

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

## Progress Report Year 2008-2009

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### Abstract

North Dakota cattle producers continue to explore the value of the calves they produce by measuring feedlot performance and carcass characteristics. 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 averaged 648.5 pounds upon delivery to the Carrington Research Extension Center Livestock Unit on October 18, 2008. After an average 198-day feeding period with 1.52 percent death loss, cattle averaged 1260.1 pounds (at plant, shrunk weight). Average daily feed intake per head, as fed, was 29.6 pounds while pounds of feed required per pound of gain were 9.9. Diet dry matter was 78 percent. The pen-of-three calves averaged 404 days of age at harvest. Overall pen average daily gain was 2.98 pounds. Feed cost was \$0.553 per pound and total cost of gain without interest was \$0.752. The cattle were marketed on May 5, 2009 and marbling scores averaged 437.6 (low choice). Profit before interest expense ranged from \$121.68 per head for pen-of-three cattle with superior growth and carcass traits to a loss of (\$63.70) per head return for a pen-of-three with poorer feedlot and carcass performance.

### Introduction

Determining calf value is a continuing 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. At time of bull selection, a producer must also estimate the type of animal desired by buyers 1½- 2 years before sale. Marketplace premiums are provided for calves that have exceptional feedlot performance and produce a high quality carcass. In addition, superior cost effective feeding performance is needed to justify the expense of feeding cattle past weaning. Since North Dakota feeds were low cost and climate is favorable, low feeding cost per pound of gain can be accomplished. This feedlot project was developed 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 18, 2008 to the Turtle Lake Weighing Station, Turtle Lake, ND 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 calves were then shipped to the Carrington Research Extension Center, Carrington, ND for feeding. Prior to shipment, calves were vaccinated, implanted, dewormed, and injected with prophylactic long acting oxytetracycline. Calves were then sorted and placed on corn based receiving diets. After a two week adaptation period, the calves were moved on to a corn-based 80% grain diet. Cattle were weighed every 28 days and updated performance reports provided to the owners.

An open house was held on February 12, 2009, at the Carrington Research Extension Center Livestock Unit, where the owners reviewed the calves and discussed marketing conditions.

The number of cattle consigned was 198 of which 153 competed in the pen-of-three contest. Cattle were implanted with Synovex S upon arrival and reimplanted with Synovex Choice during the feeding period. The cattle (193 head) were harvested on May 5, 2009. 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 648.5 pounds upon delivery to the Carrington Research Extension Center Livestock Unit on October 18, 2008. After an average 198-day feeding period cattle averaged 1260.1 pounds (at plant, shrunk weight). Three deaths or 1.52 percent death loss occurred during the feeding period. Two steers were returned to a producer due to hoof and leg structure problems. Average daily feed intake per head was 29.6 pounds, as fed basis, and 23.1 pounds, dry matter basis. Pounds of feed required per pound of gain were 9.9, as fed basis, and 7.7 pounds, dry matter basis. Overall feed cost per pound of gain was \$0.553. Overall yardage cost per pound of gain was \$0.093. Combined cost per pound of gain including feed, yardage, veterinary, trucking and other expenses except interest was \$0.752. The carcass characteristics were collected and used in calculating indexes for scoring. The cattle were harvested May 5, 2009, contained USDA Quality Grades at 2.1% Prime, 65.8% Choice or better (including 16.6% Certified Angus Beef), 29.5% Select and 2.6% Standard and USDA Yield Grades at 14.5% YG1, 46.6% YG2, 32.1% YG3, 5.7% YG4, and 1.1% YG5. Carcass value per cwt was calculated by using the actual base carcass price plus premiums and discounts. Grid prices were: May 9, 2009 - \$137.63 Choice YG3 base with premiums of Prime \$8.08, CAB \$2.79, YG1 \$4.00, YG2 \$2.00, and discounts of Select \$-2.28, Standard \$-10.30, YG4 \$-11.40, YG5 \$-19.33. Retail product value was calculated as carcass weight, pound \* 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 404 days of age and averaged 1263.0 lbs. per head at harvest. Overall pen-of -three average daily gain was 3.36 lbs. while weight per day of age was 3.23 lbs. Overall pen-of-three marbling score was 437.6 or low choice marbling category. Retail product value averaged \$1543.35 per head. Retail product value divided by day of age averaged \$3.82.



