1994

South Dakota Retained Ownership Demonstration

J. J. Wagner
South Dakota State University

L. A. Senn
South Dakota State University

D. M. Feuz
South Dakota State University

D. L. Boggs
South Dakota State University

D.D. Zalesky
South Dakota State University

See next page for additional authors

Authors
J. J. Wagner, L. A. Senn, D. M. Feuz, D. L. Boggs, D.D. Zalesky, and B. Knutson

South Dakota Retained Ownership Demonstration

J.J. Wagner[1], L.A (Goss) Senn[2], D.M. Feuz[3], D.L. Boggs[1],
D.D. Zalesky[4], and B. Knutson[5]
Department of Animal and Range Sciences and Economics

CATTLE 94-18

Summary

Seven hundred six calves representing 81 cow-calf producers were consigned to a custom feedlot. Steer calves (421 head) consigned in October weighed 562 lb initially, gained 2.75 lb per head daily, and averaged 1153 lb at slaughter after an average of 207 days on feed. Average cost of gain and profitability were $61.48 per cwt and -$86.61 per head, respectively. Steers consigned in January weighed 738 lb initially, gained 3.36 lb per head daily, and averaged 1,196 lb at slaughter after 137 days on feed. Average cost of gain and profitability were $55.55 per cwt and -$123.11 per head, respectively. Heifers consigned in January weighed 683 lb initially, gained 3.17 lb per head daily, and averaged 1063 lb at slaughter after 122 days on feed. Average cost of gain and profitability were $58.39 per cwt and -$95.63 per head, respectively. Severe losses observed for 1993-94 were due to a crash in the carcass beef market in late May through July as compared to the previous 3 years of the Retained Ownership Demonstration. As in previous years, average daily gain, days on feed and percentage of choice appear to be related to differences in profit between cattle.

Key Words: Retained Ownership, Feedlot Performance, Feedlot Profitability

Introduction

Retained ownership of feeder calves has been shown to improve profitability of cow-calf operations when examined over many years. Average profit for cattle enrolled in October the first 3 years of the South Dakota Retained Ownership Demonstration were about $50 per head. The range in profitability for all of the groups of five calves was from -$63.72 to $177.36. An understanding of the factors influencing the profitability of retained ownership is essential in order to successfully use retained ownership as a market alternative.

The objective of this multi-year program is to evaluate retained ownership as a marketing alternative for cow-calf producers. This report summarizes data from the fourth year of the project.

Materials and Methods

Forty-nine cow-calf producers consigned 45 groups of steer calves to a custom feedlot[6] in mid-October of 1993. Thirty-two cow-calf producers consigned 39 groups of steer calves to the feedlot at the end of January 1994. Sixteen cow-calf producers consigned 18 groups of heifer calves to the feedlot at the end of January 1994. Cattle that were placed in January had been weaned in the fall and backgrounded at home prior to feedlot arrival.

---

[1]Associate Professor, Animal and Range Sciences.
[2]Graduate Assistant.
[3]Associate Professor, Economics.
[4]Assistant Professor, Animal and Range Sciences.
[5]Former Jerauld County Extension Agent.
[6]R and L Feedyard, Kimball, SD.

Processing procedures included weighing, measuring hip height, and ultrasound[7] determination of initial fat thickness, rib eye area, and intramuscular ether extract concentration at the 12th rib for all steers arriving in the fall or winter. Hip height measurements and ultrasound evaluation were not conducted on the heifers.

All cattle were treated for parasites, vaccinated, implanted and started on feed in the same manner as described in Beef Report articles from previous years describing the Retained Ownership Demonstration. Individual feed yardage and veterinary bills were also allocated as described in previous years.

The only change in the project from previous years concerns the manner in which the cattle were marketed. In previous years, all five cattle in a group went to market as three of the five cattle appeared to reach .4 in. of fat over the 12th rib. This year cattle were marketed as individuals as each calf appeared to reach .4 in. rib fat.

