

Arkansas Feedout Program 2001-2002

T.R. Troxel, M.S. Gadberry, S. Cline, G. Davis, and W. Wallace¹

Story in Brief

The objective of the Arkansas Feedout Program is to provide cow-calf producers information about the postweaning performance and carcass characteristics of their calves. For the 2001 – 2002 feedout, hot carcass weight, days on feed, medicine cost, quality grade, dressing percentage, yield grade, feed cost of gain and average daily gain were significant factors that affected return over specified cost. With the information gained from this program, cow-calf producers can better evaluate their cattle breeding programs.

Introduction

The Feedout Program allows producers to learn more about the characteristics of their calf crop and the factors that influence value beyond the weaned-calf phase. The program is not a contest to compare breeds or breeders, or a retained ownership promotion program. It creates an opportunity for producers to determine how their calf crop fits the needs of the beef industry and provides information needed to determine if changes in genetics and/or management are warranted.

Experimental Procedures

On November 8, 2001, 350 calves (30 heifers and 320 steers) from 37 Arkansas producers representing 18 counties, were placed on feed at Oklahoma Feeders Inc., Coyle, Oklahoma. Upon arrival, steers were eartagged, weighed, and processed (Ivomec, Ralgro (heifers), Synovex-S (steers), Covexin, and *pasteurella bacterin*). An Arkansas Livestock Market Reporter placed an arrival value on all calves. Steers and heifers were sorted into five pens based upon weight, frame, and condition. Management factors such as processing, medical treatments, and diets were the same as the other cattle in the feedyard. The feedyard manager selected animals for slaughter when they reached the weight and condition regarded as acceptable for the industry and market conditions. Calves were slaughtered in three groups (April 16, April 30 and May 7, 2002). The cattle were sold on a carcass weight basis with premiums and discounts for quality grade, yield grade, and carcass weight. Feed, processing, medicine costs and other feedyard expenses were financed by the feedyard. All expenses were deducted from the carcass income, and proceeds were sent to the owner. Steer and heifer carcass value for Choice-Yield Grade 2 carcasses was \$111.49 and \$110.97, \$107.46 (no heifers were harvested), and \$114.46 and \$111.07 for April 16, April 30 and May 2 harvest dates, respectively.

Descriptive statistics were computed to describe general program results. Because there were only 29 heifers (1 heifer died), the heifer data were not used in the statistical analysis. Of the 320 steers that started in the fall, eight died (2.5% death loss) and six carcasses were used by IBP (Iowa Beef Processors) for quality control checks; therefore, carcass data were not obtained from these animals. These steers were not included in the statistical analyses. The final data set

analyzed consisted of feedlot and carcass data from 306 steers.

Carcasses of steers were also grouped according to whether or not they fit an industry standard for carcass merit (at least Choice, yield grade ≤ 3.5 , with a hot carcass weight between 550 and 950 lb). Steers either fit the industry standard or they did not, which resulted into two groups. The group main effect and interaction on the dependent variables carcass value, ADG and net return were determined using the GLM procedure of SAS (SAS Inst., Inc., Cary, NC). Least-squares means were computed and reported.

Calves were sorted into the top or bottom 25% category based upon their feedlot return (income minus feedlot direct expenses). Factors affecting feedlot return for the top 25% steers and the bottom 25% steers were determined using the Stepwise method of PROC REG (SAS Inst., Inc., Cary, NC). Independent variables included arrival weight; percentage Brahman, percentage English, and percentage Continental breeding; ADG; yield grade; quality grade; feed cost per lb of gain; hot carcass weight; days on feed; medicine cost; ribeye area; ribeye area/hot carcass cwt.; and dressing percentage.

Results and Discussion

The steer and heifer financial reports are summarized in Tables 1 and 2, respectively. Average steer and heifer gross income per head was \$757.50 (range = \$384 to \$1,020) and \$672.22 (range = \$403 to \$911), respectively. The feedlot returns for steers and heifers averaged \$470.70 and \$394.44, respectively, whereas the calculated returns (accounted for the initial value of the calf at arrival) averaged \$-5.00 (range = \$-418 to \$244) and \$-29.17 (\$-222 to \$156), respectively.

The sick rate was very high with 71 calves (22.8%) treated for sickness. It is not known what caused this high sick rate, but the weather during November and December was thought to have contributed. The average medicine cost per sick calf was \$47.80. The medicine cost for the entire group averaged \$13.25 per head. The health status of cattle in the feedyard usually has a major impact on performance and profit. Healthy steers had higher feedlot returns (\$489) than steers that became sick (\$413; $P < 0.001$). In addition, healthy steers had higher final weights (1,154 vs. 1,114 lb; $P < 0.01$), average daily gains (3.30 vs. 3.14; $P < 0.02$), lower total cost of gain (\$0.51 vs. \$0.61; $P < 0.001$), higher carcass value per cwt. (\$105.09 vs. \$103.47; $P < 0.06$) and higher carcass weights (729 vs. 701 lb; $P < 0.001$) than steers that became sick (62.0%; $P < 0.001$). Sickness

¹ Cooperative Extension Service, Little Rock

also impacted the calves' ability to grade Choice. More healthy steers graded Choice (35%) than steers that were treated for sickness (24%; $P = 0.08$). Less than 1% of the calves were classified as Dark Cutters and there were no differences in the Dark Cutters between healthy steers and those steers that were treated for sickness. This vividly points out the need to adhere to a sound health management plan. Implementing a sound vaccination program at the farm of origin, and thus keeping calves healthy, will play an important role in allowing calves to express their genetic potential.

