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**COMPARISON OF ESTROUS SYNCHRONIZATION AND FERTILITY USING
GONADOTROPIN-RELEASING HORMONE (GnRH) AND HUMAN CHORIONIC
GONADOTROPIN (hCG) IN COMBINATION WITH PROSTAGLANDIN (PGF)
IN BRAHMAN FEMALES**

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Background. Estrus synchronization has become a beneficial tool for the cattle industry as it facilitates artificial insemination (AI). Several protocols using GnRH and hCG in combination with PGF have been successfully used for estrus synchronization with acceptable conception and pregnancy rates in British and European breeds. There is no information using these protocols in Brahman or Brahman influenced cattle. The objectives of this study were to evaluate the effect of GnRH in combination with PGF_{2α} on synchronization rates and fertility in Brahman females inseminated at estrus vs timed AI.

Research Findings. One hundred sixty-eight Brahman females (wet cows, dry cows, first calving cows and heifers) were randomly assigned in two replicates within age and lactation status to three treatment groups: PGF (single injection of 25 mg Lutalyse®), GnRH+PGF (100 µg Fertagyl®, followed by 25 mg of Lutalyse® seven days later), and GnRH+PGF+hCG (GnRH+PGF) followed with 3000 I.U. of Follutein® on day 9. Animals were observed for estrus every two hours from the time of PGF injection through 144 hours. Animals in the PGF and GnRH+PGF groups were artificially inseminated (AI) 12 hours after the onset of estrus. Animals in the GnRH+PGF+hCG group were inseminated 15 hours after hCG injection. Pregnancy was diagnosed by rectal palpation 45 days after AI. Results of the two replicates did not differ ($P > .10$) and were combined. Synchronization rates did not differ ($P > .10$) between the PGF and GnRH+PGF groups (57.1 and 50.9%, respectively). The greatest proportions of estrus activity in both groups occurred between 49 and 72 hours after PGF injection. Within groups, dry cows had a higher ($P < .05$) synchronization rate compared to wet or first calving cows. Within the GnRH+PGF group first calving animals had lower ($P < .05$) synchronization rates compared to wet or dry cows or heifers (Table 1). Conception rate was lower ($P < .05$) in the GnRH+PGF+hCG group compared with PGF and GnRH+PGF groups. Pregnancy rate did not differ ($P > .05$) among treatments (Table 2).

Application. Results of this study demonstrate that the use of GnRH combined with PGF_{2α} does not improve synchronization rate in Brahman females. None of the protocols produced satisfactory pregnancy rates as all were below 40%. The protocols used in this study for timed AI, did not produce the same results as reported in *bos taurus* cattle. Further research must be done in *bos indicus* cattle in order to adapt these new methods for estrus synchronization of Brahman and Brahman influenced cattle.

Table 1. Synchronization rates (%) as affected by physiological status of Brahman females synchronized with PGF_{2α} or GnRH+PGF_{2α}.

Physiological status	Treatment	
	PGF _{2α}	GnRH+PGF _{2α}
Wet	44.4 _b	59.2 _a
Dry	81.8 _a	70.0 _a
Heifers	54.5 _a	63.6 _a
First calving cows	16.6 _b	25.0 _b

^{a,b} Values with different subscripts within treatment differ (P < .05).

Table 2. Conception and pregnancy rates in Brahman females artificially inseminated (AI) at estrus (AIES), and times AI (TAI) 15 hours after hCG injection.

Variable, %	AIES		TAI
	PGF _{2α}	GnRH+PGF _{2α}	GnRH+PGF _{2α} +hCG
Conception rate	71.4 _a (20/28)	65.6 _a (21/32)	33.3 _b (19/57)
Pregnancy rate	36.3 (20/55)	37.5 (21/56)	33.3 (19/57)

^{a,b} Values with different subscripts within rows differ (P < .05).