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- It utilizes research from university, government, and other sources to help people make their own decisions.
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Feedlot and Carcass Performance from the OK Steer Feedout Program—1990-2005

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Several people in the Oklahoma Cooperative Extension Service have contributed to and supported the OK Steer Feedout program since its inception. Special recognition goes to Wayne Shearhart for his continued support. Three area animal science specialists – Greg Highfill, Kent Barnes, and Bob LeValley – compiled and verified data from 16 years of the program. They then charged me to identify what might be learned from the data for the benefit of cattle producers and educators. This is the first of two Extension Fact Sheets reporting findings from the analysis. – Clem Ward

The OK Steer Feedout program has provided valuable assistance to cattle producers in Oklahoma since its inception in 1984. Producers need to understand the quality of cattle they raise both to market them effectively and to provide a base from which they can improve cattle quality through genetic selection, nutrition, and other management practices. The OK Steer Feedout program allows producers to place as few as five head of feeder cattle in a commercial feedlot (ex., Oklahoma Feeders, Inc. near Coyle, OK) and learn how they perform in the feedlot and in carcass form. OK Steer Feedout programs have provided information on more than 4,900 head of cattle from over 330 ranches during the program's existence. The feedout program operates separate test groups for spring-born calves (placed in the feedlot in November) and for fall-born calves (placed in the feedlot in August). The feeding period length typically ranges from 150 to 180 days. Visit http://www.ansi.okstate.edu/exten/oksteer/ for additional information.

This Extension Fact Sheet provides information on the quality and performance of Oklahoma cattle placed in the OK Steer Feedout program from 1990 to 2005. Averages and frequency distributions for selected beginning and ending periods are discussed as well as changes in selected characteristics and performance measures.

Data Collected

Data collected and discussed here are categorized into cattle characteristics, feeding performance measures, and carcass performance measures. Cattle characteristics include birth date and age at harvest, beginning and ending hip height, beginning and ending frame score, and beginning and ending weight. Feeding data include days on feed, average daily gain, estimated feed consumption, feed conversion, and processing/medical costs. Carcass data include carcass weight, dressing percentage, fat cover, ribeye area, internal fat percentage, marbling score, and carcass index.

Much of what is discussed in the following sections is presented in two tables. Table 1 shows average values for several cattle characteristics and performance variables for all 16 years of the data analyzed. Also, for comparison and perspective purposes, averages are presented for the first two years (1990-91) and last two years (2004-05) of the data series by season (spring-born calves and fall-born calves). Averages for beginning and ending years provide an indication of possible trends in the specific variables. Averages for each season provide an indication of possible differences for spring-born and fall-born calves.

Table 2 shows a distribution of the cattle for each variable for the beginning and ending two-year periods. These also provide insight into changes in specific characteristics over the 16-year period.

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Cattle Characteristics

One of the most notable differences in cattle over the 16-year period relates to cattle size. Comparing average placement height (measured at the hip) for the beginning and ending two years shows that average placement height declined over two inches for spring calves (48.4 to 46.3 in.) but changed little for fall calves (48.0 to 47.9 in.) (Table 1). A decline also can be seen for finished height over the two periods. The change in cattle size can be seen more clearly from the distribution of placement heights in Table 2. In the 1990-91 years, 11.9 percent of the cattle were in the taller size group (51 in. or more) and 18.0 percent were in the shorter size group (less than 47 in.). However, in the latter two years, there were very few in the taller group (2.1 percent), and many more cattle in the shorter group (44.8 percent). A similar pattern is evident in the distribution of finished heights also.

Likewise, the same pattern is evident from looking at placement and finishing frame scores. Average finished frame scores showed a decline (spring – 6.5 to 5.7 and fall – 6.7 to 6.0). Placement frame scores declined in the spring (6.7 to 5.4), but not in the fall (5.4 to 5.4). The distribution of frame scores at placement and finishing point to a trend toward smaller cattle. In 1990-91, 36.0 percent of the cattle were in the larger placement frame size group (7.0 or larger) compared with only 2.7 percent in 2004-05. Conversely, in 1990-91, there were 9.4 percent in the smallest frame size group (less than 5.0) but the percentage grew to 23.2 percent by 2004-05. A similar pattern is evident in the distribution of finished frame scores also.