The steer and heifer average off-the-truck arrival weights were 600 (range = 397 to 860) and 557 lb (range = 428 to 777), respectively. The steer average daily gain, average days on feed, feed cost per lb of gain, and total cost per lb of gain were 3.25 lb (0.97 to 4.67), 168 days (156 to 183), \$0.45 (\$0.33 to \$1.06), and \$0.54 (\$0.37 to \$1.32), respectively. The heifer average daily gain, average days on feed, feed cost per lb of gain, and total cost per lb of gain were 2.82 lb (1.93 to 4.12), 171 days (156 to 177 days), \$0.48 (\$0.36 to \$0.73), and \$0.59 (\$0.44 to \$0.90), respectively.

The average steer carcass weight, ribeye area, dressing percentage, yield grade, and fat thickness were 723 lb (504 to 904), 12.7 in² (9.3 to 18.4), 63.2%, 2.66 (0.32 to 4.77), and 0.42 in. (0.12 to 0.88), respectively. Thirty-three percent of the carcasses graded Choice whereas 57% and 9% graded Select and Standard, respectively. Only 1% of the carcasses graded Prime.

Listed below are the significant factors that affected the feedlot return over specified costs for the steers in the 2001 - 2002 Feedout Program. Factors are listed from the most important to the least important.

Factors Affecting Returns Over Specified Cost

1. Hot Carcass Weight
2. Days on Feed
3. Medicine Cost
4. Quality Grade
5. Dressing Percentage
6. Yield Grade
7. Feed Cost of Gain
8. Average Daily Gain

1. Hot Carcass Weight – The relationship between hot carcass weight and feedlot returns over specified cost was positive. As hot carcass weight increased so did feedlot returns. Table 3 shows the relationship between hot carcass weight, total cost of gain, average daily gain and feedlot returns over specified costs. Hot carcass weight discounts were observed for carcasses weighing less than 550 lb and greater than 950 lb.

2. Days on Feed – There was a negative relationship between days on feed and returns over specified cost. This means that on the average, the longer that cattle were on feed the lower the returns (Table 4).

A factor that affected the relationship between days on feed and feedlot return over specified costs was the price difference between Choice and Select quality grades on the three slaughter days. For example, early in the spring (April 16, 2002), there was a \$3 per carcass cwt. discount between Choice and Select, but on May 7, 2002 the spread was \$10 per carcass cwt.

3. Medicine Cost – Healthy steers had higher feedlot returns (\$489) than steers that became sick (\$413; $P < 0.001$).

4. Quality Grade – Cattle that graded Choice, Select, Standard and Dark Cutters had feedlot returns of \$532, \$452, \$384 and \$258, respectively for the 2001 – 2002 program. Marbling is the main 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) diet. Some cattle breed associations report marbling EPD's in their sire summary. Carcass traits such as marbling are highly heritable; therefore, selecting high marbling EPD bulls can impact the marbling ability of their progeny. Breed type can also influence a calf's ability to grade Choice.

5. Dressing Percentage – The relationship between dressing percentage and feedlot net return was positive. As dressing percentage increased so did feedlot net return. Many of the factors that affect hot carcass weight also affect dressing percentage.

6. Yield Grade – Feedlot return for Yield Grades 1, 2, and 3 was \$492, \$439, and \$466 for yield grades 1, 2, and 3, respectively, in 2001-2002. The cattle that yield graded 3 high a higher percentage grade Choice, which improved carcass value.

7. Feed Cost – Feed cost of gain had a negative relationship to feedlot return over specified costs. As feed cost of gain decreased, return over specified costs increased. The average feed cost of gain for steers with returns in the bottom 25% was \$0.45 per pound compared to \$0.43 per pound for steers in the top 25% in 2001-2002.

8. Average Daily Gain – Average daily gain is an accumulation of growth genetics, health, feed conversion, plus many other factors. The steers with returns in the bottom 25% averaged 2.98 lb ADG; whereas, the steers with returns in the top 25% averaged 3.53 lb ADG. Steers that gained faster reached their market weight earlier have were fewer days on feed.

Table 5 summarizes the performance and carcass data from the steers that were in the bottom 25% and top 25% (based on returns over specified costs) and the average of all the steers. In summary, the calves in the bottom 25% had high feed and medicine cost, low dressing percentage and failed to grade Choice. The cattle that performed the best were medium to large framed, heavy muscled, gained well, had a high dressing percentage, did not get sick, and graded Choice.

