

# Discovering value in North Dakota calves: The Dakota Feeder Calf Show feedout project XIII (2013-14)

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*The Dakota Feeder Calf Show feedout project assists cattle producers in identifying cattle with superior growth and carcass characteristics. The spread in average profitability between consignments from the top and bottom five herds was \$148.93 per head.*

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## Summary

The Dakota Feeder Calf Show feedout project was developed to discover the actual value of spring-born beef steer calves, provide comparisons among herds, and benchmark feeding and carcass performance. Cattle consigned to the feedout project were delivered to the Carrington Research Extension Center Livestock Unit on Oct. 19, 2013. After a 197-day feeding period with a 1.38 percent death loss, cattle averaged 1,313.6 pounds (shrunk harvest weight). Average feed required per pound of gain was 6.91 (dry-matter basis). Overall pen average daily gain was 3.53 pounds. Feed cost per pound of gain was \$0.575 and total cost per pound of gain was \$0.828. Profit ranged from \$472.28 per head for pen-of-three cattle with superior growth and carcass traits to \$266.06 per head. Substantial variability in the feeding and carcass value of spring-born calves continues to be discovered through participation in the feedout project.

## Introduction

Determining calf value is a learning experience for cow-calf producers. To remain competitive with other livestock and poultry in the meat industry, cow-calf producers need to identify superior genetics and management. Marketplace premiums are provided for calves that have exceptional feedlot performance and produce a high-quality carcass.

In addition, cost-effective feeding performance is needed to justify the expense of feeding cattle past weaning. Because North Dakota has low-cost feeds and a favorable climate, a low cost per pound of gain can be accomplished (Hoppe et al., 1997). Combining the low cost of gains with the identification of superior cattle, this ongoing feedlot project provides cattle producers with an understanding of cattle feeding and selection in North Dakota.

## Experimental Procedures

The Dakota Feeder Calf Show was developed for cattle producers willing to consign steer calves to a show and feedout project. The calves were received in groups of three or four on Oct. 19, 2013, at the Turtle Lake Weighing Station, Turtle Lake, N.D., for weighing, tagging, processing and showing. The calves were evaluated for conformation

and uniformity, with the judges providing a discussion to the owners at the beginning of the feedout. The number of cattle consigned was 145, of which 117 competed in the pen-of-three contest.

The calves then were shipped to the Carrington Research Extension Center, Carrington, N.D., for feeding. Prior to shipment, calves were vaccinated, implanted, dewormed and injected with a prophylactic long-acting antibiotic. Cattle were implanted with Synovex S upon arrival. Two calves were returned to their owners due to hoof and leg distress.

Calves then were sorted and placed on corn-based receiving diets. After a two-week adaptation period, the calves gradually were transitioned to a 0.62 megacalorie net energy gain (Mcal NEg) per pound finishing diet. Cattle were weighed every 28 days and updated performance reports were provided to the owners.

An open house was held on Feb. 3, 2014, at the Carrington Research Extension Center Livestock Unit, where the owners reviewed the calves and discussed marketing conditions.

The cattle (140 head) were harvested on May 7, 2014. Cattle were sold to Tyson Fresh Meats, Dakota City, Neb., on a grid basis, with premiums and discounts based on carcass quality. One calf was harvested locally on April 29, 2014. Carcass data was collected after harvest.

Ranking in the pen-of-three competition was based on the best overall score. Overall score was determined by adding the index value for feedlot average daily gain

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(25 percent of score), marbling score (25 percent of score) and profit (25 percent of score) and subtracting index value for calculated yield grade (25 percent of score). The Dakota Feeder Calf Show provided awards and recognition for the top ranking pen of steers.

