

Factors Affecting the Selling Price of Feeder Cattle Sold at Arkansas Livestock Auctions

T.R. Troxel, B. Barham, S. Cline, J. Foley, D. Hardgrave, W. Wiedower, and R. Wiedower¹

Story in Brief

Data were collected from 15 Arkansas livestock auctions to determine factors affecting selling price in 2005. Data included gender, breed or breed type, color, muscle thickness, horn status, frame score, fill, body condition, age, health, and weight. Data were randomly collected on 52,401 lots consisting of 105,542 head. The selling prices for steers ($\$124.20 \pm 0.07$), bulls ($\117.93 ± 0.12), and heifers ($\$112.81 \pm 0.07$) were different from each other ($P < 0.001$). Hereford x Charolais ($\$122.66 \pm 0.41$), Angus x Hereford ($\121.74 ± 0.21), Angus ($\$121.43 \pm 0.15$), Charolais x Limousin ($\$121.33 \pm 0.23$), Angus x Limousin ($\120.83 ± 0.74), and Angus x Charolais ($\$120.59 \pm 0.51$) feeder cattle sold for the highest price and were not different from each other ($P > 0.10$). The breed or breed types that sold for the lowest price were Brahman ($\$108.24 \pm 0.52$), Hereford ($\107.25 ± 0.40), and 1/4 Brahman ($\$106.25 \pm 1.05$) and were not different from each other ($P > 0.10$) followed by Longhorn ($P < 0.01$; $\$89.38 \pm 1.02$). Yellow-white faced ($\120.44 ± 0.26), yellow ($\$120.29 \pm 0.16$) and black-white faced ($\$120.03 \pm 0.16$) feeder cattle received the highest selling price and were not different from each other ($P > 0.10$). Spotted or striped feeder cattle received the lowest ($\$107.37 \pm 0.37$) selling price. Muscle score, horn status, frame score, fill and body condition impacted selling price ($P < 0.001$). A number of management and genetic factors affected the selling price of feeder cattle marketed through Arkansas livestock auctions in 2005.

Introduction

Cow-calf producers are challenged to produce feeder calves that are acceptable to the industry. When buyers at a livestock auction view feeder calves, they must appraise individual characteristics (muscle thickness, frame score, breed composition, etc.) as predictors of quality and animal performance and adjust their bids accordingly. Many of these factors such as breed or breed type are very subjective. Therefore, many cow-calf producers believe that feeder cattle are priced inconsistently. Producers do not understand why some phenotypic characteristics are discounted and others are not. Most feeder calf market reports list the selling prices of steers and heifers by weight groups, and frame and muscle score. Other reports have indicated that breed or breed type, health, gender, frame and muscle scores, and other noticeable factors do affect feeder calf selling price (Brown and Morgan, 1998; Neel et al., 1998; Troxel et al., 2002). Therefore, the objective was to determine the factors that affect the selling price of feeder cattle in Arkansas weekly livestock auctions.

Experimental Procedures

Five USDA certified livestock market reporters collected data from 15 weekly livestock auctions in Arkansas from January 1, 2005 to December 31, 2005. The livestock auctions were located in Ash Flat, Charlotte, Conway, Fayetteville, Fort Smith, Glenwood, Green Forest, Harrison, Hope, Marshall, Ola, Ozark, Pocahontas, Ratcliff, and Springdale. The data collected included calf gender (bull, steer, or heifer), breed or breed type, color, muscle thickness, horn status (polled (dehorned) or horned), frame score (large, medium or small), fill (gaunt, shrunk, average, full or tanked), condition (very thin, thin, average, fleshy, or fat), age (calf or yearling), health (dead hair, stale, sick, bad eye(s), lame, healthy or preconditioned), and

weight. A total of 581,413 feeder cattle were sold through these livestock auctions, and data were randomly collected (every 5th to 6th calf) on 52,401 lots consisting of 105,542 head (18.2%). Frame and muscle scores were determined based on the U.S. Standards for Grades of Feeder Cattle (USDA, 1980).