The beef cattle industry has set the standard that quality grade should be Choice, yield grade should be < 3.5 , and hot carcass weight between 550 and 950 lb. In the 2001-2002 feedout, 33% of the steer calves fit all these requirements. Forty-five percent of the steers in the 2000 – 2001 Feedout Program met the industry standards. The breed makeup of the steers that met the industry standards were 57% English, 9% Brahman and 34% Continental. Steers that met the industry standards averaged \$80 more per head than those that did not fit the industry standards ($P < 0.01$). They had higher carcass values (\$1.10 vs. \$1.02) because they graded Choice, were not discounted for yield grades greater than 4.0 and no carcasses were outside the weight range (550 to 950 lb).

Implications

Extremes in feedlot returns are due to health costs. Feedlot performance and carcass factors also exist. A producer's goal should be to produce a product that meets the needs of all segments of the beef industry. Value-based marketing at all levels of the industry is rapidly becoming a reality. Ranchers who produce a product that meets the demands will be more competitive in the market place.

Table 1. 2001-02 Arkansas feedout summary – steer financial results.

Item	Average	Range
Gross income	\$757.50	\$384 to \$1,020
Expenses		
Feed	\$242.56	\$181 to \$346
Medicine	\$10.41	0 to \$208
Freight, processing, yardage, interest, etc	\$33.83	\$24 to \$124
Total feedlot expenses	\$286.80	\$219 to \$496
Feedlot return	\$470.70	\$48 to \$711
Steer calf in value	\$475.70	\$340 to \$654
Calculated return	\$-5.00	\$-418 to \$244

Table 2. 2001-02 Arkansas feedout summary – heifer financial results.

Item	Average	Range
Gross income	\$672.22	\$403 to \$911
Expenses		
Feed	\$227.22	\$198 to \$289
Medicine	\$23.07	0 to \$147
Freight, processing, yardage, interest, etc	\$27.49	\$24 to \$34
Total feedlot expenses	\$277.78	\$229 to \$386
Feedlot return	\$394.44	\$174 to \$606
Heifer calf in value	\$423.61	\$352 to \$533
Calculated return	\$-29.17	\$-222 to \$156

Table 3. Summary of hot carcass weight, total cost of gain, average daily gain, feedlot returns, and calculated returns.

Hot carcass weight (lb)	Total cost of gain/lb	ADG (lb)	Feedlot returns	Calculated return
<600	\$0.56	2.6	\$267	\$-131
600-699	\$0.53	3.1	\$419	\$-28
700-799	\$0.54	3.3	\$491	\$-0.73
800-899	\$0.51	3.6	\$584	\$74

Table 4. Effect of days on feed on average daily gain, total cost of gain, carcass value and feedlot returns.

Slaughter dates	Days on feed	ADG (lb)	Total cost of gain/lb	Carcass value (per cwt.)	Feedlot return
April 16	156	3.4	\$0.53	\$109	\$524
April 30	170	3.2	\$0.52	\$101	\$421
May 7	177	3.2	\$0.55	\$103	\$456

Table 5. The performance of the bottom 25%, average, and top 25% steers based on feedlot returns.

Item	Bottom 25%	Average	Top 25%
Number of steers	78	306 ^a	78
In weight, lb	541 ^b	600	622 ^c
Muscle score	1.4 ^b	1.3	1.3 ^c
Frame score			
Large, %	10 ^b	25	29 ^c
Medium, %	90 ^b	60	42 ^c
Final weight, lb	1,056 ^b	1,144	1,201 ^c
Average daily gain, lb	2.98 ^b	3.33	3.66 ^c
Gross income, \$	641 ^b	758	871 ^c
Carcass value per lb, \$	0.99 ^b	1.04	1.09 ^c
In value per head, \$	437 ^b	476	492 ^c
Hot carcass weight, lb	645 ^d	723	797 ^e
Dressing percentage	61.3 ^d	63.2	66.6 ^e
Medicine cost, \$	23.90 ^b	12.20	2.37 ^c
Total feed cost per head, \$	230 ^b	243	247 ^c
Total expense, \$	286	287	283
Feedlot returns, \$	355 ^b	471	586 ^c
Calculated returns, \$	-82 ^b	-5	94 ^c
Days on feed	173 ^b	168	164 ^c
Feed cost per lb of gain, \$	0.45 ^f	0.45	0.43 ^g
Total cost per lb of gain, \$	0.56 ^b	0.54	0.50 ^c
Ribeye area, in ²	12.1 ^d	12.7	13.2 ^e
Fat thickness, in	0.35 ^d	0.42	0.46 ^e
Quality grade			
Prime, %	1	1	1
Choice, %	4 ^d	33	64 ^e

^a Fourteen calves were not used in this data set. Eight calves died and six were used as IBP quality control checks.

^{b,c} Values within rows with unlike superscripts are different ($P < 0.001$).

^{d,e} Values within rows with unlike superscripts are different ($P < 0.01$).

^{f,g} Values within rows with unlike superscripts are different ($P < 0.03$).