Crossbreeding Beef Cattle, IV

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BRAHMAN X BRITISH CROSSES

T.D. Rich
Extension Livestock Specialist

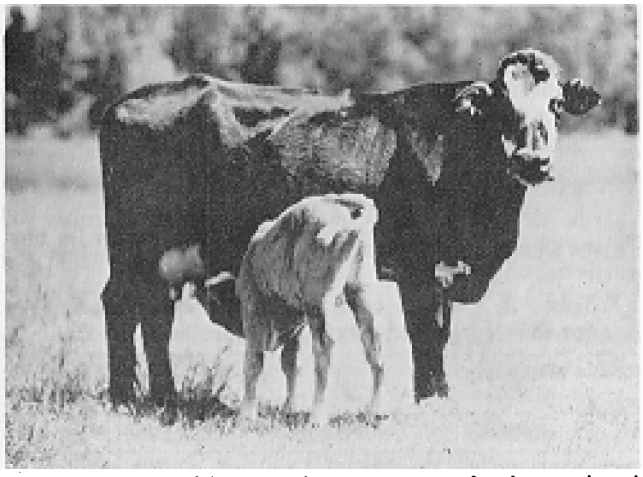
R.R. Frahm
Associate Professor of Animal Science

The Brahman represents the blending of several Indian breeds or varieties which were imported into this country and selected for beef conformation and adaptability to hot-humid areas. As purebreds, the Brahman are noted for their length of productive life, ease of calving, and resistance to external parasites. The breed is also considered adequate for milk production and moderate in mature size. These are extremely important maternal traits and thus the Brahman should make a significant contribution to a crossbreeding program.

The British and Brahman breeds have different evolutionary and developmental backgrounds so far as is known thus should be quite different genetically. This difference in genetic background causes large increases in productivity due to hybrid vigor when crossbreeding is practiced between these two different kinds of cattle.

Research from the southern states where crosses of different British breeds with Brahman and Brahman-crossed cows has been conducted indicates that no one British breed consistently excels in its ability to cross with Brahman. We must assume that most differences are within breeds, and that differences between British breeds in their ability to cross with Brahman are small and probably insignificant. Research data utilized to compile this Fact Sheet are from the Texas Agricultural Experiment Station and will concentrate on the Hereford and Brahman breeds and Brahman/Hereford crosses. It is reasonable to assume that other crosses of British breeds such as Angus and Shorthorn would produce about the same results. These data were selected because they were collected close to Oklahoma under similar climatic conditions and common markets.

There is a question of adaptability of breeds that must be considered in applying these data to all of Oklahoma. Because of adaptability to high temperatures and humidity and resistance to external parasites, the advantages (if any) of Brahman and Brahman cross cattle would be greatest in the southern and eastern sections of Oklahoma where these conditions are most severe. Their advantages should become less (possibly disappear completely) as cattle move to the western and northern sections of the state.



Eighteen year old F1 Brahman X Hereford crossbred cow nursing her 16th calf.

A weighted average in Table 1 indicates the percent calves born when Hereford and Brahman breeds remained pure was 5.5 percent higher than crosses between these breeds (78.7 vs 73.2%). This is contrary to most data reported on crossing British breeds. The negative heterosis in percent calf crop born when producing the F1 calf appears to be due to the mating behavior of Brahman cattle. Brahman bulls are shy

Table 1. Percent calf crop born to Brahman, Hereford and Brahman/Hereford Crosses

Breeding of Cows	*Breeding of Calves*	*% Born Each cross*	*Avg.*
Purebred	Purebred (British)	83.8	78.7
Purebred	Purebred (Brahman)	73.5	
Purebred	Crossbred (F_1)	73.2	73.2
Crossbred (F_1)	Crossbred (BC-British)	86.8	87.4
Crossbred (F_1)	Crossbred (BC-Brahman)	88.0	

breeders and prefer to mate Brahman cows. The crossbred F1 cows backcrossed to sires of both parent breeds increased percent calves weaned by 8.7 percent over purebred cows bred to produce purebred calves (87.4 vs. 78.7%). As purebreds, British breeds appear to be more fertile than purebred Brahmans. In general this is true because Brahmans are older at puberty, and have longer gestation periods and a longer recovery time following calving before recycling.

When crossbreeding Brahman and Hereford cattle, the hybrid vigor causes a dramatic increase on length of productive life. Information in Table 2 shows that the average Hereford cow was 7.9 years of age when she weaned her last calf, while the Brahman/Hereford crossbred cows were 10.9 years. This is an increase in longevity of three years or 37 percent. When this increase in length of productive life is considered in conjunction with percent calf crop weaned, the crossbred F1 cow produced three more calves, or an increase of 65 percent in number of calves weaned in the cow's lifetime.

Table 2. Cow's age when last calf weaned for Hereford and Brahman/Hereford Crosses.

