

Rumensin for Use on Grass and for Lighter Weight Calves

Jack Riley, Ph.D.

Department of Animal Science and Industry
Kansas State University
Manhattan, Kansas 66506

Rumensin® is an excellent example of a new product that has gained extremely wide acceptance during its first year on the market. Estimates ranging from 65-80% have been proposed for the number of feedlot cattle being fed this new feed additive. The willingness of cattle feeders and feed manufacturers to incorporate Rumensin into their rations and supplements has stimulated other segments of the cattle industry to raise questions concerning the potential for using the new product in non-feedlot rations. The initial FDA clearance was specifically for feedlot cattle and any other use at this time would be a violation. Considerable research is being conducted in an effort to gain additional clearances for pasture cattle and beef cows. The purpose of this paper is to review some of the research concerning Rumensin for lightweight growing cattle and stocker cattle on grass.

Rumensin® for Growing Cattle

Assuming the cattle are in a feedlot environment

rather than on pasture, it is perfectly legal to use Rumensin in the ration of growing steers and heifers. There does seem to be some confusion as to the performance which should be expected. Embry (5) summarized six growing trials as shown in Table 1. A small improvement of 1-5% in daily gain was observed at the 10, 20 and 30 gram per ton level. The most important response was an improved efficiency ranging from 4.3-9%. Our experience at Kansas State University (14) has shown greater improvement in gain and efficiency as evaluated in two heifer growth trials detailed in Table 2. A wide range of rations are fed to steers and heifers on growing rations and, consequently, considerable variation in performance has been observed; however, the 6% improvement in gain and 12% improvement in efficiency in the Kansas State studies appear to be very representative of results to be expected.

Questions probably should be raised regarding the use of Rumensin in rations for replacement heifers.

Table 1: Growth Trials With Rumensin® (6 experiments)

Rumensin® g/ton feed	Daily feed	Daily gain	Feed per lb. gain		
	lb.	% of control	lb.	% of control	lb.
0	20.66		2.12		10.06
10	20.31	98.3	2.20	104	9.47
20	19.18	92.8	2.12	100	9.35
30	18.76	90.8	2.15	101	8.91
40	18.02	87.2	2.12	100	8.75

Table 2: Effect of Rumensin® on Performance of Growing Heifers

Item	Trial 1*		Trial 2**	
	0	200 mg	0	200 mg
Dosage	0	200 mg	0	200 mg
No. heifers	48	48	20	20
Initial wt., lbs.	501.9	503.8	452	452
Final wt., lbs.	665.4	679.6	671	680
ADG	1.46	1.57	1.95	2.04
ADF (D.M. basis)	12.92	12.27	15.7	14.4
Eff.	8.85	7.82	8.05	7.06

*Trial 1 was conducted Dec. 12, 1974 - March 10, 1975.

**Trial 2 was conducted May 1, 1975 - August 10, 1975.

Table 3: Effect of Rumensin® on Reproduction
In First Calf Heifers, KSU.

Trait	Treatment	
	Rumensin*	Control
Number of heifers	36	39
% cycling, May 20	75	66
% 1st service conception	63	63
% 2nd service conception	24	30
% total conception	91	87
Average breeding date	May 30	May 28

*Rumensin® fed Dec. 12, 1974 - March 10, 1975.

Table 3 compares the reproduction performance of heifers used in the growing trial 1 of Table 2. No apparent detrimental effects were observed, and in fact, more of the Rumensin-fed heifers were cycling at the start of breeding. This agrees with Texas A & M data (9) which found that heifers fed Rumensin reached puberty at a significantly younger age. **It should be emphasized that Rumensin is not cleared for use in breeding cattle but research would indicate that heifers could be selected from a growing lot that was feeding Rumensin and not expect reduced reproductive performance.**

Rumensin® for Pasture Cattle

Once again it should be emphasized that clearance is not available for use of Rumensin in pasture cattle. Research is being conducted and hopefully approval will be forthcoming in the near future. Table 4 shows a summary of 12 trials conducted in various locations

as specified by the reference. In some cases, such as the 25 mg and 400 mg levels, the limited data does not allow for real valid comparisons. The results do support, fairly dramatically, the 100-200 mg levels as indicated by the 12-14% improvement in daily gain. Depending on length of grazing season, this would convert to approximately 30 extra pounds of gain for many summer pasture programs.

Northwest Kansas area livestock specialist, Frank Schwartz, and Sheridan County agent, Jim Grider, conducted a field trial with 62 steers and heifers divided into two groups. One group received 2 pounds grain per head per day without Rumensin and the second group received 2 pounds grain per head per day which was fortified to supply approximately 100 mg of Rumensin per head per day. In addition, half the cattle in each group were implanted, which enabled an evaluation of the complementary benefits of feeding Rumensin and implanting. Table 5 shows the results of the 80-day field study.

