showed a sharp rise in blood estrogen levels following reimplantation and retained higher levels throughout the remainder of the feeding

Table 4. Feedlot Performance in Implant Trial 2.

Item	Treatments		
	T ₁ 1 Implant initially (Control)	T ₂ 2 Implants initially	T ₃ Reimplanted after 77 days
Initial Wt., lb.	638	638	638
Final Wt., lb.	1087	1128	1138
Average daily gain, lb.			
First 77 days	3.10	3.38	3.23
Last 65 days	3.30	3.63	3.94
Entire 142 days	3.19	3.49	3.55
Advantage over control (one implant)		+9.4%	+11.3%
		+10.3%	
142 Day Summary			
Total Gain, lb.	449	490	500
Improvement over control		+41	+51
Daily dry matter intake, lb.	18.37	19.47	18.72
Total feed intake, lb.	2586	2729	2635
Feed/lb. grain, lb.	5.76	5.57	5.27
Improvement over control		+3.3%	+8.6%
		+6.0%	

period. These results coincide with the feedlot growth data.

Trial 2.

Feedlot performance data for trial 2 are shown in Table 4. Cattle which received two implants initially gained 9.4% (41 lb) more and cattle which were reimplanted gained 11.3% (51 lb) more during the 142 day feeding period than did the controls (received one implant initially). Moreover, they were 3.3 and 8.6% more efficient (feed/gain), respectively. Or, when the data are combined, those which received two implants (either two initially or reimplanted) gained an average of 10.3% faster and were 6.0% more efficient than those receiving just one implant. Moreover, the steers receiving two implants (T₂ and T₃) gained an average of 46 lb more and ate 94 lb more feed than those receiving just one implant. If gain is valued at 40¢/lb and feed at 6¢/lb, then the extra gain would be worth about \$18.40 and the extra feed cost would be about \$6.00 for an advantage of about \$12.40. Again this does not consider cost of the extra implant, added labor, etc. While further studies need to be conducted involving larger numbers, these two studies suggest that reimplanting may be beneficial in cattle which are in the feedlot for long periods of time, perhaps 140 days or longer.