Results and Discussion

A wide variety of cattle types were represented in the program. Initial weight and hip height are displayed in Table 1. Initial ultrasound estimates of ether extract content were not available at the time this article was published. Cattle placed on feed in October averaged 562 lb and ranged from 342 to 760 lb. They averaged 43.97 inches tall at the hip, carried .16 in. of backfat, and had an average rib eye area of 8.42 inches. Cattle placed on feed in January had been weaned in the fall and backgrounded at the ranch prior to feedlot arrival. Steers averaged 738 lb, while heifers averaged 683 lb.

Feedlot performance information is shown in Table 2. Cattle were weighed full the day prior to slaughter. Slaughter weight for each steer was computed by applying a 4% pencil shrink to this full weight. Slaughter weight was greater for the January steers as compared with the January heifers or October steers (1196 vs 1063 and 1153 lb, respectively). Average daily gain

Table 1. Initial data for retained ownership cattle

	Weight, lb	Hip height, in.	Initial fat, in.	Initial rib eye area, in.^{2}
October steers				
Average	562	43.97	.16	8.42
Range	342-760	37.00-49.00	.00-.31	5.64-12.11
Standard deviation	62	1.70	.04	1.15
Range (5 head)	398-706	41.70-46.70	.10-.24	6.83-10.35
January steers				
Average	738	47.64	.16	9.08
Range	536-1085	42.00-54.50	.10-.33	6.20-13.50
Standard deviation	104	2.05	.04	1.39
Range (5 head)	571-991	44.20-52.90	.12-.25	7.04-11.22
January heifers				
Average	683			
Range	464-826			
Standard deviation	88			
Range (5 head)	532-775			

[7]Ultrasound scans were conducted by Middle America Network, Mapleton, IA. Images were interpreted by Iowa State University, Ames, IA.

Table 2. Feedlot performance for retained ownership cattle

	Slaughter weight, lb	Average daily gain, lb	Days fed
October steers			
Average	1153	2.75	207
Range	877-1467	1.80-4.02	176-267
Standard deviation	102	.36	27
Range (5 head)	916-1364	2.19-3.28	176-243
January steers			
Average	1196	3.36	137
Range	952-1438	1.42-5.25	83-160
Standard deviation	107	.50	20
Range (5 head)	1050-1408	2.69-4.12	109-160
January heifers			
Average	1063	3.17	122
Range	845-1315	1.52-4.61	83-160
Standard deviation	100	.57	21
Range (5 head)	933-1216	2.54-4.00	109-154

was also greater for January steers than for the January heifers or October steers (3.36 vs 3.17 and 2.75 lb per head daily, respectively). January heifers were fed fewer days than January steers or October steers (122 vs 137 and 207 days, respectively).

Average dry matter intake was 20.01, 22.36, and 21.94 lb per head daily for the October steers, January steers, and January heifers, respectively. Feed to gain ratios were 7.31, 6.69, and 6.93 lb dry matter per pound gain for the October steers, January steers, and January heifers, respectively. Feed to gain and average daily gain for the January placed calves were similar to performance observed in 1992-93. Performance observed for the October calves was lower this year than in previous years. Reasons for this are not clear.

Table 3 shows carcass data collected for the cattle. Carcasses of the January steers were heavier than carcasses of the October steers or January heifers. Percentage choice carcasses for the October steers, January steers, and January heifers were 39.86, 48.73, and 50.25, respectively.

Table 4 shows the feeding period costs for the cattle. Feed and yardage expenses were greater for the October steers than the January steers or heifers due to additional time on feed. Veterinary and death loss costs were much higher for the October steers than for the January steers or heifers. January cattle were backgrounded at the home ranch and probably experienced most of the death loss and veterinary expenses at home prior to feedlot arrival.

Feed and total cost of gain are expressed on a pay weight to pay weight basis. Feed cost of gain was lowest for the October steers, yet their total cost of gain was greater than that observed for the January cattle. Initial pay weight was assumed to be 4% greater than the initial weight obtained at the feedyard. The full weight obtained the day prior to slaughter less the 4% pencil shrink was assumed to equal finished pay weight. Break-even sale prices were $78.73, $73.32, and $74.28 per cwt for the October steers, January steers, and January heifers, respectively.

