

South Dakota State University
**Open PRAIRIE: Open Public Research Access Institutional
Repository and Information Exchange**

South Dakota Beef Report, 2012

Animal Science Field Day Proceedings and
Research Reports

2012

SDSU Calf Value Discovery 2011 Summary Report

J.A. Walker

South Dakota State University

B.P. Holland

South Dakota State University

C.L. Wright

South Dakota State University

W.C. Rusche

South Dakota School of Mines and Technology

Follow this and additional works at: http://openprairie.sdstate.edu/sd_beefreport_2012

 Part of the [Animal Sciences Commons](#)

Recommended Citation

Walker, J.A.; Holland, B.P.; Wright, C.L.; and Rusche, W.C., "SDSU Calf Value Discovery 2011 Summary Report" (2012). *South Dakota Beef Report, 2012*. Paper 8.

http://openprairie.sdstate.edu/sd_beefreport_2012/8

This Report is brought to you for free and open access by the Animal Science Field Day Proceedings and Research Reports at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in South Dakota Beef Report, 2012 by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.



BEEF REPORT 2012-08

SDSU Calf Value Discovery 2011 Summary Report¹

J. A. Walker, B. P. Holland, C. L. Wright and W. C. Rusche

Department of Animal Science, South Dakota State University

INTRODUCTION

The Calf Value Discovery Program (CVD) allows cow-calf producers to gain knowledge of the finishing segment of the beef cattle industry and the marketing of fed cattle. Specifically, CVD provides an opportunity for cow-calf producers to learn how their calves perform in a feedlot and their carcass value when sold in a value-based marketing system. Each producer taking part in the program could consign a minimum of 5 steers weighing between 500 and 800 pounds to the CVD program. Animals were finished in a calf-fed program using typical diets and management protocols at VanderWal Yards (Bruce, SD). Carcass and feedlot performance information from calves were returned to producers for use in making future management decisions to improve profitability.

MATERIALS AND METHODS

Eleven cow-calf operations in South Dakota and Minnesota consigned calves to the 2011-2012 CVD program. The number of animals consigned by producers ranged from 5 to 72. Calves were received on November 8th and 9th, 2011. Upon receipt, calves were vaccinated against viral and bacterial respiratory (Bovi-Shield Gold BVD, Inforce 3, One-Shot, Pfizer Animal Health, Kalamazoo, MI) and clostridial pathogens (Ultrabac-7, Pfizer), dewormed (Dectomax Pour-On, Pfizer), individually identified, and weighed. Calves were implanted on d 35 (Synovex S, Pfizer) and on d 105 (Revalor-S, Merck Animal Health, Summit, NJ). Cattle were fed a finishing diet based on high moisture ground ear corn, modified wet distillers grains, and corn silage as a group in a single pen. Cattle were visually evaluated for degree of finish and sold in semi-load lots when deemed to have approximately 0.4 inches of backfat. Slaughter dates were May 11, June 1 and 15, 2012 (184, 205, and 219 days on feed, respectively). Animals were sold on a quality/yield grid at Tyson Fresh Meats, (Dakota City, NE).

For each animal, individual BW was recorded at arrival at the feedyard, on d 35, d 105, and one day before shipment to slaughter. A four percent shrink was used for all weights. Since cattle were fed in a single pen, individual feed intake was calculated based on animal performance and diet energy content using NRC (2000) equations. At slaughter, individual identification was tracked through the plant and individual carcass data, including HCW, 12th-rib fat thickness, ribeye area, percent kidney, pelvic, and heart fat, marbling score, and USDA Quality and Yield Grades, were reported by the plant.

Actual expenses included feed, based on calculated individual intake as a fraction of actual feed delivery, yardage (\$0.35 per animal daily), and veterinary expenses. Feeding expenses associated with calves that died during the program was distributed equally across all other

¹ Salaries and research support provided by state and federal funds appropriated to South Dakota State University.

animals in the program. Actual grid prices were used to calculate carcass value and feeding period profitability. To estimate feeder calf price, and overall profitability, average feeder steer prices from South Dakota Auction Market Summary report (USDA Agricultural Market Service report SF_LS795) for the weeks ending October 31, and November 7 and 14, 2012 were regressed on selling weights. The resulting equation was used to calculate feeder calf price for each calf: Price (\$/100 lb) = 277.65 - (BW × 0.1147) ($r^2 = 0.81$). The Nebraska weighted average carcass price for negotiated direct sales was used (USDA Agricultural Market Service report LM_CT158) for the weeks animals were sold was used to estimate carcass value and profitability had animals been sold on a dressed basis.