Data Analyses. The percent of calves within age, gender, breed or breed type, color, horn status, frame score, muscle score, fill, condition, weight group and health were determined by the frequency procedure of SAS (SAS Inst., Inc., Cary, N.C.) based on the number of lots sold ($n = 52,401$). All feeder calves in this study were sold as individuals. The final data set included 50,872 feeder calves. Due to the unbalanced nature of the data, calf characteristics were analyzed individually as independent variables in which the model included month and weight as covariates. Sale price was the dependent variable. All other variables contributed to the error sum of squares. The analysis of variance was performed with the GLM procedure of SAS. Least-squares means were generated, separated based on predicted differences, and both are reported throughout. Since all colors are not represented within each breed or breed type, color and breed or breed type data are somewhat inherently confounded. All selling prices reported are in US dollars/100 lb.

Results and Discussion

The mean selling price for all calves in 2005 was \$118.10, and all main effects reported were significant sources of variation ($P < 0.001$). Over 65% of the feeder cattle were classified as calves and 34.3% were classified as yearlings. The selling price of calves ($\$118.73 \pm 0.07$) was greater ($P < 0.001$) than the selling price of yearlings ($\$116.89 \pm 0.10$). Selling price varied by month with greater prices recorded in the spring (March, April, and May) and lesser prices in the summer and early fall (July, August, September

¹ University of Arkansas Cooperative Extension Service, Little Rock

and October; $P < 0.001$; Figure 1.) This seasonal trend followed the 5-, 10- and 20- year average seasonal trend (Cheney and Troxel, 2006). Over 71% of the cattle sold weighed less than 550 lb (Figure 2). As selling weight increased, price per cwt decreased.

Heifers made up 45.8% of the cattle sold whereas steers and bulls made up 40.0% and 14.1%, respectively (Table 1). The selling prices for steers ($\$124.20 \pm 0.07$), bulls ($\117.93 ± 0.12) and heifers ($\$112.81 \pm 0.07$) were all different ($P < 0.001$). Castration is a common practice to reduce management problems associated with aggressive and sexual behavior associated with commingling bull calves. The prices received for bulls were lower due to the expected reduction in animal performance experienced with these animals subsequent to castration as well as the costs associated with the actual procedure.

Table 1 summarizes the percentage of the population sampled and selling price based on muscle score horn status, health status, frame score, body fill and body condition. All factors affected the selling price. Buyers discounted feeder calves that were light muscled, horned, unhealthy, small framed, appeared to have the potential for excessive shrinkage and over-conditioned.

Twenty-three breeds or breed types represented 97.7% of the total feeder cattle. The breed or breed types was based upon common industry perception rather than actually knowing the breed composition. This, however, is what a buyer must do before a bid price can be offered. The main effect of cattle breed or breed type on the selling price of feeder cattle was significant ($P < 0.001$; Table 2). Hereford x Charolais ($\$122.66 \pm 0.41$), Angus x Hereford ($\121.74 ± 0.21), Angus ($\$121.43 \pm 0.15$), Charolais x Limousin ($\$121.33 \pm 0.23$), Angus x Limousin ($\120.83 ± 0.74), and Angus x Charolais ($\$120.59 \pm 0.51$) feeder cattle sold for the highest price and were not different from each other ($P > 0.10$). There was an approximate \$32.00 difference between the breed or breed types selling for the highest price and Longhorn feeder cattle, which sold for the least price ($\$89.38 \pm 1.02$). Only 7 cattle breeds or breed types had selling prices greater ($P < 0.01$) than the overall mean ($\$118.10$).

When reviewing the breeds or breed combinations above the average, many of the breeds or breed combinations were not significantly different from each other. The same was true with the breeds or breed combinations below the average. The selling prices of Brahman, Hereford, and 1/4 Brahman Cross are not different from each other but these breeds or breed types were different than the price received for Longhorn calves. The discounts on the breeds or breed types listed on the bottom are far greater than the premium for the breeds or breed types listed at the top.

