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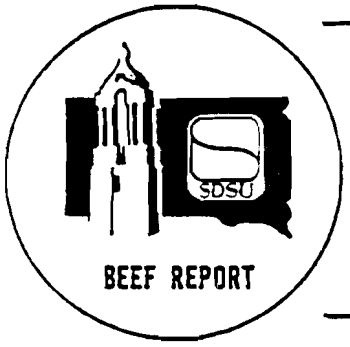

RUMEN INJECTABLE PROBIOTIC AND PROBIOTIC FEED ADDITIVE FOR NEWLY ARRIVED FEEDLOT CATTLE

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Summary

The effect of rumen injectable microbials and microbial feed additives on feedlot performance and health were monitored in a 28-day receiving trial. Average daily dry matter intake and gain and feed conversion were 9.75 lb/day, 3.78 lb/day and 2.59 lb feed/lb gain, respectively, and were not significantly different between treatments. There appeared to be no advantage to using probiotics in this trial.

(Key Words: Receiving Program, Probiotic Feed Additive, Probiotic Rumen Injection.)

Introduction

Newly arrived feeder cattle have typically undergone tremendous stress. How these cattle are managed during the first few days at the lot often determines their subsequent performance and profitability during the feeding period. Starting cattle on feed rapidly is critical in order to obtain optimum performance and maximum immune response.

The objectives of this research were to determine the effects of rumen injectable and feed additive microbials on performance, morbidity and mortality during the initial 14 and 28 days in the feedlot and the optimum feeding rate of the microbials.

Materials and Methods

One hundred ninety-two Angus steers were purchased from one western South Dakota rancher and transported to the Southeast South Dakota Experiment Farm near Beresford (400 miles). Cattle arrived during the night and were processed the following morning. Cattle were treated for grubs and lice, vaccinated for IBR, BVD, PI_3 and were given their initial 7-way clostridial bacterin injection on the ranch. Processing at the feedlot included ear tagging, implanting with Synovex-S, vaccinating with 7-way clostridial bacterin booster and injecting the rumen with microbials if appropriate. Cattle were double weighed initially at 14 and 28 days following overnight withdrawal of feed and water.

Cattle were stratified by weight and allotted to five treatments. Treatments consisted of (1) control - no intraruminal injection,[2,3] no feed additive, (2) intraruminal injection only, (3) intraruminal injection and probiotic feed additive[3] containing 500×10^6 organisms, (4) intraruminal injection and probiotic feed additive containing 2×10^9 organisms and (5) intraruminal injection and probiotic feed additive containing 20×10^9 organisms. Treatments 1 through 4 consisted of five pens per treatment and treatment 5 consisted of four pens. All pens contained eight cattle.

All cattle were fed a standard receiving diet (table 1) once daily (am). A 1-lb package per pen containing the probiotic feed additive was top dressed on the appropriate treatment rations daily. A 1-lb sham package was top dressed on the control and intraruminal injection treatments. Cattle on the control treatment were given a sham injection of water into the rumen.

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[2]Delivery system developed by Syntex Animal Health, West Des Moines, IA.
[3]Product of Triple "F" Products, Des Moines, IA. Primary microbial product is Streptococcus facium.

Health of the cattle was monitored daily. A five-point scoring system was utilized to describe illness. Cattle were assigned 1 point for discharge from the eyes, 1 point for discharge from the nose, 1 point for depressed appearance and 2 points for a temperature of 105 F or greater.

TABLE 1. DIET FED TO CATTLE

Ingredient	Amount, % of dry matter
High-moisture corn	52.03
Corn silage	20.00
Alfalfa hay	20.00
Supplement	
Soybean meal	7.00
Dical	.35
Limestone	.30
Trace mineralized salt	.30
Vitamin A-30[b]	.01
Rumensin 60[c]	.01
Analysis	
Crude protein	12.59
NEg[d]	53.11
Calcium	.60
Phosphorus	.36
Potassium	.89

[a] Composition, minimum percentage, NaCl, 96.0, Zn .350, Mn .200, Fe .200, Mg .150, Cu .030, I .007, Co .005.
[b] 30,000 IU vitamin A/gram.
[c] 60 g monensin/lb.
[d] Net energy for gain, Mcal per cwt dry matter.

Results and Discussion

Performance data of the cattle during the first 14 and 28 days in the feedlot are displayed in table 2. Cattle weighed 516 lb near the ranch and shrank 9.1% in transit. This heavy shrink may have contributed to the high average daily gains and tremendous feed conversions that were observed in this study.

Daily dry matter intake, average daily gain and feed conversion were not significantly different for any of the treatments. However, control cattle tended to have greater average daily gains and more efficient feed conversion than cattle treated with the intraruminal microbial injection.

TABLE 2. PERFORMANCE OF CATTLE[a]

Item[c]	Treatment[b] 1	2	3	4	5
Initial wt, lb	471	469	469	468	474
ADG 14, lb	4.35	3.83	3.75	3.82	4.32
ADG 28, lb	4.06	3.62	3.61	3.71	3.92
DMI 14, lb	6.43	6.33	6.36	6.37	6.42
DMI 28, lb	9.71	9.70	9.71	9.73	9.91
F/G 14	1.49	1.69	1.70	1.69	1.49
F/G 28	2.41	2.69	2.70	2.63	2.53

[a] Least squares means.
[b] Treatment 1 = control, no injection, no feed additive; treatment 2 = ruminal injection, no feed additive; treatment 3 = ruminal injection, level one additive; treatment 4 = ruminal injection, level two additive; treatment 5 = ruminal injection, level three additive.
[c] ADG = average daily gain, DMI = dry matter intake, F/G = feed/gain, 14 = day 14 and 28 = total trial.

Health data are displayed in table 3. Cattle shrank 9.1% in transit and were processed after resting 5 hours at the lot. A light, cold drizzle persisted throughout the morning and turned into freezing rain by evening. Rain changed to snow during the night. In spite of these conditions, very little sickness was observed in the cattle. Only 26 head were treated with oxytetracycline and sulfamethazine. Of these treated cattle only 1 head was treated a second time.

TABLE 3. HEALTH OF CATTLE[a]

Item	Treatment 1	2	3	4	5
Head days[b]	5	5	7	4	6
Score[c]	14	15	16	6	7
Repulls[d]	1	0	0	0	0

[a] Cumulative data.
[b] Total cattle exhibiting symptoms of illness.
[c] Cattle were assigned 1 point for discharge from the eyes, 1 point for discharge from the nose, 1 point for depressed appearance and 2 points for temperature of 105 F or greater.
[d] Cattle that were treated a second time.

These data demonstrate no advantage to using the intraruminal probiotic injection or the probiotic feed additive, even though these cattle were subjected to considerable stress in transit and upon arrival at the lot.