Table 5 shows the initial and sale values and profitability of cattle fed in the program. Initial price for the October steers was established by

Table 3. Carcass data for retained ownership cattle

	Hot carcass wt, lb	Dressing percent	Fat thickness, in.	Rib eye area, $in.^2$	Kidney, heart, and pelvic fat, %	Calculated yield grade, units	Marbling score, units[a]	Percent choice
October steers								
Average	723	62.68	.40	12.36	2.34	2.75	4.79	39.86
Range	531-915	57.18-67.85	.08-.90	9.20-16.90	1.00-3.50	.88-4.50	3.00-7.50	
Standard deviation	70	2.12	.14	1.33	.52	.59	.56	
Range (5 head)	558-872	60.15-65.03	.20-.58	10.2-14.18	1.8-3.0	1.81-3.43	4.14-5.98	0-100
January steers								
Average	740	61.90	.35	13.04	2.11	2.45	4.79	48.73
Range	585-908	56.51-65.98	.10-.80	9.80-18.70	1.00-3.50	.75-4.34	3.00-6.10	
Standard deviation	71	1.89	.13	1.65	.49	.62	.49	
Range (5 head)	652-868	59.77-63.99	.22-.52	11.12-16.16	1.5-2.8	1.53-3.11	4.14-5.42	0-100
January heifers								
Average	652	61.30	.39	12.27	2.35	2.49	4.90	50.25
Range	478-806	56.49-68.39	.10-.75	9.70-15.60	1.50-3.50	1.05-3.73	3.00-6.70	
Standard deviation	62	1.90	.13	1.21	.56	.58	.56	
Range (5 head)	561-725	59.66-63.15	.26-.54	10.74-14.26	1.7-2.9	1.94-3.18	4.35-5.64	0-100

[a]4.00 = Slight°, 5.00 = Small°.

Table 4. Feeding period costs[a]

Item	October steers	January steers	January heifers
Feed	274.88	193.93	167.08
Yardage	30.90	20.53	18.13
Veterinary	14.29	6.18	6.16
Interest[b]	8.04	3.67	2.84
Trucking[c]	7.60	7.88	7.00
Marketing	1.22	1.22	1.22
Death loss	10.85	.00	.00
Total	347.77	233.40	202.43
Feed cost of gain[d], $/cwt	48.47	46.01	47.93
Total costs of gain[d], $/cwt	61.48	55.55	58.39
Break-even sale price, $/cwt	78.73	73.32	74.28

[a]Average dollars per head.
[b]Interest on feed, yardage, and veterinary expenses only.
[c]Trucking to packing plant only.
[d]Pay weight basis.

Table 5. Profitability of retained ownership steers and heifers

Item	October steers	January steers	January heifers
Initial pay weight, lb	584	768	710
Price, $/cwt	95.92	84.19	83.07
Initial value, $	560.17	646.58	589.80
Hot carcass wt, lb	723	740	652
Carcass price, $/cwt	113.60	102.28	106.84
Sale value, $	821.33	756.87	696.60
Profit, $/head[a]	-86.61	-123.11	-95.63
Annual return on investment, %	-27.26	-50.73	-48.51

[a]Excludes calf interest and trucking to the feedlot.

using numerous sale barn reports for the last 3 weeks in October and regressing price on pay weight (Figure 1). The same technique was used for predicting the January prices (Figures 2 and 3). Equations predicting price are displayed in Table 6. No attempt was made to adjust the initial prices for breed type, frame size, initial condition, or location.

All cattle were sold on a grade and yield basis. Table 7 displays the steer carcass prices that were obtained for the cattle. A seasonal decline in the base choice price and a widening of the choice-select spread was observed. A greater number of the October steers were sold at the earlier marketing dates, resulting in a higher price being paid for these cattle as compared with the January steers or heifers. Likewise, over half of the heifers were sold prior to June, while 84% of the January steers were sold after June, resulting in a greater price for the January heifers than the January steers.

