

CARCASS MERIT NON-CONFORMANCE IN THE OK STEER FEEDOUT PROGRAM

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Story in Brief

Data were evaluated on 1540 steers to determine the percentage of carcasses in the OK Steer Feedout program that did not conform to acceptable industry performance values. Groups of five steers were assembled at a commercial feedlot and were slaughtered when three out of the five head were estimated to have .5 in of backfat thickness. Records were collected from 1986 to 1993 for spring and fall steer evaluations. Steers conforming to industry acceptable standards had to meet the following criteria for each carcass trait: hot carcass weight of 600 to 850 lb, quality grade of U.S. Choice or higher, fat thickness of .25 to .59 in, yield grade of 3.49 or better, ribeye area within 1 sq in of the expected ribeye area based on hot carcass weight or larger and a minimum ADG of 2.50 lb/day. A steer was considered a non-conformer if any of these standards were not met. Results indicated that 14.9, 12.4, 9.0 and 23.4% of Feedout steers failed to meet requirements for ribeye area, hot carcass weight, yield grade and ADG, respectively. Non-conformance for quality grade or fat thickness represented 46.8 and 32.4% of the carcasses, respectively. Only 325 steers (21.1%) met standards for all six traits. Yield and quality grade were primary reasons for non-conformance in cattle missing one or two standards. A higher percentage of steers met criteria from 1990 to 1993 than previous years. If quality requirement was lowered to mid U.S. Select and acceptable fat was $\leq .59$ in, steers qualifying for all six standards increased to 36.2%. Although steers qualified for many individual carcass trait standards, limited numbers of cattle performed acceptably in all carcass categories.

(Key Words: Beef Cattle, Carcass, Feedlot.)

Introduction

The OK Steer Feedout is a retained ownership program which allows cow-calf producers to obtain feedlot and carcass data to assess the relative merit of their calves. The Feedout is a program in which ranchers send groups of steers (minimum of five per ranch) to a centrally located feedlot for evaluation.

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Producers participating in the program learn more about the postweaning performance and carcass merit from their breeding system. Today, a popular target for progressive producers is the "ideal" beef carcass for the industry. Quality and consistency of the end-product are of increasing interest to beef cow-calf operators, as well as other segments of the industry. The purpose of the present study was to determine how well the Feedout steers conformed to a suggested set of carcass trait standards.

Materials and Methods

Data were collected on 1540 calves in the OK Steer Feedout from 1986 to 1993. All weights and records were obtained by OSU Extension personnel. There were two feeding groups to accommodate spring-born and fall-born steer calves.

Spring-born steers, born from late January to April, were started on test 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 in of subcutaneous fat thickness. Days on feed ranged from 145 to 180. All steers were slaughtered at a commercial plant and carcass data were obtained following a 48-hour chill. Carcass data included hot carcass weight, ribeye area, fat thickness, yield grade and quality grade.

Description of Suggested Standards for Carcass Traits. The set of standards for hot carcass weight, quality and yield grade, fat thickness, ribeye area, and average daily gain used to evaluate the eight years of steer data are outlined in Table 1. Expected ribeye area was calculated as: $\text{expected ribeye area} = 11.0 + (((\text{hot carcass weight} - 600)/25) \cdot .3)$. Initially, the percentage of cattle meeting

Table 1. Conformance standards for steers in the OK Steer Feedout program.

<u>Trait</u>	<u>Standard</u>
Average daily gain	2.50 lb or higher
Hot carcass weight	600 to 850 lb
Fat thickness	.25 to .59 in
Quality grade	U.S. Choice or higher
Yield grade	3.49 (3A) or better
Ribeye area	Within 1 sq in of the expected ribeye area based on hot carcass weight or larger (additional requirement = actual measure must fall between 11 and 16 sq in)

each of the requirements was determined. Then conformance of each steer to the standards was determined by requiring that all six criteria be met. Non-conformance was defined as any time a steer missed one or more of the standards. Relationships between number of standards missed, year, and season were determined using Chi-square approximation.

Results and Discussion

Means for postweaning performance and carcass traits are shown by year in Table 2. Trait averages by year represent pooled data from both the spring- and fall-born steers. Participation in the Feedout has increased since 1986. Quality and yield grade tended to improve by year, while carcass weight remained relatively unchanged. The annual averages for ADG have easily met or exceeded 2.5 lb since the beginning of the program.