Breeding of Cows	*Age When Last Calf Weaned*
Hereford	7.9
Brahman/Hereford Cross	10.9

Adjusted 205-day calf weights (Table 3) from these crosses indicates that purebred Hereford calves were less than 2 percent heavier than the purebred Brahman calves under the environmental conditions of these experiments.

Table 3. Weaning weights for Brahman, Hereford and Brahman/Hereford crosses

Breeding of Cows	*Breeding of Calves*	*205-Day Calf Wt. Each Cross*	*Ratio*
Purebred	Purebred (British)	428	100
Purebred	Purebred (Brahman)	420	
Purebred	Crossbred (F_1)	483	114
Crossbred (F_1)	Crossbred (BC-British)	493	116
Crossbred (F_1)	Crossbred (BC-Brahman)	488	

In crossbreeding programs, the Hereford bull, when mated with a Brahman cow, produces calves nearly 5 percent heavier than the reciprocal cross. When Hereford and Brahman bulls are mated to Brahman/Hereford F1 cows, the calves sired by the Hereford bulls are 2 percent heavier. The advantage of the crossbreeding program where crossbred F1 calves are produced is an increase of 14 percent in weaning weights. F1 cows backcrossed to Hereford or Brahman bull causes increases of 16 percent in 205-day calf weights over the purebred calves.

With the increase in Texas feedlots, on some select markets there has been a change in the feeders' attitude toward these crossbred calves showing evidence of Brahman breeding. A significant number of percentage Brahman cattle are being placed on feed each year and fed for the good grade. On a growing ration, the purebred calves had an average daily gain of 2.2 pounds with the Hereford calves gaining .32 pounds per day more than Brahman calves (Table 4). The F1 crossbred calves gained 2.4 pounds, an increase due to heterosis of 10 percent, while the calves from crossbred F1 cows backcrossed to sires of both breeds gained 2.24 pounds a day or an increase of only 2 percent over purebred calves.

Table 4. Rate of gain after weaning for Brahman, Hereford and Brahman/Hereford crosses

Breeding of Cows	*Breeding of Calves*	*Daily Gain, Lbs. Each Cross*	*Avg.*
Purebred	Purebred (British)	2.36	2.20
Purebred	Purebred (Brahman)	2.04	
Purebred	Crossbred (F_1)	2.44	2.44
Crossbred (F_1)	Crossbred (BC-British)	2.29	2.24
Crossbred (F_1)	Crossbred (BC-Brahman)	2.19	

The increased emphasis on reducing excess fat on carcasses has been some help in increasing the desirability and packer acceptability of Brahman crosses as feeder cattle. The data used to calculate yield grades for Table 5 were based on lightweight slaughter cattle. The percent of internal fat was not reported in this project and had to be estimated in calculating these grades. The pattern of yield grades with purebred British breeds showing the least desirable yield grade and the purebred Brahman the most desirable is typical since Brahman cattle have not been selected to deposit excess fat for as many generations as the British breeds. The F1 calves showed yield grades intermediate to the two pure breeds as expected, with three-fourths British calves with F1 dams showing a

Table 5. Yield grades for Brahman, British and Brahman/British crossse-approximate slaughter weight 700 to 800 lbs.

Breeding of Cows	*Breeding of Calves*	*Yield Grade Each Cross*	*Avg.*
Purebred	Purebred (British)	3.15	2.80
Purebred	Purebred (Brahman)	2.45	
Purebred	Crossbred (F_1)	3.00	3.00
Crossbred (F_1)	Crossbred (BC-British)	3.05	2.90
Crossbred (F_1)	Crossbred (BC-Brahman)	2.75	

less desirable yield grade than the calves from the same cow and Brahman bulls.

Cow and calf producers, trying to market Brahman-cross calves have been told by buyers for many years that these cattle must be bought for a lesser price because they would not grade. In the data shown in Table 6 where the cattle were slaughtered between 700 and 800 pounds, there was little difference in quality grades among crossbred cattle if they contained 50 or 75 percent British breeding. Crossbred calves sired by Brahman bulls from British/Brahman cows were lower than average good, while purebred British calves graded high good. When cattle of similar breeding are fed for slaughter at 1,000 lbs. to 1,100 pounds, the group will usually increase at least one-third of a grade with the differences between breeds and crosses remaining about the same.

Table 6. Quality grade for Brahman, British and Brahman/British crosses-approximate slaughter weights 700 to 800 pounds.

