

# Arkansas Steer Feedout Program 2007-2008

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## Story in Brief

The objective of the Arkansas Steer Feedout Program is to provide cow-calf producers information about the post-weaning feedlot performance and carcass characteristics of their calves. For the 2007-2008 feedout, quality grade, initial weight, hot carcass weight, yield grade and medicine costs were factors that affected ( $P < 0.05$ ) the feedlot return over specified costs. Cow calf producers who participated in the program will be able to use the information to evaluate how their cattle breeding programs fit the needs of the beef cattle industry.

## Introduction

The University of Arkansas Cooperative Extension Service Steer Feedout Program provides cow-calf producers the opportunity to acquire information about postweaning performance and carcass characteristics of their calves. It also points out factors that influence value beyond the weaned calf phase of beef production. The program is not a contest to compare breeds or breeders or to promote retained ownership. The Feedout Program creates an opportunity for producers to determine how their calf crop fits the needs of the beef industry. The program also provides the information needed to determine if changes in genetics and/or management factors are warranted for producers to be competitive in beef production.

### Experimental Procedures

On November 15, 2007, 169 steer calves from 15 Arkansas producers representing 10 counties were placed on feed at Wheeler Brothers Feedyard in Watonga, Okla. Calves were weighed on November 16, 2006. All calves were processed and placed in one pen. Management factors such as processing, medical treatments and rations were the same as the other cattle in the feedyard. The feedyard manager and Extension personnel selected animals for harvest when they reached the weight and condition regarded as acceptable for the industry and market conditions. Cattle were sold on a carcass basis with premiums and discounts for various quality grades, yield grades, and carcass weights. Feed, processing, and medicine costs were financed by the feedyard. Individual animal feed costs are estimated utilizing a formula that adjusts for initial weight and average daily gain of each calf compared to the group average. All expenses were deducted from the carcass income, and proceeds were sent to the owners.

Of the 169 steers that started on feed in the fall, 5 died (2.9% death loss). Three calves were sold as railers due to lack of performance or being chronically ill. These 8 calves were not included in the statistical analyses. Therefore, 161 steers were used in the analyses.

## Results and Discussion

Table 1 shows the overall financial summary. Table 2 shows a financial summary of the bottom 25%, top 25% and average for steers based on feedlot net return. A farm break-even value was calculated by dividing the feedlot net return by the in weight. If the feeder calf could have been sold in the fall of 2006 for more than the farm break-even value, financially it would have been better to sell the calf in the fall than to feed it. The steers' farm break-even averaged \$1.00 per pound (average in weight was 595 lb) and ranged from \$0.55 to

\$1.46 per pound. For the week ending November 16, 2007, 500 to 600 pound steers were selling for \$1.06 to \$1.10 per pound.

The sick pull rate averaged 49% with 83 calves treated for sickness. This is much higher than last year's 29% pull rate. The pull rate was very high for cattle that were all listed as being preconditioned. The average medicine cost for the entire pen was \$7.72 per head, \$1 more than last year's average. The health status of cattle in the feedyard usually has a major impact on performance and profit. Healthy steers had higher ( $P < 0.05$ ) feedlot net returns (\$594) than steers that became sick (\$516). Steers that did not receive treatment had higher average daily gain, hot carcass weights and lower feed cost of gain and total cost of gain ( $P < 0.01$ ). No differences were noted between healthy and sick steers for dressing percentage, yield grade, ribeye area, and ribeye area per cwt. of carcass weight ( $P > 0.10$ ).

Given the past health issues that the cattle in the program have faced, producers need to implement a sound health management plan. By implementing a sound vaccination program at the ranch of origin, predictability and consistency of calves increases along with product value, and calves have the opportunity to express their genetic potential.

The average steer in weight and final weight were 595 pounds (range = 374 to 940 lb) and 1,330 pounds (1,070 to 1,640 lb), respectively. Average daily gain was 3.65 pounds and ranged from 2.7 to 5.1 pounds. Overall, 37% of the steers graded Choice, compared to the national average of 56.8%. Thirteen head received a premium for Certified Angus Beef or Angus Pride Choice. A summary of the carcass data can be found in Table 2.

**Industry Standards.** Carcass standards for the beef cattle industry are Choice quality grade, yield grade of less than 4, and hot carcass weight between 550 and 950 pounds. Thirty-one percent of the steers fit these industry standards. Table 3 shows the steers that met the industry standards averaged \$53 per head more than those that did not fit the industry standards ( $P < 0.05$ ). They had higher carcass values because they graded Choice, and they were not discounted for yield grades greater than 4.0 or for carcasses outside the weight range. Of the steers that were in the top 25% based on feedlot net return, 92% met the industry standards, and for those in the bottom 25% based on feedlot net return, 100% did not meet the industry standards.

