

## Beef Cattle Handbook



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### Fed Cattle Quality: How Does it Affect Prices Received by Cattle Feeders?

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Do fed cattle prices reflect differences in end-use values of individual pens of cattle? This question has long troubled the cattle feeding industry. The manner in which fed cattle are priced is significant because pricing on averages, instead of adjusting prices to reflect changes in wholesale and retail values, sends the wrong information to cattle producers. If fed cattle prices do not adjust to reflect end-use values, there is little incentive for individual cattle feeders to emphasize management practices that produce retail beef products consumers find desirable.

Prior to identifying barriers to value-based marketing, the degree to which fed cattle are priced "on the average" must be determined. Doing so requires estimating the market value of specific cattle traits. This study was designed to investigate fed cattle pricing in southwestern Kansas by estimating market values of principal cattle traits influencing fed cattle sale prices, relative to average market prices for fed cattle and beef carcasses. Results indicated fed cattle sale prices varied as selected quality traits varied from one pen to another. The percentage of the pen expected to grade Choice, the expected dressing percentage, finish uniformity, presence of cattle generally deemed to be of low-quality, and the presence of heiferettes in pens of heifers, all had an impact on fed cattle sale prices(1). However, except for the presence of low-quality cattle, the impact of small changes in these factors on fed cattle sale price was small.

#### About the Study

Data were collected on 810 pens of steers (99,219 head)

and 566 pens of heifers (67,119 head) marketed during May 21, 1990 through November 24, 1990 from 13 feedyards in southwestern Kansas. Each feedyard recorded the sale date, transaction price, cattle delivery date, and average cattle weight for each pen of cattle sold during the 26-week period. A trained data collector recorded live cattle characteristics such as percentage of cattle expected to grade Choice and Select, expected dressing percentage, estimated percentage of Yield Grade 4 cattle in the pen, finish uniformity, and weight uniformity. Other data included number of days on feed, number of brands, presence of bulls or heiferettes, cattle breed, buying packer, feedyard, distance from the buying packer to the feedyard, and number of bids made per pen.

Summary statistics of selected prices and pricing factors are reported in Table 1. Average sale prices during the study period were \$77.32/cwt. for steers and \$76.94/cwt. for heifers. The average percentage of cattle expected to grade Choice in a pen was approximately 54 percent and ranged from 40 to 80 percent. Estimated dressing percentage averaged 63.4 percent for steers and 63.3 percent for heifers. Estimated percentage of Yield Grade 4 cattle in each pen was 1.2 and 1.1 for steers and heifers, respectively. The average delivery weight was 1,199 lbs. for steers and 1,059 lbs. for heifers.

If a packer bought cattle from a feedyard, the average total number of animals (steers plus heifers) purchased by a packer at a feedyard on a given day was 679 head when at least one pen of steers was purchased, and 580 head when at least one pen of heifers

Table 1. Summary Statistics of Prices and Selected Pricing Factors for Fed Cattle in Western Kansas, May-November, 1990.

Variable	Average	Standard Deviation	Minimum Value	Maximum Value
<b>Steers</b>				
Transaction Price (\$/cwt)	77.32	1.86	72.50	82.00
Asking Price (\$/cwt)	77.48	1.84	72.50	82.00
Estimated Choice (%)	54.0	6.6	40.0	80.0
Estimated Dressing (%)	63.4	0.2	62.5	64.0
Estimated Yield Grade 4 (%)	1.2	0.9	0.0	4.0
Delivery Weight (lbs/head)	1198.8	65.8	953.0	1416.0
Cattle purchased, single transaction (head)	678.6	597.1	47	2489
Cattle per pen (head)	122.5	62.8	29	792
Number of bids per pen	1.8	1.3	1	9
<b>Heifers</b>				
Transaction Price (\$/cwt)	76.94	1.91	71.00	82.00
Asking Price (\$/cwt)	77.12	1.85	72.00	82.00
Estimated Choice (%)	53.6	6.1	40.00	70.0
Estimated Dressing (%)	63.3	0.2	62.5	64.0
Estimated Yield Grade 4 (%)	1.1	1.0	0.0	5.0
Delivery Weight (lbs/head)	1058.6	56.1	902.0	1303.0
Cattle purchased, single transaction (head)	580.1	498.2	58	2489
Cattle per pen (head)	118.7	61.6	23	780
Number of bids per pen	1.7	1.1	1	9

was purchased. The average number of cattle per pen was approximately 120 head. Prior to sale each pen received an average of 1.7 to 1.8 bids from packers with the number of bids ranging from one to nine.

### The Effects of Cattle Quality on Price

The price impacts of different cattle quality and pen traits were analyzed statistically across all pens of cattle in the study. Several quality and pen characteristics had significant effects on transaction and asking prices for steers and heifers. The estimated price effects of these factors are presented in Table 2. Each reported premium or discount is the isolated effect on fed price resulting from changing that specific pen characteristic while holding all other factors constant.

Discounts of at least \$0.20/cwt. were given to steers weighing less than 1,000 lbs. or more than 1,300 lbs., and heifers weighing less than 950 lbs. or more than 1,150 lbs. (Figure 1). The highest prices were paid for steers weighing from about 1,080 lbs. to 1,200 lbs. and for heifers weighing 980 lbs. to 1,080 lbs. Discounts for lighter weight cattle were probably related to packers' increased costs per pound for processing lighter weight animals. Discounts for heavier cattle probably occurred for several reasons, including concerns about large carcasses producing undesirable cuts and/or feedyards' desire to maintain current showlists.