Figure 1 depicts the distribution of steers by carcass weight categories. The percentage of cattle that fit the standard weight is indicated by FIT in the graph. Only 12.4% of the 1540 steers failed to meet the window for carcass weight of 600 to 850 lb. Carcasses exceeding 900 lb were minimal (1.5%). Results suggest that cow-calf producers sending steers to the Feedout have done a good job of controlling extremes in carcass weight.

Figures 2 and 3 illustrate the percentages of cattle that fit the standards for quality grade and yield grade, respectively. Results indicated that non-conformance for quality grade or yield grade represented 46.8 and 9.0% of the steers, respectively. Not using mid-U.S. Select as the quality grade standard eliminated 22.6% of the steers across years. Yield grade 3 was split into 3A (3.00 to 3.49) and 3B (3.50 to 3.99). Yield grade 3A or better was easily met by 91% of the steers.

The distribution of steers by subcutaneous fat thickness categories is given in Figure 4. Some 32.4% of the steers could not meet the window of .25 to .59 in fat thickness. In contrast, steers had little problem meeting the average daily gain requirement (Figure 5).

Some 14.9% of the steers failed to meet the requirement for expected ribeye area based on hot carcass weight. In addition, extremes for carcass ribeye area were considered to be those actual measures less than 11.0 or greater than 16.0 sq in. Across all years, 83.6% of the steers had actual measures within an acceptable range of 11.0 to 16.0 sq in.

Results indicate that many of the steers can meet the requirements for various individual carcass traits. However, with future industry efforts toward value-based marketing, industry standards will require an animal which excels for multiple traits. To determine the degree of non-conformance in the current Feedout database, the number of standards missed by each steer was determined. A steer was considered a non-conformer if any of these standards (Table 1) were not met. When steers were required to meet standards for all six traits, only 21.1% qualified (Figure 6). Of those not qualifying, 32.3 and

Table 2. Mean steer performance by year.

Trait	Year							
	86	87	88	89	90	91	92	93
No. of steers	131	131	149	130	237	336	237	189
Ranch wt, lb	641	658	649	656	654	637	675	646
Days on feed	164	165	171	168	164	172	168	170
Daily gain, lb	2.88	2.79	2.92	3.10	3.05	2.70	2.91	2.82
Feed/day, lb as fed	23.5	21.2	23.6	23.9	23.6	21.4	23.1	23.0
Slaughter wt, lb	1109	1115	1148	1176	1150	1094	1160	1123
Wt/day of age, lb	2.55	2.58	2.68	2.76	2.72	2.57	2.71	2.58
Frame score ^b	4.7	---	---	6.1	6.6	6.5	6.7	6.8
Carcass wt, lb	707	707	710	747	726	690	740	708
Fat thickness, in	.43	.45	.51	.40	.40	.33	.36	.32
Ribeye area, in ²	12.4	12.1	12.0	13.6	13.1	12.6	12.9	12.6
Quality grade ^a	8.6	8.3	9.0	9.6	9.6	9.2	9.7	9.5
Yield grade	2.64	2.71	3.00	2.48	2.60	2.42	2.58	2.38

^a Quality grades: 8 = Select; 9 = Select+; 10 = Choice-.

^b Frame score was not measured for 1987 and 1988 calves.

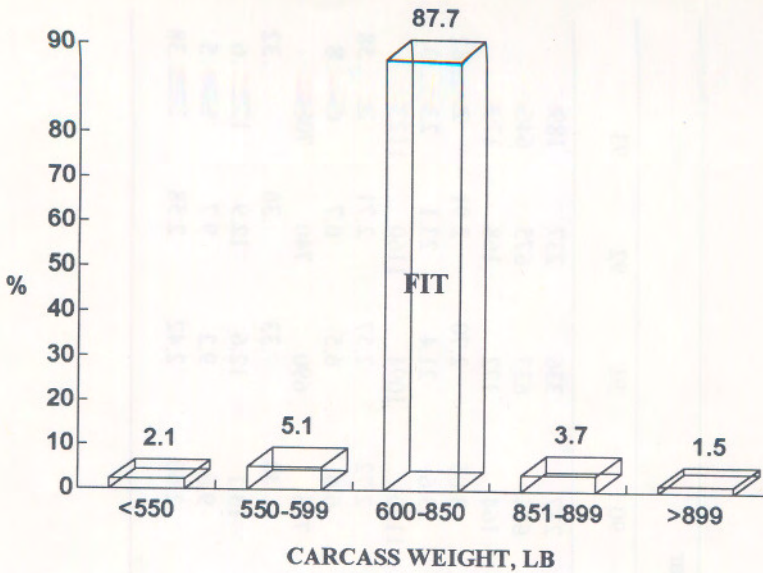


Figure 1. Distribution of steers by carcass weight categories.

