

CARCASS INDEX TRENDS FOR OK STEER FEEDOUT FROM 1986-1992

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Story in Brief

Data were collected on 321 fall-born and 743 spring-born calves in the OK Steer Feedout program which provides cow-calf producers a vehicle to evaluate the performance and carcass merit of their calf crop. Groups of five steers from various ranches were assembled and fed together at a commercial feedlot. Carcass measurements included weight (WT), rib eye area (REA), 12th-rib fat thickness (FAT), percent internal fat (%IF), yield grade (YG), and quality grade (QG). In 1986, carcass ranking value was determined by using choice and select carcass hundred-weight price with a standardized price adjustment for yield grade. In 1992, a carcass index system was modified to rank Feedout carcasses. The carcass index had a 100 point base which is then adjusted for WT, REA, FAT, %IF & QG. Each factor had an acceptable range and allotted penalty points for absolute deviations. Carcass index was determined for all feedout groups. Correlations between carcass index and other traits were .75 with QG, -.23 with YG, -.18 with FAT, and .13 with dressing percentage. Index means by year were 72.8 (1986), 61.6 (1987), 75.2 (1988), 87.0 (1989), 87.7 (1990), 84.0 (1991), and 87.6 (1992). Percentages of cattle grading U.S. choice by year were 35% (1986), 21% (1987), 55% (1988), 62% (1989), 69% (1990), 50% (1991), and 64% (1992).

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Introduction

OK Steer Feedout is a retained ownership program which allows cow-calf producers to obtain feedlot and carcass data that will help them determine the value of their calves. To emphasize carcass worth, Feedout carcasses were given a carcass value which was determined by using choice and select carcass hundred-weight price with a standardized price adjustment for yield grade. Carcasses were then sorted and awards given for the "top" carcass. As with other beef carcass contests, some ultratrim, USDA Choice carcasses began to win the carcass contest. Concern was increasing that Feedout was promoting the production of carcasses that were not industry acceptable. Carcasses with less than .15 inches of fat 1) would not be marketable as fed beef in today's industry, 2) would have a perceived problem with dressing percentage, and 3) could undergo "Cold Shortening" during initial refrigeration.

A carcass index system developed by Powell et al. (1991) was modified to meet the marketing and carcass criteria for OK Steer Feedout. This system adds and reduces index points on each carcass parameter independently to identify outstanding carcasses. The carcass index system insures the "top" ranked carcass by the Feedout is industry acceptable and allows individual producers to monitor their carcass improvement from year to year.

Materials and Methods

Data were collected on 321 fall-born and 743 spring-born calves in the OK Steer Feedout from 1986 to 1992. The Feedout is a program in which ranchers send groups of steers (minimum of five per ranch) to a centrally located feedlot for evaluation. All weights and records were obtained by OSU Extension personnel. There were two feeding groups: spring-born and fall-born steer calves.

Spring-born steers, born from late January to April, were started on feed in early November. Fall-born steers, born between late August and November, were placed on feed in August. Steers were slaughtered when three out of five calves from a ranch were estimated to have .5 inches of fat cover at the 12th rib. Days on feed ranged from 145 to a maximum of 180. All steers were slaughtered at a commercial plant and carcass data were obtained by OSU personnel after a 48-hour chill. Carcass data included weight (WT), rib eye area (REA), 12th-rib fat thickness (FAT), percentage

internal fat (%IF), yield grade (YG), and quality grade (QG). Carcass traits were used to determine index point totals on each individual carcass.

Description of Carcass Index Adjustment Factors

The carcass index system utilizes a 100 point base which is then adjusted for WT, FAT, %IF, QG, and REA. Each factor has an acceptable range and allotted penalty points for absolute deviations.

Carcass weight zero adjustment range is 600-850 pounds with index points reduced for carcasses outside the range by using the following formula: $-343.3950617 + 0.9756173 * WT - 0.0006728 * WT^2$.

Fat thickness zero adjustment is from .25 to .39 inches. Zero adjustment for %IF is 2.5%. Quality grade zero adjustment is low choice. Index point adjustments for values outside the zero "0" range are shown in Tables 1 and 2.

