

SYNCHRO-MATE-B WILL SYNCHRONIZE ESTRUS EFFECTIVELY IN SPRING AND FALL BRED BRAHMAN CROSSBRED BEEF COWS.

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Story in Brief

Postpartum, crossbred, beef cows consisting of 0-Brahman, 1/4-Brahman, or 1/2 Brahman breeding were used to evaluate estrous response and subsequent pregnancy rates after treatment with Synchro-Mate-B during spring and fall breeding seasons. We used the manufacturer's recommended regime to synchronize estrus. Synchronized cows were observed for estrus and inseminated 12 hr after estrus or at a fixed time (54 hr after implant removal) if not seen in estrus. Control animals were inseminated 12 hr after observed estrus over a 21 day breeding period that began 48 hr after implants were removed from synchronized cows. Fewer fall than spring cows exhibited estrus within the first 21 d of breeding. Within 48 hr of implant removal, 84 and 64% (spring and fall, respectively) of synchronized cows exhibited estrus whereas, 25 and 40, 63 and 66, and 85 and 74% (spring and fall, respectively) of control cows exhibited estrus by d 7, 14, and 21, respectively. In both seasons, more synchronized than control cows became pregnant by 7 d of breeding. The pregnancy advantage was no longer evident by 21 d; in fact, in the spring, synchronized cows had lower pregnancy rates (40%) than control cows (66%) by 21 d. Brahman breeding did not influence estrous response or pregnancy rates. Synchro-Mate-B can be used effectively to synchronize Brahman crossbred cows. However, season of breeding can influence the response.

(Key Words: Brahman, Synchro-Mate-B, Estrous Synchronization, Season)

Introduction

Various compounds and management techniques have been used to control the estrous cycle of cows. Animal related factors such as ovarian activity, body condition, body weight, and nutrition have been shown to affect response to estrous synchronization. It has been suggested that reproductive hormone concentrations and the timing of hormonal events which control reproduction in Brahman cattle are different from British breeds. In addition, data indicate that fertility of Brahman cattle is reduced in the late fall and winter months. It follows that estrous response to synchronization may be altered by season.

In recent years, incorporation of Brahman breeding into crossbreeding programs has gained in popularity. The effect of genotype, in particular, the influence of percent Brahman breeding on synchronization has not been adequately studied. The present study was conducted to evaluate the influence of Brahman breeding and season of breeding on estrous response and pregnancy rates in cows treated with Synchro-Mate-B.

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Materials and Methods

We used mature, crossbred beef cows of various breed combinations in two seasons (spring, n=149 and fall, n=146) to conduct this project. Cows were composed of 0-Brahman (Hereford x Angus), 1/4-Brahman (1/4-Brahman x 1/4-Hereford x 1/2-Angus or 1/4-Brahman x 1/4 Angus x 1/2-Hereford), or 1/2-Brahman breeding (Brahman x Angus or Brahman x Hereford) and in moderate to good body condition at the start of the trial. Only cows that were at least 35 d postpartum were selected. Prior to each breeding season, ovarian activity of all cows was assessed by rectal palpation of the ovaries. Cows were randomly allotted, based on ovarian status, (presence of a corpus luteum) to either a non-treated control or Synchron-Mate-B^a (SMB) treated group.

The SMB treatment regime was administered according to the manufacturer's instructions. On d 0, technicians placed an implant containing 6 mg of norgestomet under the skin on the convex surface of the ear. This remained in the ear for 9 d. An intramuscular injection of 5 mg of estradiol valerate and 3 mg of norgestomet was given on the same day. Implants were removed from SMB cows 9 to 11 d later.

Calves from both groups were separated from their dams for 48 hr at the time of implant removal. At this time tail heads of SMB cows were marked with a Paint-Stik to aid in estrous detection. Cows observed standing while mounted by an other animal or that no longer had chalk on their tail head were considered to be in estrus. On d 11, estrous detection and breeding was initiated in control cows and calves were returned to their dams.

SMB cows were inseminated 12 hr after observed estrus or at a fixed time (54 hr after implant removal) if not seen in estrus. Control cows were inseminated over a 21 d period 12 hr after observed in estrus. The same two technicians inseminated cows in both seasons. We randomly assigned service sires to each cow before initiation of each breeding season. Sires were used equally within a season among the 3 breed groups and between the 2 treatments. Cows were exposed to fertile bulls 10 d after either the 21 d AI period (control cows) or the synchronized breeding (SMB cows). Pregnancy rates were determined by rectal palpation and calving rates were calculated from actual calving records.