**Factors Affecting Steers' Feedlot Net Return.** Listed below are the significant ( $P < 0.05$ ) factors that affected feedlot net return for steers in the 2007-2008 program. Factors are listed in descending order of importance.

1. **Hot Carcass Weight** - The relationship between hot carcass weight and feedlot net return was positive. As hot carcass

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weight increased, so did feedlot net return (Table 4). The more carcass pounds sold, the greater the gross income and feedlot net return. Table 4 shows the relationship between hot carcass weight, total cost of gain, average daily gain, feedlot net return, and calculated return. Factors that affect hot carcass weight include frame size, muscle thickness, and backfat. Muscle thickness is a major factor that relates to carcass weight. Thickness, depth, and fullness of quarter, and width (without excessive fat) of back, loin, and rump are indications of muscling. The current USDA Feeder Cattle Grades utilize 4 muscle thickness scores (1 = thick, 2 = slightly thick, 3 = narrow and 4 = very narrow). Thickness is related to muscle-to-bone ratio at a given degree of thickness. Thicker muscled animals will have more lean meat. "Double-muscled" animals are included in the Inferior grade (unthrifty animals). Although such animals have a superior amount of muscle, they are graded U.S. Inferior because of their inability to produce acceptable degrees of meat quality. The ideal calf should be Feeder Cattle Grade U.S. 1. Number 1 is thrifty and moderately thick throughout. They are moderately thick and full in the forearm and gaskin, showing a rounded appearance through the back and loin with moderate width between the legs, both front and rear.

2. **Initial Weight** - The relationship between initial weight and feedlot net return was negative. As initial weight increased feedlot net return decreased. This relationship is slightly misleading though. The main reason initial weight shows up as a significant factor was due to the market at the time of harvest. The first group of steers harvested received the lowest carcass price of the 3 harvest groups. This first harvest group of steers was largely made up of the calves with heavier initial weight. Generally, the heavier the calf upon entrance to the feedyard the fewer days it took to reach slaughter weight. With the rising cost of feed, steers that are placed into the feedyard at heavier weights should be at an advantage.
3. **Yield Grade** - As yield grade increased from 1 to 4, feedlot net return changed very little (\$588, \$569, \$616, \$559 per head for yield grades 1, 2, 3, and 4, respectively). A positive

note for this year's steers was that no carcasses fell in to the yield grade 5 classification. Yield grade 3 carcasses had higher returns than grades 1, 2 and 4 ( $P > 0.05$ ). There were not any differences between grades 1, 2 and 4 for feedlot net return ( $P < 0.05$ ).

4. **Quality Grade** - Cattle that graded Upper 2/3 Choice, Low Choice, Select, and No Roll had feedlot net returns of \$616, \$633, \$560 and \$492 per head, respectively. All feedlot net returns based on quality grades differed ( $P < 0.0001$ ). Marbling is the primary factor that affects a calf's ability to grade Choice. Three main factors that affect marbling are: (1) the genetic ability to marble; (2) the maturity or the physiological age, not the chronological age; and (3) ration. Some cattle breeds report marbling EPD's in their sire summaries. Carcass traits such as marbling are highly heritable; therefore, selecting high marbling EPD bulls can be effective for improving the marbling ability of their calves. Breeds can also influence a calf's ability to grade Choice. Calves with a high percentage of English breeding usually have an increased ability to grade Choice. Physiological age influences frame score. Large-frame cattle must be older (chronologically) to reach the same physiological age to express marbling as compared to smaller-frame cattle. Steers should be medium to large frame, and extremes at both ends of the scale (small and extremely large) should be avoided.

### Summary

The purpose of the Arkansas Steer Feedout Program is to provide the opportunity for cow-calf producers to determine how their cattle fit the needs of the industry. With the traditionally large price spread between Choice and Select, it was very important to the "bottom line" that calves graded Choice. The program demonstrates that when cattle are sold on a grade and yield formula, it is very important that the cattle grade Choice and yield grade less than 4. Whether cattle are sold on a grade and yield formula or not, the industry wants cattle to grade and yield well. Regardless of the selling formula used (included live pricing), quality grade and yield are considered when determining the bidding price.

