Discovering Value in North Dakota Calves; The Dakota Feeder Calf Show Feedout Project IV

Progress Report Year 2004-2005

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Abstract

North Dakota cattle producers continue to desire to understand the feeding and carcass value of their calves. Identifying superior genetics is paramount for cow calf producers to remaining competitive with other livestock and poultry in the meat industry. The Dakota Feeder Calf Show Feedout project was developed to discover the actual value of spring-born beef steer calves. Cattle consigned to the feedout project averaged 613.5 pounds upon delivery to the Carrington Research Extension Center Livestock Unit on October 16, 2004. After an average 211-day feeding period with 3.09% death loss, cattle averaged 1308.66 pounds (at plant, shrunk weight). Average daily feed intake per head, as fed, was 29.25 pounds while pounds of feed required per pound of gain were 9.44. Diet dry matter was 72.8%. The pen-of-three calves averaged 409 days of age at harvest. Overall pen average daily gain was 3.32 lbs. Feed cost was $0.307 per pound and total cost of gain without interest was $0.476. Although the cattle were marketed over a 67-day period, marbling scores averaged 425.9 (low choice). Profit before interest expense ranged from $242.33 per head for pen-of-three cattle with superior genetics to a $-9.66 per head for poorer performance. The feeding and carcass value of spring-born calves can be determined with participation in a feedout project.

Introduction

Determining calf value is a continuing experience for cow calf producers. At time of bull selection, a producer must estimate the type of animal desired by buyers 1½- 2 years before sale. In regards to premium and discounts in North Dakota, it appears that the live market has varying prices while the meat market has a more stable price. Consequently, producers are seeking to sell cattle based on the end-value meat price. In addition, superior cost effective feeding performance is needed to justify the expense of feeding cattle past weaning. Since North Dakota feeds are low cost and climate is favorable, low feeding cost per pound of gain can be accomplished. This feedlot project was supported to provide cattle producers with an understanding of cattle genetics and cattle feeding in North Dakota.

Materials and Methods

The Dakota Feeder Calf Show was developed for cattle producers willing to consign steer calves to a show and feedout contest. The calves were received in groups of three or four on October 16, 2004, to the Turtle Lake Weighing Station for weighing, tagging, processing and showing. The calves were evaluated for conformity and uniformity with the judges providing a discussion to the owners at the beginning of the feedout.

The calves were then shipped to the NDSU Carrington Research Extension Center, Carrington, ND, for feeding. Upon arrival calves were treated with prophylaxis tilmicosin. Calves were then sorted and placed on a receiving trial comparing increasing levels (0, 15, 30 or 45%) soybean hulls to replace corn in a 70% grain diet. On December 8, 2004, calves were moved on to a corn-based 80% grain diet. Cattle were weighed periodically and reports provided to the owners.

An open house was held on February 11, 2005, at the NDSU Carrington Research Extension Center Livestock Unit, Carrington, ND, where the owners reviewed the calves and discussed

marketing conditions. The calves were ultrasounded for back fat and marbling on March 18, 2004, and sorted into market groups based on back fat, marbling and live weight.

The first market group of cattle (11 head) was harvested on March 29, 2005. The second sell group (77 head) was harvested on May12, 2005. The third sell group (42 head) was harvested on May 25, 2005 and the last sell group (27 head) was harvested on June 4, 2005. Cattle were sold to Tyson Fresh Meats, Dakota City, NE, on a grid basis with premiums and discounts. Carcass data was collected after harvest.

Ranking in the pen-of-three competition was based on the best score obtained. Overall score was determined by adding the index score for weight per day of age (20% of score), average daily gain on test (20% of score), marbling score (20% of score), and retail product value divided by weight per day of age (40% of score). The Dakota Feeder Calf Show provided cash awards for the top placing pens of steers.

Results and Discussion

Cattle consigned to the Dakota Feeder Calf Show Feedout project averaged 613.5 pounds upon delivery to the Carrington Research Extension Center Livestock Unit on October 16, 2004. After an average 211-day feeding period with 3.09% death loss, cattle averaged 1308.6 pounds (at plant, shrunk weight). The early sell group (11 head) averaged 1264.5 pounds (shrunk) at harvest. The second sell group (77 head) averaged 1367.2 pounds (shrunk) at harvest. The third sell group (42 head) averaged 1253.8 pounds (shrunk) at harvest and the last sell group (27 head) averaged 1244.8 pounds (shrunk) at harvest. Average daily feed intake per head was 29.25 pounds, as fed basis, and 21.3 pounds, dry matter basis. Pounds of feed required per pound of gain were 9.44, as fed basis, and 6.87 pounds, dry matter basis.

Overall feed cost per pound of gain was $0.307. Overall yardage cost per pound of gain was $0.079. Combined cost per pound of gain including feed, yardage, veterinary, trucking and other expenses except interest was $0.476.

