EFFECT OF YEAST CULTURE ON CONSUMPTION OF A RUMENSIN SUPPLEMENT BY STOCKER CATTLE ON WHEAT PASTURE

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Story in Brief

A cooperative field trial, using 358 head of cattle and 4 wheat pastures of about 160 acres each, was conducted to measure consumption of a self-fed Rumensin/Yeast Culture supplement and weight gains of stocker cattle on wheat pasture. Two of the 4 groups of cattle grazed wheat pasture and had free-choice access to a mineral mixture that contained no rumensin (control). The remaining 2 groups of cattle had free-choice access to Rumensin/Yeast Culture supplements that contained about 200 mg rumensin/lb and were fed in whirl-wind type mineral feeders. Consumption of the Rumensin/Yeast Culture supplements ranged from about .25 to .50 lb/head/day after the first 2 weeks of the trial. Daily gains of steers fed the Rumensin/Yeast Culture supplements were .30 lb greater than those of control steers. Gains of heifers of the 2 treatment groups were similar (i.e., 1.99 vs 1.97 lb/day). Results of the trial indicate that use of Yeast Culture in self-fed supplements containing rumensin and/or other feed additives may aid achievement of desired amounts of supplement consumption by stocker cattle on wheat pasture.

Introduction

Ionophores such as rumensin increase daily gains of stocker cattle by about .2 lb. Preliminary data (Horn, 1982) indicated that Diamond V Yeast Culture[2] can be used to achieve good consumption of a self-fed rumensin supplement by stocker cattle on wheat pasture. The supplements contained 30 to 33 percent Yeast Culture, 36 percent of a R-1200 rumensin supplement, 21 to 22 percent cottonseed meal, 10 to 12 percent salt, and were formulated for a consumption level of .35 lb of supplement/head/day. Mean consumption of the supplements (averaged over 2 wheat pasture grazing periods of 22 and 48 days) by 25 steers was .48 lb/head/day. The results were therefore encouraging. The objective of this study was to obtain additional data, via a larger scale cooperative field trial, in regard to use of Yeast Culture to control consumption of a rumensin supplement by stocker cattle on wheat pasture.

Experimental Procedure

Cattle. Steer and heifer calves (358 head) that weighed about 300 lb were used in the trial. All of the calves were purchased by an order buyer in Kentucky and were transported by truck to Enid, Oklahoma. The calves were processed within 2 days of arrival. Processing included vaccinations for black-leg, malignant edema, IBR-PI_3-BVD and leptospirosis, treatment for internal and external parasites and

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implanting with Ralgro. The calves had free-choice access to a rolled corn, cottonseed hull based ration in drylot for about 14 days prior to being placed on wheat pasture.

Pastures. Four pastures of clean-tilled wheat pasture were used. Each pasture was about 160 acres in size and contained unplowed areas that served as excellent loafing areas for the cattle during wet weather and/or periods of snow cover of wheat forage. Water wells were the source of water on all pastures. All pastures had been grazed by stocker cattle in previous years and had histories of producing good cattle performance. The 4 pastures were located in groups of two. The two groups of pastures were about 4 miles apart.

Treatments. Steer calves were placed on one group of the pastures, and heifers were placed on the other group of pastures. Treatments were as follows:

Treatment 1. Cattle were not fed any supplemental feed with the exception of limited amounts of hay during snow cover of wheat pasture. A mineral mixture that contained 20 percent salt, 16 percent calcium, 8 percent magnesium and 4 percent phosphorus was fed free-choice in whirl-wind type mineral feeders. Amounts of mineral mixture fed to the cattle throughout the trial, and remaining at the end of the trial were recorded. No additional salt was fed.

Treatment 2. Cattle were managed like those of treatment 1 except they had free-choice access to Rumensin/Yeast Culture supplements. Ingredient composition and crude protein and monensin contents of the supplements are shown in Table 1. Ingredient composition of the Rumensin/Yeast Culture supplement was changed on February 15, as shown in Table 1 or supplement number 2, in an effort to achieve greater intakes of the supplement. The supplements were fed in whirl-wind type mineral feeders (3 feeders per group of cattle) that were located around the water supply of each pasture. Consumption of supplements was measured weekly throughout the trial. No additional mineral mixture or salt was fed to the cattle.

Table 1. Composition[a] of Rumensin/Yeast Culture supplements.

Supplement number:	1	2
Ingredient		
R-1200 Feedlot Builder[b]	33	35
Yeast Culture	33	36
Plain salt	12	7
Cottonseed meal	22	22
Crude protein, %		
Calculated	18.6	19.3
Analyzed	17.6	19.0
Rumensin, mg/lb		
Calculated	198	210
Analyzed	181	242

[a]Percentage of mix (as-fed).
[b]Farmland Industries, Inc.
Contained 1200 grams rumensin/ton, 10-11% salt, 14-16% calcium and not less than 1.5% phosphorus.

Table 2. Consumption of Rumensin/Yeast Culture supplements by cattle of treatment two on wheat pasture.