Breeds or breed types do affect the selling price of feeder cattle. This is due to the perception by the order buyer as to how different breeds or breed types perform (gain, sick rate, quality grade, etc.). For many years, a perception existed that if cattle were black they had some degree of Angus breeding. Today that may or may

not be true. Many beef breeds have animals that are black, such as Limousin, Simmental, and Gelbvieh, to name a few. The perceptions regarding certain breeds and subsequent performance may be right or wrong, but they exist. With a high percentage of feeder cattle sold in livestock auctions weighing less than 550 lb, the majority of these cattle are purchased for placement in a backgrounding grazing program. Backgrounding programs are forage based (native pasture, wheat, etc.), and buyers are looking for the breeds or breed combinations that perform best under those conditions. Cow-calf producers should be aware that the breeds or breed types that perform best under backgrounding programs might not be the breeds or breed types that make good replacements. Cow-calf producers must be attentive of this and design an appropriate breeding program.

Ten colors represented 94.1% of the total population (Table 3). Yellow white-faced ($\$120.44 \pm 0.26$), yellow ($\120.29 ± 0.16) and black white-faced ($\$120.03 \pm 0.16$) feeder cattle received the greatest selling price and were not different from each other ($P > 0.10$). Black ($\$119.24 \pm 0.08$) calves brought a higher selling price than grey ($\$117.66 \pm 0.18$). Grey and grey-white faced ($\$116.79 \pm 0.54$) calves were similar in value ($P > 0.10$). Spotted or striped calves ($\$107.37 \pm 0.37$) brought the lowest price. Unlike breed or breed combinations, most colors were different from each other.

Implications

The majority of cow-calf producers in Arkansas sell feeder cattle at local livestock auctions. The major factors affecting selling prices of feeder cattle were calf health, perceived breed or breed type, muscle thickness, frame score, fill, color and body condition, calf gender, and horn status. The combination of all these factors determines the final selling price. Most of the major factors affecting selling price can be addressed through genetic selection and management. Once the impact of these factors are identified and understood, cow-calf producers can make cost effective management changes that can improve feeder calf value and total returns.

Literature Cited

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Table 1. The percentage of the sampled population and 2005 Arkansas selling prices (mean \pm SE) due to calf gender, muscle score, health, frame score, body condition, horn status and body fill.

Item	Percentage of the sampled population	Selling price (\$/cwt)
Calf gender:^a		
Bulls	14.1	\$117.93 \pm 0.12
Steers	40.0	\$124.20 \pm 0.07
Heifers	45.8	\$112.81 \pm 0.07
Muscle score:^a		
1	75.3	\$120.45 \pm 0.05
2	22.6	\$111.31 \pm 0.10
3	1.1	\$96.28 \pm 0.45
4	0.06	\$82.21 \pm 1.87
Health status:		
Preconditioned	3.3	\$122.36 \pm 0.28 ^b
Healthy	95.5	\$118.21 \pm 0.05 ^c
Dead hair	0.2	\$105.55 \pm 1.16 ^d
Bad eyes	0.3	\$104.39 \pm 0.88 ^d
Stale	0.4	\$100.01 \pm 0.83 ^e
Lame	0.2	\$84.74 \pm 1.05 ^f
Sick	0.1	\$80.22 \pm 1.70 ^f
Frame score:		
Large	64.6	\$118.27 \pm 0.06 ^b
Medium	34.3	\$118.15 \pm 0.09 ^b
Small	0.6	\$95.43 \pm 0.63 ^c
Body condition:^a		
Very thin	21.7	\$119.55 \pm 0.11
Thin	12.2	\$116.80 \pm 0.15
Average	63.2	\$118.14 \pm 0.06
Fleshy	2.9	\$112.28 \pm 0.30
Fat	0.1	\$101.98 \pm 1.97
Horned status:^a		
Polled/ dehorned	85.8	\$118.57 \pm 0.05
Horned	12.8	\$114.87 \pm 0.14
Body fill:^a		
Gaunt	21.4	\$119.63 \pm 0.11
Shrunk	26.5	\$120.22 \pm 0.10
Average	49.4	\$116.77 \pm 0.07
Full	2.7	\$110.05 \pm 0.31
Tanked	0.1	\$92.80 \pm 2.04

^a All least-squares means within an item are different from each other ($P < 0.001$).
^{b,c,d,e,f} Least-squares means without a common superscript differ ($P < 0.01$).