Figure 1 illustrates the downward trend in cattle size as measured by frame score. While average frame scores at

Table 1. Average cattle characteristics and performance measures, OK Steer Feedout, 1990-91 to 2004-05.

Cattle Characteristic or Performance Measure	Mean				
		1990-91		2004-05	
	All years	Spring	Fall	Spring	Fall
Placement height (inches)	47.6	48.4	48.0	46.3	47.9
Finished height (inches)	52.9	53.0	54.2	51.7	53.2
Placement frame score	5.7	6.7	5.4	5.4	5.4
Finished frame score	6.1	6.5	6.7	5.7	6.0
Placement weight (pounds)	606.4	592.2	667.4	594.3	661.8
Finished weight (pounds)	1172.8	1138.8	1230.4	1130.1	1260.1
Age at harvest (days)	433.6	414.1	458.9	416.8	470.0
Days on feed	166.6	172.1	159.7	166.0	170.5
Feed intake (pounds per animal)	4029.2	3749.0	3692.8	3961.1	4500.5
Average daily gain (pounds per day)	3.4	3.2	3.5	3.2	3.5
Conversion (pounds of feed per pound of gain)	7.1	6.9	6.6	7.4	7.5
Animal health cost (dollars per animal)	12.71	5.32	3.82	84.65	15.99
Marbling	407.5	408.9	419.0	403.6	429.0
Carcass weight (pounds)	713.4	691.6	741.4	684.5	769.1
Dressing percentage	60.8	60.7	60.3	60.5	61.0
Fat thickness (inches)	0.35	0.33	0.42	0.39	0.41
Kidney, pelvic, heart fat (percent)	2.3	2.6	2.5	2.7	2.9
Ribeye area (square inches)	12.4	12.6	13.3	12.4	13.0
Yield grade	2.57	2.45	2.61	2.65	2.86
Carcass index	84.3	85.1	87.8	80.8	83.3

placement varied from year to year, a general downward trend is evident. The same downward trend is evident for finishing frame score but with less year-to-year variation.

While cattle height and frame scores have declined over time, cattle weight at placement and harvest have changed less sharply. Table 1 shows fall-born calves were significantly heavier than spring-born calves when placed into the OK Steer Feedout program (75 lbs. heavier in 1990-91 and 67 lbs. heavier in 2004-05), as well as when they were harvested (92 lbs. in 1990-91 and 130 lbs. in 2004-05). However, part of that difference and some of the difference between fall and spring placement height and frame score can be explained by the fact fall calves are older when placed on feed than spring calves. This can be verified from Table 1 by noting that age at harvest is higher for fall cattle than spring cattle (by about 45 to 55 days), but days on feed is less or not much different

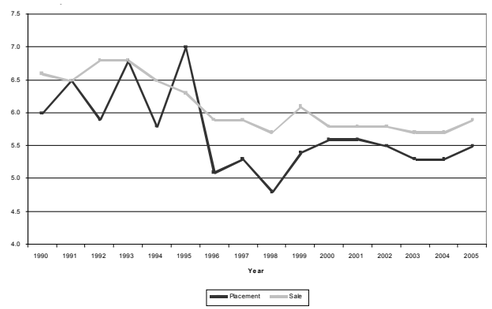

Figure 1. Comparison of placement and final frame scores, OK Steer Feedout, 1990-91 and 2004-05.

for fall versus spring calves. Thus, fall calves are both older and heavier than spring calves when placed on feed and are heavier at harvest. Average finished weight for fall-born calves was markedly higher (92 to 130 lbs.) than spring-born calves both in 1990-91 and 2004-05. The increased finished weight for fall calves is consistent with the significant industry trend toward higher finished weights. However, in the feedout data, there was virtually no change in finished weight for spring calves for the beginning and ending two-year periods.

