

# Discovering value in North Dakota calves: Dakota Feeder Calf Show feedout project XIII, 2014-15

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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 \$382.83 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. 18, 2014. After a 207-day feeding period with 1.95 percent death loss, cattle averaged 1,353.6 pounds (shrunk harvest

weight). The feed required per pound of gain was 6.25 (dry-matter basis). The overall pen average daily gain was 3.36 pounds. The feed cost per pound of gain was \$0.432, and the total cost per pound of gain was \$0.663. Profit ranged from \$270.23 per head for pen-of-three cattle with superior growth and carcass traits to a minus \$206.63 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 cattle selection in North Dakota.

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## 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. 18, 2014, 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 154, of which 132 competed in the pen-of-three contest.

The calves then were transported 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 reimplanted with Revalor S 105 days after arrival. Two calves were returned to 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 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.

An open house was held on Feb. 2, 2015, at the Carrington Research Extension Center Livestock Unit, where the owners reviewed the calves and discussed marketing conditions.

The cattle were harvested on May 6, 2015, (39 head) and May 20, 2015, (111 head). 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 value for feedlot average daily gain (25 percent of score), marbling score (25 percent of score) and profit (25 percent of score) and subtracting the 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 629.4 pounds upon delivery to the Carrington Research Extension Center Livestock Unit on Oct. 18, 2014. After a 207-day feeding period, cattle averaged 1,353.6 pounds (at plant, shrunk weight).

The death loss was 1.95 percent (two head) during the feeding period. The average daily feed intake per head was 26.9 pounds on an as-fed basis and 21 pounds on a dry-matter basis. Pounds of feed required per pound of gain were 8 on an as-fed basis and 6.2 pounds on a dry-matter basis.

The overall feed cost per pound of gain was \$0.432. The overall yardage cost per pound of gain was \$0.104. The combined cost per pound of gain, including feed, yardage, veterinary, trucking and other expenses except interest, was \$0.663.

Calves were priced by weight upon delivery to the feedlot. The pricing equation ( $\$ \text{ per } 100 \text{ pounds} = (-0.219196097 * \text{initial calf weight, pounds}) + 413.303051$ ) 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 (USDA) Quality Grades at 2.7 percent Prime, 76.7 percent Choice or

better (including 10 percent Certified Angus Beef), 19.3 percent Select and 1.3 percent Standard, and USDA Yield Grades at 7.3 percent YG1, 36.7 percent YG2, 41.3 percent YG3, 13.3 percent YG4 and 1.3 percent YG5.

The carcass value per 100 pounds was calculated using the actual base carcass price plus premiums and discounts for each carcass. The grid price received for May 6, 2015 was: \$258.17 Choice YG3 base with premiums: Prime \$28, CAB \$6, YG1 \$6.50 and YG2 \$3, and discounts: Select \$8, Standard (no roll) \$15, YG4 \$8, YG5 \$20 and carcasses greater than 1,050 pounds \$20. The grid prices received for May 20, 2015, were similar, except the Choice YG3 base was \$257.64 and the Select discount was \$10.

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. The final carcass value was assessed using the actual grid pricing for the harvest group.

For all cattle placed on feed, the feedout calculated a \$37.39 loss 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 411 days of age and 1,362.1 pounds per head at harvest. The overall pen-of-three average daily gain was 3.50 pounds, while the weight per day of age was 3.29 pounds. The overall pen-of-three marbling score was 471.7 (low choice, small marbling).

Correlations between profit and average birth date, harvest weight, average daily gain, weight per day of age and marbling score are shown

