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Effects of preweaning and postweaning implants on suckling, growing, and finishing steer performance - a three trial summary

Abstract

Over 500 crossbred steers were used in three trials to compare lifetime implant strategies and to study the effects of implanting during the suckling period on performance in the growing and finishing periods. Contrary to previous research, implanting in the suckling period did not increase suckling gain. Implanting in the growing period increased ($P < .05$) average daily gain, and the implant response in the growing period was not influenced by suckling implant treatment. Steers implanted twice during the finishing period had similar finishing gains regardless of prior implant treatment. Steers implanted only once during the finishing phase gained less ($P < .05$) than those implanted twice, and while their gains were higher than those of control steers, the difference was small ($P > .05$). Implanting steers in the finishing phase tended to improve feed conversion but again the difference was not statistically significant. All implant treatments increased ($P < .05$) lifetime average daily gains and total gain, and there was no difference among implant combinations. Implant treatments increased lifetime gains by 30 to 54 lbs. Because implanting in the suckling period did not reduce cattle performance during the growing and finishing periods, there appears to be no basis for discounting the price of previously implanted cattle. Additionally, this study emphasizes the importance of reimplanting cattle during long finishing periods

Keywords

Cattlemen's Day, 1987; Kansas Agricultural Experiment Station contribution; no. 87-309-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 514; Beef; Preweaning; Postweaning; Implants; Suckling; Growing; Performance

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Effects of Prewearing and Postweaning Implants¹
on Suckling, Growing, and Finishing Steer Performance¹
-A Three Trial Summary-

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Summary

Over 500 crossbred steers were used in three trials to compare lifetime implant strategies and to study the effects of implanting during the suckling period on performance in the growing and finishing periods. Contrary to previous research, implanting in the suckling period did not increase suckling gain. Implanting in the growing period increased ($P < .05$) average daily gain, and the implant response in the growing period was not influenced by suckling implant treatment.

Steers implanted twice during the finishing period had similar finishing gains regardless of prior implant treatment. Steers implanted only once during the finishing phase gained less ($P < .05$) than those implanted twice, and while their gains were higher than those of control steers, the difference was small ($P > .05$). Implanting steers in the finishing phase tended to improve feed conversion but again the difference was not statistically significant. All implant treatments increased ($P < .05$) lifetime average daily gains and total gain, and there was no difference among implant combinations. Implant treatments increased lifetime gains by 30 to 54 lbs.

Because implanting in the suckling period did not reduce cattle performance during the growing and finishing periods, there appears to be no basis for discounting the price of previously implanted cattle. Additionally, this study emphasizes the importance of reimplanting cattle during long finishing periods.

Introduction

While numerous implanting trials have been conducted, few have studied the long-term effects of implanting during the suckling and growing periods on performance in the finishing period. Some research has indicated that implanting in the suckling period reduces performance during the finishing phase. Our trials were

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conducted to study the impact of suckling- and growing-phase implants on finishing and lifetime performance.

Experimental Procedures

Approximately 100 suckling, exotic crossbred, steer calves on each of five Kansas ranches were assigned at branding (1 to 2 months old) to receive either no implant (Control) or a 36 mg Ralgro® implant. Non-shrunk weights were taken at branding and weaning. Following weaning, the calves were managed and allotted to various implant treatments for the growing and finishing periods as follows:

Trials 1 and 2. In both trials, calves at one ranch were weaned and backgrounded for approximately 1 month before being shipped to the Southwest Kansas Experiment Station. Calves at another ranch were weaned and shipped directly to the station. The steers were on a "warm-up" ration at the experiment station for 30 to 60 days before the growing period started. They remained at the station for the finishing phase.

Trial 3. Calves were placed on the growing trial at weaning and remained at the ranch until they were shipped to the KSU Beef Research Unit at Manhattan shortly before starting the finishing phase.

In each trial, calves were allotted by suckling implant treatment and weight at branding to implant treatments for the growing period as shown in Table 13.1. Also shown are implant treatments for the finishing phase.

Non-shrunk weights were taken at the beginning of the growing period. Beginning (end of growing period) and ending weights for the finishing period were the average of two weights taken on consecutive days after an overnight stand without feed and water. During finishing, the steers were fed in pens of 5 to 10 steers each.

The growing period lasted 59, 63, and 142 days for trials 1, 2, and 3, respectively. The days from branding to the end of the growing period and length of the finishing period were 276 and 121 (Trial 1), 306 and 147 (Trial 2), and 357 and 126 (Trial 3), respectively. Reimplanting occurred on day 56 of the finishing period in all trials. All implants were 36 mg. Ralgro placed subcutaneously near the base of the ear.

