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Effect of COMPUDOSE on Grazing Steers in Pasture, Then in Feedlot

Jack Riley, Larry Corah, and Ron Pope

Summary

Steers implanted with an estradiol removable implant (COMPUDOSE¹) gained 14.8% faster during 121 days of grazing and 12.1% faster in the feedlot than control steers not implanted. Implanting improved feed efficiency 6.9% during finishing. Removing implants after grazing resulted in slowest and least efficient feedlot gains. Steers implanted only during the finishing phase gained the fastest and most efficiently in feedlot. Results of this 240-day test indicate that one implant stimulates performance at least 240 days.

Introduction

COMPUDOSE is the result of six years research at Eli Lilly Research Laboratories to develop an implant that controls release of oestradiol-17B (a naturally occurring hormone). The implant is an inert silicone rubber core surrounded by a silicone rubber matrix containing molecular oestradiol-17B. Size and shape of the implant permits removal, if desired, to positively terminate treatment. Extensive field research is being conducted at universities to determine the effectiveness of the implant in grazing and finishing steers. But the Food and Drug Administration has not yet approved the implant.

Procedure

We took individual weights of the 72 yearling Hereford steers used (from one source) on two consecutive days at the beginning and end of the grazing and feedlot phase. Steers were grazed on predominantly brome grass pasture 121 days (March 25-July 24, 1980) supplemented with 2.7 pounds (dry matter) per steer per day of 12% C.P. range cubes. The experimental design is shown in Table 5.1. In the feedlot, each treatment was replicated three times, 6 steers per replicate. Each steer was checked 28 days after implanting to determine implant losses and to reimplant for losses. Observations were made for abnormal behavior such as "buller steers." The ration of 80% grain sorghum, 15% sorghum or corn silage and 5% supplement (dry matter basis) during the feedlot phase provided at least 11.5% crude protein, .4% calcium, .3% phosphorus, and 30 grams of Rumensin per ton. All steers were slaughtered at approximately the same average weight on two dates (14 days apart). Hot carcass weights were used to adjust final feedlot weights for possible fill differences. Each steer was checked for liver abscesses at slaughter, and carcass measurements were taken 24 hours later.

¹COMPUDOSE is to be trademark name for the estradiol implant produced by Elanco Products Co., Division of Eli Lilly Co., Indianapolis, IN 42606. Implants and partial financial assistance provided by Eli Lilly Co.

Results

During the 121-day grazing period, implanted steers gained 23.5 pounds more (14.8%) than those not implanted (Table 5.2). Four implants lost during the first 4 weeks were replaced at the 28-day weighing. Steers with implants during the feedlot phase gained 12.1% faster, required 14 fewer days on feed to make the same total gain, and were 6.9% more efficient.

Feedlot performances of the 4 treatment groups are shown in Table 5.4. Implant removal after grazing resulted in poorest gains and efficiency. Steers implanted only during the feedlot phase were fastest gaining and most efficient of any treatment group.

Performances for the combined grazing and feedlot phases are shown in Table 5.5. Steers implanted only for the feedlot phase and those with implants during both grazing and feedlot phases gained similarly. Most of the increased gain from implanting during grazing was lost when the implant was removed before the feedlot phase.

Number of "buller" steers or other mounting activity did not differ among treatment groups.

Table 5.1. Experimental Design

Grazing treatment	No implant		Implant	
No. steers	36		36	
Feedlot treatment	No implant	Implanted	Implant removed	Implant retained
No. steers	18	18	18	18

Table 5.2. Effect of COMPUDOSE on performance of grazing steers
(March 25 - July 24, 1980)

	<u>No implant</u>	<u>Implant</u>
No. steers	36	33
No. days	121	121
Initial wt., lb.	516.8	515.8
Final wt., lb.	671.5	694.0
Gain, lb.	154.7	178.2
ADG, lb.	1.28	1.47

Table 5.3. Effect of COMPUDOSE on performance of feedlot steers
(July 25 - November 24 or December 8, 1980)

	No implant	Implant
No. steers	34	32
Days in feedlot	136	122
Initial wt., lb.	689.6	676.4
Adj. final wt., lb. ¹	1084.1	1073.0
Gain, lb.	394.5	396.6
ADG, lb.	2.90	3.25
Daily D.M., lb.	20.92	21.81
Feed/gain	7.21	6.71

¹Adjusted from hot carcass weight and average 59.5 dressing percentage.

Table 5.4. Effect of grazing treatment on feedlot performance and carcass characteristics of steers

Grazing	No implant	No implant	Implant	Implant
Feedlot	No implant	Implant	No implant	Implant
No. steers	18	17	16	15
Days in feedlot	136	122	136	122
Initial wt., lb.	679.1	665.4	701.4	688.9
Adj. final wt., lb. ¹	1079.2	1072.9	1089.6	1073.1
Gain	400.1	407.5	388.2	384.17
ADG	2.94	3.34	2.85	3.15
ADF	21.14	21.24	20.70	22.38
F/G	7.19	6.36	7.26	7.10
Carcass:				
Hot wt., lb.	641.9	638.2	648.1	638.3
Fat, in.	.59	.49	.51	.52
LEA, sq. in.	11.21	11.98	11.53	12.19
USDA, grade	11.78	11.41	11.69	11.73
USDA, yield grade	3.37	2.87	3.09	2.88

¹Adjusted to 59.5 dressing percentage.

Table 5.5. Effect of COMPUDOSE on total grazing and finishing performance
(March 25 - November 24 or December 8, 1980)

Grazing	No implant	No implant	Implant	Implant
Feedlot	No implant	Implant	No implant	Implant
No. Steers	18	17	16	15
Days	257	243	257	243
Initial Wt., lb.	521.3	514.0	523.2	510.5
Adj. Final Wt., lb.	1079.2	1072.9	1089.6	1073.1
Gain	557.9	558.9	566.4	562.6
ADG	2.17	2.30	2.20	2.32

Response to Implants

According to a recent summary from the University of Nebraska, response of nursing calves to implants has averaged 8.8%, with more benefit in steers than heifers. During the growing phase, gains were increased 15.1%. During finishing, the gain advantage was 10.8%, with 6 to 10% less feed required per unit of gain.