Factors Influencing Bred Heifer Price

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Introduction

Replacing breeding females or growing the beef cattle herd with heifers is a frequent decision for beef cattle producers, and it has long-term profitability implications. Producers understand replacement heifers require a substantial financial investment and the return on an animal is uncertain. Previous studies report a heifer's lifetime profitability primarily depends on cattle prices and development costs (Mathews & Short, 2001; Ibendahl et al., 2004; Mackay et al., 2004; Clark et al., 2005).

Cattle producers commonly raise their own replacement heifers. The alternative of purchasing heifers may come with the advantages of:

- Introducing improved genetics to increase productivity;
- Reducing labor and feed costs from managing heifers separately from the cow herd; and
- Confirmed pregnancy at the time of purchase.

These potential advantages along with heifer physical characteristics, reproductive management characteristics and cattle market prices influence the value of these animals. What has not been evaluated is how reproductive management characteristics and feeder cattle prices impact bred heifer value. It is important to understand if other factors influence bred heifer value and what total impact those factors may have.

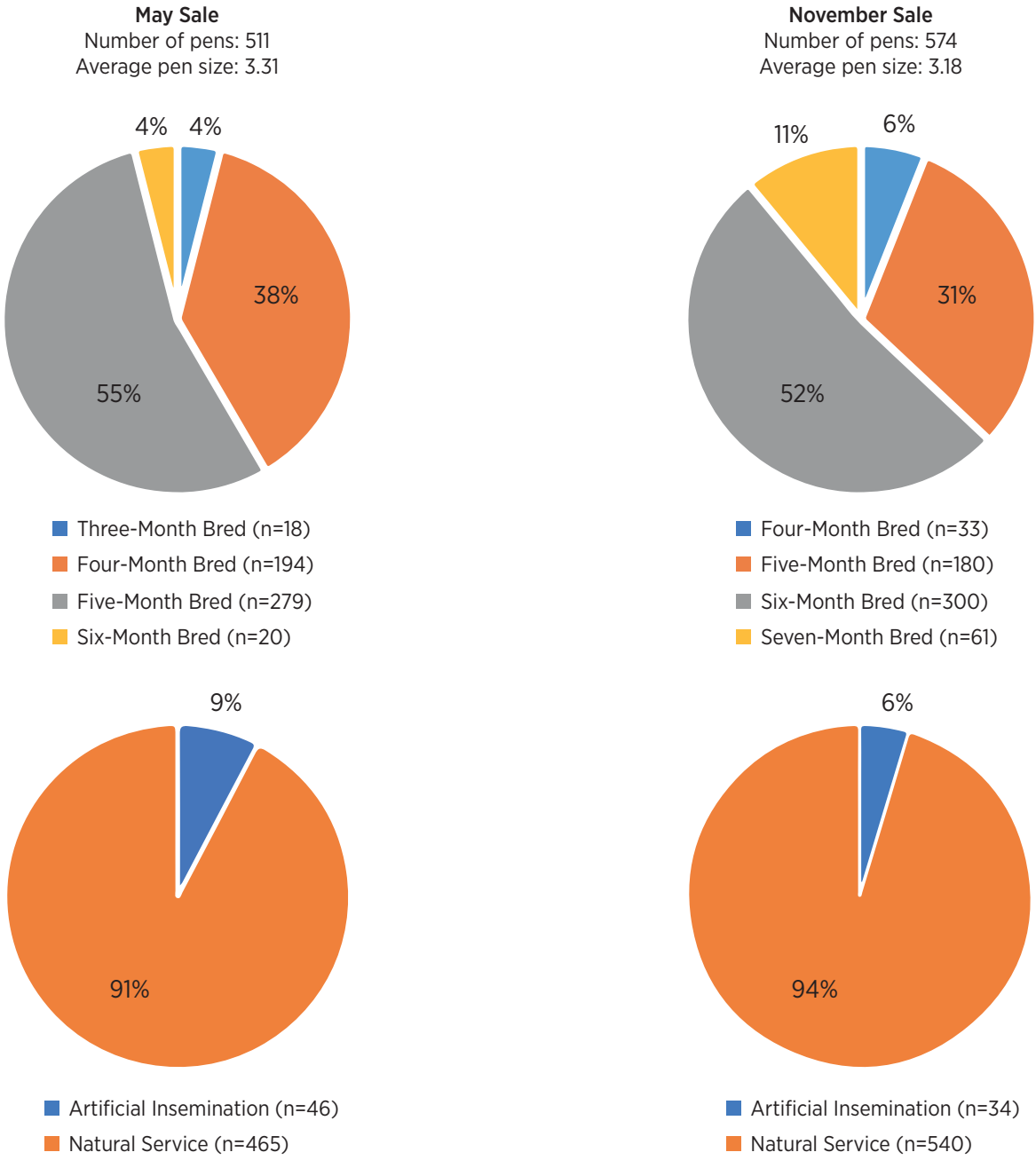
The objective of this project is to determine how reproductive characteristics and feeder cattle prices influence bred heifer prices. By reporting the results from the following study this publication should provide information to assist buyers and sellers of bred beef heifers in determining the value of the animal.