In summary, cattle in the OK Steer Feedout program over the past 16 years have become shorter in height with smaller frame score, but having about the same or heavier finished weights. Differences were noted between spring- and fall-born calves, but much of the difference can be attributed to fall calves being older when placed into the feedout program.

Feeding Performance

Key measures of cattle feeding performance typically include average daily gain and feed conversion. These are related to other measures provided in the feedout data, notably days on feed and feed intake. Of critical importance also is animal health, discussed here in terms of medical costs.

Cattle in the OK Steer Feedout program are fed to a target endpoint and then harvested. Days on feed vary in large part on how rapidly cattle reach their target endpoint. Average placement weight for the 16 years was 606 pounds. Cattle were fed on average 167 days and harvested at an average weight of 1,172 pounds. Table 1 shows days on feed were greater for spring calves than fall calves in 1990-91 but just the reverse for 2004-05. The distribution of days on feed in Table 2 shows 32.3 percent of cattle were on feed more than 180 days in 1990-91; while in 2004-05, no cattle were on feed past 179 days.

Table 3 shows the net grid price, premium sum, discount sum, and gross revenue (total carcass value) from three grids for two periods of feedout data. Net grid prices and carcass values for feedout carcasses on the yield grid were higher than for the average grid. In turn, net grid prices for the average grid were higher than for the quality grid. Given the carcass data discussed above, cattle in the feedout program fit a yield grid much better than a quality grid. Net grid prices in carcass values were slightly higher for carcasses in 2004-05 than for those in 1990-91.

However, there are two negative aspects to what is shown in Table 3. First, producers are experiencing large opportunity costs or lost revenue opportunities. Discounts for each set of carcass data and each year are very large and the premiums much smaller. Improvements in cattle quality – especially higher marbling and quality grades, less fat cover, and less KPH fat – would significantly reduce total discounts, increase total premiums, and significantly increase net grid prices and carcass values. Second, while net grid prices and carcass values were higher for the ending two years compared with the beginning two years, they do not approach the level needed just to cover higher feeding and operating costs over the 16-year period. Thus, what seems to be a small gain in value is really an economic loss over the sixteen years.

Summary and Conclusions

Evidence abounds from the OK Steer Feedout data that cattle quality, based on feedlot and carcass performance measures, has not improved significantly over time. It should be noted that cattle were placed in the feedout program by some 330 producers. Several new producers placed cattle in the program each year. Data were not available to determine if – as a result of producers placing cattle in the program and learning how their cattle performed – those producers made genetic and management changes to upgrade the cattle they raise. There are likely examples of some individual producers making improvements in cattle quality over time. The assessment of a decline in cattle quality is based solely on what can be derived from the OK Steer Feedout data as summarized here.

Oklahoma producers need to concentrate on upgrading the feeding and carcass performance of cattle being raised *– if cattle in the OK Steer Feedout program represent the population of cattle raised in Oklahoma*. Based on feedout data summarized here, Oklahoma producers are giving up a lot of money in the form of lower-than-possible prices due to deficiencies in cattle performance and carcass attributes.

References

Ward, Clement E. *Grid Pricing Calculator*. Oklahoma Cooperative Extension Service, Extension Facts AGEC-577, July 2002, (http://pods.dasnr.okstate.edu/docushare/dsweb/HomePage).

processors and distributors. The retail cut may be too large for the specifications developed by restaurants and retailers. Ribeye size declined between 1990-91 and 2004-05 both for spring-born and fall-born calves (spring – 12.6 square inches to 12.4 square inches; and fall – 13.3 square inches to 13.0 square inches) (Table 1). This change corresponds to the reduction in size (height and frame) of cattle over this period. The distribution of ribeye size in Table 2 indicates the distribution has narrowed somewhat, with a smaller percentage in the smallest category (less than 10.0 square inches) combined with the largest category (16.0 square inches or more), 3.3 percent in 2004-05 compared with 5.3 percent in 1990-91.

