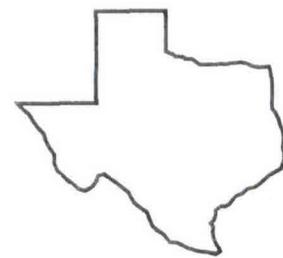
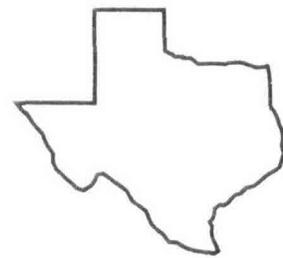
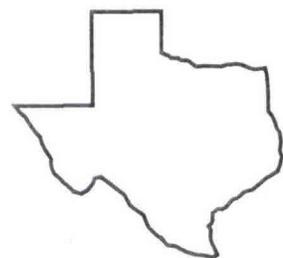
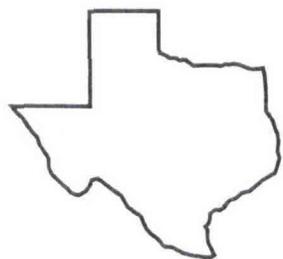
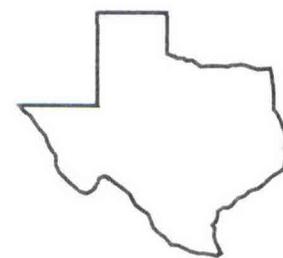


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## GESTATION LENGTH AND POSTCALVING REPRODUCTIVE ACTIVITY OF BRAHMAN COWS BRED TO BRAHMAN, ANGUS, OR TULI BULLS

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**Background.** In East Texas, Brahman cows are used in cow-calf operations to take advantage of their environmental adaptation. Along with maintaining purebred herds, Brahman cows are used in crossbreeding programs to take advantage of hybrid vigor and maternal attributes. Reproductive efficiency plays a major role in the success or failure of a cow-calf enterprise. Maintaining short calving intervals (under 365 days) is desirable, but can be a problem with Brahman cows due to long gestations and extended intervals from calving to first estrus and conception. Past research has shown that sire breed of calf has an influence on gestation length in purebred cow herds. This project examined the gestation length and calving to estrus intervals in Brahman cows calving to Angus, Brahman, or Tuli bulls. The Tuli is a beef breed from Africa.

**Research Findings.** In 1992 and 1993, 225 Brahman cows calved in the spring to 1 of 12 Angus (A, 68 cows), 11 Brahman (B, 82 cows), or 9 Tuli (T, 75 cows) bulls. First calf cows and mature cows were involved. Cows grazed ryegrass and bermudagrass pastures. Gestation lengths were determined based on A.I. dates. Only cows with live calves were used to determine calving to first estrus intervals (postpartum interval, PPI). Estrus detection was done by visual observation aided by heat-check bulls wearing chin-ball markers. Additional cows calving to Brahman clean-up bulls were included in PPI analyses. In 1993, blood samples were collected on cows before and after calving to examine hormone concentrations. The hormone estrogen is elevated before calving and is partially responsible for the lack of estrus activity after calving. Average estrogen concentrations were determined during the 96 hours before calving. The hormone prostaglandin  $F_2\alpha$  is elevated after calving and helps the uterus repair and recover after the trauma associated with pregnancy and delivery. Concentrations of a metabolic product of prostaglandin  $F_2\alpha$ , PGFM, were determined during the 10 days after calving. Suckling by the calf has been shown in numerous reports to extend PPI in Brahman cows. Therefore, calf average daily weight gains (ADG) for calf breedtypes are included through 4 months of age.

Each breed of service sire differed ( $P < .01$ ) in resulting gestation lengths (Angus,  $284 \pm 1$  day; Tuli,  $288 \pm 1$  day; Brahman,  $294 \pm 1$  day). By the end of the breeding seasons, more ( $P < .01$ ) mature cows exhibited estrus than first-calf cows (97 vs 43%). First-calf cows had longer ( $P < .01$ ) PPI than mature cows ( $112 \pm 5$  vs  $72 \pm 3$  days). Cows raising Brahman-sired purebred

calves had PPI ( $83 \pm 4$  days) that were shorter ( $P < .06$ ) than for cows raising  $F_1$  calves by Tuli bulls ( $97 \pm 4$  days) and Angus bulls ( $95 \pm 5$  days). In 1993, sire breed of calf influenced PPI ( $P < .06$ ), precalving estrogen concentrations ( $P < .05$ ), and 120-day calf ADG ( $P < .01$ ) as shown in Table 1. High animal to animal variation existed in PGFM concentrations.

Table 1. Various traits of Brahman cows calving to 3 sire breeds in 1993.

Traits	Sire Breed			SE ( $\pm$ )
	Angus	Brahman	Tuli	
Postpartum Interval, d	95	79	103	7
Precalving Estrogen, pg/mL	1704	1419	1396	98
Postcalving PGFM, pg/mL	981	1042	649	185
120-d Calf ADG, lb	1.81	1.42	1.66	.04

Cows calving to Angus bulls had longer PPI and higher estrogen concentrations and cows calving to Tuli bulls had longer PPI and lower PGFM concentrations compared to cows calving to Brahman sires. In addition, cows raising crossbred calves had longer PPI and higher calf ADG through 4 months of age compared to cows raising purebred calves.

**Application.** Gestation lengths are reduced in Brahman cows when bred to Tuli bulls, and more so when bred to Angus bulls. However, reductions in gestation length are coupled with longer intervals from calving to estrus in cows delivering and raising crossbred calves. The means by which the crossbred calves are creating longer postpartum intervals compared to purebred calves in their Brahman dams are unclear at the present time. Prolonged postpartum intervals are likely due to the combined effects of altered hormone concentrations immediately before and after calving along with variable amounts of nutritional stress placed on the cows during the early preweaning period. In managing for shorter calving intervals in Brahman cows, producers need to consider the sire breed being used. Calf performance is of primary interest in sire breed selection. However, sire breed selection will influence gestation length. Managing the calving intervals of Brahman cows in crossbreeding programs may be aided by reduced gestation lengths, but taking advantage of shorter gestations may require taking management steps to lessen the extension of postpartum intervals that crossbred calves may cause. Postpartum intervals are shorter for Brahman cows raising purebred calves, but long gestations associated with purebred Brahman calves makes it equally important to take steps to ensure reduced postpartum intervals in purebreeding programs. Further evaluation of the data presented here is ongoing.