Breeding of Cows	*Breeding of Calves*	*Quality Grade Each Cross*	*Avg.*
Purebred	Purebred (British)	High good	Avg. good
Purebred	Purebred (Brahman)	High standard	
Purebred	Crossbred (F_1)	Avg. good	Avg. good
Crossbred (F_1)	Crossbred (BC-British)	Avg. good	Avg. good
Crossbred (F_1)	Crossbred (BC-Brahman)	Low good	

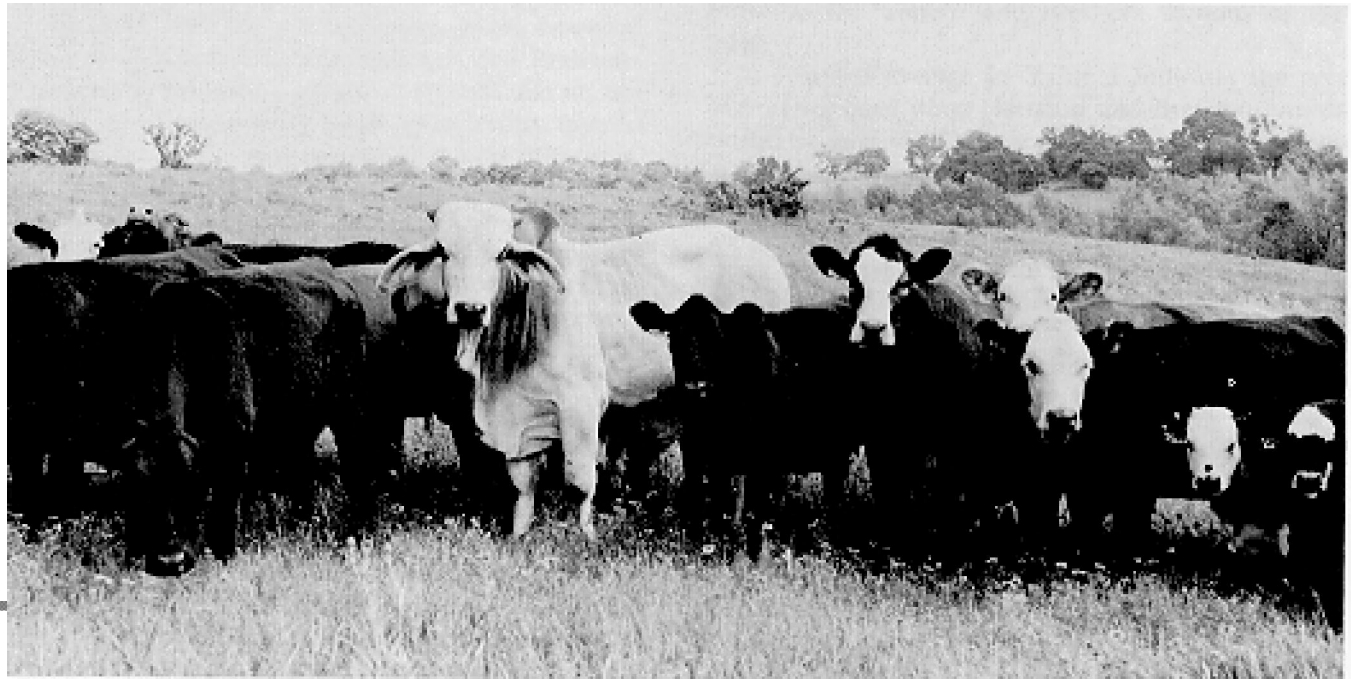
The increase in rates of gain resulting from hybrid vigor of crosses continues to affect growth rate, and affects the size of cows when they reach physical maturity as shown in Table 7. Where Hereford cows had an average mature weight of 997 pounds, the Brahman/Hereford-cross cows had an average weight of 1,142 pounds or an increase of 14.6 percent. This increase in cow weight must be offset by corresponding increase in calf weaning weights or other production measures to maintain the same efficiency level.

Table 7. Mature weights of Hereford and Brahman/Hereford-cross cows

Breeding of Cows	*Mature Cow Weight*
Hereford	997
Brahman/Hereford-cross	1,142

This greater mature size of crossbred cows is not without confusion. Some researchers do not believe that crossbred cows are actually larger at final maturity but merely reach maturity earlier in life. It is known that crossbreeding does enhance both sexual and physical maturity. Also, crossbred cows could be heavier because of superior adaptability to environmental conditions.

A general summary of using Hereford, Brahman and Brahman/Hereford crosses shows an increase in weaning weights of approximately 14 percent when the cows are Fl Brahman/Hereford. There was a rather consistent increase in percent calf crop of up to 12 percent. The Fl calves are expected to gain about 10 percent more than the average of purebreds in a feedlot. This increase in gain may be as little as 5 percent more than the purebred Hereford calves. The yield grades of Fl calves are slightly less desirable than the average of the parent breeds; this difference



Planned crossbreeding programs can increase net production.

is probably insignificant. There is no real change in quality grades from the average of the two purebreds, but there is a reduction in grade from the purebred Hereford to the F1 steer.

Calves from crossbred cows sired by Brahman or Hereford bulls show an increase of weaning weight up to 16 percent and calf crop of 7 percent. The length of productive life in the southeastern part of the state should be increased with the crossbred cow by one third.

One disadvantage of the F1 crossbred cow is the 14 percent increase in cow weight. Calves resulting from Hereford and Brahman bulls used on crossbred cows show only a 2 percent increase in rate of gain, with little or no change in yield or quality grade when compared to the average of the purebred parents.