Data

The data used in this analysis was provided by the West Kentucky Select Bred Heifer Sale at Guthrie, Kentucky from 2008 to 2017. Heifers bred to calve in the spring are sold in November while fall-calving heifers are sold in May. The number of heifers sold in a single sale has ranged from 112 to 233 head with an average of 187 head per sale. Heifers were sold via public live auction in lot sizes ranging from one to six head with the average lot size being about three head.

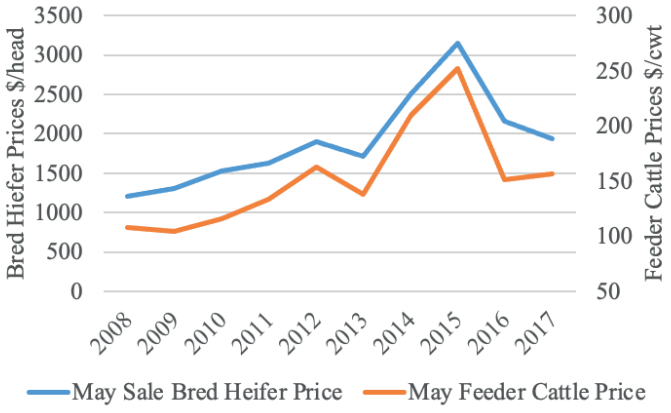
Heifer data include breed or breed type, expected calving month, whether the heifer was bred by artificial insemination (AI) or natural service, number of head per lot/pen and sale price. Sale summary statistics are available in Figure 1. May-sold heifers ranged from three to six months pregnant with an average of 4.5 months pregnant while November sold heifers ranged from four to seven months pregnant with an average of 5.5 months bred. For the May sale 92 percent of the lots were all black hided animals while the remaining 8 percent of lots were other colors or mixed color lots. Similarly, 82 percent of the November lots were all black hided heifers while the other 18 percent of lots were mixed lots or colors other than black.

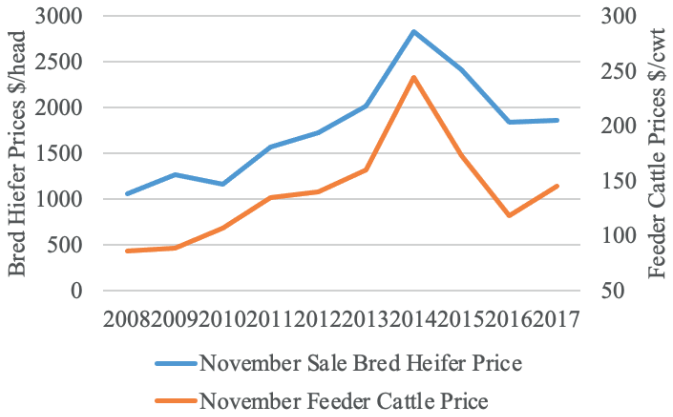
Figure 1. Summary statistics of lots sold from 2008 to 2017 at the West Kentucky Select Bred Heifer Sale.



Monthly Kentucky and Tennessee price data were collected for 500- to 600-pound heifers and averaged over this same time period (2008-2017; USDA Agricultural Marketing Service, 2017). November weanling heifer prices were analyzed for the spring-calving herd (November sale), and May weanling heifer prices were analyzed for the fall-calving herd (May sale) to determine if feeder heifer prices were correlated with bred heifer prices. The average price of 500- to 600-pound feeder heifers is shown in Figure 2 for the time period along with bred heifer sale price. The average heifer price in May was higher than November.

Figure 2. Bred heifer price ($/head) and feeder cattle price ($/cwt) for 500- to 600-pound heifers at the time of the May and November sale from 2008 to 2017.