Figure 6 shows ribeye size has declined over the 16-year period. Fat thickness has varied with a slight upward trend noted over the same period. These two variables combined, along with what we saw in KPH, indicate cattle have gotten somewhat smaller but are depositing more fat than previously. But since marbling has not improved, fat is not being deposited intramuscularly where it enhances tenderness and juiciness, but in the form of coverage fat and internal fat. Again, this points away from improvements in cattle quality over time.

Yield grade averaged below 3.0 (2.57) for the 16-year period, which is positive. However, there is evidence the average moved closer to 3.0 than toward 2.0 over the period. Spring-born calves increased from 2.45 to 2.65; and fall-born calves, from 2.61 to 2.86. Table 2 shows the same trend. Fewer cattle yield graded 1-2 in 2004-05 (66.7 percent) than in 1990-91 (76.9 percent) and there were slightly more in the yield grade 4-5 categories in 2004-05 (3.0 percent) than in 1990-91 (2.5 percent).

The carcass index is a composite measure of the desirability of the carcass. It begins with 100 as a base value that signifies an ideal or target carcass if there are no adjustments due to carcass attributes outside the desired ranges. Adjustments are made for carcasses other than 600 to 950 pounds, carcasses other than a quality grade of low Choice, carcasses other than fat thickness of 0.25 to 0.39, carcasses other than KPH of 2.5 percent, and carcasses with ribeye size outside the standard size associated with carcass weight. Ideally, a high percentage of carcasses would have a carcass index score of 100 or higher.

Average carcass index for all years was 84.3, well below the 100 target (Table 1). The carcass index for spring and fall

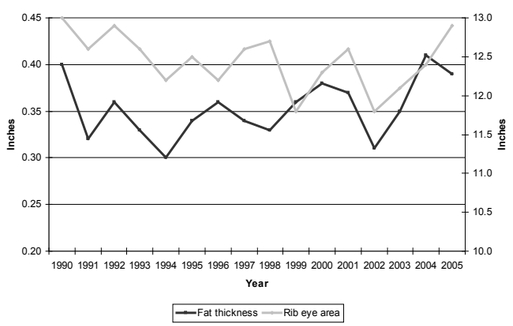

Figure 6. Comparison of fat thickness and ribeye area, OK Steer Feedout, 1990-91 and 2004-05.

calves declined from the beginning to ending two years of the data period (spring – 85.1 to 80.8; and fall – 87.8 to 83.3). This, too, evidences a move away from better carcass characteristics. The distribution of carcass index values bears that out (Table 2). More cattle were in the lowest two categories (less than 75.0) in 2004-05 (30.5 percent) than in 1990-91 (21.2 percent); and fewer were in the highest category (100.0 or more) for the ending period (18.7 percent) than beginning period (26.0 percent).

In summary, carcass quality attributes have not improved over the data period studied for OK Steer Feedout data. Marbling scores and USDA quality grades have not improved while both fat thickness and KPH fat increased. Carcass weights rose but ribeye size declined. Yield grades increased (worsened) over the 16-year period. Overall carcass quality (carcass index) further bears out the same observation. The decline over time in the carcass index is not attributed to simply one or two carcass attributes, but to several components of the index.

Estimated Carcass Value

One way to assess the value of cattle from the OK Steer Feedout program is with a grid calculator (Ward, 2002). One grid calculator found at http://agecon.okstate.edu/pricing/publications.asp can be downloaded in a Microsoft Excel spreadsheet.

Average prices and grid premiums and discounts were chosen at a point in time (first week of October 2006) and applied consistently to the OK Steer Feedout carcass data for 1990-91 and 2004-05. The date chosen affects the *level* of prices but not necessarily the *relationship* between prices. Three hypothetical grids were used. An average grid used average premiums and discounts for quality and yield grades reported by USDA for a given week. The quality grid used higher reported premiums for upper quality grades and average discounts for lower quality grades, with average premiums and discounts for yield grades. The yield grid used higher reported premiums for better yield grades and average discounts for poorer yield grades, with average premiums and discounts for quality grades.

