

RUMENSIN AND RALGRO ALONE AND IN
COMBINATION FOR GROWING-FINISHING STEERS
AND GROWING HEIFERS

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Feed additives and subcutaneous implants have been used in the cattle industry for more than two decades to promote weight gains and improve feed efficiency. Rapid weight gains and increasing feed utilization are two important steps in maximizing the efficiency of red meat production. Ralgro, a subcutaneously implanted anabolic agent, promotes weight gains on pasture and in the feedlot. Rumensin, a biologically active feed additive, has proven its ability to increase weight gains and improve the feed-to-gain ratio in grazing animals while improving the feed-to-gain ratio in the feedlot.

The objectives of this study were to examine the effects of Rumensin and Ralgro, used alone or in combination, on weight gains and feed efficiency for growing and finishing steers and growing heifers. Most of the heifers will become part of a five-year study to evaluate the effects of these treatments on developing replacement heifers.

EXPERIMENTAL PROCEDURE

Spring-born calves, dropped in March and April, were weaned on September 11, put on rake-bunched meadow hay and started on a barley-biuret supplement. On October 24, after an overnight shrink off of feed and water, 56 steers and 40 heifers were weighed and stratified by weight to four treatments. These same weighing conditions were used for all weights discussed in this paper. Treatments were control, Ralgro alone, Rumensin alone and a combination of Ralgro and Rumensin. Ralgro implants were 36 mg and daily dosage of Rumensin per head was 200 mg. All animals received 3.2 pounds of supplement and a full feed of meadow hay. Supplement consisted of .12 pounds of biuret mixed in with barley which made up the remainder. Rumensin was also mixed with the supplement for those on the Rumensin treatments. Hay was weighed in daily with refusals weighed back weekly. On January 23, 91 days after the first implant, all calves on the Ralgro treatments were reimplanted. The winter portion of the trial was terminated on May 7, with animals being weighed before going on range. Heifers were put with the breeding herd and will become part of a long-term study to determine the effect of these treatments on productive and reproductive performance of replacement heifers.

Steers were put on crested wheatgrass range and received a supplement starting at 1 pound of barley. This was increased to 3 pounds by the August 13 termination for the summer grazing period. Biuret provided added protein. Treatments remained the same, with the steers on the Ralgro treatments being reimplanted on May 7.

On August 13, steers were put on an accelerated supplement program until they reached full feed. When on full feed, steers remained on range and received barley ad libitum along with hay at 4 pounds per head and .10 pounds of biuret and .10 pounds limestone. Ralgro steers were again reimplanted and those on Rumensin continued to receive Rumensin. Final weights were taken on November 18 and steers were slaughtered with carcass data collected. Carcass data have not been summarized and will not be presented in this paper.

Fall-born calves dropped in October and November were weaned on July 25, put on meadow aftermath and/or rake-bunched hay and started on a barley-biuret supplement. On August 22, 36 steers and 40 heifers were weighed and assigned to treatments as described for the spring-born calves. They were receiving 3.6 pounds of supplement at the initiation of the trial and moved up to 6.6 pounds by the December 11 termination. These levels were used to background the steers for moving into the feedlot. The supplements consisted of barley and .12 pounds of biuret.

Calves were weighed on December 11, with steers on the Ralgro treatments reimplanted and moved into the feedlot. The feedlot ration was the same as that for the spring-born steers on range. The feedlot portion of the trial was terminated on May 13, with steers weighed and sent to slaughter. Carcass data were collected but have not been analyzed. Heifers were added to the breeding herd and put on the replacement heifer study previously discussed.

The next year, 36 fall-born heifers were handled in an identical manner and on the same calendar dates as the previous year and assigned to the same treatments, except that they received a constant supplement of 3.1 pounds. They became a part of the long-term replacement heifer study.

RESULTS AND DISCUSSION

Gain data on the spring-born steers from the beginning of the winter period to slaughter are presented in Table 1. Overall, Ralgro alone, Rumensin alone and the combination increased gains 4, 7 and 16 percent, respectively, over the controls. Daily gain response to Ralgro was quite variable ranging from -9 percent over the winter to 23 percent over the controls during the summer grazing. Rumensin ranged from 5 to 9 percent over the controls and the combination 12 to 20 percent, which represent rather consistent results over a wide array of feeding regimes and weather. The reduced response to Rumensin during the summer grazing period, as compared to other periods, may be because of quality of forage. Response was about as expected early but tailed off towards the end of the grazing period. This was a good water year and range grass was plentiful, but nutritive quality of the grass was very poor as compared to most years. These steers gained very little weight the last 40 days of this period. Previous studies have indicated a reduced response to Rumensin when fed with a low level of supplement and with very poor feed, such as straw of poor quality grass.

Table 1. Gain data of spring-born steers^{1/}

Treatment	Initial weight	Winter	Summer	Finishing	Final weight	Overall	Increase over control
		ADG (196 days)	ADG (98 days)	ADG (97 days)		ADG (391 days)	
		—1b—					%
Control	418	1.22	1.39	2.67	1052	1.62	-
Ralgro	418	1.12	1.71	2.77	1074	1.68	4
Rumensin	418	1.33	1.48	2.81	1095	1.73	7
Ralgro- Rumensin	418	1.37	1.61	3.20	1155	1.88	16

^{1/} Each treatment group consisted of 14 steers.

Daily feed intake and feed efficiency for the spring-born steers over the winter and during the finishing period are shown in Table 2. Ralgro improved feed efficiency by 8 percent over the winter as compared to the controls. Rumensin reduced feed intake and, along with the increased gains, improved feed efficiency by 24 percent when fed alone. In combination with Ralgro it reduced feed required for each pound of gain by 27 percent.

