Discovering value in North Dakota calves: Dakota Feeder Calf Show feedout project XIV, 2015-2016

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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 five herds and the bottom five herds was $200.21 per head for the 2015-2016 feeding period.

Summary

The Dakota Feeder Calf Show Feedout project was developed to discover the actual value of spring-born beef steer calves, provide comparisons between 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. 17, 2015. After a 215-day feeding period with 0.98 percent death loss, cattle averaged 1,325.1 pounds (shrunk harvest weight). Feed required per pound of gain was 6.72 (dry-matter basis). Overall pen average daily gain was 3.21 pounds. Feed cost per pound of gain was $0.519 and total cost per pound of gain was $0.774. Profit ranged from $27.11 per head for pen-of-three cattle with superior growth and carcass traits to minus $322.85 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, 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.

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.17, 2015, 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 205, of which 176 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. One calf was returned to an owner due to hoof and leg distress.

Calves then were sorted and placed on corn-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 Revlor S.

An open house was held on Feb. 5, 2016, at the Carrington Research Extension Center Livestock Unit, where the owners reviewed the calves and discussed marketing conditions.

The cattle were harvested on May 3, 2016 (eight head), May 18, 2016 (92 head), and May 25, 2016 (102 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 value for feedlot average daily gain (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

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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. 17, 2015. After an average 215-day feeding period, cattle averaged 1,325.1 pounds (at plant, shrunk weight). Death loss was 0.98 percent (two head) during the feeding period.

Average daily feed intake per head was 32.7 pounds on an as-fed basis and 21.6 pounds on a dry-matter basis. Pounds of feed required per pound of gain were 10.2 on an as-fed basis and 6.7 pounds on a dry-matter basis.

The overall feed cost per pound of gain was $0.519. 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 $0.774.

Calves were priced by weight upon delivery to the feedlot. The pricing equation ($ per 100 pounds = (-0.130250942* initial calf weight, pounds) + 297.316269) 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 percent Prime, 69.8 percent Choice or better (including 13.3 percent Certified Angus Beef), 25.7 percent Select, 1.5 percent Standard and 1 percent other, and USDA Yield Grades at 7.9 percent YG1, 43.56 percent YG2, 42.6 percent YG3, 5.4 percent YG4 and 0.50 percent YG5. One carcass (0.50 percent) was greater than 1,050 pounds.

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 3, 2016, was $196.01 Choice YG3 base with premiums: Prime $20, CAB $6, YG1 $6.50 and YG2 $3, and discounts: Select minus $9, Standard (no roll) minus $15, YG4 minus $8, YG5 minus $20 and carcasses greater than 1,050 pounds minus $20.

The grid price received for May 18, 2016, was similar except the Choice YG3 base was $210.51 and the other discount (dark cutter and blood splash) was minus $55. The grid price received for May 25, 2016, was similar except the Choice YG3 base was $207.11 and the Select discount was minus $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. Final carcass value was assessed using the actual grid pricing for the corresponding harvest group.

For all cattle placed on feed, the feedout calculated a $137.15 loss per head, with death loss included.

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

Overall, the pen-of-three calves averaged 418 days of age and 1,334.4 pounds per head at harvest. The overall pen-of-three feedlot average daily gain was 3.29 pounds, while weight per day of age was 3.18 pounds. The overall pen-of-three marbling score was 462.7 (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. The 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 $27.11 per head, while the bottom pen-of-three calves returned minus $322.85 per head. The average of the five top-scoring pens of steers averaged minus $5.03 per head, while the average of the bottom five scoring pens of steers averaged minus $205.24 per head.

For the pen-of-three competition, average profit/loss was minus $107.10 per head. The spread in profitability between the top and bottom five herds was $200.21 per head.

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	-0.2494
Profit and average harvest weight	0.5082
Profit and average daily gain	0.6205
Profit and weight per day of age	0.3688
Profit and marbling score	0.4656
Profit and yield grade	0.3522