**Calves consigned to the Dakota Feeder Calf Show Feedout.**

**Table 1. Feeding performance - 2008-2009 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	Ave Retail Product Value /DOA	Ave Feeding Profit or Loss / Head
1	3.485	11-Mar-08	1,346.95	3.703	3.356	663.3	4.205	\$ 121.68
2	3.440	2-Apr-08	1,293.63	3.533	3.399	650.0	4.188	\$ 80.31
3	3.306	9-Apr-08	1,345.99	3.682	3.601	400.0	4.648	\$ 50.33
4	3.280	28-Mar-08	1,366.52	3.739	3.545	470.0	4.260	\$ 37.66
5	3.265	29-Mar-08	1,424.13	3.891	3.705	383.3	4.408	\$ 33.99
<b>average of top 5</b>	<b>3.355</b>	<b>28-Mar-08</b>	<b>1,355.444</b>	<b>3.710</b>	<b>3.521</b>	<b>513.333</b>	<b>\$ 4.34</b>	<b>\$ 64.79</b>
6	3.232	8-Apr-08	1,228.39	3.691	3.280	583.3	3.793	\$ 43.16
7	3.211	17-Mar-08	1,348.38	3.953	3.405	410.0	4.260	\$ 61.25
8	3.210	11-Mar-08	1,377.02	3.353	3.425	483.3	4.266	\$ 47.62
9	3.194	26-Mar-08	1,343.29	3.868	3.469	433.3	4.116	\$ 26.10
10	3.147	16-Apr-08	1,271.51	3.458	3.457	440.0	4.175	\$ 31.30
11	3.138	17-Mar-08	1,348.38	3.853	3.406	500.0	3.689	\$ 34.42
12	3.130	20-Mar-08	1,358.72	3.640	3.460	440.0	4.015	\$ 34.13
13	3.128	17-Apr-08	1,281.38	3.668	3.495	420.0	4.059	\$ 12.38
14	3.119	1-Feb-08	1,359.36	3.502	3.106	640.0	3.395	\$ 64.13
15	3.113	6-Mar-08	1,405.51	3.435	3.458	396.7	4.268	\$ 44.60
16	3.090	27-Mar-08	1,303.82	3.569	3.377	420.0	4.064	\$ 56.97
17	3.070	15-Apr-08	1,208.97	3.398	3.283	516.7	3.731	\$ (9.20)
18	3.064	8-Apr-08	1,269.92	3.442	3.396	433.3	3.985	\$ (2.14)
19	3.058	25-Mar-08	1,329.12	3.577	3.419	373.3	4.136	\$ 25.46
20	3.058	9-Mar-08	1,358.25	3.721	3.363	480.0	3.620	\$ 19.71
21	3.057	27-Mar-08	1,270.08	3.401	3.290	446.7	3.988	\$ 25.85
22	3.051	15-Mar-08	1,333.10	3.614	3.347	476.7	3.683	\$ 47.59
23	3.044	26-Mar-08	1,329.76	3.147	3.430	423.3	4.111	\$ (1.49)
24	2.998	2-May-08	1,211.68	3.420	3.445	370.0	4.030	\$ (7.43)
25	2.996	13-Apr-08	1,151.21	3.462	3.107	433.3	3.923	\$ 40.05
26	2.992	15-Mar-08	1,347.42	3.539	3.390	483.3	3.482	\$ (63.70)
27	2.992	24-Mar-08	1,278.84	3.480	3.287	370.0	4.070	\$ 33.02
28	2.984	28-Mar-08	1,311.62	3.802	3.400	373.3	3.782	\$ (12.29)
29	2.978	13-Apr-08	1,257.83	2.995	3.398	376.7	4.206	\$ 2.03
30	2.972	26-Jan-08	1,438.93	3.560	3.238	533.3	3.277	\$ (34.93)
31	2.966	10-Apr-08	1,170.14	3.186	3.134	483.3	3.750	\$ 6.18
32	2.963	16-Mar-08	1,206.11	3.583	3.045	443.3	3.741	\$ 46.47
33	2.955	1-Apr-08	1,262.13	3.226	3.308	426.7	3.837	\$ 15.50
34	2.955	16-Apr-08	1,166.64	3.084	3.178	430.0	3.979	\$ 4.39
35	2.953	16-Apr-08	1,102.83	3.205	3.002	500.0	3.702	\$ 16.62
36	2.925	18-Mar-08	1,253.53	3.306	3.175	436.7	3.730	\$ 28.34
37	2.924	26-Mar-08	1,237.78	3.157	3.193	396.7	3.976	\$ 28.62
38	2.916	30-Mar-08	1,181.92	3.339	3.078	506.7	3.434	\$ 1.92
39	2.916	25-Mar-08	1,317.66	3.400	3.392	350.0	3.898	\$ (45.90)
