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Forage Finishing Exotic Crossbred Cattle

V. L. Anderson and C. A. Dinkel

Ruminants make the most efficient use of forage of any of the farm animal species. Recently, increased attention has been given to finishing cattle on high-forage or all-forage rations. This could become more important if the world demand for grain for human consumption increases and less grain is available for livestock feeding. Limited information is available on forage finishing exotic crossbred cattle. When the percent of forage in a ration is increased, the rate of gain will be reduced and the time spent in the feedlot extended.

This experiment compares the feedlot and carcass performance of exotic crossbred cattle finished on all-forage vs a traditional high corn grain ration.

Procedure

The exotic crossbred cattle used in this experiment were produced by one Limousin bull artificially mated to Angus, Charolais and Angus-Charolais crossbred cows at the South Dakota State University beef breeding unit. At weaning, 40 steer and 30 heifer calves were started on the high-concentrate ration and 10 steer and 19 heifer calves were started on the all-forage ration.

The initial concentrate ration consisted of 58% corn, 20% ground alfalfa, 16% oats, 4% soybean meal and 2% vitamin A premix. Steers and heifers were individually switched to a higher energy ration consisting of 83% corn, 10% ground alfalfa, 5% soybean meal and 2% vitamin A premix when they reached 700 lb. and 625 lb., respectively. Steers and heifers were fed for an additional 140 and 119 days, respectively, prior to slaughter.

The all-forage ration consisted of three parts corn silage and one part alfalfa hay (18.78% protein). The 1976 drought silage (35.77% dry matter) yielded approximately 5 to 10 bushels of grain per acre.

The concentrate-fed animals were individually fed ad libitum at the Brookings station, while the forage-fed animals were pen-fed in sex groups at the Southeast Experiment Farm near Beresford.

The concentrate-fed animals were slaughtered first and an attempt was made to slaughter the forage-fed animals at the same weight as their high grain-fed counterparts. Forage-fed steers shrunk more than expected, resulting in an 86 lb. difference in slaughter weight (table 1). All animals were slaughtered at John Morrell and Company in Sioux Falls, and the right half of each carcass was shipped to the South Dakota State University Meat Lab for cutting into closely trimmed, semi-boneless retail cuts. Retail cut yield for the two groups was adjusted for differences in initial weight (table 1).

Results

The crossbred steers in this trial gained 1.83 lb. per day on forage and 2.73 lb. per day on concentrate. Heifers gained 1.62 lb. per day and 2.53 lb. per day on forage and concentrate, respectively (table 1).

The forage-fed cattle yield graded 71% number 1 and 28% number 2. Concentrate-fed cattle yield graded 75% number 1, 20% number 2 and 5% number 3. Quality grading of forage-fed animals resulted in 48% Standard, 45% Good and 7% Choice. Concentrate-fed animals quality graded 35% Standard and 65% Good.

Efficiency was measured by pounds of TDN required per pound of red meat produced (table 1). Forage-fed steers required 8.78 lb. of TDN per pound of red meat, while concentrate-fed steers required 5.73 pounds. Forage- and concentrate-fed heifers required 7.83 and 5.36 lb., respectively.

Economic analysis is the critical factor in any livestock operation. Applying actual costs to each of the feed ingredients and estimating the fixed cost per head per day can give a total cost of gain. An example of this cost analysis, based on prices existing at the time of this experiment, is illustrated in table 2.

Forage and concentrate feed costs per pound of gain for steers were \$0.334 and \$0.318, respectively, and for heifers \$0.338 and \$0.346, respectively. Total fixed and feed cost per pound of retail cut was \$0.374 and \$0.393 for forage- and concentrate-fed steers, respectively. Cost per pound of retail cut for forage- and concentrate-fed heifers was \$0.342 and \$0.353, respectively.

Conclusions

Preliminary results of this trial indicate that feeder cattle can be finished competitively on all-forage rations, especially in years of high grain prices and available drought silage. It is important to keep the fixed costs to a minimum, as this is a larger part of the total cost of producing forage-finished cattle. Costs will vary greatly, depending on the equipment and facilities utilized. Farmer-feeders who fill their feedlots one time a year can profit more from forage finishing cattle. Ruminants will continue to produce red meat efficiently from high forage rations as grain increases in price and decreases in availability.

Table 1. Performance Factors of Forage Vs Concentrate Finished Exotic Crossbred Cattle

	Forage	Concen- trate
<u>Exotic Crossbred Steers</u>		
Initial wt., lb.	553	539
Final wt., lb.	1019	1105
Average daily gain, lb.	1.83	2.46
Lb. feed/lb. gain	24.85	6.34
Lb. TDN/lb. retail cut	8.78	5.73
<u>Exotic Crossbred Heifers</u>		
Initial wt., lb.	545	510
Final wt., lb.	887	894
Average daily gain, lb.	1.62	2.26
Lb. feed/lb. gain	24.75	6.78
Lb. TDN/lb. retail cut	7.83	5.36

Table 2. Cost Analysis of Forage Vs Concentrate Finished Exotic Crossbred Cattle

	Forage	Concen- trate
Feed ingredient		
Corn silage	\$20/ton	
Alfalfa hay	\$30/ton	
Corn grain		\$2.50/bu.
Oats		\$1.25/bu.
Ground alfalfa hay		\$40/ton
Soybean meal		\$200/ton
Vitamin A premix		\$7.50/cwt.
Fixed cost	\$.10/head/day	
<u>Exotic Crossbred Steers</u>		
Feed cost per lb. gain	\$.334/lb.	\$.318/lb.
Feed cost per lb. retail cut	\$.313/lb.	\$.348/lb.
Fixed cost per lb. retail cut	\$.061/lb.	\$.045/lb.
Total cost per lb. retail cut	\$.374/lb.	\$.393/lb.
<u>Exotic Crossbred Heifers</u>		
Feed cost per lb. gain	\$.338/lb.	\$.346/lb.
Feed cost per lb. retail cut	\$.280/lb.	\$.308/lb.
Fixed cost per lb. retail cut	\$.062/lb.	\$.045/lb.
Total cost per lb. retail cut	\$.342/lb.	\$.353/lb.