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Abstract

The performance, carcass characteristics, and economic data from over 6,200 steers entered in Kansas Steer Futurities from 1974 through 1988 were summarized to evaluate production trends and profitability. The steers' delivery weights, final weights, and frame scores increased over the 14-year period, while daily gain was essentially unchanged. The quality grade, fat thickness, and yield grade all decreased slightly. Ribeye area increased slightly, but ribeye area per unit of carcass remained constant over the years. Based on the delivery weight of the steers, price, normal production relationships, and estimated production costs, we estimate that net returns over cash costs for the cow/calf phase have averaged \$5.97 per cow unit from 1974 through 1988, with losses in 7 of those years. Correspondingly, steers in the futurities have been profitable in 10 of the 14 years, with an estimated average return of \$38.43. Thus, retaining ownership should be a viable marketing alternative for progressive Kansas cattle producers.

Keywords

Cattlemen's Day, 1991; Kansas Agricultural Experiment Station contribution; no. 91-355-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 623; Beef; Futurity; Retained ownership; Marketing

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**KANSAS STEER FUTURITIES:
AN ECONOMIC ANALYSIS OF RETAINED OWNERSHIP AND
A SUMMARY OF CATTLE PERFORMANCE FROM 1974-1988**

D. Simms, J. Mintert¹, and A. Maddux²

Summary

The performance, carcass characteristics, and economic data from over 6,200 steers entered in Kansas Steer Futurities from 1974 through 1988 were summarized to evaluate production trends and profitability. The steers' delivery weights, final weights, and frame scores increased over the 14-year period, while daily gain was essentially unchanged. The quality grade, fat thickness, and yield grade all decreased slightly. Ribeye area increased slightly, but ribeye area per unit of carcass remained constant over the years.

Based on the delivery weight of the steers, price, normal production relationships, and estimated production costs, we estimate that net returns over cash costs for the cow/calf phase have averaged \$5.97 per cow unit from 1974 through 1988, with losses in 7 of those years. Correspondingly, steers in the futurities have been profitable in 10 of the 14 years, with an estimated average return of \$38.43. Thus, retaining ownership should be a viable marketing alternative for progressive Kansas cattle producers.

(Key Words: Futurity, Retained Ownership, Marketing.)

Introduction

The Kansas Steer Futurity program was developed in 1974 to provide producers with performance and carcass information on their cattle. The economic results were provided as

secondary information; however, it soon became obvious that accelerated feeding had significant profit potential. The original analysis of the futurities' performance and economic data was conducted by Lambert and co-workers in 1984 (Cattlemen's Day Rep. of Progress 448). The current summary was conducted to update this information and determine if earlier trends in performance, carcass characteristics, and returns had persisted.

Experimental Procedures

Although procedures at the 70 futurities involving over 6,200 cattle in 14 locations were not totally standardized, in general, lots of five spring born calves were delivered to the feedlot in late November or early December. After a warm-up period of approximately 21 days, the calves were placed on the final finishing ration until slaughter in May or early June. In most futurities, the calves were all fed in one pen.

The cattle were slaughtered in groups either when they reached 0.4 in. of backfat, when they approached 1400 lb, or when it was time to close out the pen. Thus, although 0.4 in. of fat was the goal, some cattle were slaughtered based on other practical considerations.

The economic analysis from 1974-1983 was taken from the work of Lambert and co-workers (1984 Cattlemen's Day) with slight modification. The costs for the cow/calf phase were based on data from the Kansas Farm Management Association and costs for the feedlot phase were based on actual costs

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incurred in the futurities. Market value of the calves at delivery was based on Kansas City market quotes for the delivery months.

For the analysis of breed type and frame score, individual feed consumption was based on National Research Council formulas for feed intake, which take into account average body weight maintained and rate of gain. For that part of the analysis, average prices and costs for the period of 1983-1988 were used, which resulted in higher profit levels than were obtained over the entire 14-year period.

For the analysis by breed, the cattle were grouped according to the U.S. Meat Animal Research Center classification as follows:

Large Continentals (LC) - Beef Fresian,
Charolais, Chianina, Maine Anjou, and
Simmental
Medium Continentals (MC) - Gelbvieh,
Blonde D'Aquitaine, and Beef Brown
Swiss
Small Continentals (SC) - Limousin,
Pinzgauer, Salers, South Devon, and
Tarentaise
British - Angus, Red Angus, Hereford, Polled
Hereford, and Shorthorn

Additionally, cattle with Brahman breeding, which included Santa Gertrudis, Brangus, Beefmaster, and Brahman crosses, were grouped together. Longhorn crosses also were considered a separate category. To make breed and frame score comparisons, differences related to test location and year were eliminated statistically.

Results

Performance of the steers by year is shown in Table 1, and the carcass characteristics are shown in Table 2. Over the 14 years of the futurities, arrival weight, final weight and frame score increased, while daily gain was essentially unchanged. Fat thickness at slaughter tended to decrease, which lowered numerical yield grades and quality grades slightly. Ribeye area increased but not when expressed on a per unit carcass weight basis.