Table 3. Estimated net grid prices, premiums/discounts, and total value of carcasses based on average carcass attributes from the OK Steer Feedout and alternative grids, 1990-91 versus 2004-05.

Year	*Net Price ($/cwt)*	*Premium Sum ($/cwt)*	*Discount Sum ($/cwt)*	*Gross Value ($)*
Average Grid				
1990-91	135.75	1.35	10.37	961.10
2004-05	136.32	1.16	9.61	974.68
Quality Grid				
1990-91	135.32	1.45	10.91	958.04
2004-05	136.17	1.49	10.09	973.61
Yield Grid				
1990-91	137.61	3.37	10.53	974.27
2004-05	137.70	2.73	9.80	984.53

Table 2. Frequency distribution of cattle characteristics and performance measures, OK Steer Feedout, 1990-91 compared with 2004-05.

Cattle Characteristic or Performance Measure	*Percent of total 1990-91*	*2004-05*
Placement height (inches)		
Less than 47.0	18.0	44.8
47.0-50.9	70.1	53.1
51.0 or more	11.9	2.1
Finished height (inches)		
Less than 51.0	13.8	14.5
51.0-52.9	28.2	45.1
53.0 or more	58.0	40.4
Placement frame score		
Less than 5.0	9.4	23.2
5.0-6.9	54.6	74.2
7.0 or more	36.0	2.7
Finished frame score		
Less than 5.0	5.9	11.6
5.0-6.9	48.4	81.6
7.0 or more	45.6	6.8
Placement weight (pounds)		
Less than 500	6.5	8.0
500-599	36.9	37.7
600-699	41.1	38.6
700-799	13.6	12.8
800 or more	1.9	3.0
Finished weight (pounds)		
Less than 1000	8.9	5.6
1000-1099	19.6	22.3
1100-1199	31.8	31.2
1200-1299	26.6	26.1
1300-1399	10.3	10.1
1400 or more	2.8	4.8
Age at harvest (days)		
Less than 390	6.5	8.3
390-449	72.2	64.6
450 or more	21.4	27.1
Days on feed		
Less than 150	1.8	0.0
150-159	24.0	30.6
160-169	25.2	21.7
170-179	16.8	47.8
180 or more	32.3	0.0
Feed intake (pounds per animal)		
Less than 2000	0.2	0.0
2000-3499	35.8	14.8
3500-4999	60.3	77.2
5000 or more	3.7	8.0
Average daily gain (pounds per day)		
Less than 2.0	1.6	0.3
2.0-2.9	29.2	23.4
3.0-3.9	59.4	67.7
4.0-4.9	9.6	8.6
5.0 or more	0.2	0.0
Conversion (pounds of feed per pound of gain)		
Less than 6.0	4.0	0.0
6.0-6.9	54.4	16.3
7.0-7.9	39.2	62.6
8.0 or more	2.4	21.1
Animal health cost (dollars per animal)		
0	72.9	45.4
0.01-9.99	4.9	0.9
10.00-19.99	14.3	0.0
20.00-29.99	4.9	23.7
30.00-39.99	2.1	6.8
40.00-49.99	0.4	1.2
50.00 or more	0.5	22.0
Marbling		
Less than 300	0.4	0.0
300-499	88.1	85.7
500-599	10.8	11.0
600-699	0.2	2.4
700 or more	0.5	0.9
Carcass weight (pounds)		
Less than 600	8.2	5.4
600-749	62.9	61.9
750-899	28.0	31.8
900 or more	0.9	0.9
Dressing percentage		
Less than 56.0	2.1	0.9
56-58.9	16.3	12.5
59-63.9	78.3	83.4
64.0 or more	3.3	3.3
Fat thickness (inches)		
Less than 0.2	10.1	3.9
0.2-0.39	46.3	44.2
0.4-0.59	33.2	41.0
0.6-0.79	7.7	9.5
0.8 or more	2.6	1.5
Kidney, pelvic, heart fat (percent)		
Less than 2.0	5.9	11.9
2.0-2.9	55.8	35.9
3.0 or more	38.3	52.2
Ribeye area (square inches)		
Less than 10.0	2.3	1.8
10.0-11.9	27.6	29.7
12.0-13.9	47.9	52.5
13.0-15.9	19.2	14.5
16.0 or more	3.0	1.5
Yield grade		
Less than 2.0	22.9	14.6
2.0-2.9	54.0	52.1
3.0-3.9	20.6	30.4
4.0-4.9	2.3	3.0
5.0 or more	0.2	0.0
Carcass index		
Less than 50.0	3.0	6.8
50.0-74.9	18.2	23.7
75.0-99.9	52.8	50.7
100.0 or more	26.0	18.7

