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Effects from using Ralgro sequentially on sexual development of bulls and on growth and carcass characteristics of steers and bulls

Abstract

Forty-nine Simmental X Hereford and Hereford calves (24 bulls and 25 steers) were used to study the effect of Ralgro on growth, carcass traits, sex drive, sperm production, and development of sex organs. Approximately half of the bulls and half of the steers received a total of four 36-mg. Ralgro implants, one implant each 100 days (approximately 28, 128, 228 and 328 days of age). Implanted bulls and steers had higher average daily gains; however, the effect was greater in steers than bulls. Ralgro impaired all facets of sexual development measured. None of the implanted bulls could have been used for breeding purposes as yearlings.

Keywords

Cattlemen's Day, 1979; Report of progress (Kansas State University. Agricultural Experiment Station); 350; Beef; Sexual development; Bulls; Growth; Carcass characteristics; Steers

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Effects from Using Ralgro^{1,2} Sequentially on Sexual Development of Bulls and on Growth and Carcass Characteristics of Steers and Bulls

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Summary

Forty-nine Simmental X Hereford and Hereford calves (24 bulls and 25 steers) were used to study the effect of Ralgro on growth, carcass traits, sex drive, sperm production, and development of sex organs. Approximately half of the bulls and half of the steers received a total of four 36-mg. Ralgro implants, one implant each 100 days (approximately 28, 128, 228 and 328 days of age). Implanted bulls and steers had higher average daily gains; however, the effect was greater in steers than bulls. Ralgro impaired all facets of sexual development measured. None of the implanted bulls could have been used for breeding purposes as yearlings.

Introduction

Ralgro increases growth and performance of steers, but little is known about its effects on bulls or effects from implanting steers every 100 days from birth to slaughter. It is not known if bull calves implanted with Ralgro can be used later for breeding. We measured the effect of four sequential 36-mg. Ralgro implants on growth and carcass traits of steers and bulls and on sexual development of yearling bulls.

Experimental Procedure

Eleven of 24 bull calves and 13 of 25 steer calves were implanted with 36 mg. of Ralgro April 19 when calves averaged 28 days of age (range 0 to 71). All implanted animals were reimplanted at approximately 128, 228, and 328 days of age. All calves were weaned October 14, 1977, and placed on a growing ration of 19% corn, 77% corn silage, and 4% supplement. January 16, 1978, they were switched to a finishing ration that was 73% corn, 13% corn silage, and 4% supplement. All calves were weighed at birth, at weaning (October 14, 1977), 120 days after weaning (February 23, 1978), and at slaughter.

Testicle-scrotal circumference was measured October 14, 1977, February 23, 1978, and June 10, 1978. The measurement was taken at the area of maximum circumference and included the scrotum and both testicles. Pelvic area was measured May 15, 1978, with a Rice pelvimeter. Semen was collected by electro-ejaculator.

¹Ralgro is a product of International Minerals & Chemical Corporation.

²Mention of products and companies is made with the understanding that no discrimination is intended and no endorsement implied.

During May and June, bulls were observed for mounting activity, two hours each day for eight days, and number of mounts by each bull was recorded.

Sex drive was evaluated June 10, 1978. Each bull was exposed to a heifer in heat for 10 minutes and scored on a scale of 1 to 5; one representing no interest and five representing mating.

Steers were slaughtered June 13, 1978, and bulls were slaughtered June 15, 20, or 27. At slaughter, testicle length, circumference, and weight and penis weight and length were measured. Bull and steer carcasses were evaluated for quality and yield grade.

Results and Discussion

Ralgro implants increased average daily gain (ADG) in bulls and steers over nonimplanted animals (2.04 lbs. versus 1.97 lbs. in bulls and 2.12 lbs. versus 1.95 lbs. in steers). Implanted steers weighed 83.7 lbs. more at slaughter than nonimplanted steers (Table 3.2). Implanted bulls had smaller testicle-scrotal circumferences but larger pelvic areas (Table 3.1) indicating that Ralgro increases pelvic bone growth.

Nonimplanted bulls did three times more mounting than implanted bulls, so implanting may have an advantage for bulls that go into feedlots.

Implants depressed sex drive scores (1.45 vs. 2.08) and semen production. Eight of 13 nonimplanted bulls were classified as fertile but none of the 11 implanted bulls was classified fertile. No sperm were found in 2 of 13 nonimplanted bulls or 6 of 11 implanted bulls. Testicle length, circumference, and weight and penis length and weight, measured at slaughter, were depressed in implanted bulls, (Table 3.1) indicating that Ralgro significantly retards sexual development.

With the few animals used, differences in quality and yield grades were inconsistent (Table 3.2).

We concluded that four Ralgro implants will suppress sexual development in bulls to the point that they cannot be used for breeding as yearlings, and that implanting may benefit bulls fed for slaughter by both promoting growth and depressing mounting activity. Additional data are needed to determine if fewer implants would have similar effects.

Table 3.1. Effects of Raigro on sexual development of bulls.

	Testicle-scrotal circum(cm)			Pelvic ¹ area (sq.cm.)	Slaughter data				
	10-14-77	2-23-78	6-10-78		Testis length (cm.)	Testis circum. (cm.)	Testicle wt. (gm.)	Penis wt. (gm.)	Penis length (cm.)
Not implanted ²	23.51	29.63	37.42	164.08	27.05	18.64	485.20	337.20	32.55
Implanted ²	20.10	22.65	30.90	197.54	19.91	14.03	247.93	219.07	30.07

¹Taken rectally with a pelvimeter on 6-10-78.

²All differences (means) of measurements taken differed significantly ($P < .05$) between implanted and nonimplanted bulls.

Table 3.2. Effects of Raigro on growth and carcass traits of bulls and steers.

	Number of animals	Wean ¹ wt.(lbs.)	Wt. on ² 2-23(lbs.)	Slaughter wt.(lbs.)	ADG birth to slaughter (lbs.)	Carcass ³ grade	Yield grade	Back fat(in.)
Bulls								
Not implanted	13	441.04 ^a	729.32 ^a	959.81 ^a	1.97 ^a	9.04 ^d	2.00 ^a	0.24 ^a
Implanted	11	450.20 ^a	714.13 ^a	995.93 ^a	2.04 ^a	7.68 ^b	2.19 ^a	0.24 ^a
Steers								
Not implanted	12	430.41 ^a	704.18 ^a	951.72 ^a	1.95 ^a	5.59 ^a	3.00 ^a	0.48 ^a
Implanted	13	477.26 ^b	742.74 ^a	1035.41 ^b	2.12 ^b	6.93 ^a	2.55 ^b	0.37 ^b

¹Taken 10-14-77.

²120 day weight on feed.

³1 = prime⁺, 12 = standard⁻

^{a,b}Means in the same column with different superscripts differ significantly ($P < .05$).



Raigro-implanted bulls had much smaller testicles than controls.