EFFICACY OF VITA-FERM FORMULA FOR STOCKER CALVES

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Introduction

Vita-Ferm Formula is a commercial formulation containing dried *Aspergillus oryzae* fermentation extract (Amaferm) that is reported to maintain a healthy, functional level of microflora in the digestive tract. This reportedly results in an enhancement of rumen fermentation, thereby improving dry matter digestibility and resulting in more efficient utilization of feedstuffs. This properly functioning digestive tract is also reported to minimize the effects of stress on performance

This trial was conducted with 56 head of 500 pound beef calves to investigate response in performance to receiving 2 1/2 ounces per head per day of Vita-Ferm Formula during a 126-day winter stockering period. Of particular interest was the response during the first 28 days on feed, while calves were under the stress of adjusting to a new ration and confinement.

Materials and Methods

Fifty-six Angus and Angus x Hereford steer feeder calves, weighing 400-500 pounds and grading M-1 were purchased from North Carolina Graded Feeder Calf Sales in September of 1988. They were processed within 12 hours after arrival at the Mountain Research Station in Waynesville, NC. The processing consisted of ear tagging for identification, administering a growth implant, weighing, deworming, treating for grubs and lice, injecting vitamins A, D, and B-12, and vaccinating for Clostridial diseases, *Haemophilus somnus*, IBR, PI-3, BVD, BRSV and Pasteurella.

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Steers were confined for four days after arrival to a one-acre grass lot with pole shed and given free access to hay and water. They were then turned out together on fall pasture where they remained until November 8th. At that time they were removed from fall pasture and weighed. Animals were grouped by breed and ranked by weight. Assignment to treatment groups was by a Z-type distribution from heaviest to lightest across breeds.

The calves were weighed on November 8th and 10th and the average of the two weights was used for a starting weight. Thereafter, they were weighed at 28-day intervals until end of test. Weights taken on March 14th and 16th were averaged for the final weight. All weights were taken after having received half of a full feeding the day before and no water for 16 hours prior to weighing. The four groups of cattle were mixed 30 minutes prior to each weighing and resorted into their respective treatment groups after weighing. After each 28-day weighing, treatment groups were randomly reassigned to pens within the barn.

The four groups received corn silage rations supplemented with 44% soybean oil meal and minerals. Rations were formulated to provide 12% crude protein and 67.5% TDN on a dry matter basis. Each group was fed daily all the corn silage the animals would clean up during a 24-hour period, except on the day before each weighing. All received the same protein and mineral supplementation incorporated into the daily feeding of corn silage via a Gehl mixer wagon. In addition, treated groups received 2 1/2 ounces of Vita-Ferm Formula per head per day incorporated into their protein/mineral mixture via a horizontal blender. The steers were provided trace mineral salt free choice.

The data were analyzed by least squares methods using Procedure GLM of SAS (1986). Fixed effects accounted for in analyzing differences in daily gains between treated and untreated controls were replicates, breed and initial weight.

Results

Least squares means for average daily gain by weigh periods and for the 126-day trial are shown in Table 1. Average daily gains during the first 28-day period were .53 lb higher ($P<.05$) for the treated group than controls. Differences between groups for later periods and for the 126-day trial were not significant ($P>.05$). These results agree with those reported by Lee (1989), Wren (1989), and Fox (1988). They reported beneficial effects of probiotics on daily gain during 14- to 35- day feeding periods. Effects of replicate, breed, initial weight and interaction terms were not statistically significant ($P>.05$).

An analysis of the economic consequences of including Vita-Ferm Formula in the diet is shown in Table 2. Total feed cost per head was $2.91 less for controls for the first 28-day period. The additional cost for the treated group was due almost exclusively to the cost of Vita-Ferm Formula. However, feed cost per hundredweight of gain was $12.31 less for the treated group. This difference represents a 22% reduction in feed cost per unit of gain. Other studies (Lee, 1989; Wren, 1989; and Fox 1988) have shown improvements in feed efficiency due to the use of probiotics during the initial four to six weeks for incoming feedlot cattle.

Since these cattle had been pastured on the farm for several weeks prior to going on test, the major stresses imposed were those associated with confinement. Yet, in comparing feed cost per hundredweight of gain for the first 28-day period with that for the entire test (Table 2), efficiency of weight gain was substantially reduced by those stresses. No major health problems were noted, but sub-clinical infections may have been a factor. Clearly the stresses and probably morbidity would have been greater if the calves had gone on test soon after delivery from the market.

Discussion

Newly purchased stocker cattle are subjected to the stresses of transportation, processing, concentration of animals, concurrent diseases, antibiotic therapy and abrupt changes in diet For a short period following such stresses, administration of probiotics is reported to reduce morbidity, and improve average daily gain and efficiency of gain (Wren, 1989; Wren, 1987; Wren, 1987, Lee, 1988; Fox, 1988). Based on these reports and the improvements in rate of gain and efficiency of gain during the first 28 days of the present study, the use of a probiotic with newly arrived stocker cattle may be advisable.

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Table 1. Least squares means (standard errors) for average daily gain (lbs) by periods

	Period[1]					
	1	2	3	4	5	6
Breed						
Angus	1.36 (0.23)	2.95 (0.22)	2.69 (0.16)	2.70 (0.13)	2.23 (0.27)	2.41 (0.09)
Angus x Hereford	1.17 (0.10)	3.07 (0.10)	2.63 (0.07)	2.68 (0.06)	2.06 (0.13)	2.36 (0.04)
Treatment						
Control	1.00[a] (0.17)	3.02 (0.17)	2.63 (0.12)	2.73 (0.10)	2.09 (0.21)	2.34 (0.07)
Vita-Ferm Form.	1.53[b] (0.18)	3.00 (0.17)	2.70 (0.12)	2.65 (0.10)	2.19 (0.21)	2.43 (0.07)

[1]Periods 1-4 were 28 days in length
Period 5 was 14 days in length
Period 6 represents entire trial (126)

[a,b]Means with different superscripts were significantly different (P<.05)

Table 2. Economic Analysis of Feeding Vita-Ferm Formula

Item	Control (C)	Vita-Ferm Formula (V)	V-C
No. of Head	28	28	
Avg. Start Wt. (lbs)	508	504	-4
First 28-day Period			
Avg. Daily Gain (lbs)	1.00	1 53	0.53
Feed Cost[a], $/head	15.44	18.35	2.91
Feed Cost, $/cwt gain	55.14	42.83	-12.31
126-day Test			
Avg. Daily Gain (lbs)	2 34	2.43	0.09
Feed Cost, $/head	99.25	110.39	11.14
Feed Cost, $/cwt gain	33.66	36.05	2.39

[a]Feed ingredient costs: Corn Silage, $26/T; SBOM, $17.50/cwt; Ground Limestone, $5/cwt, DiCal Phosphate, $14/cwt; Trace Min. Salt, $4.50/cwt; Vita-Ferm Formula, $55/cwt.