Profits, excluding calf interest and trucking to the lot, were -$86.61, -$123.11, and -$95.63 per head for the October steers, January steers and January heifers, respectively. The variability in profitability between individual cattle and between groups of five head was tremendous (Table 8). The poorest profitability group of five cattle among the October calves lost $173.03 per head. The most profitable group of five cattle lost $27.67 per head. Annual return on investment for all of the groups of five ranged from -64.79 to -9.82%.

Another way to express retained ownership profitability is to use slaughter value and feedlot costs to back calculate the value of the calves when they entered the feedlot. October steers, January steers, and January heifers were worth $821.33, $756.87, and $696.60 per head at slaughter, respectively. Total feeding costs were $347.77, $233.40, and $202.43 per head for the October steers, January steers, and January heifers, respectively. Therefore, the calves were worth $473.56, $523.47, and $494.17 at feedlot arrival for the October steers, January steers, and January heifers, respectively. Average pay weights on the calves were 584, 768, and 710 lb for the October steers, January steers, and January heifers, respectively. Thus, October steers were worth $81.09 per cwt, January steers were worth $68.16 per cwt, and January heifers were worth $70.00 per cwt. These calf values represent no interest charge on the calf and no feedlot profit. If one assumes calf interest at 9.5%, breakeven calf values are $76.72, $65.73, and $67.79 per cwt.

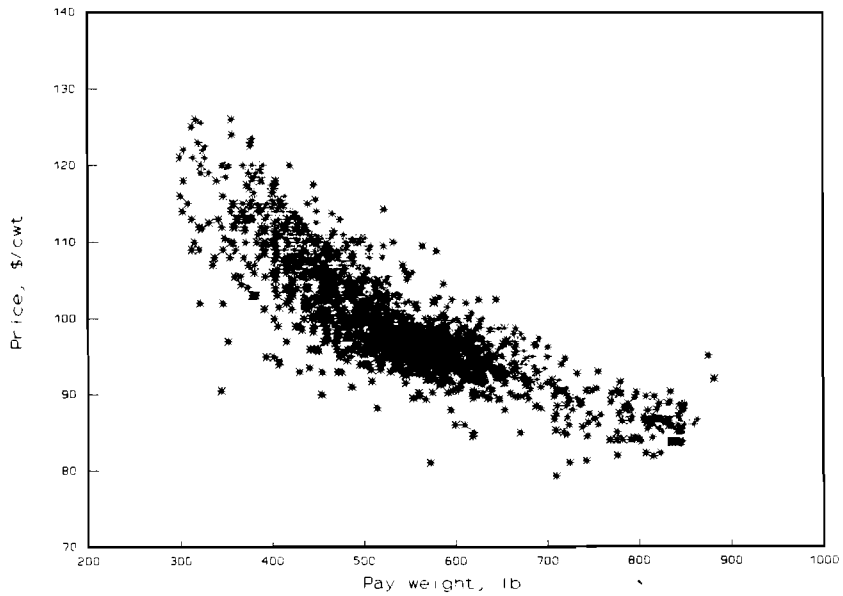

Figure 1. Relationship between price and pay weight of steers for late October 1993.

