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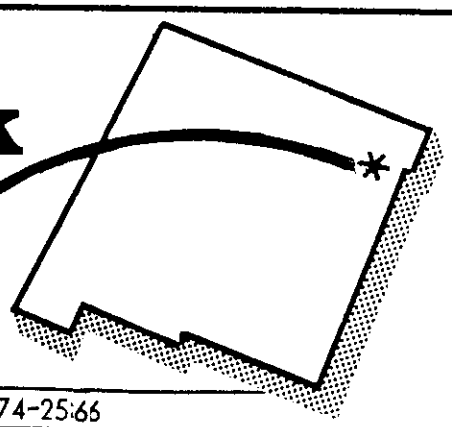
Clayton Livestock Research Center

PROGRESS REPORT



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EFFECTS OF DIETARY STREPTOCOCCUS FAECIUM (Syntaba® 200) ON PERFORMANCE OF GROWING - FINISHING FEEDLOT STEERS

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Cattle entering the feedlot are often subjected to numerous stressors that can adversely affect health and performance. A major effect of this stress can be depletion of the normal, commensual microflora inhabiting the rumen and intestinal epithelium. Probiotics have been promoted as a means of re-establishing normal populations of lactobacilli and streptococci in the digestive tract, thereby decreasing morbidity and improving performance. Many previous studies concerning probiotics have been fairly short term and designed to examine the response of stressed cattle during the receiving period. Few studies have examined the long-term effects of probiotics on performance of feedlot cattle during the subsequent growing - finishing phases. The objective of this study was to evaluate the effects of providing Streptococcus faecium (Syntabac® 200) at four concentrations in the diets of feed-lot steers.

One hundred-sixty steers (avg wt 535 lb) were allotted to both weight [light (L), moderately light (ML), moderately heavy (MH) and heavy (H)] and treatment groups. Treatments consisted of feeding four pens/treatment (10 steers/pen) either 0, 2.5, 10.0, or 40.0 g/hd/day of SF. These dietary levels of Syntabac® 200 (SF) corresponded to providing 0, 5 X 10^8, 2 x 10^9, and 8 X 10^9 colony - forming units of Streptococcus faecium per head daily.

During the first 2 weeks on trial, cattle were fed a 75% concentrate diet, and then switched to a 85% finishing diet. Cattle were fed once daily. Syntabac was provided by premixing the appropriate amount of SF with hominy feed and incorporating it into each diet at a rate of 5 lb/day. Cattle in H MH, ML, and L weight groups were on trial for 189, 209, 210 and 211 days, respectively, after which cattle were slaughtered.

Results for average daily gain (ADG), daily feed intake (DFI), and feed-to-gain ratio (F/G) throughout the trial are shown in Table 1. During the first 84 days, cattle receiving 10.0 g SF/hd/day exhibited improved performance compared with cattle fed 0.0 or 2.5 g/hd/day, while performance for cattle fed 40.0 g/hd/day was generally similar to the 10.0 g/hd/ day group. Throughout the entire trial, performance for steers fed 2.5 g/hd/day was significantly less than for other treatment groups. The reason for this effect is not known; however, a comparison of observed ADG with predicted ADG from net energy requirements indicated no differences in energy utilization among treatments (data not shown). This suggests differences among treatments were attributable to a stimulation or depression in DFI, relative to

controls, rather than direct effects on energy utilization. The results of this study suggest that providing 10.0 g/hd/day of Streptococcus faecium to growing - finishing cattle may be beneficial for promoting improvements in performance for a period of at least 84 to 112 days on feed. This response appears to be related to a stimulation of feed intake and feed efficiency.

TABLE 1. EFFECTS OF SYNTABAC CONCENTRATION ON PERFORMANCE OF GROWING - FINISHING FEEDLOT STEERS

Level of Syntabac, g/hd/d	28	56	84	112	140	168	196	211
			Average daily gain, lb/d					
0	2.54	2.95[a,b]	3.21[d]	3.24[a]	2.97[a]	2.87[d]	2.84[a]	2.78[a]
2.5	2.43	2.80[a]	2.94[e]	3.04[b]	2.78[b]	2.72[e]	2.68[b]	2.63[b]
10.0	2.75	3.22[b]	3.41[f]	3.30[a]	3.09[a]	2.99[d]	2.92[a]	2.87[a]
40.0	2.66	3.17[b]	3.32[d,f]	3.20[a]	2.99[a]	2.91[d]	2.89[a]	2.82[a]
SE[j]	.12	.10	.06	.06	.07	.05	.06	.06
			Daily feed intake, lb/d					
0	16.0	18.0[d]	19.2[g,h]	19.9	19.9	20.1	19.5[d]	19.4[d]
2.5	15.8	17.3[e]	18.6[g]	19.3	19.3	19.4	18.5[e]	18.3[e]
10.0	16.1	18.2[d,f]	19.4[h]	20.0	20.3	20.5	20.1[d]	19.8[d]
40.0	16.4	18.5[f]	19.6[h]	20.1	20.2	20.3	20.2[d]	20.0[d]
SE[j]	.2	.2	.3	.3	.3	.4	.3	.3
			Feed - to - Gain					
0	6.32	6.10[a]	5.97[g]	6.13[a,b]	6.70[a]	6.99	6.97	7.12
2.5	6.59	6.26[a]	6.36[h]	6.36[c]	6.96[b]	7.15	7.19	7.32
10.0	5.89	5.67[b]	5.71[i]	6.07[a]	6.57[a]	6.85	7.05	7.13
40.0	6.17	5.86[a,b]	5.91[g]	6.29[b,c]	6.75[a,b]	7.00	6.97	7.14
SE[j]	.24	.16	.07	.07	.09	.08	.12	.09

[a,b,c] Column means with different superscripts differ (P<.10).
[d,e,f] Column means with different superscripts differ (P<.05).
[g,h,i] Column means with different superscripts differ (P<.01).
[j] Standard error of mean with n = 4, except for 196 and 211 days where n = 3.

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