

USING AN ENZYME PRODUCT IN BACKGROUNDING

RATIONS FOR STEER CALVES

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The vitamin-mineral enzyme supplements used in this trial are being used and sold in this area with apparent success. Earlier research work reported by E.D. Holfield and D.L. Hixon in the 1975 Illinois Beef Cattle Day Report indicate an improvement in performance of 0.28 pounds per head per day. However, in the 53rd Roundup Report of Beef Cattle Feeding Investigations of the Fort Hayes Branch Station, little or no advantage was found for feeding the enzyme product. Because of questions being asked by producers and the divergence of opinion in the literature, the product is being evaluated under conditions in southwestern North Dakota.

"Vita-Charge and Vita-Ferm Cow Calf 5" are trade names of a commercial vitamin-mineral enzyme product containing an enzyme component Amafirm^R, produced by the fermentation of sucrose by *Aspergillus Flavus-oryzae* (a fungus). These products were evaluated when fed to backgrounded steer calves for approximately 145 days.

In this trial, light weight steer calves born in the spring were purchased at a local livestock market. Following an overnight shrink without feed or water, they were weighed, ear tagged and allotted into two uniform feeding groups with respect to weight, breed and prior owner. The steers were handled and fed as recommended by the Vita-Ferm company representatives. These recommendations included an initial oral drench of approximately 1½ quarts of a solution made up of 4 oz. Vita-Charge, 1 oz. C.R. (corn) oil and 1½ quarts warm water. The steers were drenched at the time of processing (branding, vaccination for blackleg and enterotoxemia, ear tagging, etc.). Immediately after processing, they were started on a control feeding system or the control feeding system plus the Vita-Charge supplement as recommended by the Vita-Ferm Company. The treatment calves were fed the control ration plus 4 oz/hd/day of Vita-Charge for the first fourteen days. They were then switched to the control ration plus 4 oz/hd/day of Vita-Ferm Cow Calf 5 for the duration of the trial. All feed was self-fed in straight sided self feeders. The calves started on a ration of ⅓ oats, ⅔ roughage for the first fourteen days and were then switched to a ration of approximately 50% oats, 50% roughage for the balance of the trial. Vita-Charge and Vita-Ferm Cow Calf 5 were added to the total mix so that each calf would consume a minimum of 4 oz. of supplement per day. Rations as fed are shown in Table 1.

Table 1. Rations As Fed In the Vita-Ferm Trial – 1980 & 1981

Ration I for First 14 Days:		
	Control	Vita-Charge
Oats	330.0	330.0
Chopped Tame Hay	657.5	636.5
Di cal	2.5	2.5
Vita- Charge	---	<u>21.0</u>
	1,000.0	1,000.0
Ration II – Day 15 to End of Trial:		
	Control	Vita-Charge
Oats	500.0	500.0
Chopped Tame Hay	487.5	469.5
Trace Mineral Salt	10.0	10.0
Di cal	2.5	2.5
Vita-Ferm Cow Calf 5	---	<u>18.0</u>
	1,000.0	1,000.0

A record was kept of feed eaten, twenty-eight day weights, final weight and selling weight and price. The calves were sold in two groups representing each method of feeding. All performance and total economic records are shown in Tables 2, 3, and 4.

Table 2. Performance and Economic Summary for Vita-Ferm Trial 1979 – 1980

	Control	Vita-Ferm
Number of Head on Trial	9	9
Initial Weight – lbs. – Dec. 18	3225	3225
Average per Head – lbs.	358	358
Weight Off Trial – lbs. – May 22	5815	5905
Average per Head – lbs.	646	656
Gain for 145 days	2590	2680
Average gain/head	288	298
Average gain/day	1.98	2.05
Weight at Market	5825	5900
Average/lot	647	656
Total Price	\$3951.59	\$3992.35
Value/head	\$ 439.07	\$ 443.59
Value/lb.	67.8¢	67.7¢
Pounds feed/lot	23,015	23,830
Pounds of feed/hd.	2,557.2	2,647.8
Pounds of feed/day	17.6	18.26
Pounds of feed/lb gain	8.89	8.89
Cost of feed + grinding/lot	\$ 882.95	\$1030.37
Cost of feed + grinding/hd.	\$ 98.10	\$ 114.71 (includes 23¢ for drench)
Cost/lb of gain	\$ 0.34	\$ 0.38
Return over feed/hd.	\$ 340.97	\$ 328.88
Difference	+\$ 12.09	

