

# Evaluation of low-input growing and finishing options for cattle producers

## Year 1 progress report

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### Introduction

Producers spend a lifetime, or, in some cases, multiple generations, developing the genetics of their cow herds to match their local environment. While the average number of cows in North Dakota herds is growing, there are still many modest-sized cow herds maintained as a complementary enterprise for biological and economic efficiency on a diversified crop farm. In many cases, cow/calf producers sell their calves before they are half grown. Producers with smaller herds have few economical alternatives to manual labor for feeding their calves after weaning or they may invest in feeding and mixing equipment that ultimately does not return a profit.

Self-feeding may offer a practical, low-labor, minimal-equipment option for feeding calves after weaning and potentially all the way to market as fat cattle. Self-feeding may be used to finish beef for local butcher shops and community consumption as well as for traditional terminal markets and the natural beef market in North Dakota.

Finishing their own cattle will teach producers about the carcass value of their particular genetic base. Self-feeding with carefully formulated rations that include co-products, some grains, and appropriate additives, all balanced for optimum growth may be as (or more) profitable than retained ownership of feeder cattle in the best commercial feedyards. This project was developed to compare the performance of calves fed a totally-mixed ration (TMR) in the bunk versus two self-feeding options.



Self-fed cattle were compared to those bunk-fed a TMR.

## Procedures

Weaned mixed sex calves (n=69 head) from the Hettinger Research Extension Center were shipped to Carrington and fed a common ration for two weeks prior to the start of this study. Feeder calves were sorted randomly into three pens and fed until slaughter. The three treatments were: (1) Control - a totally-mixed ration fed in a fenceline bunk; (2) a self-fed high grain diet using the same concentrate ingredient (corn) as the TMR, with grass hay offered free choice in a bale feeder and (3) a self-fed diet formulated with other ingredients including higher fiber co-products (wheat middlings in this case) and forage offered free choice as in treatment 2. Average feed intake for each treatment by ingredient is reported in Table 1.

**Table 1. Rations consumed for steers fed a total mixed ration vs. self-fed.**

	Control TMR	Self-fed Corn	Self-fed Corn/Barley
Rumensin	0.413	0.360	0.370
CaCo <sub>3</sub>	1.660	0.192	0.197
Corn	13.398	11.505	7.833
Barley	0.000	0.000	7.518
Midds	7.391	10.984	7.723
Oat/barley hay	4.048	5.243	5.993

The same brand of modified creep feeders were used as the self-feeders in this trial. Feeders were filled as required and monitored for feed flow. Calves were assigned in identical pens with fenceline water fountains and wind fence protection. Bedding was provided regularly during the winter months.

Feeder calves were weighed every 28 days and feed intake and efficiency calculated overall. The feeding period was 96 or 118 days based on two slaughter dates. Each treatment group was represented equally for each market time, based on visual appraisal. Calves were marketed when it was estimated by visual appraisal that they had a minimum of 0.5 inches backfat and that 60 percent or more would grade as Choice or better. Calves were marketed at Tyson Meats, Inc. at Dakota City, NE.

Carcass traits were determined after a 24-hour chill by trained individuals. Cost of gain was based on feed delivered (consumed or spoiled), yardage for commercial yards in the control treatment, and actual costs for mixing feed and delivering to the self-feeder.

## Results

Table 2 presents the average values for each pen/treatment for the first year of this multi-year/replicate study. The data indicates modest gains for all treatment groups as calves in this study were small-framed Angus with considerable condition (Score 6+) upon arrival.

**Table 2. Performance of steers fed a totally-mixed ration vs. self-fed.**

	Control TMR	Self-fed Corn	Self-fed Corn/Barley
No. Head	23	24	22
Initial wt., lbs	779	795	774
Final wt., lbs	1123	1125	1122
Average Daily Gain, lbs			
Period 1	3.54	2.54	2.95
Period 2	3.17	3.38	3.19
Period 3	2.90	2.48	3.13
Period 4	2.50	2.47	2.11
Overall	2.96	2.69	2.86
DMI, lb/hd/d			
	23.412	24.606	25.781
Feed/Gain			
	7.48	9.15	9.01
Feed cost/lb gain, \$			
	0.461	0.519	0.513
Yardage cost, \$/hd/day			
	0.35	0.15	0.15
Cost/lb gain, \$			
	0.118	0.0557	0.052
Total cost/lb gain, \$			
	0.579	0.574	0.566

Carcass performance is reported in Table 3.

**Table 3. Carcass traits of steers fed a totally-mixed ration vs. self-fed.**

	Control TMR	Self-fed Corn	Self-fed Corn/Barley
Hot carcass weight, lbs	666.2	677.3	666.5
Dressing percent, %	62.05	62.74	62.47
Marbling score*	569	544	601
Preliminary Yield Grade	3.51	3.49	3.55
Fat thickness, in.	0.6	0.6	0.62
Ribeye area, sq. in.	11.96	12.18	12.17
KPH fat, %	2.39	2.44	2.41
Quality Grade	CH <sup>0</sup>	CH <sup>0</sup>	CH <sup>+</sup>
% Choice or better, %	91	87	95

\*Marbling score: 300 to 399 = Select; 400+ = Choice.

## Discussion

Previous research to explore the value of a feed wagon in delivery of TMR diets (Anderson et al., 1996) indicates that the minimum number of feeder cattle for breakeven ownership of a single small trailer-mounted feed wagon is approximately 125 head. Growing heifer calves were used in that study to compare a TMR ration that included silage, hay, and supplements to silage and supplements layered in a fenceline bunk with hay offered separately. Heifer calves fed the TMR gained 1.56 pounds per day versus 1.41 for self-fed calves, and feed efficiency was similar. Heavy steer calves were finished in a field observation study at Central Grasslands Research Extension Center with one self-fed group versus one TMR treatment (Kreft et al., 2001). Steers fed the TMR gained 3.51 pounds per day versus 3.22 for the self-fed group, but no statistical analysis was provided for performance or carcass data.

*The authors would like to acknowledge the collaboration of the Hettinger Research Extension Center and the support of the SBARE Livestock Grant Committee for partial support of this project.*

## Literature Cited

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Self-feeder used in trial.