Rumensin and implants each improved gain during the 80 days by 20 pounds, however, when Rumensin and implants were used in conjunction, gain was increased by 36 pounds when compared to controls.

The single most important factor to consider regarding the use of Rumensin for grazing cattle is the method of feeding. As is indicated in Table 4, most research studies have been conducted by feeding the additive mixed into 1 or 2 pounds of grain fed daily. The method probably is not feasible for all producers. Other methods have been tried such as mixing with mineral, however, because of inconsistent mineral intake this procedure does not appear to be satisfac-

Table 4: Overall Summary of Rumensin® Grazing Trials.

Reference	Pasture*	Cattle/ Treatment	Input	Average Daily Gain, lb./day Rumensin® Dose (mg/day)					
				0	25	50	100-150	200	400
12	I.P.	28	2# grain	0.81	-	-	1.03	1.12	0.86
12	I.P.	30	2# grain	1.23	-	1.32	1.54	1.58	-
11	C.B.	20	2# grain	1.24	1.55	1.61	1.72	1.56	-
1	C.B.	20	1# grain	1.42	1.44	1.48	1.52	1.55	-
13	I.P.	20	2# grain	1.52	-	1.49	1.58	1.61	1.65
13	G.C.	10	2# grain	1.09	-	1.18	1.19	1.29	1.13
7	I.P.	10	1# grain	1.15	1.08	1.11	1.12	-	-
6	O.R.	16	2# grain	2.12	-	2.05	2.18	2.23	-
3	6	O.R.	16	2# grain	2.12	-	2.05	2.18	2.23
3	N.P.	19	4# grain	1.79	-	-	-	1.93	-
8	I.P.	10	4# grain	1.42	-	-	1.77	-	-
4	N.P.	18	0.3# block	1.32	-	-	1.60	-	-
4	N.P.	31	2# grain	1.86	-	-	2.12	-	-
Average				1.41	1.36	1.46	1.58	1.61	1.21
% Improvement				-	-	3.5	12.0	14.2	-

*I.P. = Improved pasture - primarily cool season grasses.

C.B. = Coastal Bermudagrass.

G.C. = Green Chop improved pasture.

O.R. = Oats-rye combination.

N.P. = Kansas native pasture.

Table 5: Rumensin® N.W. Kansas Grazing Study.

	Control	Implant*	100 mg**	100 mg+Implant
Total gain, lbs.	136	156	156.5	172
ADG, lbs.	1.70	1.95	1.96	2.15
% improvement		14.7	15.0	26.5

*DES or Ralgro.

**Incorporated into 2 lbs. grain per head per day.

tory. Work is being conducted to determine if liquid supplements serve as a good carrier for Rumensin.

Ed Smith, at Kansas State University, successfully used a block to self feed Rumensin to steers on summer pasture. Table 6 shows the daily gain and block consumption for the trial.

Table 6: Rumensin® for Steers Grazing Bluestem Pasture.

	Control Block	Rumensin Block*
No. steers	18	18
No. days	161	161
Total gain, lbs.	213	258
ADG, lbs.	1.32	1.60
Block consumption, lbs.	0.32	0.26

*Rumensin® content of block was 400 mg/lb. Daily consumption was approximately 100 mg of Rumensin®.

Rumensin® and Efficiency of Gain on Grass

It is extremely difficult to measure the intake of cattle on grass. Generally, daily gain improvement is interpreted to mean improved efficiency. Potter and associates at the Lilly Research Farm attempted to determine efficiency by conducting a green chop study and harvesting grass on a daily basis to feed to steers. A portion of that study is shown in Table 7.

The apparent optimal response occurred at 200 mg per head per day, which increased daily gain 18% and feed efficiency by 14%. Dosages of 200 mg and below had no effect upon dry matter consumption. This effect of monensin on feed consumption is different from that seen in feedlot cattle and suggests that the increased gain of pasture cattle is because Rumensin

allowed the cattle to obtain more net energy per unit of feed consumed. Pasture cattle apparently used the additional energy to increase daily gain while feedlot cattle consumed less feed and gained at the same rate.

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Table 7: Effect of Rumensin® on Cattle Fed Green Chop.

	0	100	200	300
No. steers	10	10	10	10
ADG, lbs.	1.09	1.19	1.29	1.18
ADF, lbs.*	15.2	15.4	15.4	14.4
Feed/gain	13.9	12.9	11.9	12.3

*100% Dry matter basis.