

observed digestibility does not appear useful in predicting average daily gain. However, year and month accounted for a major proportion of the variation, and only 2 years were represented in these data. Therefore, further replications are needed to obtain more precise estimates of the relationship between rate of digestion, digestibility and average daily gain.

### Literature Cited

Horn, G.W., *et al.* 1979. Okla. State Univ. Ag. Exp. Sta. Res. Rep. MP-104:104.

## Effects of Reimplantation for Grazing Calves

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### Story in Brief

One hundred ten steer and heifer calves were used to study the effects of Ralgro<sup>1</sup> implants on calves grazing native pastures. Administration of Ralgro implants increased weight gains 31 lb over a 449-day grazing period. This improved performance yielded \$22.40 more profit per calf. Equal responses were noted for calves reimplanted at 90- and 180-day intervals. In yearlings, response to an implant was equal for calves implanted for the first time and calves which had received implants previously. Ralgro implants appeared most beneficial when pastures supported rapid growth.

### Introduction

High interest rates, combined with increasing fertilizer and land costs have reduced the profit margins of cattle-growing operations. The use of growth-stimulating implants is one method which may be used to increase rate of gain and total profits. Ralgro implants have been shown to increase gains in pasture cattle in many trials. However, the effect of frequency and number of implants has not been thoroughly studied. The purpose of this study was to determine the weight gain response of beef calves to Ralgro implants over a period of approximately 15 months.

### Materials and Methods

A total of 110 crossbred ( $\frac{1}{2}$  Charolais,  $\frac{1}{4}$  Angus and  $\frac{1}{4}$  Hereford) calves (200 lb) were used in three different sequences of implantation with Ralgro.

Steer and heifer calves were randomly allotted between treatments. Calves were nursing and later grazing two different pasture types. Pasture one has deep sand and is primarily tall grass species. Pasture two has predominantly red clay soil with short grass species. Calves were born between January 1 and April 1, 1978.

The three sequences of Ralgro implantation are presented in Table 1. One set of calves was not implanted until 1 year of age. Calves on Treatments 2 and 3 received their first implants in April of 1978 when the calves were branded, dehorned and castrated. Treatment 2 calves received subsequent implants at 180-day intervals while calves in Treatment 3 were reimplanted with Ralgro approximately every 90 days. The

<sup>1</sup>IMC Chemical Group, Inc., Terre Haute, Indiana.

<sup>2</sup>Davison and Sons Cattle Company, Arnett, Oklahoma.

**Table 1. Treatment schedule**

Date	Days	Treatment		
		1	2	3
April, 1978	0	—	Implant	Implant
July, 1978	90	—	—	Implant
October, 1978	167	—	Implant	Implant
January, 1979	266	—	—	Implant
April, 1979	371	Implant	Implant	Implant

fall implantation was given at the time of weaning. The summer and winter implants in Treatment 3 were inserted at times when the cattle are not normally worked on this ranch<sup>2</sup>. The following spring (April, 1979) all three treatment groups were implanted with Ralgro. All calves were weighed at approximately 90-day intervals.

## Results and Discussion

Weight of the calves at the end of each 90-day period is shown in Table 2. The comparison of weight gained over 371 days indicated that reimplantation at 90 or 180 days increased weight gain by an average of 31 pounds. If one assumes this gain is worth \$75 per hundred weight, Ralgro increased the value of the calf by \$23, which more than covers the 60-cent cost of the implant. A 26-pound advantage after 449 days was evident for calves implanted every 90 or 180 days as compared to calves given a single implant as yearlings in Treatment 1. This suggests that growth stimulants are beneficial for young calves and that the early gain advantage for Ralgro is maintained throughout the grazing period even with later implantation. Steers gained 53 pounds more than heifers in this trial. Though not significantly different, the gain response to Ralgro the first 371 days appeared greater with heifers (10 percent) than with steers (6 percent). Repeated use of Ralgro for replacement heifers may reduce subsequent breeding performance (Muncy, 1979).

