

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Beef Cattle Reports

Animal Science Department

1-1-1996

An Enzyme-Microbial Feed Product for Finishing Steers

Burt Weichenthal

University of Nebraska-Lincoln, bweich@comcast.net

Ivan G. Rush

University of Nebraska-Lincoln, irush1@unl.edu

Brad Van Pelt

University of Nebraska-Lincoln

Follow this and additional works at: <https://digitalcommons.unl.edu/animalscinbcr>



Part of the [Animal Sciences Commons](#)

Weichenthal, Burt; Rush, Ivan G.; and Van Pelt, Brad, "An Enzyme-Microbial Feed Product for Finishing Steers" (1996). *Nebraska Beef Cattle Reports*. 494.

<https://digitalcommons.unl.edu/animalscinbcr/494>

This Article is brought to you for free and open access by the Animal Science Department at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Beef Cattle Reports by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

An Enzyme-Microbial Feed Product for Finishing Steers

Burt Weichenthal
Ivan Rush
Brad Van Pelt¹

Summary

The feeding of MSE (Multiple Stabilized Enzymes in an enzyme-microbial feed product) to finishing yearling steers at the rate of 2 lb of product per ton of diet dry matter improved daily gain about 10% and feed conversion 7.5% over values for steers receiving Rumensin-Tylan at 29 and 10 grams per ton, respectively. The steers were not implanted. MSE fed steers had a higher dressing percentage, but other carcass characteristics were similar. Feed dry matter intakes were similar, so the feeding of MSE resulted in improved feed utilization during the 119 day trial. There was only one abscessed liver in the study.

Introduction

The MSE feed product contains multiple enzymes plus four strains of bacteria, two strains of yeast and three strains of fungi. The bacteria were three *Lactobacillus acidophilus* cultures and one strain of *Bacillus subtilis*; the yeasts were three strains of *Saccharomyces cerevisiae*; and the fungi were two strains of *Aspergillus oryzae* and one of *Aspergillus niger*. Potential benefits for feeding MSE to finishing beef cattle could be improvement in daily gain and feed utilization. Thus, a feedlot trial was designed to compare MSE to an ionophore-antibiotic combination often fed to finishing cattle on a high grain diet to improve feed utilization and control the percentage of abscessed livers at slaughter.

Procedure

Ninety-two British crossbred yearling steers were allotted by weight to four pens of eight and two pens of seven steers for each of two treatments: (1) Rumensin fed at 29 grams and Tylan at 10 grams per ton of diet dry matter, and (2) the enzyme-microbial feed product MSE fed at two pounds per ton of diet dry matter. Three step-up diets were fed to reach the final diet. During the first 72 hours on feed, MSE was fed at six pounds per ton of diet dry matter (3 times higher than the long-term feeding rate). Rumensin was fed at 25 grams per ton of diet dry matter for the first 3 days, at 28 grams during diet step two and at 29 grams thereafter. A pelleted protein supplement with and without Rumensin-Tylan was used in the study. Calculated crude protein contents of the final finishing diets were 12.5% of diet dry matter. The calculated NEg values for these diets averaged .65 Mcal/lb. The final diet dry matter consisted of 82.75% dry rolled corn, 10% corn silage, and 7.25% protein-mineral supplement. The MSE was premixed at the rate of two pounds of MSE with eight pounds of finely ground corn and added to the mixer truck after all other ingredients were added. The steers were not implanted. They had been used in a grazing study the previous summer, but were fed a low grain diet from the end of the grazing study in early September to the start of the finishing trial on November 2, 1994. They were fed once a day. The steers were slaughtered after 119 days on test and carcasses were evaluated for dressing percentage, fat thickness over the 13th rib, marbling, quality grade, rib eye area, and yield grade. The data from four steers (one from Rumensin-

Tylan and three from MSE treatments) were removed from the summary and analysis due to low performance or carcass trim which were unrelated to treatments.

Daily gains and carcass measurements for individual steers were analyzed by utilizing PC SAS (Statistical Analysis System), using Proc GLM (General Linear Model). Initial weight was used as a covariate. Feed intakes and feed conversions were analyzed by SAS also, using pen means.

Results

Daily gain was improved ($P < .05$) for the steers fed the MSE enzyme-microbial product over those fed Rumensin-

Table 1. Rumensin-Tylan vs MSE^a, an enzyme-microbial feed product, in finishing diets

	Rumensin-Tylan	MSE
No. of pens	6	6
No. of steers	45	43
Initial weight, lb	864	866
Final weight, lb ^b	1249 ^c	1287 ^d
Daily gain, lb ^b	3.22 ^c	3.54 ^d
Feed DM intake, lb	22.9	23.3
Feed/gain	7.1 ^e	6.6 ^f
Hot carcass weight, lb	773 ^c	799 ^d
Dressing percent	62.5 ^g	63.3 ^h
Fat thickness, in	.54	.55
Rib eye area, sq in	12.9 ⁱ	13.2 ^j
Rib eye area, sq in per cwt of carcass	1.67	1.65
Marbling score ^k	5.53	5.55
Quality grade ^l	18.9	18.7
Yield grade	3.0	3.0

^aMSE = Multiple Stabilized Enzymes, an enzyme-microbial product of Nature's Way Inc., Horton, KS.