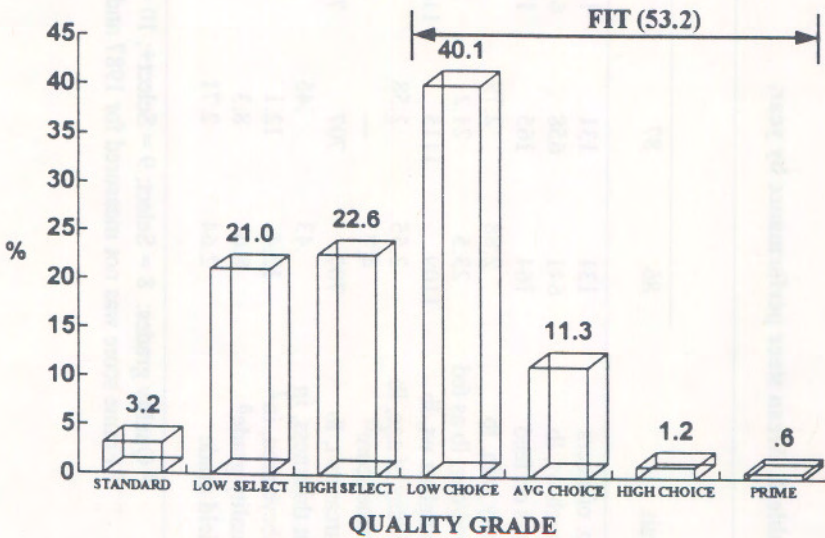


Figure 2. Distribution of steers by quality grades.

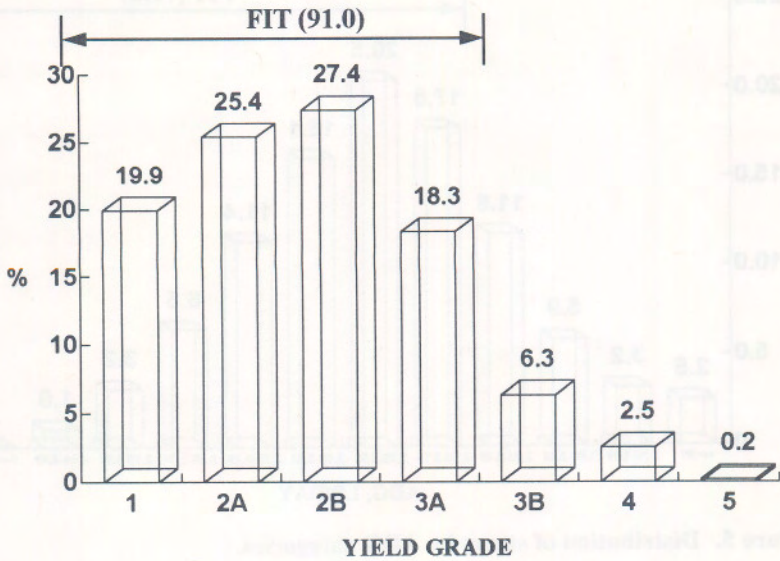


Figure 3. Distribution of steers by yield grades.

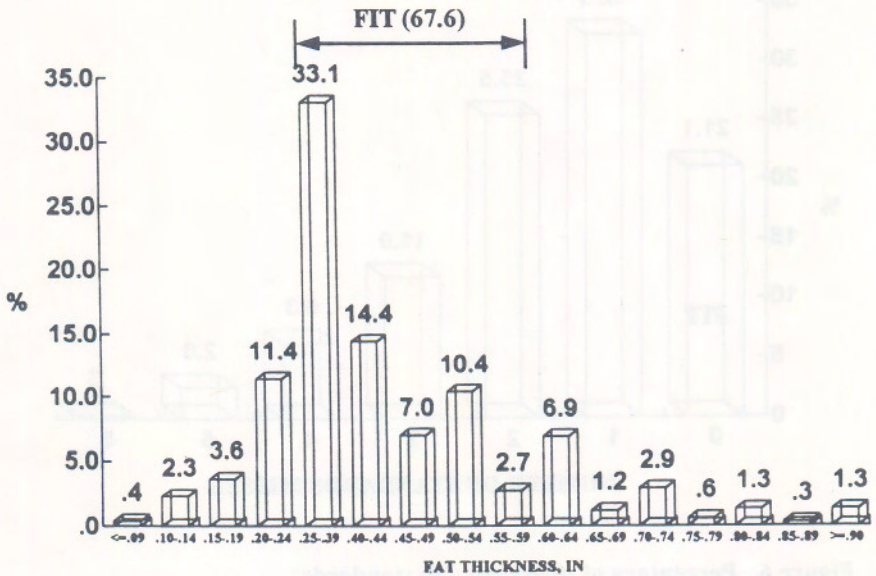


Figure 4. Distribution of steers by fat thickness categories.