The number of cattle consigned was 162 of which 129 competed in the pen-of-three contest. Cattle were implanted with Synovex Choice at 94 days on feed.

The carcass characteristics were collected and used in calculating indexes for scoring. The first market group, harvested March 29, 2005, contained USDA Quality Grades at 45.2% Choice or better (including 4.76% Certified Angus Beef) and 54.76% Select and USDA Yield Grades at 7.14% YG1 , 42.86% YG2, and 50% YG3. The second market group, harvested May 12, 2005, contained USDA Quality Grades at 63.64% Choice (including 9.09% Certified Angus Beef), 27.27% Select, and 9.09% Standard and USDA Yield Grades at 36.36% YG2, and 63.64% YG3. The third market group, harvested May 25, 2005, contained USDA Quality Grades at 71.43% Choice (including 10.39% Certified Angus Beef), 27.27% Select, and 1.3% Standard and USDA Yield Grades at 2.6% YG1, 50.65% YG2, and 46.75% YG3. The last market group, harvested June 4, 2005, contained USDA Quality Grades at 40.74% Choice and 59.26% Select and USDA Yield Grades at 22.22% YG 1, 55.56% YG2, and 22.22% YG3.

Carcass value per cwt was calculated by using the actual base carcass price plus premiums and discounts. Grid prices were: March 29, 2005 - $149.06 Choice YG3 base with premiums of CAB $4.64, YG1 $6.50, YG2 $2.50, and discounts of Select $-3.40, and YG4 $-15; May 12, 2005 - $151.13 Choice YG3 base with premiums of CAB $3.57, YG1 $6.50, YG2 $2.50, and discounts of Select $-14.05, Standard $-16.35, YG4 $-15; May 25, 2005 - $147.79 Choice YG3 base with premiums of CAB $4.76, YG1 $6.50, YG2 $2.50, and discounts of Select $-14.80,

Standard $-17.10, YG4 $-15; and June 4, 2005 - $145.63 Choice YG3 base with premiums of CAB $2.66, YG1 $6.50, YG2 $2.50, and discounts of Select $-14.44, Standard $-16.74, YG4 $-15.

Retail product value was calculated as carcass weight, lb. * percent retail product *(((carcass value per cwt /100)/ retail product yield) / retail product markup) where retail product yield = 0.65, and retail product markup = 0.75. Percent retail product value was calculated as 0.825 - (calculated yield grade *0.05).

Results from the calves selected for the pen-of-three competition are listed in Table 1. Overall, the pen-of-three calves averaged 409 days of age and averaged 1322.0 pounds per head at harvest. Overall pen-of -three average daily gain was 3.32 pounds while weight per day of age was 3.23 lbs. Overall pen-of-three marbling score was 425.9 or 25.9% into low choice/small marbling. Retail product value averaged $1734.16 per head. Retail product value divided by day of age averaged $4.24.

Dakota Feeder Calf Feedout steers.

Table 1. Feeder Performance - 2004-2005 Dakota Feeder Calf Show Feedout.