Table 2. The percentage of the sampled population and 2005 Arkansas selling prices (mean ± SE) of feeder calves sold based on breed or breed type^a

Breed or breed type ^b	Percentage of the sampled population	Selling price (\$/cwt)
HC	2.1	\$122.66 ± 0.41 ^c
AH	7.2	\$121.74 ± 0.21 ^c
A	11.1	\$121.43 ± 0.15 ^c
CLm	4.7	\$121.33 ± 0.23 ^c
ALm	0.5	\$120.83 ± 0.74 ^{c, d}
AC	3.2	\$120.59 ± 0.51 ^{c, d}
HBA	2.9	\$120.01 ± 0.32 ^d
C	11.7	\$118.12 ± 0.14 ^e
CBq	3.0	\$117.91 ± 0.28 ^e
HLm	2.5	\$117.87 ± 0.32 ^e
ABq	5.3	\$117.69 ± 0.21 ^{e, f}
Lm	8.3	\$116.86 ± 0.17 ^f
Bx	4.8	\$116.62 ± 0.76 ^{f, g}
AB	13.6	\$116.15 ± 0.33 ^{f, g}
LmBq	2.3	\$115.29 ± 0.33 ^g
HBq	1.8	\$114.94 ± 0.37 ^g
HSm	0.4	\$114.15 ± 1.47 ^{g, h}
Sm	0.9	\$111.91 ± 0.52 ^h
S	0.6	\$110.17 ± 0.63 ^h
B	0.9	\$108.24 ± 0.52 ^j
H	1.5	\$107.25 ± 0.40 ^j
Bq	7.8	\$106.25 ± 1.04 ⁱ
Lg	0.6	\$89.38 ± 1.02 ^j

^a Main effect of breed or breed type on selling price ($P < 0.0001$).

^b Breed type = HC - Hereford x Charolais, AH - Angus x Hereford, A - Angus, CLm - Charolais x Limousin, ALm - Angus x Limousin, AC - Angus x Charolais, HBA - Hereford x Brahman x Angus, C - Charolais, CBq - Charolais x ¼ Brahman, HLm - Hereford x Limousin, ABq - Brangus, Lm - Limousin, Bx - Brahman x other crosses, AB - Angus x Brahman, LmBq - Limousin x ¼ Brahman, HBq - Hereford x ¼ Brahman, HSm - Hereford x Simmental, Sm - Simmental, S - Saller, B - Brahman, H - Hereford, Bq - ¼ Brahman x other crosses, Lg - Longhorn.

^{c, e, f, g, ..., j} Least-squares means without a common superscript differ ($P < 0.01$).

Table 3. The percentage of the sampled population and 2005 Arkansas selling prices (mean ± SE) of feeder calves sold based on calf color^a

Calf color	Percentage the of sampled population	Selling price (\$/cwt)
Yellow-white face	3.7	\$120.44 ± 0.26 ^b
Yellow	10.2	\$120.29 ± 0.16 ^b
Black-white Face	10.2	\$120.03 ± 0.16 ^b
Black	35.4	\$119.24 ± 0.08 ^c
Gray	7.5	\$117.66 ± 0.18 ^d
Gray-white Face	0.8	\$116.79 ± 0.54 ^{d, e}
White	5.7	\$116.01 ± 0.21 ^e
Red-white Face	7.0	\$114.58 ± 0.19 ^f
Red	11.8	\$113.92 ± 0.14 ^g
Spots or Stripes	1.8	\$107.37 ± 0.37 ^h

^a Main effect of calf color on selling price ($P < 0.0001$).

