

# Discovering performance and value in North Dakota calves: 2022-2023 Dakota Feeder Calf Show Feedout

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*The Dakota Feeder Calf Show is a feedout project where North Dakota cattle 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 \$312.11 per head for the 2022-2023 feeding period.*

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## Summary

North Dakota cattle producers are using 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. 15, 2022. After a 228-day feeding period with 1.79% death loss, cattle averaged 1325.7 pounds (shrunk harvest weight). Feed required per pound of gain was 6.6 (dry-matter basis). Overall pen average daily gain was 3.18 pounds. Feed cost per pound of gain was \$0.825, and total cost per pound of gain was \$1.151. Profit ranged from \$611.63 per head for pen-of-three cattle with superior growth and carcass traits to a loss of \$299.53 per head (no death loss). The variability between producers' herds continues to be substantial when discovering the feeding and carcass value of spring-born calves.

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## Introduction

Cow-calf producers need to be competitive with increasing production costs and increasing returns. 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 a high-quality carcass. 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 cattle producers with an understanding of cattle feeding and cattle selection in North Dakota.

## 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. 15, 2022, at the Turtle Lake weighing station, Turtle Lake, N.D., for weighing, tagging, veterinary

processing, and display. The calves were evaluated for conformation and uniformity, with the judges providing a discussion with the owners at the beginning of the feedout. The number of cattle consigned was 168, of which 147 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 with Synovex-S, dewormed and injected with a prophylactic long-acting antibiotic. Calves then were sorted and placed on corn and rye-based receiving diets. After an eight-week backgrounding period, the calves were transitioned to a 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 Jan. 24, 2023.

At a Feb. 2, 2023, open house, cattle owners could review calves, ponder performance, and discuss marketing options. The cattle were harvested on June 1, 2023 (164 head). The 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 due to lameness. 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 577.5 pounds upon delivery to the Carrington Research Extension

Center livestock unit on Oct. 15, 2022. After an average 228-day feeding period, cattle averaged 1,325.7 pounds (at plant, shrunk weight). Death loss was 1.79% (three head)

**Table 1. Feeding performance - 2022-2023 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 <sup>1</sup>	Ave Calculated Yield Grade	Ave Feeding Profit or Loss/Head
1	2.614	8-Apr-22	3.31	1376.1	3.8	614	3.7	\$667.99
2	2.610	11-Apr-22	3.04	1256.5	3.3	673	3.4	\$606.62
3	2.475	16-Mar-22	3.40	1496.1	3.8	605	4.1	\$669.92
4	2.355	24-Mar-22	3.39	1460.3	3.6	500	2.9	\$559.09
5	2.346	14-Apr-22	3.15	1293.5	3.3	611	3.5	\$554.55
<b>Average Top 5 herds</b>	<b>2.48</b>	<b>2-Apr-22</b>	<b>3.3</b>	<b>1376</b>	<b>3.6</b>	<b>601</b>	<b>3.49</b>	<b>\$611.63</b>
6	2.327	30-Apr-22	3.10	1226.1	3.2	591	3.6	\$629.54
7	2.294	5-Apr-22	3.26	1368.1	3.3	498	2.8	\$577.81
8	2.283	8-Apr-22	3.26	1358.4	3.4	484	2.8	\$571.70
9	2.184	2-Apr-22	3.37	1424.2	3.4	628	4.4	\$578.03
10	2.146	27-Mar-22	3.19	1363.3	3.5	512	3.4	\$543.83
11	2.129	22-Feb-22	3.01	1387.3	3.3	545	3.2	\$476.47
12	2.087	23-Mar-22	3.24	1396.2	3.7	562	4.6	\$616.77
13	2.057	16-Apr-22	3.28	1340.0	3.5	540	3.6	\$479.80
14	2.050	30-Mar-22	3.29	1399.4	3.8	480	3.8	\$536.99
15	2.015	27-Mar-22	3.23	1384.9	3.6	526	3.4	\$421.10
16	2.006	11-Apr-22	3.20	1323.9	3.3	504	3.8	\$560.97
17	2.000	30-Apr-22	3.26	1287.0	3.3	413	3.4	\$620.24
18	1.976	5-Mar-22	3.14	1413.6	3.6	489	4.2	\$601.06
19	1.945	5-Apr-22	3.02	1267.0	3.0	558	3.8	\$491.67
20	1.909	21-Apr-22	3.30	1329.6	3.6	513	4.0	\$482.97
21	1.863	8-Mar-22	3.31	1482.0	3.7	397	3.2	\$446.02
22	1.817	23-Mar-22	3.12	1349.6	3.4	483	3.3	\$373.81
23	1.801	19-Apr-22	3.20	1296.7	3.3	406	3.1	\$458.69
24	1.749	4-Apr-22	3.10	1298.3	3.0	431	3.4	\$489.38
25	1.704	3-May-22	3.22	1260.6	3.2	416	2.8	\$329.88
26	1.634	24-Apr-22	3.39	1353.6	3.1	452	3.7	\$439.40
27	1.631	16-Apr-22	3.15	1276.6	3.1	425	3.6	\$445.08
28	1.628	25-Feb-22	2.78	1276.6	2.9	423	3.0	\$371.40
29	1.613	21-Mar-22	3.16	1374.5	3.3	407	3.8	\$465.43
30	1.559	26-Apr-22	1.85	1120.9	2.7	393	2.3	\$286.19
31	1.553	19-Apr-22	3.49	1413.8	3.6	453	3.8	\$319.76
32	1.507	27-Mar-22	3.0	1277.4	3.2	491	4.2	\$371.70
33	1.365	29-Mar-22	2.9	1252.5	3.0	391	3.0	\$266.67
34	1.358	15-Apr-22	3.1	1282.2	3.1	445	3.4	\$206.97
35	1.338	20-Mar-22	2.7	1189.9	2.9	397	2.9	\$235.67
36	1.318	6-Apr-22	1.6	1325.1	3.2	403	4.4	\$416.63
<b>Average bottom 5 herds</b>	<b>1.38</b>	<b>1-Apr-22</b>	<b>2.7</b>	<b>1265</b>	<b>3.1</b>	<b>425</b>	<b>3.60</b>	<b>\$299.53</b>
<b>Overall average - pens of three</b>	<b>1.92</b>	<b>3-Apr-22</b>	<b>3.10</b>	<b>1,332.83</b>	<b>3.34</b>	<b>490.48</b>	<b>3.51</b>	<b>\$476.94</b>
Standard deviation		17.4	0.4	80.1	0.3	77.5	0.5	122.9
number		36	36	36	36	36	36	36