Table 3. Performance and Economic Summary for Vita-Ferm Trial – 1981

	Control	Vita-Ferm
Number of Head on Trial	10	10
Initial Weight – lbs. – Dec. 3	3790	3780
Average per Head – lbs.	379	378
Weight Off Trial – lbs. – Apr. 21	6255	6300
Average per Head – lbs.	625.5	630
Gain for 139 days	2465	2520
Average gain/head	246	252
Average gain/day	1.77	1.81
Weight at Market	6140	6028
Average/lot	614.0	602.8
Total Price	\$4087.40	\$4129.18
Value/head	\$ 408.74	\$ 412.92
Value/lb.	\$ 66.57	\$ 68.50
Pounds feed/lot	22,380	22,415
Pounds of feed/hd.	2,238	2,241.5
Pounds of feed/day	16.1	16.1
Pounds of feed/lb gain	9.1	8.9
Cost of feed + grinding/lot	\$1560.73	\$ 1627.10
Cost of feed + grinding/hd.	\$ 156.07	\$ 162.71
Cost/lb of gain	\$.63	\$.65
Return over feed/hd.	\$ 252.67	\$ 250.21
Difference	\$ 2.46	

Table 4. Combined Results from Feeding Vita-Ferm Supplement

	Control	Vita-Ferm
Total No. Head	19	19
Average initial wt.	369	369
Average final wt.	635	642
Average gain	266	273
Average days fed	142	142
Average daily gain	1.87	1.92
Average wt. at market	630	628
Average value/head	\$ 423.10	\$ 427.45
Average value/cwt	\$ 67.16	\$ 68.06
Average pounds of feed/hd.	2389	2434
Average pounds of feed/day	16.8	17.1
Average pounds feed/lb. gain	8.98	8.91
Average cost of feed & grinding/lot	\$1221.84	\$1328.73
Average cost of feed & grinding/hd.	\$ 128.61	\$ 139.87
Average cost/cwt gain	\$ 48.35	\$ 51.23
Average return over feed fed	\$ 294.49	\$ 287.58
Average difference/hd.	+\$6.91	

Discussion:

During both years this trial has been conducted, calves in both groups make a rapid adjustment to rations and physical facility. Neither group required any medication or treatments for problems normally anticipated when starting calves on feed.

As shown in Table 2, the calves fed Vita-Ferm were about ten pounds per head heavier than the control calves after 145 days on feed. They also had a \$4.52/hd. advantage at the market. However, because of higher feed cost per head, the actual dollar return over feed cost per head favored the control calves by \$12.09 per head.

In 1981 (See Table 3) the Vita-Ferm calves were six pounds heavier after 139 days on feed (252 vs. 246) than the control calves. At the market they sold for \$1.93 more per hundred weight. This amounted to \$4.18 more gross dollars per head. Again, in 1981, feed cost for the Vita-Ferm fed calves was \$6.64 higher than for the controls. Return over feed cost favored the control calves by \$2.46.

The two year combined results (as shown in Table 4) show weight gain advantage for feeding the Vita-Ferm. Higher feed cost however, offset weight gains and market advantage. The control calves average \$6.91 more dollar return based on two year average results.

Summary:

It appears that the Vita-Charge Vita-Ferm Supplemental Feeding Program may improve weight gains when fed in backgrounding rations to calves. However, greater feed costs due to feeding the supplement were not offset by the heavier weights and higher market value. Total economics do not seem to justify the use of the enzyme product in this trial to date. The trial is to continue in 1982.