^{b, c, d, e, ..., h} Least-squares mean without a common superscript differ ($P < 0.01$).

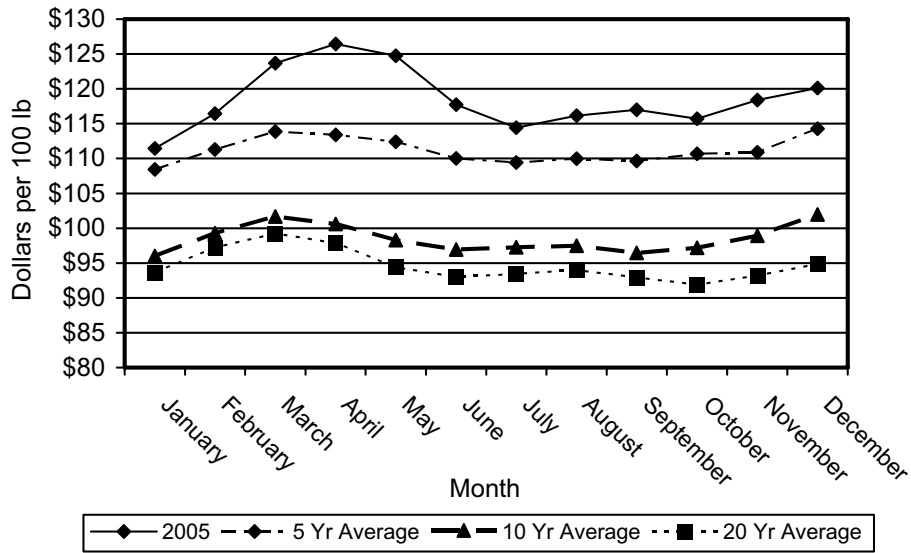


Fig. 1. The mean selling price for year 2000 and the 5-, 10-, and 20-yr averages for 400 to 500 lb feeder cattle by month. Main effect of month on selling price ($P < 0.0001$). All least-squares means for 2005 are different ($P < 0.01$) except February and August.

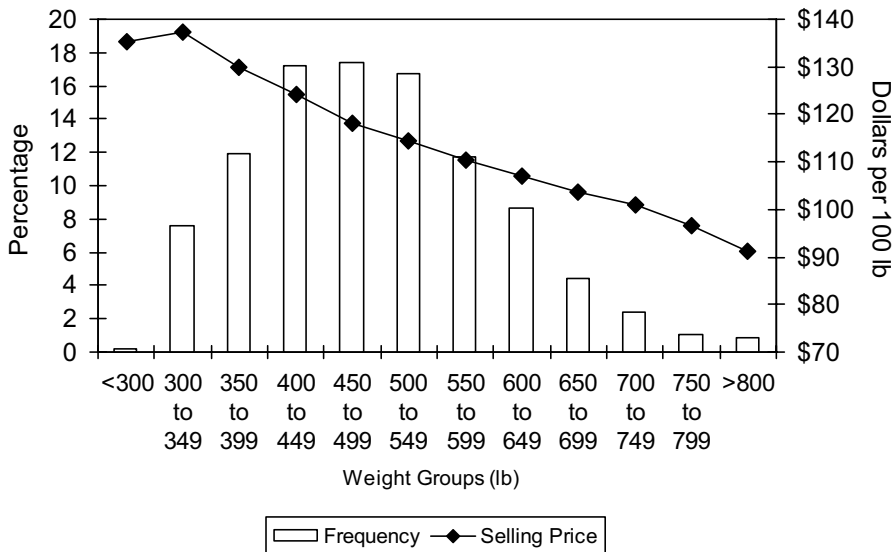


Fig. 2. The percentage of the sampled population and mean selling price of calves by weight groups. Main effect of weight groups on selling price ($P < 0.001$).