Table 2. Feed efficiency of spring-born steers

Treatment	Winter period			Finishing period ^{2/}		
	Daily intake ^{1/}	Feed per lb of gain	Improvement over control	Daily intake	Feed per lb of gain	Improvement by Rumensin
	lb	lb	%	lb	lb	%
Control	15.8	13.0	-			
Ralgro	13.3	11.9	8	22.1	8.1	-
Rumensin	13.1	9.9	24			
Ralgro- Rumensin	13.0	9.5	27	21.4	7.1	12

^{1/} Feed intake includes 3.2 lbs of supplement with the remainder being meadow hay.

^{2/} Steers were fed by Rumensin groups so data on Ralgro are not available.

Steers not receiving Rumensin were combined to form one group and those receiving Rumensin formed another during the finishing period, so the consumption data only allow a comparison of those receiving Rumensin as opposed to those not receiving it. Rumensin improved feed efficiency by 12 percent, despite the fact that these animals were larger going into the finishing phase and were heavier at the end as compared to those not receiving Rumensin. Feed intake was again reduced by Rumensin.

In Table 3, gain and feed data are presented for the spring-born heifers. Ralgro, Rumensin and the combination increased gains by 3, 18 and 31 percent, respectively, as compared to the controls and reduced feed required per pound of gain by 5, 21 and 27 percent. These results are similar to the steers, except for less of a response by the heifers to Ralgro or Rumensin alone. However, the combination results were similar.

Table 3. Spring-born heifers performance over the winter (196 days)^{1/}

Treatment	Initial weight	ADG	Increase in gain over control	Daily feed intake ^{2/}	Feed per lb of gain	Improvement over control
	lb	lb	%	lb	lb	%
Control	407	0.99	-	12.8	12.9	-
Ralgro	409	1.02	3	12.4	12.2	5
Rumensin	409	1.17	18	12.0	10.2	21
Ralgro-Rumensin	408	1.30	31	12.2	9.4	27

^{1/} Each treatment group consisted of 9 heifers.

^{2/} Feed intake includes 3.2 lbs of supplement with the remainder being meadow hay.

Table 4 presents the gain data for the fall-born steers during the fall period and in the feedlot. Response to all treatment groups, as compared to the controls, was much greater during the fall feeding period than in the feedlot. Overall, Ralgro increased gains by 13 percent, Rumensin 9 percent and the combination 18 percent. Feed efficiency comparisons (Table 5) show that again despite Rumensin steers being heavier, feed intake was reduced by feeding Rumensin and an improvement in feed required per pound of gain of 12 percent was realized. This is almost identical to the results of the spring-born steers finished on range.

Table 4. Gain data of fall-born steers^{1/}

Treatment	Initial weight	Fall ADG (111 days)	Finishing ADG (153 days)	Final weight	Overall ADG (264 days)	Increase in gain over control
		lb				%
Control	535	1.50	1.96	1001	1.77	-
Ralgro	544	1.87	2.09	1071	2.00	13
Rumensin	548	1.80	2.03	1058	1.93	9
Ralgro-Rumensin	545	1.93	2.21	1098	2.09	18

^{1/} Each treatment group consisted of 9 steers.

Table 5. Feed efficiency of fall-born steers during the finishing period^{1/}

Treatment	Daily feed intake	Feed per lb of gain	Improvement by Rumensin
	lb	lb	%
Control and Ralgro	27.4	13.6	-
Rumensin and Ralgro-Rumensin	25.6	12.0	12

^{1/} Steers were fed by Rumensin groups so data on Ralgro are not available.

Gain data of fall-born heifers during the fall period over two years are presented in Table 6. Rumensin increased gains 16 and 8 percent over controls and with Ralgro increased gains by 41 and 19 percent. Ralgro increased gains by 14 percent in the first year but only 1 percent in the second year. Over the years, we at times get little or no response with Ralgro on a set of animals and do not have an explanation for this.

Table 7 is shown to summarize all gain data of heifers and steers through the growing and finishing periods. Overall, Ralgro increased gains 7 percent, Rumensin 10 percent and the combination 22 percent. The response was even greater on the growing animals, before being put on finishing rations. Feed efficiency, where measured, shows Ralgro with a 7 percent improvement and Rumensin 23 percent and the combination 27 percent.

Table 6. Fall-born heifers performance during the fall of two years^{1/ 2/}

Treatment	Year 1 ^{2/}			Year 2 ^{2/}		
	Initial weight	ADG	Increase in gain over control	Initial weight	ADG	Increase in gain over control
	lb	lb	%	lb	lb	%
Control	508	1.34	-	508	1.72	-
Ralgro	508	1.54	14	507	1.74	1
Rumensin	514	1.56	16	504	1.85	8
Ralgro-Rumensin	504	1.90	41	512	2.05	19

^{1/} Each treatment group consisted of 10 heifers during Year 1 and 9 during Year 2.

^{2/} Year 1 trial run 111 days and Year 2, 110 days.

Table 7. Combined gain data of all calves over all trial periods

Treatment	ADG	Increase over control	
		lb	%
Control	1.52	-	-
Ralgro	1.63	7	4
Rumensin	1.67	10	6
Ralgro-Rumensin	1.85	22	14

In summary, either Ralgro or Rumensin will provide a good gain response. However, the two in combination will not only retain the response of both separately, but in almost all cases provide more than an additive effect. Rumensin is the real key for improving feed efficiency, as seen from the data presented, but Ralgro also reduced feed required per pound of gain and the effects of it with Rumensin were additive. Either of these products used alone provide an economical return, however, by using them in combination a tremendous potential for increasing efficiency of production can be realized.