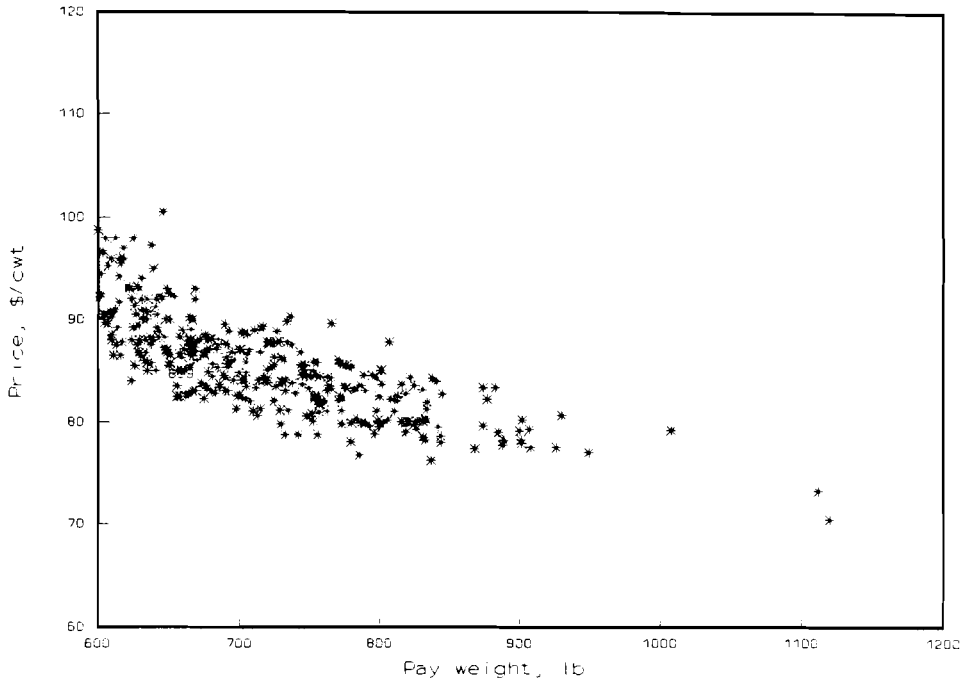

Figure 2. Relationship between price and pay weight of steers for late January 1994.

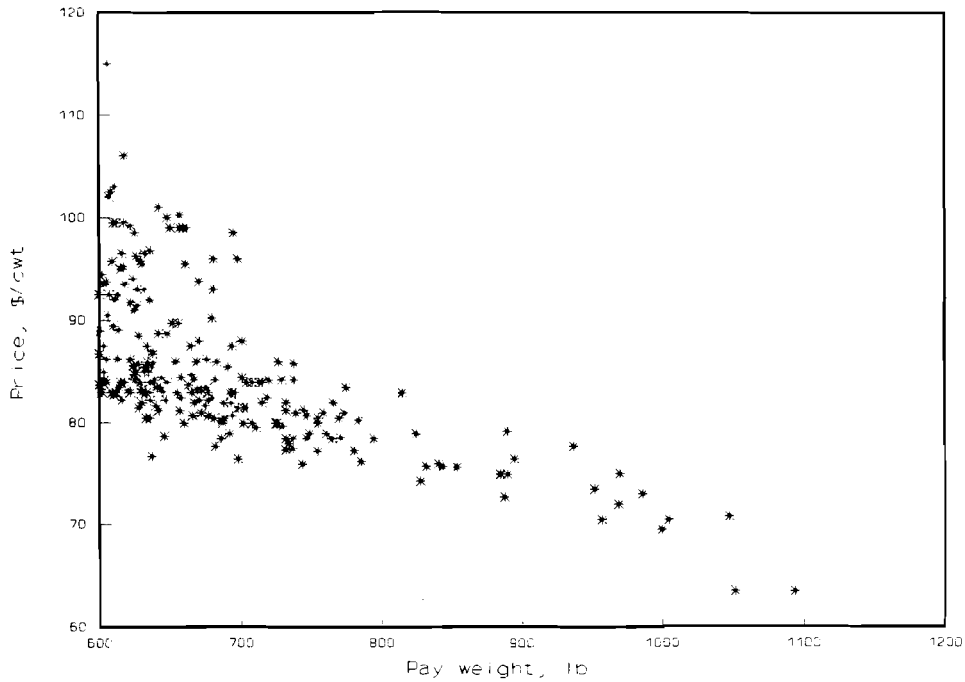

Figure 3. Relationship between price and pay weight of heifers for late January 1994.

Table 6. Equations predicting initial price

Cattle	n	Equation[a]	R^2	Sy.x
October steers	1887	160.6476 - .16455 x lb + .000091 x lb^2	.7326	3.83
January steers	345	181.9377 - .22128 x lb + .000119 x lb^2	.6138	2.82
January heifers	297	152.4253 - .14451 x lb + .000064 x lb^2	.4904	4.54

[a]Weight = pay weight in lb.