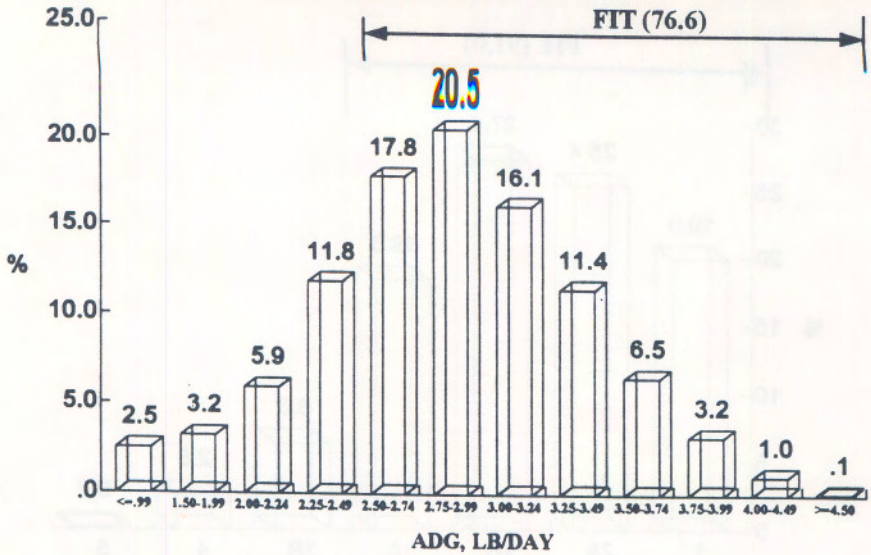


Figure 5. Distribution of steers by ADG categories.

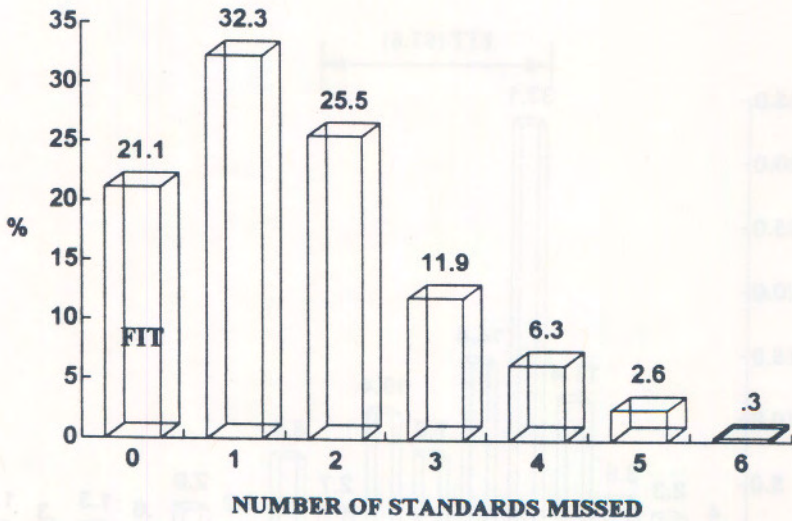


Figure 6. Percentage of steers missing standards.

25.5% missed one or two of the standards, respectively. Three or more criteria were not met by 21.1% of the steers. Quality grade, fat thickness and yield grade were the primary reasons for non-conformance in the cattle missing one or two standards.

A higher percentage of steers met all six criteria from 1990 to 1993 than in previous years ($P < .01$). During the first four years, only an average of 13.1% of the steers met the standards as compared with 25.4% in the most recent four years. Improvement in conformance was influenced by quality grade, fat and yield grade. Carcass weight had minimal effect on percentage of non-conforming steers.

The average number of acceptable standards met by each steer varied with season ($P < .01$). Across all years, fall calves had a higher percentage of calves meeting the six standards than did spring calves (26 vs 19%).

If the quality grade requirement was lowered to mid U.S. Select and fat thickness was allowed to be .59 or less, the number of steers conforming to all six standards increased to 36.2%.

Although many of the steers qualified for single carcass trait standards, limited numbers of steers performed acceptably in all categories. Evidence of non-conformance in Feedout steers indicated that cow-calf producers should strive for improvement in total carcass performance.