## Results and Discussion

Cattle consigned to the Dakota Feeder Calf Show feedout project averaged 600.4 pounds upon delivery to the Carrington Research Extension Center Livestock Unit on Oct. 19, 2013. After an average 197-day feeding period, the cattle

averaged 1,313.6 pounds (at plant, shrunk weight). Death loss was 1.38 percent (two head) during the feeding period. Average daily feed intake per head was 39.4 pounds on an as-fed basis and 24.4 pounds on a dry-matter basis. Pounds of feed required per pound of gain were 11.1

**Table 1. Feeding performance – 2013-2014 Dakota Feeder Calf Show Feedout**

Pen of Three	Best Three Score Total	Average Birth Date	Weight Per Day of Age	Average Harvest Weight	Average Average Daily Gain	Marbling Score	Calculated Yield Grade	Ave. Feeding Profit or Loss/Head
1	0.690	30-Mar-13	3.06	1227.21	3.73	636.67	2.93	472.28
2	0.634	29-Mar-13	3.29	1325.45	3.89	433.33	1.98	421.21
3	0.604	26-Mar-13	3.48	1410.81	3.97	550.00	3.43	456.61
4	0.600	19-Apr-13	3.48	1327.06	3.91	460.00	2.40	402.14
5	0.600	29-Mar-13	3.36	1352.83	3.77	610.00	3.69	454.25
Average Top 5 herds	0.625	2-Apr-13	3.334	1,328.67	3.854	538.00	2.88	\$441.30
6	0.567	8-May-13	3.35	1214.32	3.76	420.00	2.11	366.03
7	0.567	2-Nov-12	2.63	1336.72	3.52	590.00	2.99	361.41
8	0.564	29-Mar-13	3.66	1473.62	3.70	470.00	3.39	486.11
9	0.554	28-Mar-13	3.32	1338.33	3.58	376.67	1.58	333.76
10	0.550	16-Mar-13	3.19	1327.06	3.59	496.67	2.96	401.24
11	0.549	7-Mar-13	2.91	1235.26	3.42	526.67	2.85	379.31
12	0.546	7-Apr-13	3.49	1373.76	3.41	440.00	1.99	339.23
13	0.531	17-Apr-13	3.36	1288.41	3.84	486.67	3.08	373.24
14	0.526	13-Apr-13	3.55	1375.37	4.01	423.33	3.40	439.42
15	0.526	18-Apr-13	3.52	1344.77	3.79	356.67	2.23	368.82
16	0.524	24-Mar-13	3.17	1293.24	3.45	436.67	2.24	336.49
17	0.520	20-Mar-13	3.14	1293.24	3.58	420.00	2.38	348.96
18	0.507	21-Apr-13	3.34	1265.86	3.39	403.33	2.29	352.93
19	0.497	6-Apr-13	3.23	1275.52	3.49	383.33	2.23	336.08
20	0.491	10-Apr-13	3.53	1378.60	3.99	486.67	3.89	401.79
21	0.485	20-Feb-13	3.20	1402.75	3.51	493.33	3.59	397.60
22	0.480	28-Mar-13	3.39	1367.32	3.66	466.67	3.22	350.48
23	0.476	2-Mar-13	3.51	1504.21	3.85	500.00	4.22	423.51
24	0.469	5-Apr-13	2.99	1177.28	3.66	370.00	2.27	294.96
25	0.463	20-Mar-13	3.10	1273.91	3.33	413.33	2.88	360.30
26	0.456	26-Mar-13	3.01	1220.77	3.55	393.33	2.45	292.22
27	0.455	31-Mar-13	3.31	1327.06	3.61	420.00	2.94	322.95
28	0.429	24-Mar-13	3.04	1238.48	3.40	383.33	2.38	266.06
29	0.411	8-Apr-13	2.24	1330.28	3.64	493.33	4.02	332.07
30	0.411	13-Mar-13	3.04	1270.69	3.33	376.67	2.55	273.75
31	0.380	25-Mar-13	3.01	1222.38	3.49	376.67	3.14	287.09
32	0.375	25-Apr-13	3.37	1264.25	3.19	430.00	3.43	302.89
Average bottom 5 herds	0.401	31-Mar-13	2.938	1265.2	3.410	412.0	3.103	\$292.37
Overall Average	0.514	26-Mar-13	3.227	1,314.3	3.625	453.9	2.847	\$366.73
Standard Deviation	0.073	30.743	0.289	74.952	0.213	71.523	0.661	58.20
Number	32	32	32	32	32	32	32	32

on an as-fed basis and 6.9 pounds on a dry-matter basis.

