

# Reciprocal Differences in Birth Weight in Brahman x *Bos taurus* Crossbred Cattle

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Brahman and Brahman crossbred females have high value in commercial beef cattle herds in the Southern United States. Their improved parasite resistance, heat tolerance, fertility, longevity, and maternal effect on calf growth in addition to increased maternal calving ease make them a desirable cow type for the subtropical climate in the region. There exists a phenomenon related to calf birth weight that producers interested in producing Brahman x *Bos taurus* crosses should be aware of when making breeding decisions.

Dr. Tom Cartwright and his colleagues in 1964 were the first to observe these differences in research on hybrid vigor in Brahman-Hereford crosses in Central Texas. In the 1990s, data was reported by Dr. Jim Sanders and his colleagues showing the same unusual pattern, with birth weights in the F<sub>1</sub> calves varying widely depending upon the way the mating was made (Table I). Calves by Brahman bulls and Hereford dams averaged 94 lb at birth, while calves of the reciprocal cross (Hereford bulls bred to Brahman dams), averaged only 74 lb. This enormous difference is not consistent with current knowledge about heterosis.

These differences are not unique to Texas research results. Similar trends have been reported in other research herds and private operations. Calves out of Brahman bulls and Angus cows in a Florida research herd averaged 80 lb at birth (Table II), while calves out of Angus bulls and Brahman cows averaged 69 lb at birth, which, consistent with the cited Texas results, is an enormous difference in birth weight between calves of the reciprocal crosses.

Another unusual aspect of this phenomenon is larger than expected differences in birth weights between the sexes. In Texas, Brahman-sired bull calves out of Hereford dams weighed 14 lb more than heifer calves of the same mating. In Florida, the difference was similar with Brahman-sired bull calves out of Angus dams weighing 12 lb heavier than heifer calves of the same mating. Average differences in birth weights between the sexes for the purebred animals of both studies were from 3 to 6 lb. We could expect that in the data of Table II, based on statistical principles, about 3% of all Brahman-sired bull calves out of Angus dams to weigh over 113 lb at birth. Calves born at this extreme weight are of concern, as they are almost certain to cause calving difficulties which may result in cow or calf loss. On the other hand, when the dam in the cross is Brahman, calving ease is not of as great concern due to reduced birth weights in the calves. Based on the data in Table II, we could expect about 3% of all Angus-sired bull calves out of Brahman dams to weigh 89 lb or more at birth, which is considerably lower than calves of the same percentile in the reciprocal cross.

In Brahman-*Bos taurus* crossbreds, maternal calving ease is improved when the dam is Brahman due to the Brahman cow's apparent effect of reducing birth weight. This combined with the lower overall average birth weight and minimal difference between sexes when the cross is made this way often results in improved calving ease relative to the reciprocal cross. When the dam in the cross is *Bos taurus*, calving ease is of concern because of larger overall average birth weight, especially for bull calves.

Research is currently being conducted to investigate the causes of these differences, with the aim of making breeding recommendations to help producers avoid extreme birth weights, as well as to characterize other traits that may be influenced by this mating. It is recommended that producers do not breed Brahman bulls to *Bos taurus* heifers at the present time, even if the bull has a low birth weight EPD. Mature *Bos taurus* cows bred to Brahman bulls will have heavier calves at birth, but may be

better able in many cases to give birth to a heavier calf and recover. Brahman cows bred to *Bos taurus* bulls will have calves with birth weights comparable to the birth weights of purebred Brahman or *Bos taurus* calves.

## Tables

**Table I –** *Birth Weight in Brahman-Hereford Crosses at the Texas A&M AgriLife McGregor Research Center in Texas; 1992-1997*

<b>Birth Weight (lbs)</b>				
<b>Sire Breed</b>	<b>Dam Breed</b>	<b>Bulls</b>	<b>Heifers</b>	<b>Average</b>
Brahman	Hereford	101	87	94
Hereford	Brahman	75	73	74
Brahman	Brahman	74	71	73
Hereford	Hereford	80	76	78

**Table II –** *Birth Weight in Brahman-Angus crosses at the USDA ARS Subtropical Agricultural Research Station in Florida; 2002-2005*

<b>Birth Weight (lbs)</b>				
<b>Sire Breed</b>	<b>Dam Breed</b>	<b>Bulls</b>	<b>Heifers</b>	<b>Average</b>
Brahman	Angus	86	74	80
Angus	Brahman	67	70	69
Brahman	Brahman	70	65	68
Angus	Angus	67	63	65