To estimate what factors were associated with feeding performance or profit and quality grade for calves that finished the 2011-2012 CVD program, calves were divided into thirds based on profit. A generalized linear model was used to separate means between groups (PROC GLM, SAS Institute, Cary, NC). The association of USDA Quality Grade among profit groups was determined by χ^2 (Proc Freq, SAS). Means were considered different when $P \leq 0.05$.

RESULTS AND DISCUSSION

Four calves (1.63%) died during the program, and the remaining 240 animals finished the program and were included in the analysis. Overall cattle performance data is included in Table 1. Calves were placed with an average weight of 569 ± 87 lb, but the range in weights was 459 lb. Some calves were accepted into the program whose initial weights were outside the recommended range of 500 to 800 pounds. Average final BW for steers (average DOF = 201) was 1,245 ± 110.1 lb, and ADG was 3.37 lb/d. Dry matter intake of was 20.2 lb/d, which was 2.2% of average BW, and F:G ratio was 6.01 on average. The 2011-2012 winter was extremely mild in eastern South Dakota, with little precipitation. This likely contributed to the good performance. On average, steers were slaughtered at target fat thickness, but considerable variability existed among steers. Steers graded well, with 67.1% Grading US Choice or Prime, with only 9 Yield Grade 4 carcasses and 2 Yield Grade 5 carcasses. In a pen-based scenario, approximately 10% of carcasses should have Yield Grades of 4 and 5 for maximal profit (Walter and Hale, 2011). In this case, had some animals been fed longer, overall quality grade might have been improved.

On average, feeding costs were \$565.31 per animal. This equates to a total cost of gain of \$83.62/100 lb. When carcasses were sold on a grid marketing basis, price ranged from \$1,173.37 to 1,954.15, but had carcasses been sold on a dressed basis this range would have been narrower (\$1,184.49 to \$1,863.22). When including the value of the feeder calf, there was a \$633.86 dollar per animal range in return from a loss of \$220.95 to a profit of \$412.91. However, on average total profit was \$48.20 per animal. Since 1973, feeding cattle has been approximately a breakeven business (Walter and Hale, 2011). For the whole group, carcasses sold for \$11.42 per carcass more on a grid basis, than on a dressed basis. This resulted in approximately the same profit advantage to selling on a grid for the whole group. However, on an individual basis, there was less potential profit for the highest profit animals when they were sold on a dressed basis. Generally, animals that had the best potential to match the grid should have been sold on a grid, but there would have been less price risk for animals that did not conform to the grid by selling on a dressed basis.

When sorted according to profit groups, the High profit steers had heavier placement and final weights, and had a greater ADG compared to the Low and Middle profit groups. Typically, higher profit in cattle feedlots is associated with superior feed efficiency, but because DMI was

calculated from NRC (2000) models, DMI and subsequently F:G may be overestimated for some high gaining animals. Because of this higher DMI, High profit steers had greater feed costs than Low, with Middle intermediate. However, superior performance and carcass value overcame this expense. In addition, while High profit steers were placed on feed weighing 154 pounds more than the Low profit steers, they were on feed 9 fewer days, which helped reduce yardage and feed costs. On average, costs associated with treating illness were significantly greater for Low profit groups than Middle and High.