Results and Discussion

Suckling Phase: Data in Table 13.2 are the combined results of all three experiments. Implanting at branding time (1 to 3 months of age) did not improve average daily gain up to weaning. Most other research indicates that implanting during the suckling period significantly increases weight gains. Calves in trials 1 and 2 had a warmup period prior to the start of the growing phase. In those trials only, implanting during the suckling phase increased ($P < .05$) average daily gain from branding to the start of the growing period.

Table 13.1. Experimental Design of the Long-Term Implant Trial

No. Steers	No. Pens ¹	Phase		
		Suckling	Growing	Finishing
79	11	- ²	-	- - ³
78	11	-	-	+ +
97	11	-	+	+ +
97	11	+	-	+ +
65 ⁴	8	+	+	+ -
96	11	+	+	+ +

¹ Number of pens (5 to 10 steers each) per treatment in the finishing phase.

² - = no implant, + = implanted.

³ A second implant, when used, was given after 56 days on feed.

⁴ This implant combination was not evaluated in Trial 3.

Growing Phase: For the three trials combined, calves receiving an implant in the growing phase gained faster ($P < .05$) than non-implanted controls (Table 13.2). However, it should be noted that when Trial 2 was analyzed alone, there was no significant benefit from the implant.

Prior suckling implant treatment did not influence average daily gain in the growing phase. Calves receiving an implant in both the suckling and growing periods had a higher ($P < .05$) average daily gain from branding to the end of the growing period than controls, as shown in Table 13.2.

Finishing Phase: All steers implanted twice in the finishing phase gained faster ($P < .05$) than controls and steers not reimplanted. Steers not reimplanted gained only slightly faster ($P > .05$) than controls. This emphasizes the importance of implanting twice during a long finishing period. All implant treatment groups tended to have better feed conversions than controls, although differences were not statistically significant.

Steers that were not implanted prior to the finishing period gained essentially the same during finishing as steers that had received 1 or 2 implants prior to the finishing period. Correspondingly, steers receiving two implants prior to the finishing period had similar feed conversions to steers not receiving prior implants.

Table 13.2. Effects of Implant Combinations on Steer Performance during the Suckling and Growing Periods

Average Daily Gain, lb ¹	Implant Treatment ²			
	--	- +	+ -	++
Branding to Weaning	1.83		1.84	
Branding to Start of Growing Period ³	2.04 ^a		2.10 ^b	
Growing Period ⁴	2.19 ^a	2.31 ^b	2.10 ^a	2.32 ^b
Branding to End of Growing Period	1.97 ^a	1.98 ^{ab}	1.99 ^{ab}	2.03 ^b

¹ Least-squares means.

² Implant treatment in the suckling and growing phase, respectively.

³ Trials 1 and 2. Those trials included a 30 to 60-day warm-up period prior to the growing phase.

⁴ Trial x implant treatment interaction (P<.05).

^{ab} Values with different superscripts in the same row differ (P<.05).

Lifetime Performance: Lifetime average daily gain was increased (P<.05) by all implant combinations. Furthermore, final weight was increased (P<.05) over controls in all treatments in which cattle were implanted twice during finishing. There were no differences in cattle gains from branding to slaughter or in final weights among any of the implant combinations. According to these data, implanting during the suckling phase does not reduce subsequent performance if implanting is repeated. Moreover, these trials indicate the importance of implanting twice during a long finishing period.

Table 13.3. Effects of Implant Combinations on Steers Performance during the Finishing Period and on Lifetime Performance

Item	Suckling and Growing Periods Finishing Period	Lifetime Implant Treatment					
		-- ² -- ³	--	- +	+ -	++	++
Finishing Period:							
Average daily gain		2.85 ^a	3.22 ^b	3.15 ^b	3.17 ^b	2.97 ^a	3.10 ^b
Feed/gain		7.2	6.5	6.7	6.9	7.1	6.8
Dry matter intake		20.6	21.2	21.2	21.2	21.3	21.1
Final weight		1147 ^a	1202 ^b	1190 ^b	1195 ^b	1175 ^{ab}	1201 ^b
Lifetime:							
Average daily gain		2.22 ^a	2.34 ^b	2.32 ^b	2.32 ^b	2.29 ^b	2.34 ^b
Total gain		985 ^a	1039 ^b	1030 ^b	1030 ^b	1015 ^b	1036 ^b

¹ Least square means, expressed in lbs.

² The first sign refers to suckling implant treatment, the second, growing.

³ The first sign refers to implant treatment at the start of finishing, the second to treatment at day 56 of finishing.

^{ab} Values with different superscripts in the same row differ (P<.05).