Table 1. Financial Results Summary, 2006-2007.<sup>a</sup>

	Average per head (\$)	Range (\$)
Gross Income	1,192.92	903 to 1,513
Expenses		
Feed	519.66	434 to 713
Freight, interest, etc.	72.73	78 to 87
Medicine	<u>12.12</u>	<u>0 to 62</u>
<b>Total</b>	606.78	379 to 625
Feedlot net return	707.66	517 to 790
In value	591.60	342 to 846
Calculated return	-6.54	-241 to 229

<sup>a</sup> 161 head

**Table 2. Performance Summary of the Bottom 25%, Top 25%, and Average Steers Based on Feedlot Net Return.**

	Bottom 25%	Top 25%	Average
Number of steers	39	39	161
Gross income per head (\$)	1,057 <sup>a</sup>	1,357 <sup>b</sup>	1,192
Carcass value per lb (\$)	1.45 <sup>a</sup>	1.51 <sup>b</sup>	1.46
In value per head (\$)	536 <sup>a</sup>	616 <sup>b</sup>	591
Medicine per head (\$)	14.69 <sup>c</sup>	10.91 <sup>d</sup>	12.12
Feed cost per head (\$)	496 <sup>a</sup>	557 <sup>b</sup>	519
Total expense per head (\$)	589 <sup>a</sup>	645 <sup>b</sup>	606
Feedlot net return per head(\$)	468 <sup>a</sup>	711 <sup>b</sup>	550
Calculated return per head (\$)	-68 <sup>a</sup>	95.35 <sup>b</sup>	-6.54
Days on feed	197	217	195
Feed cost per lb of gain (\$)	0.74	0.68	0.74
Total cost per lb of gain (\$)	0.88	0.79	0.86
In weight (lb)	536 <sup>a</sup>	620 <sup>b</sup>	595
Muscle score	1.9	1.7	1.8
Frame score			
Large	66%	82%	73%
Medium	34%	16%	26%
Final weight (lb.)	1,210 <sup>a</sup>	1,444 <sup>b</sup>	1,330
Average daily gain (lb)	3.44 <sup>a</sup>	3.79 <sup>b</sup>	3.65
Hot carcass weight (lb)	728 <sup>a</sup>	896 <sup>b</sup>	817
Carcass value (\$/lb)	1.46 <sup>a</sup>	1.51 <sup>b</sup>	1.46
Dressing percentage	62.7% <sup>a</sup>	64.7% <sup>b</sup>	63.9%
Ribeye area (sq. in)	12.3	13.3	12.75
Backfat	0.43	0.55	0.49
REA per 100 lb. carcass weight	1.66 <sup>a</sup>	1.48 <sup>b</sup>	1.55
Quality grade			
Prime	0%	0%	0%
Choice	18% <sup>a</sup>	67% <sup>b</sup>	37%
Select	67% <sup>a</sup>	33% <sup>b</sup>	57%
No roll	15% <sup>a</sup>	0% <sup>b</sup>	6%
Yield grade	2.54	2.74	2.53

a, b, c, d Values within rows with unlike superscripts are different ( $P < 0.01$ ).

**Table 3. Feedlot Net Return, Average Daily Gain and Carcass Value for Steers that Did or Did Not Meet Industry Standards<sup>a</sup>**

Item	Met standards	Did not meet standards	Difference
Feedlot return	\$620	\$567	\$53 <sup>b</sup>
Average daily gain (lb)	3.79	3.62	0.17 <sup>b</sup>
Carcass value	\$1.51	\$1.46	\$0.06 <sup>b</sup>

<sup>a</sup> USDA Quality Grade Choice, yield grade  $\leq 4.0$  and carcass weight of 550 to 950 pounds.

<sup>b</sup>  $P < 0.05$ .

**Table 4. Summary of Hot Carcass Weight, Total Cost of Gain, Average Daily Gain, Feedlot Net Return and Calculated Return**

Hot carcass weight (lb)	Total cost of gain (\$)	ADG (lb)	Feedlot net return per head (\$)	Calculated return per head (\$)
600-699	0.84	2.9 <sup>a</sup>	450 <sup>a</sup>	-39
700-799	0.82	3.5 <sup>b</sup>	535 <sup>b</sup>	8
800-899	0.88	3.8 <sup>c</sup>	601 <sup>c</sup>	-18
900+	0.88	4.1 <sup>d</sup>	695 <sup>d</sup>	12.79

a, b, c, d Values within column with unlike superscripts are different ( $P < 0.001$ ).