REA adjustment is based on the WT of each carcass. The Index required REA is calculated based on WT and is the same as that used in the USDA Yield Grade equation. The formula for required REA is: $REA = HCW * .012 + 3.8$. Examples of REA requirements by WT are given in Table 2. The index adjustment is 5 points for each 1 square inch (positive and negative) that the actual REA deviates from the REA required. A maximum of 16.0 square inches of actual REA was placed on the index

Table 1. Carcass index adjustment factors (adj) for carcass weight and % internal fat.

Carcass weight, lb	adj	% Internal fat	
		fat	adj
500	-24	.5	4.0
550	-10	1.0	3.0
600	0	1.5	2.0
850	0	2.0	1.0
900	-10	2.5	.0
950	-24	3.0	-2.0
1000	-40	3.5	-4.0
		4.0	-6.0
		4.5	-8.0

Table 2. Carcass index adjustments factors (adj) for fat thickness and quality grade, and example ribeye area requirements by weight.

Fat, in	adj	Ribeye area requirement for zero "0" adjustment		Quality grade	adj
		Wt, lb	REA		
.00-.09	-12	500	9.8	Standard	-72
.10-.14	-8	600	11.0	Low Select	-36
.15-.19	-4	700	12.2	High Select	-21
.20-.24	-2	800	13.4	Low Choice	0
.25-.39	0	900	14.6	Average Choice	4
.40-.44	-2			High Choice	6
.45-.49	-4			Prime	8
.50-.54	-6				
.55-.59	-8				
.60-.64	-12				
.65-.69	-16				
.70-.74	-20				
.75-.79	-24				
.80-.84	-28				
.85-.89	-32				
.90-1.25	-40				

adjustment. Carcasses with greater than 16.0 square inches are discounted 5 points for each one square inch the carcass exceeds the maximum.

Carcass indexes were determined for all Feedout groups. Correlations were obtained between carcass index and other traits. These correlations were adjusted for the effects of year, season, year by season, breed of sire, breed of dam and the interaction between breed of sire and breed of dam.

Results and Discussion

Means for carcass index and carcass traits are shown in Table 3. Trait averages by year represent pooled data from both the spring- and fall-born test. The effects of year, sire, dam, and sire x dam interaction were highly

Table 3. Means for carcass traits and percent grading choice by year.

Year	Index	%Ch	Carcass fat, in	Yield grade	REA (in ²)	Index		
						REA adj	Carcass wt, lb	Slaughter wt, lb
1986	72.7	35	.43	2.6	12.4	.6	700	1098
1987	61.1	21	.45	2.7	12.1	-1.1	707	1115
1988	73.7	55	.51	3.0	12.0	-1.8	710	1147
1989	86.4	62	.40	2.5	13.6	3.3	746	1176
1990	87.0	69	.40	2.6	13.1	2.4	726	1149
1991	83.7	50	.33	2.4	12.6	2.6	690	1094
1992	87.3	64	.36	2.6	12.9	1.0	739	1159

significant sources of variation in carcass index ($P < .01$). Season differences were not important.

Following a low in 1987, index scores increased and have generally leveled off. The percent choice in the Feedout has followed the same trend. Fat thickness and yield grade have been relatively constant. Index adjustment for REA has remained within 3.3 (5 points/sq in adjustment) of zero. REA for carcasses remained constant with carcass weight. Weight adjusted REA overall, needs to be increased. Carcass weight and slaughter weight have also been relatively constant.

Carcass index is highly correlated with quality grade. The heavy weighting of points deducted for not grading low choice reflects the importance of this trait in carcass value. Yield grade, fat thickness and dressing percentage were lowly correlated with carcass index (Table 4).

The carcass index outlines acceptable ranges for each carcass trait that would produce a carcass in demand by beef processors and today's consumer. Data show that many Oklahoma producers' breeding programs allow them to place weaned calves directly in the feedlot and obtain acceptable feedlot performance, lean growth, and carcass quality. The OK Steer Feedout Program is an excellent tool for ranchers to learn the carcass value of their calves.

Table 4. Residual correlations between carcass index and other traits.

Trait	Carcass index correlations
Quality grade	.75
Yield grade	-.23
Fat thickness	-.18
Dressing percentage	.13

^aAll correlations were significant ($P < .01$).

Literature Cited

- Powell, T.H., et al. 1991. The 1991 Beef Empire Days beef carcass index system. *J. Anim. Sci.* (Suppl.) 69:247.