Individual animal feed consumption cannot be measured easily in a commercial feedlot. Therefore, feed consumption was estimated with an NRC net energy gain equation utilizing actual average daily gain and average weight. Feed consumption or intake is related to weight gain. Animals must eat to maintain body weight as well as to grow and gain weight. Feed intake beyond a maintenance level is converted to weight gain. Figure 2 shows the relationship between estimated feed intake and average daily gain over the 16 years. The two lines generally move together, indicating a positive correlation or relationship between the two variables.

Estimated feed intake increased both for spring and fall calves from the 1990-91 to 2004-05 (spring – 3,749.0 lbs. to 3,961.1 lbs.; and fall – 3,692.8 lbs. to 4,500.5 lbs.) (Table 1). The upward trend in feed intake can be seen in Figure 2 and Table 2. Cattle in the latter years of the feedout program generally consumed more feed than those in the earlier years. The distribution of feed intake in Table 2 shows a much higher percentage of cattle in the two largest feed consumption groups (3,500 to 4,900 lbs. and 5,000 lbs. or more) in 2004-05 (85.2 percent) than in 1990-91 (64.0 percent).

Increased consumption means increased feed costs. However, increased feed consumption can also be either a positive or negative. It is positive if cattle convert feed efficiently to increased (saleable) weight. However, if increased consumption does not result in better and more efficient gains, it can be a negative. Over time in the feedout program, increased feed consumption appears to have been a negative. Average daily gain remained unchanged for spring and fall calves from 1990-91 to 2004-05 (spring calves – 3.2 lbs./day, fall calves – 3.5 lbs./day) (Table 1). Thus, cattle were eating more but adding weight at the same rate as previously, resulting in higher cost of gain (excluding changes in feed prices). The distribution of average daily gains in Table 2 also shows fewer, rapid-gaining cattle (4.0-4.9 lbs./day and 5.0 lbs./day or more) in 2004-05 (8.0 percent) compared to the earlier period (9.8 percent). On a positive note, there also were fewer, slow-gaining cattle (2.0-2.9 lbs./day and less than 2.0 lbs./day) in the latter period (23.7 percent) than in 1990-91 (30.8 percent). Thus, there is evidence more cattle moved to an average performance level, but not a higher performance level over time.

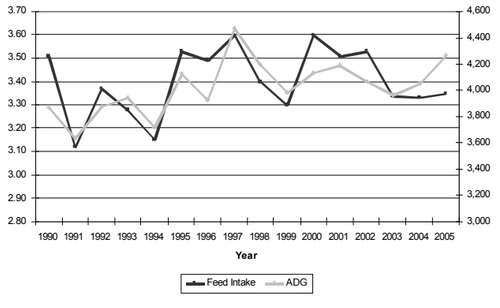

Figure 2. Comparison of average daily gain and estimated feed intake, OK Steer Feedout, 1990-91 and 2004-05.

Feed conversion data confirm the above observation. Feed conversion (feed consumed per pound of weight gain) both for spring and fall calves increased between the beginning and ending two-year periods (spring – 6.9 lbs. to 7.4 lbs.; and fall – 6.6 lbs. to 7.5 lbs.) (Table 1). Increased feed conversion is a negative. It means an animal requires more pounds of feed to gain a pound of weight. Higher feed consumption or intake is not being converted to weight gain as efficiently as in the past. Table 2 indicates 41.6 percent of cattle required 7 pounds of feed per pound of gain in 1990-91 while 83.7 percent required 7 pounds of feed per pound of gain in 2004-05. In addition, there were no high-converting cattle, those needing less than 6 pounds of feed per pound of gain in 2004-05 compared with 4.0 percent in 1990-91.