40	2.914	13-Apr-08	1,202.29	3.363	3.248	353.3	3.984	\$ 12.90
41	2.871	12-Apr-08	1,132.59	3.081	3.052	423.3	3.816	\$ (7.99)
42	2.870	4-Apr-08	1,185.26	3.073	3.127	406.7	3.846	\$ 10.58
43	2.869	15-Mar-08	1,293.63	3.016	3.252	386.7	3.888	\$ 9.77
44	2.866	17-Apr-08	1,164.73	3.116	3.182	363.3	3.965	\$ 1.81
45	2.848	29-Feb-08	1,218.52	3.089	2.959	473.3	3.574	\$ 13.30
46	2.842	30-Mar-08	1,250.83	3.342	3.265	430.0	3.420	\$ (24.10)
47	2.823	6-Apr-08	1,176.03	3.233	3.122	380.0	3.723	\$ (22.23)
48	2.797	27-Mar-08	1,201.33	3.183	3.107	436.7	3.430	\$ (29.42)
49	2.560	14-Feb-08	1,109.35	2.868	2.602	430.0	3.174	\$ (22.17)
<b>average of bottom 5 with no deads</b>	<b>2.774</b>	<b>16-Mar-08</b>	<b>1,191.214</b>	<b>3.143</b>	<b>3.011</b>	<b>430.000</b>	<b>3.464</b>	<b>(16.924)</b>
50 (1 dead)	2.149	27-Mar-08	1,247.78	2.424	2.481	300.0	2.746	\$ 12.54
51 (2 deads)	1.013	2-Apr-08	835.26	1.189	1.157	140.0	1.282	\$ (5.82)
<b>Average</b>	<b>2.974</b>	<b>26-Mar-08</b>	<b>1,263.060</b>	<b>3.364</b>	<b>3.231</b>	<b>437.647</b>	<b>3.818</b>	<b>\$ 17.53</b>
Standard Deviation	0.348	18.520	102.372	0.428	0.368	85.313	0.497	32.876
Number	51	51	51	51	51	51	51	51

The highest combined index score per pen-of-three was 3.485. While the highest overall scoring pen did place first in marbling score, it did not place first in harvest weight, weight per day of age, feedlot average daily gain and percent retail product value divided by weight per day of age. Correlation between index score total and profit was fair ( $r = 0.4291$ ). 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 Cofefficient
Profit and Index Score	0.4291
Profit and Average Birth Date	-0.0945
Profit and Average Harvest Weight	0.2941
Profit and Average Daily Gain,	0.3368
Profit and Weight per Day of Age	0.2162
Profit and Marbling Score	0.4173
Profit and Percent Retail Product Value divided by day of age	0.3917

Profit or loss was calculated using initial calf price as price per 100 lbs.,  $\$ = 123.25321 - (0.03767 * \text{initial calf weight})$ . 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 \$-91.82 per head loss including death loss but not interest expense. However, the top profit pen-of-three calves with superior genetics returned \$121.68 per head while bottom pen of three calves returned \$-63.70 per head loss. The average of the top five scoring pens-of-steers averaged \$64.79 per head while the average of the bottom five scoring pens-of steer (dead loss not included) averaged \$-16.92 per head. The overall pen-of-three average was \$17.53 per head profit.

**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 feedlot performance, genetic differences, and discover cattle value.