Steers in the High profit group had greater HCW, dressing percentage, and ribeye area than Low profit steers, with Middle profit steers intermediate. Similarly, High Profit steers had greater marbling scores, and lower kidney pelvic and heart fat, and tended to have lower yield grades than Low profit steers, with Middle profit steers intermediate. Twelfth-rib fat thickness, however, was not different among profit groups, indicating that the previously mentioned differences in carcass characteristics were not influenced by degree of finish. Superior HCW and quality grade resulted in carcass values of \$1,714.08 for High profit steers compared to \$1,551.27 and \$1,376.34 for Middle and Low, respectively. However, because of the higher feed costs for High and Middle compared to Low the difference in feeding period profit was not as great as the difference in carcass value (High minus Low profit = \$300.10). In addition, High and Middle steers had greater placement weights, and thus greater feeder calf values compared to Low. Therefore, the difference in total profits between High and Low was only \$149.18 per animal. Had steers been sold on a dressed basis, the carcass value and profit to Middle steers would have been similar to when animals were sold on a grid. For Low profit steers, selling on a dressed basis would have an advantage of \$8.36 in carcass value compared to selling on a grid, but High profit steers were valued \$40.05 more per carcass on the grid than on a dressed basis.

For individual producers, the Calf Value Discover program provides feedback on feeding performance and carcass characteristics of calves. In addition, viewing animals from an individual ranch in the context of the entire group can provide a benchmark for comparison with cattle from other operations. In general, cattle with greater potential to perform and producer heavier carcasses were more profitable than those with lower weight gains. Higher profit steers also had superior USDA Quality Grades and tended to have better Yield Grades. Ultimately, market conditions and input prices can greatly impact feeding profitability from year to year, but these data provide useful guidelines for making selection and marketing decisions in the future.

LITERATURE CITED

NRC. 2000. Nutrient requirements of beef cattle. 7th Ed. Update 2000. National Academy Press. Washington, D.C.

Walter, S., and R. Hale. 2011. Profit profiles: factors driving cattle feeding profitability. Available: <http://www.cabpartners.com/news/research/CABProfitProfiles.pdf>. Accessed September 10, 2012.

Table 1. Overall performance and carcass characteristics of cattle enrolled in the 2011-2012 South Dakota Calf-Value Discovery Program.

Item	Mean	Standard Deviation	Minimum	Maximum
Days on Feed	201	14.2	184	219
BW, lb				
D 0	569	87.0	340	799
D 105	934	107.5	641	1,273
Final	1,245	110.1	979	1,549
ADG, lb/d	3.37	0.412	2.17	4.97
DMI, lb/d	20.2	1.84	15.9	26.8
F:G	6.01	0.40	5.01	8.17
HCW, lb	795	75.2	615	966
Dress., %	63.8	1.76	58.1	68.1
12-th rib fat thickness, in.	0.46	0.14	0.11	1.30
Rib eye area, in. ²	13.0	1.7	9.8	18.9
KPH, %	1.91	0.19	1.41	2.52
Marbling Score ^a	421.6	77.6	285.0	770.0
Yield Grade	2.50	0.75	1.0	5.0
Quality Grade Distribution	N	Percent		
Prime, %	2	0.8		
Choice, %	159	66.3		
Select, %	76	31.7		
No roll, %	3	1.3		

^a Marbling score: 300-399 = Slight, 400 – 499 = Small, 500 -599 = Modest.

Table 2. Feeding expenses and carcass values of cattle enrolled in the 2011-2012 South Dakota Calf-Value Discovery Program.

Item	Mean	Standard Deviation	Minimum	Maximum
Feeder calf cost, \$/steer	914.91	84.92	641.18	188.67
Feeding costs, \$/steer				
Feed cost	444.36	36.78	331.79	543.60
Treatment costs	7.08	17.12	0.00	101.03
Total Feeding cost	565.31	42.51	438.20	702.43
Grid marketing profit				
Carcass value, \$/carcass	1,547.23	156.97	1,173.37	1,954.15
Carcass price, \$/100 lb	192.23	5.98	173.14	223.13
Live price, \$/100 lb	122.57	5.54	102.58	148.73
Feeding profit, \$/steer	963.11	135.80	636.13	1,349.09
Total profit, \$/steer	48.20	86.37	- 220.95	412.91
Dressed marketing profit				
Carcass value, \$/carcass	1,535.81	144.31	1,184.49	1,863.22
Feeding profit ^a , \$/steer	951.70	122.61	647.76	1,265.19
Total profit, \$/steer	36.79	68.12	- 219.20	211.38

^aFeeding profit is carcass value minus feeding cost.

Table 3. Feedlot performance and carcass characteristics of steers enrolled in the 2011-2012 South Dakota Calf-Value Discovery Program according to profit group.