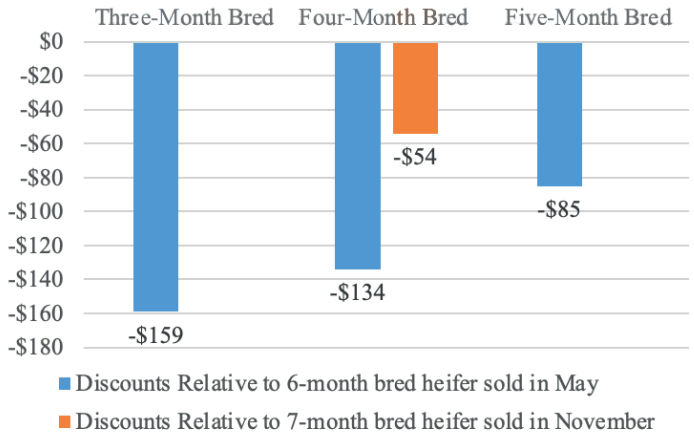




Results

For the May sale, purchase price increased as the number of months bred increased with six-month bred heifers bringing the highest price (Figure 3). Six-month bred heifers were considered the "base" of the model, which means other bred results are interpreted relative to six-month bred heifers. For example, three- and five-month bred heifers were valued $159/head and $85/head less than six-month bred heifers, respectively. Similarly, natural bred heifers were considered the base of the model. The results suggest AI bred heifers sold for $148/head more than natural service bred heifers.

Figure 3. Heifer price discounts for the May and November sale based on number of months bred.



A one dollar per hundredweight increase in weanling heifer price at the time of sale was correlated with a $12/head increase in bred heifer price, meaning as weaned heifer prices increase, so do bred heifer prices. Lot size was a little harder to interpret as price did not change consistently as lot size increased. Lot size was found to increase sale price of bred heifers up to a lot size of five head, and then prices decreased for larger lots. Increasing the lot size from three to four head increased bred heifer price by $30/head. An increase in lot size from four to five head increased bred heifer price another $8/head. However, bred heifer price decreased $13/head when going from five to six head per pen. Higher prices for larger lots of heifers may mean buyers could purchase heifers at a lower price by focusing on the smaller lots. However, the lower price of smaller lots may also be associated with lower relative quality, but heifer quality information was not inherent in the data.

For the November sale, there was no difference in purchase price for heifers that were five, six or seven months pregnant. However, prices were $54/head lower for four-month relative to seven-month pregnant heifers for the November sale (Figure 3). Similar to the May sale, weanling heifer price influenced bred heifer price in the November sale. A one dollar per hundredweight increase in weanling heifer price was associated with an $11/head increase in bred heifer price. Contrary to the May sale, bred heifer price for the November sale decreased as lot size approached three head, but price began to increase with lots of three or more heifers.

Another finding was black-hide color did not influence bred heifer price. Over the past several years, black-hided feeder cattle have been valued higher than other color cattle. This is due to it being fairly easy to make a uniform group of cattle, and many of these cattle can often be marketed as Certified Angus Beef (CAB), which has a premium associated with it.

Conclusions

Fall-calving bred heifer prices increased as the number of months pregnant increased. Given the May sale, bred heifer buyers prefer heifers that calve in August and September compared to those that calve in October and November. This means sellers of fall calving bred heifers should push to have five- and six-month bred heifers to market in May such that those heifers calve early in the fall calving season (i.e. August and September).

Spring-calving bred heifer prices did not vary for five- to seven-months bred heifers, but four-month pregnant heifers were priced lower. Buyers at the November sale prefer bred heifers that will calve between January and March, which means sellers should focus on having five- to seven-months bred heifers at the November sale. It is clear from the May and November sales that *buyers want heifers that calve early in the calving season,* which will set that heifer up to be successful in the subsequent breeding season.

Heifer feeder cattle price was positively associated with the price of bred heifers for both sales. Thus, when heifer feeder cattle price increased so did bred heifer prices. *Fall calving bred heifers sold in May are generally valued 2.5 times more than the value of a 550-pound feeder heifer.* For example, if 550-pound feeder heifers are bringing $800 per head in May then bred heifers are typically valued near $1,800 per head. Similarly, *spring calving bred heifers sold in November are generally valued 2.8 times more than the value of a 550-pound feeder heifer.* Thus, if 550-pound feeder heifers are bringing $650 per head in November then bred heifers are typically valued near $1,820 per head.

It is also important to note many of the sellers associated with the West Kentucky Select Bred Heifer Sale have developed a reputation for producing high quality bred heifers. This has translated to repeat buyers of cattle produced by those sellers.

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