**Table 1. Feeding performance - 2014-2015 Dakota Feeder Calf Show Feedout**

Pen of Three	Best Three Score Total	Average Birth Date	Average Weight per Day of Age	Average Harvest Weight	Average Daily Gain	Average Marketing Score	Average Calculated Yield Grade	Average Feeding Profit or Loss/Head
1	5.819	16-Mar-14	3.72	1546.07	4.03	513.33	3.87	\$270.23
2	5.449	9-Apr-14	3.59	1456.80	3.80	600.00	4.24	\$219.80
3	4.937	10-Mar-14	3.58	1507.93	3.96	476.67	3.90	\$161.45
4	4.859	18-Apr-14	3.65	1447.18	3.72	420.00	2.97	\$139.50
5	4.777	17-Mar-14	3.67	1522.23	3.88	510.00	4.35	\$149.59
Average Top 5 herds	5.168	26-Mar-14	3.643	1,496.0	3.878	504.0	3.86	\$188.11
6	4.770	15-Mar-14	3.62	1507.93	3.78	390.00	2.56	\$118.93
7	4.732	24-Feb-14	2.95	1326.98	3.53	506.67	2.86	\$104.68
8	4.556	9-Mar-14	3.65	1542.89	3.85	413.33	3.50	\$113.51
9	4.446	17-Mar-14	3.83	1590.56	3.92	520.00	4.46	\$104.46
10	4.356	15-Mar-14	3.29	1387.67	3.55	523.33	3.85	\$82.30
11	4.345	28-Mar-14	3.06	1277.30	3.66	456.67	2.72	\$54.69
12	4.318	19-Apr-14	3.41	1349.42	3.64	540.00	3.14	\$47.15
13	4.281	30-Mar-14	3.49	1453.59	3.93	466.67	3.06	\$47.16
14	4.266	1-Apr-14	3.26	1351.02	3.59	473.33	2.71	\$42.04
15	4.150	21-Mar-14	3.19	1354.23	3.65	506.67	2.70	\$16.47
16	4.125	4-Apr-14	3.36	1381.47	3.53	543.33	3.29	\$28.19
17	4.066	19-Mar-14	3.12	1330.19	3.30	573.33	3.32	\$21.44
18	4.019	6-Apr-14	3.22	1315.76	3.24	453.33	2.31	\$9.56
19	3.980	2-Apr-14	3.47	1383.99	3.48	436.67	3.14	\$28.76
20	3.934	26-Mar-14	3.23	1355.83	3.44	493.33	2.75	\$(2.23)
21	3.838	6-May-14	3.27	1237.23	3.44	436.67	2.82	\$(0.18)
22	3.781	14-Mar-14	3.24	1395.90	3.65	503.33	3.53	\$(5.34)
23	3.643	6-Apr-14	2.89	1182.75	3.15	443.33	1.95	\$(48.75)
24	3.589	7-Apr-14	3.33	1342.39	3.31	510.00	3.93	\$(9.54)
25	3.573	13-Apr-14	3.00	1206.78	3.37	446.67	2.29	\$(54.17)
26	3.486	7-Apr-14	3.07	1251.66	3.14	480.00	2.60	\$(56.18)
27	3.429	11-Mar-14	3.40	1460.33	3.59	683.33	4.52	\$(58.69)
28	3.404	5-Mar-14	3.20	1380.15	3.24	400.00	3.31	\$(28.85)
29	3.327	23-Mar-14	2.99	1261.27	3.46	496.67	2.46	\$(95.89)
30	3.288	20-Mar-14	3.07	1309.35	3.28	440.00	3.28	\$(55.81)
31	3.232	19-Apr-14	3.03	1195.57	3.28	393.33	2.54	\$(77.68)
32	3.139	21-Mar-14	3.12	1313.85	3.21	500.00	3.26	\$(88.08)
33	2.822	22-Mar-14	3.05	1291.72	3.25	376.67	2.50	\$(130.21)
34	2.806	27-Apr-14	3.17	1227.62	3.24	423.33	3.57	\$(106.99)
35	2.446	1-Apr-14	3.44	1394.29	3.54	405.00	2.60	\$(26.46)
36	2.330	1-Apr-14	3.14	1300.54	3.64	405.00	3.35	\$(28.42)
37	2.158	7-Apr-14	3.19	1299.74	3.00	393.33	2.82	\$(206.63)
38	2.023	31-Mar-14	3.25	1317.99	2.97	370.00	3.24	\$(205.08)
Average bottom 5 herds	2.353	7-Apr-14	3.238	1,308.0	3.278	399.3	3.12	\$(114.72)
Overall Average	3.855	28-Mar-14	3.296	1,362.1	3.506	471.7	3.165	\$12.49
Standard Deviation	0.872	15.222	0.241	103.617	0.275	66.321	0.640	\$104.53
Number	38	38	38	38	38	38	38	38

in Table 2. The weight-influenced measurements of average harvest weight, average daily gain and weight per day of age were highly correlated to profitability.

The top profit pen-of-three calves with superior genetics returned \$270.23 per head, while the bottom pen-of-three calves returned a minus \$206.63 per head. The aver-

age of the top five scoring pen-of-three steers was \$188.11 per head, while the average of the bottom five scoring pen-of-three steers was a minus \$114.72 per head.

For the pen-of-three competition, the average profit/loss was \$12.49 per head. The spread in profitability between the top and bottom five herds was \$382.83 per head.

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

	Correlation Coefficient
Profit and average birth date	-0.2679
Profit and average harvest weight	0.7034
Profit and average daily gain	0.8469
Profit and weight per day of age	0.6761
Profit and marbling score	0.3656
Profit and yield grade	0.4102

## Implications

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.