Date	Days	Date of snow[b]	Suppl. no.	Pasture group 1 (steers) Supplement (lb/head/day)	1 (steers) Rumensin[a] (mg/head/day)	2 (Heifers) Supplement (lb/head/day)	2 (Heifers) Rumensin[a] (mg/head/day)
12/28-1/3	7		1	.08	16	---	---
1/4-1/10	7		1	.13	26	.10	20
1/11-1/17	7		1	.21	42	.11	22
1/18-1/24	7	1/21 (2)	1	.45	89	.50	99
1/25-1/31	7		1	.44	87	.29	57
2/1-2/7	7	1/31 and 2/4 (7)	1	.50	99	.50	99
2/8-2/14	7		1	.26	51	.21	42
2/15-2/21	7		2	.27	57	.24	50
2/22-2/28	7		2	.32	67	.26	55
3/1-3/7	7		2	.24	50	.29	61
3/8-3/17	10		2	.25	52	.25	52
			Mean:	.29	58	.28	56

[a]From calculated rumensin contents of supplements.
[b]Total days of snow cover of pasture during interval are enclosed in parentheses.

Table 3. Effect of Rumensin/Yeast Culture supplement on weight gains of wheat pasture stocker cattle.

Pasture group:	1 (Steers)		2 (Heifers)	
Treatment:	Control	Rumensin/ Yeast suppl.	Control	Rumensin/ Yeast suppl.
Number of cattle[a]	73 (67)	82 (81)	103 (102)	100 (100)
Date on pasture	12/29/82	12/28/82	12/30/82	1/4/83
Date off pasture	3/18/83	3/18/83	3/17/83	3/17/83
Number days on pasture	78	79	76	71
Initial wt, lb	289	296	289	300
Final wt, lb	434	467	440	440
Average daily gain[b], lb	1.86	2.16	1.99	1.97

[a]Number of cattle initially placed on pasture, and (number) weighed off of pasture.
[b]Observed significance level for effect of treatment equals .348.

The number of cattle that grazed each pasture and the dates that the cattle were placed on and removed from the pastures are listed in Table 3. Mean initial and final weights of cattle of each group, which are listed in Table 3, were calculated from group weights measured immediately prior to placing the cattle on the pastures and immediately after removal of cattle from the pastures.

Results and Discussion

The two groups of cattle of treatment 1 consumed an average of only .075 and .061 lb/head/day of mineral mixture during the trial. These levels of mineral consumption were very similar to the .08 lb/head/day observed by Streeter et al. (1981). In the trial reported by Streeter et al. (1981), addition of 33.3 and 50 percent Yeast Culture to the mineral mixture increased consumption of the mineral mixture to .14 and .24 lb/head/day, respectively, by stocker cattle on wheat pasture.

Consumption of the Rumensin/Yeast Culture supplements (Table 2) was low during the first two weeks that the cattle were fed on pasture. Consumption of the supplements then increased and ranged from about .25 to .50 lb/head/day during the remainder of the trial. Dates of snow and total days of snow cover of wheat pasture are also indicated in Table 2. Because of the prolonged days of snow cover during the week of February 1 to 7, the supplements were limit fed daily at a level of .5 lb/head/day. Rumensin consumption after the first 2 weeks ranged from 42 to 99 mg/head/day. It was hoped that the calves would consume enough of the supplements to provide 70 to 100 mg of rumensin daily. In a previous study, which was conducted over 2 wheat pasture grazing years with 251 light weight heifers (i.e., 384 lb initial weight), rumensin (90 mg/head/day) increased gains .18 lb/day (Horn et al., 1981).

Weekly consumption of the Rumensin/Yeast Culture supplements in this trial was never as large as that observed in the "preliminary trial" that was conducted during the 1981-82 wheat pasture year by Horn (1982) with 25 head of stocker cattle on a single, much smaller wheat pasture.

Weight gains of the cattle are shown in Table 3. Daily gains of steers fed the Rumensin/Yeast Culture supplement were .30 lb greater

than those of control steers. The .30 lb improvement in daily gain of the steers is greater than what would be attributed to rumensin alone. Gains of heifers of the 2 treatment groups were very similar (i.e., 1.99 vs 1.97 lb/day). An explanation for the lack of a weight gain response by heifers fed the Rumensin/Yeast Culture supplement is not apparent. Pastures that the heifers grazed appeared similar throughout the trial, and the gain response of stocker cattle fed rumensin should be similar for steers and heifers.

Results of this trial indicate that Yeast Culture is beneficial in supplements that are formulated to be self-fed in small amounts (i.e., .35 to .50 lb/head/day) to stocker cattle on wheat pasture. Because of the lower consumption of the Rumensin/Yeast Culture supplement observed in this trial as compared with the "preliminary trial" and the absence of a weight gain response by heifers fed the Rumensin/Yeast Culture supplement, additional data is needed in order to make strong recommendations to producers. While the primary objective in using Yeast Culture in this trial was to achieve good consumption of rumensin, feed additives other than rumensin (i.e., other ionophores, antibiotics, bloat preventive compounds, minerals, etc.) may be of primary interest in other situations and/or in the future. This approach would be particularly attractive to wheat pasture stocker operators in that, in addition to serving a means of getting rumensin into stocker cattle, a bloat preventive compound could be added to the supplement during periods of bloat. Producers who do not feed any supplement to cattle on wheat pasture have little chance of getting bloat preventive compounds into their cattle when needed because the cattle are not accustomed to eating a supplement. Also the increased gains in response to rumensin greatly improves the economics of feeding bloat preventive compounds for long periods of time.

Literature Cited

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