Figure 3 shows the relationship between average daily gain and length of the feeding period. In several but not all years of the feedout data, the two lines move in opposite directions. As days on feed increase, average daily gains decrease, and vice versa. This, too, relates to feed efficiency. Figure 4 shows the relationship between average daily gain and feed conversion. There appears to be a slight upward trend in average daily gain over the 16 years, but a clearer upward trend in feed conversion. Thus, it takes more feed to achieve the same or only slightly improved average daily

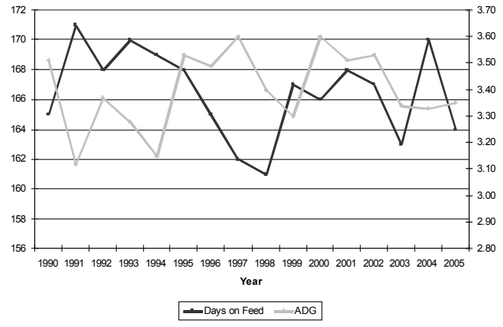

Figure 3. Comparison of average daily gain and days on feed, OK Steer Feedout, 1990-91 and 2004-05.

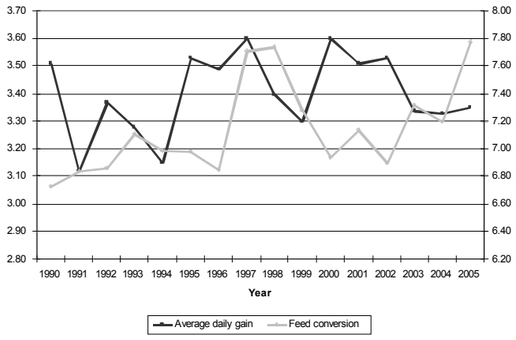

Figure 4. Comparison of average daily gain and estimated feed conversion, OK Steer Feedout, 1990-91 and 2004-05.

gain. Ideally, producers would raise cattle that gain rapidly, convert efficiently, and need fewer days to reach their finished endpoint. Together, that results in lower feed costs and a greater potential for profitability in the feeding program.

Animal health costs in the OK Steer Feedout program varied widely from year to year. This variability can be seen from Table 1 for spring and fall calves for the first and last two-year periods. Animal health costs per head for spring calves in 2004-05 were $84.65 compared with the overall average for the 16 years of $12.71 per head. Table 2 shows that a smaller percentage of cattle in 2004-05 incurred zero medical costs (45.4 percent) than in 1990-91 (72.9 percent).

In summary, little evidence of cattle feeding performance gains was found from the 16 years of the feedout program. Average daily gains showed a slight upward trend, but it came from a stronger upward trend in feed intake and feed conversion, thus suggesting less efficient cattle and higher feed costs per pound over the feedout period. Animal health costs showed little upward trend, but considerable year-to-year variability.

Carcass Performance

Key carcass performance measures are those associated with retail or wholesale value, including carcass quality grade, yield grade, and carcass weight. OK Steer Feedout data on carcass attributes included marbling, carcass weight, fat thickness, kidney-pelvic-heart (KPH) fat, ribeye area, and carcass index.

Marbling is the primary determinant of USDA quality grade. Higher marbling scores reflect a higher quality grade. Marbling decreased a few points for spring-born calves and increased a few points for fall-born calves from the beginning to ending two-year periods (Table 1). Overall, the average marbling score was 407.5, which translates to a mid-to-upper range Select quality grade. The distribution of marbling scores showed little change over the 16-year period (Table 2). Less than 1 percent graded Prime (marbling score greater than 700), 11.0 to 13.4 percent graded Choice (marbling scores 500 to 699), and most (88.5 percent to 85.7 percent graded Select). Overall, quality of cattle in the OK Steer Feedout program was below the average for the beef industry as a whole. There was little evidence of significant improvement over time. Thus, cow-calf producers need to make a conscious effort to improve the quality grade of cattle they raise.