^bFinal weight and daily gain were calculated by dividing hot carcass weight by a common dressing % (62).

^{c,d}Means differ ($P = .02$).

^{e,f}Means differ ($P = .08$).

^{g,h}Means differ ($P = .01$).

^{i,j}Means differ ($P = .05$).

^kMarbling scores; Small = 5.0, Modest = 6.0.

^lQuality grade; Select+ = 18, Choice- = 19.

Tylan (Table 1). The improvement in daily gain for MSE was about 10%. The numerical increase in dry matter consumption for the MSE fed steers was not statistically significant ($P=.54$). Figure 1 shows the dry matter feed consumptions by treatment during each week of the 119-day trial. An expected reduction in feed intake for Rumensin occurred during the first week when cattle were adjusting to this ionophore. Cattle on MSE went off feed during the third and fourth weeks, but after recovering, appeared to average higher in feed intake during the remainder of the trial. There was an improvement ($P=.08$) in feed conversion for the MSE fed steers that was 7.5% greater than the average for the steers fed Rumensin-Tylan at typical finishing diet levels.

Carcass measurements showed an increase ($P<.01$) in dressing percentage for MSE fed steers. It is not known why this occurred, as fat cover was the same for both treatments. In addition to heavier hot carcass weights ($P<.05$) for MSE fed steers, rib eye area was also greater ($P=.05$) for MSE fed steers. This increase in rib eye can be attrib-

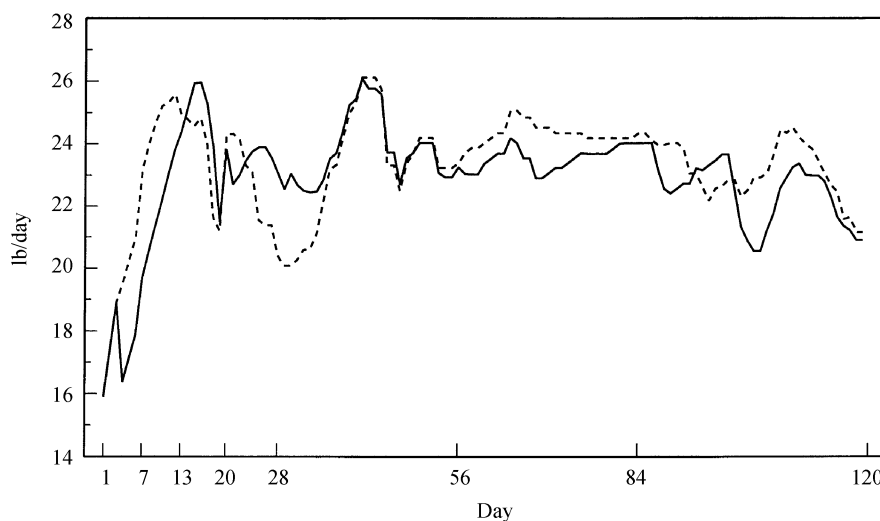


Figure 1. Dry matter intake/day for MSE (----) and Rumensin-Tylan (—).

uted to increased carcass weight as rib eye area per cwt of carcass was not different. Quality and yield grade means were similar for the two treatments. There was only one abscessed liver in all of the steers.

The chances for affecting fermentation with the MSE enzyme-microbial feed product would suggest that it improved utilization of the high grain

diet during fermentation and digestion. However, the mechanism for achieving this improvement with a multiple component product is yet to be defined.

¹Burt Weichenthal and Ivan Rush, Professors, Animal Science; Brad Van Pelt, research technician, Panhandle Research and Extension Center, Scottsbluff.

Effects of Bovatec, Rumensin or GainPro Fed to Yearling Summer Grazing Steers

Ivan Rush
Burt Weichenthal
Brad Van Pelt

Summary

Yearling steers on summer pasture were fed Bovatec (lasalocid), Rumensin (monensin) or GainPro (bambermycins) in a mixture of 2 lb of corn and .2 lb of dry molasses per day. Control steers received the same supplement without an additive. Daily gains during the 113-day grazing season on primarily crested wheatgrass pastures

were improved ($P<.1$) by all three additives, averaging 17.8, 13.3 and 22.2% greater for Bovatec, Rumensin and GainPro, respectively. There were no significant differences in daily gains among the additives.

Introduction

Studies of beef production systems often indicate profitability can be increased in calf growing and feeding programs if yearling cattle are grazed at least during part of the growing phase. If yearling cattle are grazed on summer range, it is important that the summer

gain be as efficient and economical as possible. The use of implants and ionophores can improve gain in grazing cattle. A feed additive, bambermycins (GainPro™), has been released for the purpose of improving weight gain in cattle, especially in those consuming high roughage diets. Data from practical grazing conditions are limited with bambermycins so the objective of this trial was to evaluate the effect of bambermycins, lasalocid (Bovatec®) and monensin (Rumensin®) on weight gain of yearling grazing steers when hand-fed daily on summer pasture.

(Continued on next page)