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.

Discussion:

During all three years this trial was conducted, calves in both groups made a rapid adjustment to rations and housing.

Neither group required any medication or treatment except one calf in the Vita-Ferm group in 1982. This calf made a rapid response to treatment and was not removed from trial.

In 1980, the first year of this trial, 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 $4.25 per head advantage when sold. 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 weights. 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.

In 1982 the Vita-Ferm calves averaged 12 pounds heavier after 146 days on feed, and returned $4.06 more per head than the control calves when sold. However, the control calves were slightly more efficient (8.95 vs. 9.09) and consumed less feed per lot (2278 pounds vs. 2418 pounds). Thus, the feed cost for the control calves was $17.43 less than the Vita-Ferm fed calves. Total returns (calf value – feed cost) favored the control calves by $13.37 in 1982.

When all three years are averaged together, the Vita-Ferm fed calves appeared to gain slightly faster and sold for more dollars per head.

However, they consumed more feed per head (2436 pounds vs. 2358 pounds) and incurred a higher feed bill per head ($140.26 vs. $126.70).

Thus, the slower gaining control calves returned $9.31 more per head than the Vita-Ferm fed calves.

Summary:

During a three year period from 1980 to 1982, calves fed according to the Vita-Ferm program tended to eat more feed and gain slightly faster, but returned less net dollars than control calves.

Table 1. Rations as Fed in the Vita-Ferm Trial 1980-1982

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	---	21.0
	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	---	18.0
	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 – 1980

	Control	Vita-Ferm
No. of Head on Trial	9	9
Initial Wt., lbs. – Dec. 18	3225	3225
Average per Head, lbs.	358	358
Wt. off Trial, lbs. – May 22	5815	5905
Average per Head, lbs.	646	656
Gain for 145 days, lbs.	2590	2680
Average gain/hd., lbs.	288	298
Average gain/day, lbs.	1.98	2.05
Wt. at Market, lbs.	5825	5900
Average/lot, lbs.	647	656
Total Price, $	3951.59	3992.35
Value/hd., $	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
No. of Head on Trial	10	10
Initial Wt., lbs. – Dec. 3	3790	3780
Average per Head, lbs.	379	378
Wt. off Trial, lbs. – April 21	6255	6300
Average per Head, lbs.	625.5	630
Gain for 139 days, lbs.	2465	2520
Average gain/hd., lbs.	246	252
Average gain/day, lbs.	1.77	1.81
Wt. at Market, lbs.	6140	6028
Average/lot, lbs.	614.0	602.8
Total Price, $	4087.40	4129.18
Value /hd., $	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, $	1,560.73	1,627.10
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. Performance and Economic Summary for Vita-Ferm Trial – 1982

	Control	Vita-Ferm
No. of Head on Trial	10	10
Initial Wt., lbs. – Nov. 13	3660	3665
Average per Head, lbs.	366.0	366.5
Wt. off trial, lbs. – April 8	6205	6325
Average per Head, lbs.	620.5	632.5
Gain for 146 days, lbs.	2545	2660
Average gain/hd., lbs.	254.5	266.0
Average gain/day, lbs.	1.74	1.82
Wt. at Market, lbs.	6060	6170
Average/lot, lbs.	606.0	617.0
Total price, $	3942.25	3982.88
Value/hd., $	394.23	398.29
Value/lb., ¢	65.00	64.50
Pounds of feed/lot	22,775	24,185
Pounds of feed/hd.	2,277.5	2,418.5
Pounds of feed/day	15.6	16.6
Pounds of feed/lb. gain	8.95	9.09
Cost of feed + grinding/lot, $	1,259.16	1,433.53
Cost of feed + grinding/hd., $	125.92	143.35
Cost/Cwt. gain, $	49.48	53.89
Return over feed/hd., $	268.31	254.94
Difference, $	+13.37	

Table 5. Three Year Average Performance and Economic Summary

	Control	Vita-Ferm
Total Head	10	10
Average:		
Initial Wt., lbs.	367.7	367.3
Final Wt., lbs.	630.7	639.3
Gain, lbs.	262.7	272.0
Days fed	143	143
Daily gain, lbs.	1.83	1.89
Wt. at Market, lbs.	622.3	625.3
Value/hd., $	414.01	418.27
Value/Cwt., $	66.46	66.89
Pounds of feed/hd.	2,357.7	2,436.0
Pounds of feed/day	16.4	17.0
Pounds of feed/lb. gain	8.98	8.96
Cost of feed + grinding/lot, $	1,234.23	1,363.67
Cost of feed + grinding/hd., $	126.70	140.26
Cost/Cwt. gain, $	48.97	52.32
Return over feed/hd., $	287.32	278.01
Difference, $	+9.31	