<sup>1</sup>Marbling score 300-399 = select, 400-499 = low choice, 500-599 = average choice, 600-699 = high choice, 700-799 = low prime

during the feeding period. Average daily feed intake per head was 31.2 pounds on an as-fed basis and 21.0 pounds on a dry-matter basis. Pounds of feed required per pound of gain were 9.8 on an as-fed basis and 6.62 pounds on a dry-matter basis. The overall feed cost per pound of gain was \$0.826. The overall yardage cost per pound of gain was \$0.124. The combined cost per pound of gain, including feed, yardage, veterinary, trucking and other expenses except interest, was \$1.151. Calves were priced by weight upon delivery to the feedlot. The pricing equation (\$ per 100 pounds =  $(-0.057040968 * \text{initial calf weight, pounds}) + 228.4227584$ ) 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 2.4% Prime, 75.0% Choice (including 17.0 percent

Certified Angus Beef), and 22.5% Select and 0% ungraded, and USDA Yield Grades at 3.7% YG1, 40.1% YG2, 49.4% YG3, and 6.8% 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 25, 2022, was \$291.23 Choice YG3 base with premiums: Prime \$25, CAB \$6, YG1 \$6.50 and YG2 \$3, and discounts: Select minus \$21, Standard (ungraded - no roll) minus \$25.50, YG4 minus \$8, YG5 minus \$20, Mature minus \$10 and carcasses heavier than 1075 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 425.6 days of age and 1,332.8 pounds per head at slaughter. The overall pen-of-three feedlot average daily gain was 3.34 pounds, while weight gain per day of age was 3.10 pounds. The overall pen-of-three marbling score was 490.5 (average choice, modest 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. 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 \$669.92 per head, while the bottom pen-of-three calves returned \$206.97 per head. The average of the five top-scoring pens of steers averaged \$611.63 per head, while the average of the bottom five scoring pens of steers averaged a loss of \$299.53 per head. For the pen-of-three competition, average profit was \$476.94 per head. The spread in profitability between the top and bottom five herds was \$312.11 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 exceptional market price improvement in 2023. Feedout projects continue to provide a source of information for cattle producers to learn about feedlot performance and individual animal differences, and discover cattle value.

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

	Correlation coefficient
Profit and average birth date	-0.0372
Profit and average slaughter weight	0.4640
Profit and average daily gain	0.5750
Profit and weight per day of age	0.3908
Profit and marbling score	0.6635
Profit and yield grade	0.3694