

Evaluation of Angus-, Brangus-, Gelbvieh-, Gelbray-sired, and F₁ Brahman x Hereford Females for Cow-Calf Production

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Findings from this study revealed that: 1) pregnancy rates for first and second exposure Brangus-sired females were 19 to 29 percent lower than for Angus-, Gelbvieh-, Gelbray-sired, and F₁ Brahman x Hereford females which were similar; 2) pregnancy rates were similar among Angus-, Gelbvieh-, Gelbray-sired, and F₁ Brahman-Hereford mature cows and were 8 to 15 percent higher than for Brangus-sired cows; and 3) actual calf weaning weight and 205-day calf weight produced by mature F₁ Brahman-Hereford cows were 16 to 34 pounds heavier than calves from Angus-, Brangus-, Gelbvieh-, and Gelbray-sired cows.

Introduction

Crossbreeding is widely recognized as a means for improving productivity through the exploitation of heterosis and combining desirable traits from different breeds. Crossbreeding involving Brahman, British, and Continental breeding, is used by most commercial producers. Traditional crossbreeding systems usually require several breeding pastures or artificial insemination in order for the systems to be implemented effectively.

Most beef cattle herds in Louisiana are composed of a small number of commercial cows. It is apparent that traditional crossbreeding systems may not be economically or physically feasible for the majority of commercial producers. As a result of these limitations, finding suitable replacement heifers presents a major problem for producers. One possible alternative to this problem of producing or buying replacements could be addressed by using straightbred sires mated to first-cross Brahman dams to produce three-breed cross replacement females. Another option for producing replacement females could be with the use of Brahman-derivative breeds as sires. Use of Brahman composite breeds allows for maintaining a desirable degree of Brahman breeding in replacement females. Crossbred cows that contain approximately one-half Brahman breeding are often recommended in the southern United States due to superior adaptability and productivity under humid, subtropical conditions. Therefore, one of the objectives of this study was to compare three-breed cross females (*Angus-, Brangus-, Gelbvieh-, and Gelbray-sired*) with contemporary first cross (*F₁*) Brahman x Hereford females for reproductive and maternal performance.

Materials and Methods

A total of 1,014 reproductive and 752 calving records were evaluated from 1994 to 2001. The mating scheme for producing the heifers included *exposing F₁ Brahman-Hereford (BH) cows to Angus (A), Brangus (BA), Gelbvieh (G), and Gelbray (GB) sires to produce three-breed cross females*. In addition, contemporary BH heifers were purchased at weaning when the other heifers were weaned. Percent Brahman inheritance was 25 percent in A- and G-sired females, 44 percent in BA- and GB-sired females, and 50 percent in BH females. A total of 37 sires were used to produce the heifers and this represented 9 A, 6 BA, 7 G, 7 GB, and 8 Brahman sires. An attempt was made to sample sires that were representative of the type of bulls used by commercial cattle producers in Louisiana.

After weaning, heifers were developed on a forage-based diet. Spring-born heifers were weaned in late September and developed on rye-ryegrass pastures prior to spring breeding. Fall-born heifers were weaned in April and developed on bermudagrass pastures in the summer and wintered on hay with supplementation followed with grazing on over-seeded ryegrass pastures prior to spring breeding. Heifers were exposed to Red Poll bulls during a 60-day spring breeding season to first calve at 2 or 2 ½ years of age. Thereafter, cows were exposed to Simmental bulls during a 60-day spring breeding season. Cows were 3 to 8 years of age at calving with Simmental-sired calves. Calves were weaned in late September or early October of each year at an average age of 211 days. Heifers and cows were palpated at weaning to determine pregnancy status. Non-pregnant females were culled from the study.

Reproductive traits evaluated were pregnancy rates for first- and second-exposure females and mature (3 to 8 years old) cows. Maternal traits evaluated were actual weaning and 205-day calf weights produced from both first-calving cows and mature cows.