The overall feed cost per pound of gain was \$0.575. The overall yardage cost per pound of gain was \$0.090. The combined cost per pound of gain, including feed, yardage, veterinary, trucking and other expenses except interest, was \$0.828.

Calves were priced by weight upon delivery to the feedlot. The pricing equation (\$ per 100 pounds = (-0.077887036\* initial calf weight, pounds) + 224.209802) was determined by regression analysis on local livestock auction prices reported for the weeks before and after delivery.

Overall, the carcasses contained U.S. Department of Agriculture quality grades at 2.1 percent Prime, 73.6 percent Choice or better (including 10.7 percent Certified Angus Beef), 24.3 percent Select and 0 percent Standard, and USDA yield grades at 5 percent YG1, 36.4 percent YG2, 45 percent YG3, 12.9 percent YG4 and 0.7 percent YG5.

Carcass value per 100 pounds was calculated using the actual base carcass price plus premiums and discounts for each carcass. Grid price received was \$204.78 Choice YG3 base with premiums: Prime \$28, CAB \$6, YG1 \$6.50 and YG2 \$3 and discounts: Select minus \$10, Standard (no roll) minus \$15, YG4 minus \$8, YG5 minus \$20, and carcasses lighter than 625 pounds or greater than 1,050 pounds minus \$-20.

Profit or loss accounted for initial calf price, feed, yardage, veterinary, freight, brand inspection, beef checkoff, ultrasound and carcass data collection costs, and death loss.

Interest costs on cattle or feeding expenses were not included in calculating profit or loss. Final carcass value was assessed using the actual grid pricing for the harvest group.

For all cattle placed on feed, the feedout calculated a \$324.28 profit per head with death loss included.

### Pen-of-three-calves competition

Results from the calves selected for the pen-of-three competition are listed in Table 1.

Overall, the pen-of-three calves averaged 406 days of age and 1,314.3 pounds per head at harvest. The overall pen-of-three average daily gain was 3.63 pounds, while weight per day of age was 3.23 pounds. The overall pen-of-three marbling score was 452.5 (low choice, small marbling).

Correlations between profit and average birth date, harvest weight, average daily gain, weight per day of age or marbling score are shown in Table 2. No individual trait had a high correlation to profit, indicating profit relates to multiple production and performance measurements.

The top profiting pen-of-three calves with superior genetics

returned \$472.28 per head, while bottom pen of three calves returned \$266.06 per head. The average of the top five scoring pens-of-steers averaged \$441.30 per head, while the average of the bottom five scoring pens-of steer averaged \$292.37 per head.

For the pen-of-three competition, average profit/loss was \$366.80 per head. The spread in profitability between the top and bottom five herds was \$148.93 per head.

These data indicate that calf value is improved with superior carcass and feedlot performance. Exceptional average daily gains, weight per day of age, harvest weight and marbling score can be found in North Dakota beef herds. Feedout projects provide a source of information for cattle producers to learn about feedlot performance and individual animal differences, and discover cattle value.

### Literature Cited

Hoppe, K.F., V.L. Anderson, H. Hughes and K. Alderin. 1997. Finishing North Dakota Calves in North Dakota or Kansas - Final Report. A Report on Agricultural Research and Extension in Central North Dakota. 38:7.

**Table 2. Correlation between profit and various production measures (pen-of-three).**

	Correlation coefficient
Profit and average birth date	-0.0159
Profit and average harvest weight	0.5928
Profit and average daily gain	0.3656
Profit and weight per day of age	0.4373
Profit and marbling score	0.6715
Profit and yield grade	0.3949