Ralgro implantation increased gain of 200-pound calves by 7 percent during the first 90 days (Table 3). Reimplantation after 90 days continued to increase gains as compared to cattle without implants. However, cattle which were implanted the first 90

**Table 2. Effects of reimplantation with Ralgro on weight by periods**

Item	Treatment			Pasture		Sex <sup>a</sup>	
	1	2	3	1	2	H	S
Cattle no.	39	35	36	56	54	54	56
Weight, lb							
Initial	217	221	217	233	205	215	223
90 days	429	448	444	453	426	435	445
167 days	540	563	570	576	538	545 <sup>b</sup>	569 <sup>c</sup>
266 days	574 <sup>b</sup>	601 <sup>c</sup>	607 <sup>d</sup>	617	569	581 <sup>b</sup>	605 <sup>c</sup>
371 days	603 <sup>b</sup>	636 <sup>c</sup>	635 <sup>c</sup>	647	600	613 <sup>b</sup>	635 <sup>c</sup>
449 days	805 <sup>e</sup>	834 <sup>f</sup>	832 <sup>f</sup>	848	797	791 <sup>b</sup>	853 <sup>c</sup>
Weight gained to							
371 days	385 <sup>b</sup>	415 <sup>c</sup>	417 <sup>c</sup>	414	395	398 <sup>e</sup>	412 <sup>f</sup>
Total weight							
gained, 449 days	587 <sup>b</sup>	613 <sup>c</sup>	614 <sup>c</sup>	616	592	577 <sup>b</sup>	630 <sup>c</sup>

<sup>a</sup>H = Heifer, S = Steer.

<sup>bcd</sup>Means in a row within a heading with different superscripts differ statistically ( $P < .05$ ).

<sup>ef</sup>Means in a row within a heading with different superscripts differ statistically ( $P < .10$ ).

**Table 3. Effect of reimplantation with Ralgro on daily gain within periods**

Item	Treatment			Pasture		Sex <sup>a</sup>	
	1	2	3	1	2	H	S
Cattle no.	39	35	36	56	54	54	56
ADG by period							
90 days	2.35 <sup>b</sup>	2.52 <sup>c</sup>	2.51 <sup>c</sup>	2.45	2.46	2.45	2.45
77 days	1.44 <sup>b</sup>	1.50 <sup>c</sup>	1.64 <sup>d</sup>	1.59 <sup>f</sup>	1.46 <sup>e</sup>	1.43 <sup>e</sup>	1.62 <sup>f</sup>
99 days	.33	.39	.37	.42 <sup>c</sup>	.30 <sup>b</sup>	.37	.36
105 days	.28	.33	.26	.28	.30	.30 <sup>b</sup>	.28
78 days	2.58	2.55	2.52	2.58	2.52	2.29	2.80
Overall ADG	1.31 <sup>b</sup>	1.37 <sup>c</sup>	1.37 <sup>c</sup>	1.37 <sup>f</sup>	1.32 <sup>e</sup>	1.28 <sup>g</sup>	1.40 <sup>h</sup>

<sup>a</sup>H = Heifers, S = Steers.

<sup>bcd</sup>Means in a row within a heading with different superscripts differ statistically ( $P < .01$ ).

<sup>ef</sup>Means in a row within a heading with different superscripts differ statistically ( $P < .05$ ).

<sup>gh</sup>Means in a row within a heading with different superscripts differ statistically ( $P < .10$ ).

days but not reimplanted continued to outgain the non-implanted cattle. This suggests that the effective life of the Ralgro implant may exceed 90 days. A 4.6 percent advantage in gain was evident for reimplanted cattle over the 449-day trial. Calves which received an implant first as yearlings (371 days) gained weight the next 78 days at a rate equal to calves which had received implants earlier during growth. Examination of periods of rapid and slow growth, which reflect forage quality or quantity, indicated that implantation with Ralgro produced little effect on gain during time periods of slower growth. This suggests that an adequate feed supply is essential to obtain an advantage from Ralgro implants.

### Literature Cited

Muncy, C.D., *et al.* 1979. Okla. Agr. Exp. Sta. Res. Rep. MP-104:152.