

Further Evidence for a Sire Breed x Calf Sex Interaction for Birth and Weaning Traits in Multibreed Cattle Data

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Findings

- Differences in birth dates of male and female calves were similar for Angus-, Charolais-, and Hereford-sired calves, but Brahman-sired calves were born later in the calving season than calves by other sire breeds.
- Differences between male and female calves for birth weight, average daily gain, and 205-day weaning weight were greater for Brahman-sired calves than for calves by Angus, Charolais, or Hereford bulls, indicating a sire breed x calf sex interaction.

Introduction

The primary beef cattle industry in Louisiana and the southeastern United States is the cow-calf enterprise. Cow-calf enterprises produce calves that are generally sold at weaning. It is well known that the birth weight and growth rate of calves vary according to their breed of sire. A breed of sire x sex of calf interaction has been reported in several studies where Brahman sires are used in comparison to British sire breeds such as Angus and Hereford and European sire breeds such as Simmental and Charolais. A breed of sire x sex of calf interaction occurs when the ranking of birth weights of male calves by sire breeds is different from the ranking of birth weights of heifer calves by the same sire breeds or when the differences among sire breeds for birth weights of male calves are dissimilar to the differences of birth weights of heifer calves.

Most cow-calf herds in Louisiana contain crossbred cows. Many contain some percentage of Brahman breeding. Brahman as well as other breeds of sires are involved in producing calves for sale and in producing heifer calves for cow herd replacements. Breeders should be aware of how individual sire breeds combine with breeds or crossbred types of cows to produce calves for sale or for replacements. Using sires of a breed that influences larger birth weights and greater calving difficulty could offset any advantage gained by that sire breed in calf growth rate or carcass characteristics. The objective of this study was to compare birth and weaning weights of male

and female calves from Brahman sires compared to birth and weaning weights of male and female calves by Angus, Charolais, and Hereford sires.

Experimental Approach

Angus, Brahman, Charolais, and Hereford breeds were involved in rotational crossbreeding systems over four generations. Data were collected from Angus x Brahman, Charolais x Brahman, and Hereford x Brahman two-breed rotation systems, Angus x Brahman x Charolais, Angus x Brahman x Hereford, and Brahman x Charolais x Hereford three-breed rotation systems and the Angus x Brahman x Charolais x Hereford four-breed rotation system over four generations of matings. The data from these systems were used to study breed of sire x sex of calf interactions for birth and weaning traits.

Angus, Brahman, Charolais, and Hereford sires were not mated to the same breed of cow each generation, but each was mated to cows that included percentages of all four of the breeds each year. This allowed cow breed to be included in the statistical procedures to adjust for proportion of cow breed in each mating. Thus a valid comparison of sire breeds and sexes of calves was possible for these traits.

The breeding season began on April 15 each year and lasted for 75 days. Calves were born between January 15 and April 15. Male calves were castrated at about 5 months of age. Calves were weaned in October of each year at an average age of 220 days. Cows were culled for injury and sickness and if they failed to calve in two consecutive years. The calf traits of interest in this study included birth date, birth weight, average daily gain from birth to weaning, and weaning weight adjusted to 205 days.

Results and Discussion

Adjusted average birth and weaning traits due to breed of sire, calf sex, and the breed of sire x calf sex interaction are given in Table 1. A total of 3,445 calves were involved. The number of calves by sire breed ranged from 754 by Hereford sires to 1,004 by Brahman sires. A total of 29 Angus, 46 Brahman, 31 Charolais, and 31 Hereford bulls produced calves.

Male calves by each breed of sire were born later, weighed more at birth, gained more per day from birth to weaning, and had heavier 205 day weaning

weights than female calves. The sire breed x calf sex interaction influenced variation in birth weight, average daily gain from birth to weaning, and 205 day weaning weight, but not calf birth date. In this study, the significant breed of sire x calf sex interaction occurred because the difference between male and female calves sired by Brahman bulls was greater than the differences between male and female calves by the other breeds of sire. No differences of rank of male and female calves occurred for any sire breed.

Angus, Brahman, Charolais, and Hereford male calves were born 3, 3, 2, and 1 days later than female calves, respectively. These differences should not be confused with gestation length, which is known to be longer in Brahman-influenced cattle. Gestation length apparently was longer for Brahman-sired calves in this study because the birth dates of Brahman-sired calves were 9 to 11 days later than for calves by Angus, Charolais, or Hereford sires.

Brahman-sired male calves weighed 11 pounds more at birth than Brahman-sired female calves, compared to 2, 3, and 3 pound heavier male than female calves sired by Angus, Charolais, and Hereford sires, respectively. Some researchers have reported greater calving difficulties for Brahman-sired male calves compared to female calves than for male calves compared to female calves by other sire breeds. Larger birth weights of Brahman-sired calves have been associated with greater calving difficulty than other sire breeds of similar mature size.

Brahman-sired male calves gained .20 more pounds per day from birth to weaning than Brahman-sired female calves, whereas Angus-, Charolais-, and Hereford-sired male calves gained .15, .16, and .14 more pounds per day than their contemporary female calves.

For weaning weight adjusted to 205 days, Brahman-sired male calves weighed 29 pounds more than Brahman-sired female calves, compared to 11, 13, and 10 pounds for male calves over female calves sired by Angus, Charolais, and Hereford bulls, respectively. These differences in weaning weight are a function of the differences in birth weight and average daily gain from birth to weaning between male and female calves by each sire breed. Brahman-sired calves from mostly Angus, Charolais, or Hereford cows are known to contain more hybrid vigor for birth and weaning traits than calves sired by Angus, Charolais, or Hereford bulls mated to mostly Angus, Charolais, or Hereford cows. This larger heterosis effect contributes to the increased birth and weaning traits of Brahman-sired calves.

Summary. These findings support earlier results suggesting a sire breed x calf sex interaction for birth and weaning traits when one of the sire breeds is Brahman. These data also suggest that breeders should be aware of interactions between sire breed and calf sex to plan for such things as larger birth weights of Brahman-sired calves.

Table 1. Breed of sire, calf sex, and breed of sire x calf sex interaction for birth and weaning traits.

Item	No of calves	Julian birth date, ¹ days	Birth weight, lb	Average daily gain, lb/day	205 day weaning weight, lb
Sire breed					
Angus	852	47	66	1.81	447
Brahman	1004	58	77	1.88	473
Charolais	835	49	76	1.90	478
Hereford	754	48	69	1.81	452
Calf sex					
Male	1788	52	75	1.93	470
Female	1657	49	70	1.77	454
Sire breed x calf sex					
Angus x Male	451	49	67	1.88	452
Angus x Female	401	46	65	1.73	441
Brahman x Male	518	59	82	1.98	487
Brahman x Female	486	56	71	1.78	458
Charolais x Male	416	50	78	1.98	484
Charolais x Female	419	48	75	1.82	471
Hereford x Male	403	48	71	1.88	457
Hereford x Female	351	47	68	1.74	447

¹ Days from January 1.