Results and Discussion

Pregnancy rates for heifers (first exposure), first calving cows (second exposure), and mature cows are shown in Table 1. Breed type affected ($P<.05$) pregnancy rate for first exposure heifers. Angus-, G-, GB-sired, and BH heifers had pregnancy rates ranging from 87 to 92 percent, whereas BA-sired heifers had rates that were considerably lower at 68 percent. This pattern of lower fertility for BA-sired heifers was exhibited also at second exposure (first-calf cows) and as mature cows (Table 1). With the exception of the BA-sired females, reproductive performance was acceptable and similar among the breed types.

Table 2 shows actual calf weaning weights and adjusted 205-day calf weights for first calving and mature cows by cow breed type. Actual weaning weights and 205-day weights of calves from first calving BH cows ranked the highest and were greater ($P<.05$) than calves from A-, BA-, and GB-sired cows. Calf weights from first calving G-sired cows ranked second but did not significantly differ from the other breed types with the exception of heavier ($P<.05$) actual calf weaning weights compared with calves from first calving BA-sired cows (Table 2). Similar rankings and differences for calf weights existed among breed types for mature cows. The actual weaning and 205-day weights for calves from mature BH cows were 24 and 29 pounds heavier ($P<.05$), respectively, than the average of calves from A-, BA-, G-, and GB-sired cows. Equating this actual weaning weight advantage for BH cows into economic comparisons, this would result from \$18 (calf value=\$75/cwt) to \$24 (calf value=\$100/cwt) advantage per calf, assuming there would be no discount for calves produced from BH cows relative to calves produced from A-, BA-, G-, and GB-sired cows.

Under the condition of this study, lower reproductive performance for BA-sired females were observed, whereas A-, G-, GB-sired, and BH females had acceptable pregnancy rates. The acceptable reproductive ability and superior maternal performance exhibited by BH females supports previous work indicating that first-cross Brahman cows are well adapted and highly productive in the southern United States.

Table 1. Pregnancy rates (%) of first exposure (1 and 1½ year olds), second exposure (2 and 2½ year olds), and mature (3 to 8 years) females.

Breed type ¹	1st exp females	2 nd exp females	Mature females
Angus-sired	87 ^a	91 ^a	96 ^c
Brangus-sired	68 ^b	62 ^b	81 ^d
Gelbvieh-sired	91 ^a	89 ^a	96 ^c
Gelbray-sired	91 ^a	83 ^a	89 ^{c,d}
Brahman x Hereford	92 ^a	85 ^a	95 ^c
Overall	86	82	92
Number of records	244	200	570

¹Angus, Brangus, Gelbvieh, and Gelbray sires were mated to Brahman x Hereford cows to produce females for these four breed types.

^{a,b}Means within a column within breed type with different superscripts differ ($P < .05$).

^{c,d}Means within a column within breed type with different superscripts differ ($P < .10$).

Table 2. Actual weaning and 205-day weights for calves from first calving (2 and 2½ year olds) and mature (3 to 8 year old) cows.

Breed type ¹	First calving cows		Mature cows	
	Actual weaning wt., lb	205-day wt., lb	Actual weaning wt., lb	205-day wt., lb
Angus-sired	519 ^{b,c}	481 ^b	560 ^{a,b}	538 ^b
Brangus-sired	497 ^c	472 ^b	556 ^{a,b}	542 ^b
Gelbvieh-sired	531 ^{a,b}	488 ^{a,b}	564 ^{a,b}	548 ^b
Gelbray-sired	505 ^{b,c}	470 ^b	546 ^b	540 ^b
Brahman x Hereford	541 ^a	501 ^a	580 ^a	571 ^a
Overall	519	482	562	548
Number of observations	195	195	557	557

¹Angus, Brangus, Gelbvieh, and Gelbray sires were mated to Brahman x Hereford cows to produce females for these four breed types.

^{a,b,c}Means within a column within breed type with different superscripts differ ($P < .05$).