Table 3 shows the economic data for the cow/calf phase from 1974-1988, indicating that this phase was profitable in only 7 of the 14 years, with an average return of \$5.97 per head. Furthermore, returns were extremely variable, with a low of \$-106.79 and a high of \$115.80 per head. Table 4 shows the economic analysis for the feedlot phase during this same period, indicating that this phase was profitable in all but 4 years, with an average return of \$44.43. Finishing returns also exhibited a great deal of variability over the 14 years.

The performance by breed type is shown in Table 5. The most profitable breed groups were those that combined high growth rate with the ability to reach the choice grade at fat thicknesses of 0.4 in. or less.

The performance by frame score group is shown in Table 6. Starting weight and carcass weight increased with frame score, whereas average daily gain plateaued at frame score 6. Fat thickness, quality grade, and yield grade decreased as frame score increased. Profitability increased up to frame score 3 and then leveled off. Thus, a wide range of cattle types was equally profitable under the accelerated feeding program used in the futurities.

Table 1. Performance of Futurity Steers by Year

Year	No. head	On weight lb	Final weight lb	Start age, d	Final age, d	Frame score	Daily gain, lb	Wt/d age, lb	Days on feed
1974-75	448	524	1036	271	438	2.0	3.10	2.38	167
1975-76	477	522	1082	281	441	2.5	3.32	2.48	159
1976-77	513	587	1109	281	446	3.0	3.17	2.51	166
1977-78	545	619	1124	284	460	2.6	2.93	2.46	176
1978-79	554	631	1145	286	463	2.6	2.95	2.53	177
1979-80	533	616	1124	281	456	3.1	2.95	2.46	174
1980-81	551	617	1139	283	451	3.4	3.12	2.55	170
1981-82	599	671	1172	296	444	3.9	3.32	2.66	152
1982-83	583	662	1157	279	445	3.4	3.01	2.60	166
1983-84	587	647	1159	288	457	4.2	3.10	2.53	166
1984-85	647	666	1182	288	462	4.9	3.01	2.51	171
1985-86	657	675	1197	287	454	5.1	3.19	2.62	165
1986-87	644	622	1141	280	441	4.3	3.04	2.57	159
1987-88	668	704	1215	297	450	4.9	3.48	2.68	150

Table 2. Carcass Characteristics of Futurity Steers by Year

Year	Carcass wt, lb	USDA quality grade ¹	Yield grade	Fat thickness, in	Ribeye area, in ²	% Retail product	Ribeye area/cwt carcasswt, in ²
1974-75	639	6.9	2.6	.41	11.9	71.1	1.87
1975-76	675	6.8	2.5	.41	13.0	71.7	1.93
1976-77	678	6.8	2.4	.34	12.1	71.9	1.80
1977-78	695	6.3	2.5	.35	13.0	71.5	1.88
1978-79	686	6.2	2.3	.35	12.2	72.4	1.77
1979-80	686	6.5	2.6	.34	12.6	71.2	1.84
1980-81	707	6.6	2.4	.35	12.4	72.0	1.76
1981-82	694	6.3	2.6	.33	12.7	71.3	1.84
1982-83	694	6.5	2.3	.33	12.7	72.3	1.84
1983-84	691	6.1	2.3	.35	12.8	72.5	1.85
1984-85	712	6.6	2.1	.32	13.3	73.3	1.87
1985-86	723	6.2	2.1	.33	13.8	73.3	1.91
1986-87	682	6.5	1.9	.27	12.8	74.0	1.88
1987-88	730	6.3	2.0	.30	13.6	73.9	1.86

¹6.0 = Select + , 7.0 = Choice -.

Table 3. Economic Data of Cow/Calf Phase during 14 Annual Futurities

Year	Weight at delivery, lb	Price cwt at delivery	Calf value at delivery	Estimated ^a annual cash costs of cow ownership	Est. returns ^b from cows if calves sold at delivery	On-farm ^c weaning costs	Net calf returns
1974-75	523	\$27.73	\$145.15	\$221.67	\$124.10	\$9.22	\$-106.79
1975-76	551	37.73	206.67	223.96	168.32	8.15	-63.80
1976-77	582	37.27	217.87	228.85	176.93	8.40	-60.32
1977-78	589	40.91	241.20	221.52	201.20	8.35	-28.67
1978-79	589	69.55	409.76	244.21	342.35	9.15	88.99
1979-80	572	88.18	505.27	296.07	416.57	10.45	110.05
1980-81	575	77.27	444.33	348.93	370.70	14.12	7.05
1981-82	604	64.55	389.32	345.27	327.04	12.43	-30.76
1982-83	597	65.00	387.80	345.31	321.58	13.22	-36.95
1983-84	587	62.74	368.28	331.86	306.39	10.98	-36.45
1984-85	647	65.10	421.20	320.33	347.83	9.95	17.55
1985-86	657	62.70	411.94	287.85	342.16	8.48	45.83
1986-87	644	64.20	413.45	279.39	348.83	7.45	61.99
1987-88	668	79.50	531.06	326.18	450.02	8.04	115.80
14-yr avg			\$363.81	\$287.24	\$303.14	\$9.89	\$5.97

^aBased on average costs from Kansas Farm Management Association records. Feed costs were calculated at market rates with pasture charged at typical rental rates. Interest charges assumed 60 percent debt on operating expenses and livestock. Interest on breeding stock was calculated on the estimated cow's value + 16 percent of replacement heifer value + 4 percent of estimated bull value. Costs did not include a change for operator labor, depreciation on buildings and equipment, or a return on the 40 percent investment equity.