Table 1. Feeding performance – 2015-2016 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]	Average Calculated Yield Grade	Feeding Profit or Loss/Head
1	2.021	5-Apr-15	3.47	1424.49	3.77	513.67	2.77	$27.11
2	1.928	5-Mar-15	3.21	1387.78	3.22	666.33	3.22	$(26.83)
3	1.897	2-Mar-15	3.25	1436.45	3.42	492.33	2.53	$(11.49)
4	1.853	7-Apr-15	3.38	1391.24	3.84	519.33	3.38	$8.73
5	1.852	7-Mar-15	3.12	1375.39	3.57	572.33	3.26	$(22.65)
Average Top 5 herds	**1.910**	**18-Mar-15**	**3.286**	**1,403.068**	**3.562**	**552.800**	**3.034**	**$(5.03)**
6	1.795	9-Mar-15	3.23	1404.66	3.39	455.00	2.60	$(20.52)
7	1.791	19-Jan-15	3.11	1503.36	3.67	561.00	3.70	$5.20
8	1.781	18-Apr-15	3.51	1383.47	3.51	532.33	3.40	$2.65
9	1.776	6-Apr-15	3.44	1410.72	3.66	442.67	2.94	$(5.00)
10	1.775	27-Apr-15	3.56	1388.40	3.50	442.67	2.34	$(72.15)
11	1.763	18-Mar-15	3.10	1317.83	3.22	478.00	1.83	$(147.54)
12	1.761	20-Jan-15	3.21	1530.97	3.82	478.33	3.16	$(33.05)
13	1.755	1-Apr-15	3.20	1334.01	3.43	416.00	2.24	$(62.90)
14	1.747	17-Apr-15	3.02	1216.27	3.38	579.00	3.37	$(45.60)
15	1.732	4-Apr-15	3.00	1243.22	3.23	599.33	2.58	$(167.02)
16	1.727	17-Apr-15	3.40	1360.58	3.27	463.00	2.64	$(44.11)
17	1.723	25-Mar-15	3.39	1421.11	3.38	482.33	3.14	$(4.73)
18	1.704	13-Mar-15	3.28	1425.01	3.82	415.33	3.07	$(21.21)
19	1.640	1-Apr-15	3.31	1364.01	3.32	514.33	2.85	$(113.50)
20	1.634	21-Apr-15	3.16	1260.72	3.04	459.33	2.05	$(148.21)
21	1.613	21-Mar-15	2.85	1223.05	3.11	427.67	2.12	$(129.21)
22	1.606	1-Feb-15	3.33	1531.56	3.90	515.00	3.58	$(100.94)
23	1.580	4-Apr-15	3.01	1250.79	3.25	482.00	3.21	$(56.46)
24	1.579	2-Apr-15	3.35	1374.77	3.54	449.00	3.55	$(16.04)
25	1.562	29-Mar-15	3.30	1376.43	3.26	422.67	2.50	$(116.42)
26	1.537	8-Mar-15	3.27	1428.39	3.37	411.33	2.55	$(125.98)
27	1.504	12-Feb-15	2.88	1323.36	3.18	504.00	3.32	$(92.88)
28	1.498	16-Apr-15	3.24	1291.61	2.91	392.00	1.76	$(185.63)
29	1.494	2-May-15	3.17	1230.14	3.02	401.00	2.34	$(126.18)
30	1.491	15-Apr-15	3.36	1345.50	3.23	544.00	3.54	$(110.88)
31	1.476	12-Apr-15	3.12	1248.08	2.92	381.00	2.07	$(145.05)
32	1.466	28-Feb-15	2.98	1326.88	3.11	420.33	3.13	$(57.43)
33	1.456	27-Mar-15	3.10	1296.24	3.02	426.00	2.64	$(126.74)
34	1.453	3-Apr-15	3.09	1280.49	3.13	496.00	3.19	$(125.64)
35	1.412	16-Apr-15	3.24	1307.69	3.25	376.67	2.18	$(201.50)
36	1.404	10-Apr-15	3.38	1367.45	3.24	525.00	3.85	$(98.09)
37	1.368	14-Apr-15	3.18	1285.15	3.18	393.33	2.62	$(167.53)
38	1.365	3-Apr-15	3.41	1393.91	3.21	448.33	2.90	$(184.15)
39	1.362	19-Feb-15	2.81	1272.12	2.84	476.67	2.29	$(251.61)
40	1.360	11-Mar-15	3.63	1515.94	3.83	451.00	3.28	$(212.24)
41	1.360	20-Mar-15	2.80	1231.87	2.94	426.00	2.67	$(164.95)
42	1.318	8-Mar-15	3.23	1408.14	3.37	380.33	3.11	$(137.52)
43	1.288	26-Mar-15	2.83	1201.77	2.86	381.67	2.38	$(195.62)
44	1.287	8-May-15	2.83	1078.97	2.80	356.67	2.22	$(190.35)
45	1.238	30-Mar-15	2.99	1249.27	3.04	426.33	3.30	$(153.48)
46	1.225	30-Mar-15	2.98	1250.48	3.09	434.00	2.99	$(217.93)
47	1.215	1-May-15	3.27	1271.44	3.23	464.33	3.91	$(136.31)
48	1.213	7-May-15	2.98	1136.98	2.78	340.33	2.33	$(195.62)
49	1.003	12-Apr-15	3.24	1310.50	3.22	436.33	3.24	$(322.85)
Average bottom 5 herds	**1.179**	**15-Apr-15**	**3.091**	**1,243.733**	**3.070**	**420.267**	**3.156**	**$(205.24)**
Overall average - pens of three	**1.559**	**27-Mar-15**	**3.187**	**1,334.462**	**3.291**	**462.687**	**2.855**	**$(107.10)**
Standard deviation		25.2	0.204	96.966	0.292	66.600	0.542	$79.11
number	49	49	49	49	49	49	49	

[1]Marbling score 300-399 = select, 400-499 = low choice, 500-599 = average choice, 600-699 = high choice, 700-799 = low prime