

Discovering performance and value in North Dakota calves: 2023-2024 Dakota Feeder Calf Show Feedout

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The Dakota Feeder Calf Show is a feedout project to help North Dakota producers identify cattle with superior growth and carcass characteristics. Average difference in profitability between consignments from the top five herds and the bottom five herds was \$205.89 per head for the 2023-2024 feeding period.

Summary

North Dakota cattle producers use the Dakota Feeder Calf Show feedout project to discover the actual value of their 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. 21, 2023. After a 222-day feeding period with 0% death loss, cattle averaged 1,342.3 pounds (shrunk harvest weight). Feed required per pound of gain was 6.5 pounds (dry matter basis). Overall pen average daily gain was 3.35 pounds. Feed cost per pound of gain was \$0.712, and total cost per pound of gain was \$1.02. Profit ranged from \$338.15 per head for pen-of-three cattle with superior growth and carcass traits to \$14.30 per head. The variability between producers' herds is substantial when discovering the feeding and carcass value of spring-born calves.

Introduction

Cow-calf producers need to be price competitive with other meat industry proteins. Controlling increasing production costs with variable returns is challenging. By determining calf value through a feedout program, cow-calf producers can identify profitable genetics under common feedlot management. Substantial marketplace premiums are provided for calves that have exceptional feedlot performance and produce high-quality carcasses.

Cost-effective feeding performance is needed to justify the expense of feeding cattle past weaning. Price premiums are provided for cattle producing highly marbled carcasses. Knowing production and carcass performance can lead to profitable decisions for ranchers raising North Dakota born and fed calves.

This ongoing feedlot project provides producers with an understanding of cattle feeding and cattle selection in North Dakota.

Procedures

The Dakota Feeder Calf Show was developed in 1999 for cattle producers willing to consign steer calves to a show and feedout project. The 2023-24 calves were received in groups of three or four on Oct. 21, 2023, at the Turtle Lake, N.D., weighing station for weighing, tagging, veterinary processing and display. 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 95, of which 82 competed in the pen-of-three contest.

The calves then were transported to the Carrington Research Extension Center for feeding. Prior to transport, calves were vaccinated, implanted with Synovex-S, dewormed and injected with a prophylactic long-acting antibiotic.

Calves then were sorted and placed on corn- and distiller grains-based receiving diets. After an eight-week backgrounding period, the calves were transitioned to a diet containing 0.62 megacalorie of net energy for gain (Mcal NEg) per pound finishing diet. Cattle were weighed every 28 days, and updated performance reports were provided to the owners. Cattle were reimplanted with Synovex-Choice on January 19, 2024.

An open house was held on Jan. 31, 2024, where cattle owners could review calves, ponder performance and discuss marketing options.

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The cattle were harvested on May 31, 2023 (95 head). The cattle were sold to Tyson Fresh Meats, Dakota City, Neb., on a grid basis, with premiums and discounts based on carcass quality. Carcass data were collected after harvest.

Ranking in the pen-of-three competition was based on the best overall score. The overall score was determined by adding the index values for feedlot average daily gain (25% of score), marbling score (25% of score) and profit (25% of score) and subtracting index value for calculated yield grade (25% 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 597.9 pounds on delivery to the Carrington Research Extension Center livestock unit on Oct. 21, 2023. After a 222-day feeding period, cattle averaged 1,342.3 pounds (at plant, shrunk weight). No deaths occurred during the feeding period.

Average daily feed intake per head was 29.4 pounds on an as-fed basis and 21.8 pounds on a dry-matter basis. Pounds of feed required per pound of gain were 8.77 pounds on an as-fed basis and 6.51 pounds on a dry-matter basis.

The overall feed cost per pound of gain was \$0.712. The overall yardage cost per pound of gain was \$0.119. The combined cost per pound

of gain, including feed, yardage, veterinary, trucking and other expenses except interest, was \$1.02.

Calves were priced by weight upon delivery to the feedlot. The pricing equation (\$ per 100 pounds = $(-0.18403292 \times \text{initial calf weight, pounds}) + 384.5022016$) was determined by regression analysis on local livestock auction prices reported for the weeks before and after delivery.

Overall, the carcasses met U.S. Department of Agriculture Quality Grades at 4.2% Prime, 85.2% Choice (including 25.3% Certified Angus Beef), 9.4% Select and 1.1% ungraded., and USDA Yield Grades (YG) at 6.3% YG1, 30.5% YG2, 51.6% YG3 and 11.6% YG4.

Carcass value per 100 pounds (cwt) was calculated using the actual base carcass price plus premiums and discounts for each carcass. The grid price received for May 31, 2024, was \$305.91 Choice YG3 base with premiums: Prime \$25, CAB \$6, YG1 \$6.50 and YG2 \$3, and discounts: Select minus \$12, Standard (ungraded - no roll) minus \$15, YG4 minus \$8, and carcasses heavier than 1,075 pounds or lighter than 650 pounds minus \$20.