Pen	Best Three Score Total	Average Birth Date	Average Harvest Weight	Average Daily Gain	Average Weight per Day of Age	Marbling Score	Avg Retail Product Value per Day of Age	Avg Feeding Profit or Loss / Head
1	3.379	23-Feb-04	1265.9	3.395	2.94	607	$ 4.05	$ 203.99
2	3.244	13-Apr-04	1302.0	3.544	3.32	510	$ 4.69	$ 219.17
3	3.244	4-Apr-04	1323.0	3.376	3.26	587	$ 4.21	$ 174.42
4	3.237	16-Mar-04	1374.1	3.609	3.26	450	$ 4.57	$ 219.18
5	3.199	25-Apr-04	1404.3	3.699	3.69	497	$ 4.85	$ 242.33
6	3.196	17-Mar-04	1374.4	3.579	3.26	453	$ 4.44	$ 233.28
7	3.194	24-Mar-04	1451.3	3.652	3.51	417	$ 4.79	$ 204.60
8	3.162	24-Mar-04	1326.7	3.286	3.34	533	$ 4.38	$ 155.25
9	3.154	5-Apr-04	1308.5	3.132	3.20	490	$ 4.45	$ 174.47
10	3.145	21-Mar-04	1292.2	3.303	3.22	497	$ 4.38	$ 161.82
11	3.142	4-Mar-04	1469.9	3.461	3.39	403	$ 4.53	$ 159.74
12	3.111	4-Apr-04	1394.9	3.638	3.46	437	$ 4.50	$ 190.36
13	3.109	30-Mar-04	1354.7	3.016	3.29	423	$ 4.75	$ 192.36
14	3.097	8-Mar-04	1400.8	3.686	3.21	383	$ 4.16	$ 142.72
15	3.094	12-Mar-04	1312.9	3.007	3.05	493	$ 4.01	$ 134.16
16	3.091	18-Mar-04	1305.8	3.370	3.23	473	$ 4.24	$ 159.76
17	3.075	5-Apr-04	1358.0	3.310	3.31	457	$ 4.31	$ 159.68
18	3.062	16-Mar-04	1283.1	3.186	3.00	413	$ 4.11	$ 148.16
19	3.053	4-Apr-04	1350.6	3.472	3.35	440	$ 4.31	$ 140.37
20	3.050	2-Apr-04	1352.7	3.483	3.34	417	$ 4.39	$ 197.86
21	3.042	29-Apr-04	1248.8	3.259	3.18	463	$ 4.26	$ 139.75
22	3.040	20-Apr-04	1324.7	3.485	3.36	463	$ 4.21	$ 181.01
23	3.029	6-Apr-04	1293.8	3.215	3.16	407	$ 4.38	$ 148.78
24	3.029	9-Apr-04	1341.4	3.324	3.39	447	$ 4.36	$ 160.73
25	3.022	21-Mar-04	1278.0	3.189	2.98	423	$ 3.94	$ 129.11
26	3.020	29-Apr-04	1342.6	3.390	3.44	423	$ 4.50	$ 139.22
27	3.013	24-Mar-04	1222.6	3.258	3.06	457	$ 4.09	$ 126.73
28	3.011	10-Mar-04	1409.2	3.434	3.30	373	$ 4.23	$ 126.67
29	2.973	16-Mar-04	1400.3	3.464	3.29	340	$ 4.27	$ 104.66
30	2.960	7-Apr-04	1398.8	3.425	3.45	353	$ 4.46	$ 123.01
31	2.951	9-Apr-04	1463.2	3.790	3.68	373	$ 4.28	$ 95.71
32	2.932	8-Apr-04	1347.6	3.378	3.29	377	$ 4.16	$ 90.52
33	2.929	14-Apr-04	1224.8	2.878	2.95	413	$ 3.99	$ 86.99
34	2.899	8-Apr-04	1247.6	3.301	3.06	380	$ 3.95	$ 55.96
35	2.869	12-Apr-04	1286.6	3.157	3.19	403	$ 3.95	$ 56.97
36	2.862	31-May-04	1177.5	3.267	3.25	403	$ 4.31	$ 121.10
37	2.862	10-Mar-04	1398.6	3.375	3.33	290	$ 4.27	$ 90.31
38	2.861	2-Apr-04	1268.2	3.031	3.04	393	$ 3.82	$ 70.80
39	2.846	9-Apr-04	1257.7	2.984	3.06	367	$ 4.00	$ 77.45
40	2.825	10-Apr-04	1312.3	3.213	3.13	367	$ 3.77	$ 37.14
41	2.760	24-Apr-04	1258.5	3.087	3.15	350	$ 3.88	$ 26.71
42	2.686	12-Apr-04	1240.3	2.891	3.06	333	$ 3.72	$ (4.49)
43	2.637	21-Apr-04	1097.1	2.844	2.71	337	$ 3.35	$ (9.66)
Average	3.025	2-Apr-04	1,322.0	3.322	3.236	425.969	$ 4.24	$ 134.62
Standard Deviation	0.155	18.084	76.118	0.232	0.192	65.573	$ 0.30	$ 60.81
Count	43	43	43	43	43	43	43	43

The highest combined index score per pen-of-three was 3.57. While the highest overall scoring pen did not place first in average daily gain, weight per day of age, harvest weight, or percent retail product value divided by weight per day of age and profit, the pen did rank first for marbling score at 607. Correlation between index score total and profit was high (r = 0.9213). Correlations between profit and average daily gain, weight per day of age, marbling score, or percent retail product value divided by weight per day of age are shown in Table 2.

Table 2. Correlation between profit and various production measures.

	Correlation coefficient
Profit and Index Score	**0.9213**
Profit and Average Birth Date	**-0.2696**
Profit and Average Harvest Weight	**0.4835**
Profit and Average Daily Gain,	**0.6156**
Profit and Weight per Day of Age	**0.495**
Profit and Marbling Score	**0.6731**
Profit and Percent Retail Product Value divided by day of age	**0.8288**

Profit or loss was calculated using initial calf price as price per pound, $ = 169.4306 – (0.074622 * initial calf weight). Profit or loss accounted for initial calf price, feed, yardage, veterinary, freight, brand inspection, beef check off, ultrasound and carcass data collection costs. 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.

Overall, cattle feeding provided a $84.40 profit before interest was included. However, the top profit pen-of-three calves with superior genetics returned $242.33 per head while the bottom pen-of-three calves returned $-9.66 per head due to death loss.

Implications

Calf value is improved with superior carcass performance. Feedlot performance is also important for increased weight gain and heavier carcass weights. Exceptional average daily gains, weight per day of age, marbling score and retail product value can be found in North Dakota beef herds. Feedout projects provide a source of information for cattle producers to learn about genetics and discover cattle value.