Table 7. Market dates of the cattle and carcass prices paid for cattle

Market date	Number of cattle sold: October steers	January steers	January heifers	Base choice price[a]	Select discount[a]	Heifer discount[a]
April 6	89			122.00	3.00	
April 20	119	9	6	124.00	3.00	1
May 17	104	23	45	113.00	5.00	0
June 7	69	74	23	107.00	7.00	1
June 14	17	25		106.00	6.00	
July 6	16	65	15	100.00	6.00	1

[a]$ per cwt carcass.

Table 8. Variation in profitability

	Profit, $/head	Annual return, %	Initial calf value, $/cwt
October steers			
Average	-86.61	-27.26	81.09
Range	-255.51-28.35	-73.51-9.64	50.67-103.62
Standard deviation	57.03	15.37	9.99
Range (5 head)	-173.03 - -27.67	-45.52 - -9.82	66.07-92.25
January steers			
Average	-119.88	-50.73	68.16
Range	-252.91 - -25.82	-93.96 - -10.31	52.99-78.70
Standard deviation	41.63	14.29	5.09
Range (5 head)	-172.70 - -62.24	-64.79 - -31.58	63.55-74.56
January heifers			
Average	-92.55	-48.51	70.00
Range	-195.68-41.13	-82.00-28.73	54.68-83.32
Standard deviation	43.53	19.04	5.88
Range (5 head)	-143.10 - -36.80	-62.59 - -21.95	62.31-76.54

Tables 9, 10, and 11 show the value of select variables for low, middle, and high profitability groups for the October steers, January steers, and January heifers, respectively. Average daily gain, days on feed, and percentage of choice appear to be important indicators of profitability. Higher gaining cattle that went to market earlier lost less money than poor gaining cattle that were marketed later in the year.

Acknowledgements

Support for this project was contributed by Purina Mills, Inc., MSD AGVET, and Syntex Animal Health. The time and effort contributed by numerous private industry personnel who served on the project steering committee are also greatly appreciated. They included John McGee, Chamberlain; Ron Bauer, Platte; John Heiberger, Bridgewater; Ed Blair, Vale; Rod Larsen, Kimball; Dr. Bruce Naasz, Kimball; Dr. Arnie Fleck, Sioux City, IA; Jim Honomichl, Mitchell; and Ron Frederick, Selby. Appreciation is also expressed to numerous SDSU faculty, graduate students, staff, and extension agents who contributed to the project.

Table 9. Value of select variables for low, middle, and high profit groups of October placed calves

	Profit group		
Variable	Low 1/3	Mid 1/3	High 1/3
Profit, $/head	-153.64	-79.79	-29.56
Average daily gain, lb	2.56	2.71	2.98
Initial weight, lb	552	567	568
Finished weight, lb	1182	1142	1135
Dressing percent	63.03	62.16	62.83
Days fed	233	200	188
Cost of gain, $/cwt	61.88	61.60	60.96
Percentage choice	20.29	47.83	51.45

Table 10. Value of select variables for low, middle, and high profit groups of January placed steer calves

	Profit group		
Variable	Low 1/3	Mid 1/3	High 1/3
Profit, $/head	-164.57	-121.54	-73.51
Average daily gain, lb	3.21	3.31	3.56
Initial weight, lb	748	714	753
Finished weight, lb	1217	1184	1188
Dressing percent	61.53	61.94	62.22
Days fed	147	142	122
Cost of gain, $/cwt	56.64	54.18	55.84
Percentage choice	10.77	45.45	58.46

Table 11. Value of select variables for low, middle, and high profit groups of January placed heifer calves

	Profit group		
Variable	Low 1/3	Mid 1/3	High 1/3
Profit, $/head	-140.11	-91.63	-44.30
Average daily gain, lb	2.85	3.33	3.33
Initial weight, lb	656	669	726
Finished weight, lb	1050	1062	1078
Dressing percent	61.70	60.70	61.33
Days fed	141	119	105
Cost of gain, $/cwt	58.62	56.29	60.33
Percentage choice	36.67	46.67	72.41