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

Overall, the pen-of-three calves averaged 428.8 days of age and 1,372.9 pounds per head at harvest. The overall pen-of-three feedlot average daily gain was 3.49 pounds, while weight gain per day of age was 3.22 pounds. The overall pen-of-three

marbling score was 511.5 (average choice, modest marbling).

Correlations between profit and average birth date, harvest weight, average daily gain, weight per day of age and marbling score are shown in Table 2. Average slaughter weight, average daily gain and marbling score had higher correlations to profitability than average birth date, average weight per day of age or yield grade.

The top-profit pen-of-three calves with superior genetics returned \$338.15 per head, while the bottom pen-of-three calves returned \$14.30 per head. The average of the five top-scoring pens of steers averaged \$310.76 per head, while the average of the bottom five scoring pens of steers averaged a loss of \$104.87 per head.

For the pen-of-three competition, average profit was \$228.66 per head. The spread in profitability between the top and bottom five herds was \$205.89 per head.

North Dakota calf value is improved with superior carcass and feedlot performance. Favorable average daily gains, weight per day of age, harvest weight and marbling score can be found in North Dakota beef herds. Exceptional profit per head was a result of extremely high market price in 2024. Feedout projects provide a source of information for cattle producers to learn about feedlot performance and individual animal differences, and discover cattle value.

Table 1. Feeding performance — 2023-2024 Dakota Feeder Calf Show Feedout

Pen of three	Best Three Score Total	Average Birth Date	Average Weight per Day of Age, lbs	Average Harvest Weight, lbs.	Average Daily Gain, lbs.	Average Marbling Score ¹	Ave Calculated Yield Grade	Ave Feeding Profit or Loss/Head
1	2.6693	24-Feb-23	3.04	1392.8	3.59	657.7	3.12	\$307.52
2	2.5229	2-Apr-23	3.46	1464.4	3.84	536.7	3.09	\$315.74
3	2.4768	27-Mar-23	3.36	1438.9	3.65	599.0	3.25	\$276.09
4	2.4753	18-Mar-23	3.11	1364.1	3.60	689.7	4.17	\$338.15
5	2.4740	27-Mar-23	3.20	1370.5	3.43	610.0	3.34	\$316.28
Average Top 5 herds	2.52	20-Mar-23	3.2	1406	3.6	619	3.39	\$310.76
6	2.2560	8-Mar-23	3.45	1545.6	3.86	511.3	3.93	\$332.24
7	2.2499	27-Mar-23	3.02	1295.7	3.37	468.0	2.40	\$199.00
8	2.1691	31-Mar-23	3.42	1451.7	3.67	506.7	3.68	\$278.19
9	2.1152	4-Mar-23	3.06	1381.6	3.42	544.3	3.83	\$271.86
10	2.0682	5-Apr-23	3.30	1386.4	3.54	497.0	3.72	\$259.89
11	2.0625	28-Apr-23	3.25	1287.7	3.40	451.7	2.73	\$161.72
12	2.0472	11-Mar-23	3.07	1364.1	3.52	508.0	3.49	\$199.76
13	2.0255	23-Mar-23	3.44	1488.3	3.53	470.3	4.05	\$324.48
14	2.0104	28-Mar-23	3.39	1450.1	3.53	471.0	3.61	\$239.37
15	1.9268	16-Apr-23	3.20	1308.4	3.36	416.0	2.91	\$162.98
16	1.9223	7-May-23	3.28	1271.8	3.38	493.3	3.22	\$121.61
17	1.8142	19-Mar-23	2.94	1284.5	3.17	419.7	2.75	\$99.56
18	1.6814	3-Apr-23	2.97	1249.5	3.16	386.3	2.46	\$14.30
19	1.6555	21-Apr-23	3.20	1289.3	3.39	483.0	4.07	\$125.88
Average bottom 5 herds	1.80	13-Apr-23	3.1	1281	3.3	440	3.08	\$104.87
Overall average - pens of three	2.14	29-Mar-23	3.22	1,372.92	3.49	511.56	3.36	\$228.66
Standard deviation		18.4	0.2	83.8	0.2	80.1	0.5	93.2
number		19	19	19	19	19	19	19

¹Marbling score 300-399 = select, 400-499 = low choice, 500-599 = average choice, 600-699 = high choice, 700-799 = low prime**Table 2. Correlations between profit and various production measures (pen of three).**

	Correlation coefficient
Profit and average birth date	-0.5267
Profit and average slaughter weight	0.8233
Profit and average daily gain	0.8129
Profit and weight per day of age	0.5114
Profit and marbling score	0.7261
Profit and yield grade	0.5735