Item	Profit Group			SEM	P-Value
	Low	Middle	High		
n	80	80	80	-	-
Days on Feed	206 ^a	201 ^b	197 ^b		0.003
BW, lb					
D 0	487 ^a	578 ^b	641 ^c	6.69	<0.001
D 105	834 ^a	941 ^b	1,028 ^c	7.94	<0.001
Final	1,136	1,255 ^b	1,343 ^c	7.87	<0.001
ADG, lb/d	3.17 ^a	3.38 ^b	3.57 ^c	0.042	<0.001
DMI, lb/d ^d	18.6 ^a	20.3 ^b	21.6 ^c	0.154	<0.001
F:G	5.94 ^a	6.01 ^{ab}	6.09 ^b	0.044	0.054
HCW, lb	716 ^a	801 ^b	868 ^c	4.76	<0.001
Dress., %	63.0 ^a	63.8 ^b	64.6 ^c	0.183	<0.001
12-th rib fat thickness, in.	0.45	0.48	0.47	0.016	0.41
Rib eye area, in. ²	12.0 ^a	13.0 ^b	14.1 ^c	0.162	<0.001
KPH, %	2.01 ^a	1.89 ^b	1.82 ^c	0.020	<0.001
Marbling Score ^e	402 ^a	414 ^a	449 ^b	8.42	<0.001
Yield Grade	2.60	2.56	2.35	0.083	0.07

^{a,b,c} Means differ; P-values noted in table.

^d Calculated from BW and ADG

^e Marbling score: 300-399 = Slight, 400 – 499 = Small, 500 -599 = Modest.

Table 4. Quality and Yield Grade Distributions of steers enrolled in the 2011-2012 South Dakota Calf-Value Discovery Program according to profit group.

Quality Grade	Profit Group						P-Value
	Low		Middle		High		
	n	Percent	n	Percent	n	Percent	
Prime	0	0	1	0.1	1	0.1	0.02
Choice	44	55.0	48	60.0	67	83.8	
Select	24	30.0	30	38.5	12	1.5	
No Roll	2	0.3	1	0.1	0	0	
Yield Grade							0.24
1	5	6.3	9	11.3	8	10.0	
2	29	36.3	23	28.8	36	45.0	
3	40	50.0	42	52.5	36	45.0	
4	5	6.3	4	5.0	0	0	
5	1	1.3	1	1.3	0	0	

Table 5. Feedlot performance and carcass characteristics of steers enrolled in the 2011-2012 South Dakota Calf-Value Discovery Program according to profit group.

Item	Profit Group			SEM	P-Value
	Low	Middle	High		
Feeder calf cost, \$/steer	831.98 ^a	929.83 ^b	982.91 ^b	6.44	<0.001
Feeding costs, \$/steer					
Feed costs	420.16 ^a	445.47 ^b	467.67 ^c	3.51	<0.001
Treatment costs	12.44 ^b	6.27 ^a	3.55 ^a	2.25	0.01
Total costs	546.52 ^a	565.07 ^b	584.35 ^c	4.45	<0.001
Grid marketing profit					
Carcass value, \$/carcass	1,376.34 ^a	1,551.27 ^b	1,714.08 ^c	8.36	<0.001
Carcass price, \$/100 lb	189.68 ^a	191.55 ^b	195.45 ^c	0.614	<0.001
Live price, \$/100 lb	119.10 ^a	122.24 ^b	126.36 ^c	0.524	<0.001
Feeding profit ^d , \$/steer	810.89 ^a	967.45 ^b	1,110.99 ^c	6.51	<0.001
Total profit, \$/steer	- 21.09 ^a	37.62 ^b	128.09 ^c	6.82	<0.001
Dressed marketing profit					
Carcass value, \$/carcass	1,384.70 ^a	1,548.71 ^b	1,674.03 ^c	9.21	<0.001
Feeding profit ^a , \$/steer	819.25 ^a	964.90 ^b	1,070.94 ^c	7.40	<0.001
Total profit, \$/steer	-12.73 ^a	35.07 ^b	88.03 ^c	6.09	<0.001

^{a,b,c} Means differ; P-Values noted in table.

^d Feeding profit is carcass value minus feeding cost.