Some might argue that simply feeding cattle longer will increase the percentage of Choice grade cattle harvested. The short response to that is maybe yes and maybe no. Yes, it can if the genetics to reach Choice grade are bred into the cattle. Some cattle can be fed for very long periods and never reach a higher grade. Figure 5 shows the relationship between average marbling score and days on feed over the 16-year period. There is no clear relationship between days on feed and marbling score. In some years, days on feed increased but marbling declined. In other cases, more days on feed resulted in higher marbling. Therefore, simply feeding cattle longer is no guarantee of higher grading cattle.

Several factors combine to compute yield grade or the percentage of saleable retail cuts from a carcass, including carcass weight, fat thickness, KPH fat, and ribeye area. Packers seek carcasses in a relatively wide weight range, usually about 600 to 900 pounds. Carcasses less than 600 pounds may be discounted and carcasses over some upper

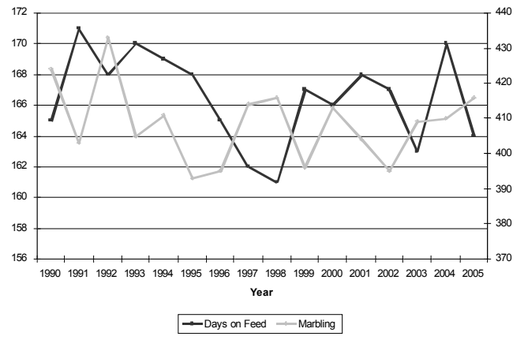

Figure 5. Comparison of marbling score and days on feed, OK Steer Feedout, 1990-91 and 2004-05.

limit, such as 900, 950, or as much as 1,000 pounds, are also discounted. Average carcass weight for spring-born calves declined from 1990-91 to 2004-05 (691.6 lbs. to 684.5 lbs.) while it increased for fall-born calves (741.4 lbs. to 769.1 lbs.) (Table 1). The distribution of carcasses in Table 2 shows a slight trend toward heavier carcass weights which is consistent with the overall trend in the beef industry.

The trend toward larger carcasses alone is neither a positive nor negative. If quality improves simultaneously, it can be a positive. However, if quality improvement gains are not evident, then larger carcasses alone are of little value for the industry in the aggregate. The distribution of dressing percentage showed a trend toward better dressing carcasses. In this case, larger and better dressing carcasses are a positive. However, recall from the above discussion that evidence of gains in marbling and quality grade were not evident as carcass weight increased.

Often a fat covering of 0.4 inches is considered a target end point for harvesting fed cattle. Average fat cover for the 16-year period was slightly better, at 0.35 inches (Table 1). Spring-born calves in 1990-91 were leaner than in 2004-05 (0.33 inches to 0.39 inches) and fall-born calves remained about the same (0.42 inches to 0.41 inches). The distribution of cattle by fat thickness (Table 2) shows that in 2004-05, there were fewer cattle (48.1 percent) in the leaner categories (less than 0.40 inches) and more in the fatter categories (0.60 or more inches) (11.0 percent) than in 1990-91 (56.4 percent and 10.3 percent, respectively). Again, this is not the direction the industry strives to move. Producers need to reduce fat in the production process. Otherwise, packers and retailers have to manually remove the outer fat in order to satisfy consumer demands for leaner beef, especially the preferred visual appearance of lean beef.

Another component of yield grade is internal fat or kidney-pelvic-heart (KPH) fat. As with fat thickness, there is evidence of cattle having more KPH fat than is considered desirable by the industry. KPH fat, like all fat, has little value as a by-product and packers incur a labor cost to remove it from the carcass. Producers lose by paying the feed cost of putting it on the animal, then pay again (indirectly) by having packers pay them less because of higher processing costs associated with removing waste fat.

Ribeye area is sometimes seen as a proxy for size of cattle. Ribeye areas that are too large present a problem for