^bReturns were based on a 92 percent calf crop. Therefore, sales included 46 percent of a steer calf; 30 percent of a heifer calf (16 percent held for replacement), cull cow sales of 14 percent per year, and a 2 percent death loss.

^cCosts for on-farm weaning expenses calculated as one-half the average daily feedlot cost of cattle on feed for 14 days.

Table 4. Economic Data of Feedlot Phase during 14 Annual Futurities

Year	Interest ^a rate	Interest cost on feeder (180 days)	Total feedlot costs	Value of ^b steer at slaughter	Return ^c from feeding	Lifetime Returns
1974-75	6.5%	\$4.83	\$242.42	\$525.75	\$138.18	\$31.39
1975-76	8.0	8.88	224.44	432.35	1.25	-62.55
1976-77	8.8	9.72	217.88	450.15	14.40	-45.92
1977-78	8.9	11.29	224.50	591.58	125.88	97.21
1978-79	10.1	21.77	246.11	753.74	97.87	186.86
1979-80	14.7	39.00	278.08	710.96	-72.40	37.65
1980-81	16.6	37.18	358.04	737.80	-64.57	-57.52
1981-82	17.2	31.00	286.33	808.95	133.30	102.54
1982-83	14.3	27.35	328.94	739.24	22.50	-14.45
1983-84	14.3	26.31	348.31	728.57	11.98	-24.47
1984-85	13.5	28.37	323.12	671.01	-73.31	-55.76
1985-86	12.4	25.60	261.25	645.21	-27.98	17.85
1986-87	11.4	23.57	211.65	772.71	147.61	209.60
1987-88	11.5	30.59	242.99	857.85	83.80	199.10
Average	12.0	\$23.25	\$271.00	\$673.28	\$38.43	\$44.40

^aFrom Federal Reserve Bank of Kansas City, average interest rates on feeder calf loans, first two quarters of each year, Kansas City area.

^bReturn at slaughter = Carcass price × Carcass weight, adjusted for death loss (average 1.26%).

^cReturn from feeding = Value at Slaughter - Total Feeding Costs - Value at Delivery.

Table 5. Performance, Carcass Characteristics and Profitability of Breed Groups in Kansas Steer Futurities from 1974-1988

Longhorn Item Cross	LC ×		MC ×		SC ×		Dairy	Brahman	
	British	LC	Brit.	Brit.	SC	Brit.	Cross	Cross	
No. steers	1257	106	2496	201	172	306	53	213	84
Profit, \$/hd	72.82	87.08	86.62	96.54	70.58	79.90	94.10	77.16	35.31
Starting wt., lb	615	660	651	631	611	626	684	640	560
Frame score	3.2	4.6	4.2	3.8	2.8	4.0	3.7	4.2	2.6
ADG, lb	2.99	3.32	3.32	3.23	3.06	3.21	3.30	3.10	2.60
Quality grade ^a	6.8	6.0	6.4	6.6	6.5	6.3	7.0	6.4	6.8
Carcass wt., lb	658	736	720	724	677	700	745	699	613
Fat thickness, in	.48	.29	.36	.38	.27	.37	.41	.39	.31
Ribeye area, in ²	12.1	13.5	13.2	13.6	13.1	13.2	12.7	12.7	11.9
Yield grade	2.8	2.1	2.4	2.3	2.1	2.3	2.5	2.6	2.3
Days fed	160	168	166	167	166	165	163	166	171

^a6.0 = Select + , 7.0 = Choice -.

Table 6. Performance, Carcass Characteristics and Profitability of Frame Score Groups in Kansas Steer Futurities from 1974-1988.

Item	Frame Score						
	1	2	3	4	5	6	7
No. Head	273	500	712	1027	771	321	50
Profit, \$/hd	67.68	77.40	89.48	92.41	89.70	82.56	90.79
Starting wt., lb	585	604	634	662	684	705	747
ADG, lb	2.88	3.06	3.21	3.32	3.39	3.48	3.50
Quality grade ^a	6.8	6.6	6.6	6.4	6.2	5.8	5.6
Carcass wt., lb	644	673	704	733	753	765	802
Fat thickness, in	.43	.41	.40	.36	.33	.28	.27
Ribeye area sq in	12.1	12.5	13.0	13.3	13.5	13.6	14.1
Yield grade	2.6	2.5	2.5	2.4	2.3	2.2	2.1
Days fed	167	164	163	164	165	162	166

^a6.0 = Select + , 7.0 = Choice -.