Table 2 reports the fed cattle price impact of

changes in expected percent Choice, expected dressing percentage, finish uniformity, and presence of heiferettes and low-quality cattle. Sale price increased as the percentage of a pen expected to grade Choice increased. Steer sale prices increased by \$0.07/cwt., and heifer prices increased by an average of \$0.08/cwt., for a 10 percent increase in Choice cattle, with all other factors held constant. This compares with an increase in cattle feeders' asking prices of approximately \$0.08 to 0.10/cwt. for each 10 percent increase in the percentage of cattle expected to grade Choice. The premium for Choice cattle partially reflects the increased value of Choice beef to packers. However, from a cattle feeder's perspective, this small premium for Choice fed cattle provided little incentive to adjust feeding programs to produce a higher percentage of Choice cattle.

Other quality factors that had a significant impact on fed steer prices include expected dressing percentage and the degree of finish uniformity. Each 1 percent increase in the expected dressing percentage increased the steer transaction price by \$0.23/cwt. The increase in expected meat yield from cattle with higher expected dressing percentages accounts for this premium. Packers, on average, paid \$0.35/cwt. more for steers that were judged to be uniform in finish.

The cost of sorting non-uniform cattle carcasses by packers following processing probably explains the premium for steers with uniform finish. Neither expected

Table 2. Premiums and Discounts Associated with Various Cattle and Pen Traits in Western Kansas, May-November 1990\*

Cattle or pen trait	Transaction Price		Asking Price	
	Steers	Heifers	Steers	Heifers
			\$/cwt	
10% increase in cattle expected to grade Choice	+0.07	+0.08	+0.08	+0.10
1% increase in expected dressing percentage	+0.23	N/A	+0.37	N/A
Premium for uniform finish	+0.35	N/A	+0.36	N/A
Presence of heiferettes	—	-0.26	—	-0.26
Low-quality pen (junk)	-2.46	-0.37	-2.37	-0.40

\* N/A indicates that price impact was not statistically different from zero.

dressing percentage, nor finish uniformity, had a statistically significant impact on heifer sale prices. This may indicate that variation in heifer dressing percentage and uniformity were captured in other cattle quality variables.

Other perceived quality problems had a negative effect on fed cattle sale prices. The presence of heiferettes in pens of heifers reduced sale prices an average of \$0.26/cwt., holding other factors constant. Steer pens judged to be of extremely low and variable quality were discounted \$2.46/cwt. whereas poor quality heifers were discounted \$0.37/cwt. In both cases these discounts were probably related to expectations of reduced carcass value.

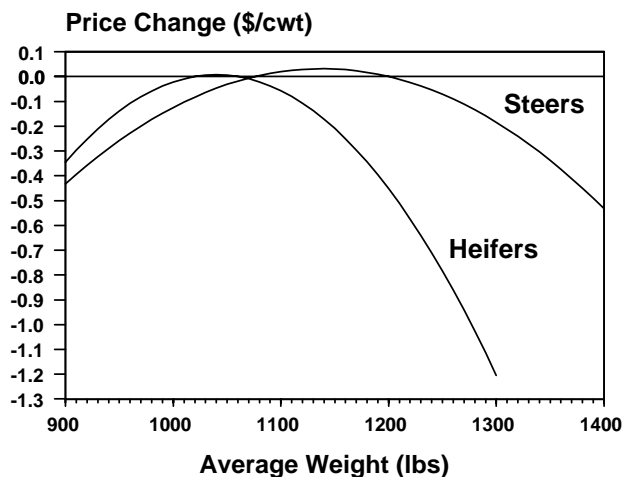


Figure 1. Estimated Price Changes Associated with Varying Cattle Weight Relative to Base Heifer Weight of 1060 lbs. and Base Steer Weight of 1200 lbs.

### Conclusions

Fed cattle sale prices change as cattle quality varies. Fed cattle sale prices and cattle quality characteristics collected on over 160,000 head of cattle from May through November of 1990 in southwestern Kansas

indicated changes in: the percentage expected to grade Choice; dressing percentage; and finish uniformity, all had an impact on steer prices. Fed heifer prices were affected by changes in the percentage of cattle expected to grade Choice and the presence of heiferettes in the pen. Both steer and heifer prices were lower when low-quality cattle were present in the pen.

Although sale prices did change as these measures of quality varied, the changes were often quite small. For example, a 10 percent shift in the percentage of steers in a pen expected to grade Choice resulted in an average sale price change of about \$0.85 per head, which was less than 25 percent of the estimated wholesale value differential. A one percent shift in the expected dressing percentage of a pen of steers led to a sale price change of \$2.76 per head, and steers that were uniformly finished sold for \$4.20 more per head than non-uniform steers. The largest price changes were associated with extremely low-quality cattle that were discounted nearly \$30 per head compared to pens without low-quality cattle.

Do fed cattle prices reflect differences in end-use values of individual pens of cattle? Research conducted during May through November of 1990 indicates that differences in end-use values were partially reflected in fed cattle prices. While these quality factors and pen traits had a statistically significant impact on price, the actual impact on per head revenue received by cattle feeders was generally quite small. Price changes associated with variation in fed cattle quality may not be large enough to influence cattle feeders' production and management decisions.

### References

1. Jones, R., T. Schroeder, J. Mintert, and F. Brazle. 1992. The Impacts of Quality on Cash Fed Cattle Prices. *Southern Journal of Agricultural Economics*, 24:149-162.

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