Results and Discussion

Preliminary data describing results from spring bred cows were reported by Smith and coworkers (1985). Synchron-Mate-B effectively synchronized estrus in both spring and fall bred cows. In both seasons, the cumulative percent cows that exhibited estrus by 7 d of breeding was greater ($P < .01$) for SMB treated cows (Table 1). However, by 21 d there was no longer a significant difference in estrous response between groups. Percent Brahman breeding did not influence estrous response by 7 or 14 d of breeding in either season. Estrous response by 21 d was not different among breed groups in spring bred cows whereas, estrous response tended ($P < .08$) to be reduced in fall bred cows containing 1/2-Brahman breeding. Overall, fewer ($P < .01$) cows exhibited estrus by 21 d of breeding in the fall than in the spring.

^a Courtesy, E.A. Henderson, D.V.M., Ceva Laboratories, Inc.

Table 1. Effect of Brahman percentage and Synchro-Mate-B (SMB) on estrous response.

Group	Cumulative % exhibiting estrus			
	SMB	CONTROL		
	2 days	7 days	14 days	21 days
Spring				
0-Brahman	83	33 ^a	73	100
1/4-Brahman	84	17 ^a	51 ^a	74
1/2-Brahman	85	25 ^a	64 ^a	82
Average	84	25 ^a	63 ^a	85
Fall				
0-Brahman	76	47 ^a	71	88
1/4-Brahman	59	39	61	61
1/2-Brahman	57	33 ^a	67	74
Average	64	40 ^a	66	74

^a Value different from SMB.

It is important to have as many cows pregnant early in the breeding season as possible. Early conception in a finite breeding season ensures that more cows will calve early in the calving season. Early calving provides a greater opportunity for cows to become pregnant the following breeding season. In both spring and fall breeding seasons, more ($P < .02$) SMB treated cows became pregnant by 7 d of breeding when compared with control cows (Table 2). This advantage was mostly likely due to the greater estrous response in SMB cows. However, the advantage was lost by 21 d; in fact, by this time, spring bred SMB treated cows (40%) had a lower ($P < .01$) pregnancy rate than control cows (66%).

Table 3 depicts the cumulative percent cows calving by 20, 40, and 60 d of the calving season. Although treatment did not influence calving rate during these times, based on pregnancy rates, more SMB cows should have calved by 7 d of the calving period. Calving rate was similar among all breed groups within each 20 d period.

Technician and sire accounted for a significant ($P < .01$) portion of the variation in pregnancy rates. Technician fatigue and expertise should be a major concern in any synchronization program. It is well documented that novice technicians fatigue easily and have a greater chance of depositing semen improperly, resulting in low pregnancy rates. Similarly, semen from bulls with low fertility and that which has been handled carelessly will be a cause of reduced pregnancy rates.

These data indicate that SMB treatment will effectively synchronize a fertile estrus in crossbred Brahman cows. Fewer cows may exhibit estrus in the fall than in the spring in a finite breeding season. Although pregnancy rates can be reduced after synchronization, pregnancy success is expected to be comparable between Brahman and British crossbred cows. Attention should be paid to technician fatigue and semen quality in an A.I. program.

Table 2. Effect of Brahman percentage and Synchro-Mate-B (SMB) on pregnancy rates.

Group	Cumulative % pregnant			
	SMB	CONTROL		
	2 days	7 days	14 days	21 days
Spring				
0-Brahman	38	18	47	60
1/4-Brahman	40	17 ^a	50	64 ^a
1/2-Brahman	43	18 ^a	55	73 ^a
Average	40	18 ^a	51	66 ^a
Fall				
0-Brahman	49	35	51	51
1/4-Brahman	50	29 ^a	49	49
1/2-Brahman	34	19	49	57 ^a
Average	44	28 ^a	50	52

^a Value different from SMB.

Table 3. Effect of Brahman percentage and Synchro-Mate-B (SMB) on calving rates.

Group	Cumulative % calving					
	20 days		40 days		60 days	
	CONTROL	SMB	CONTROL	SMB	CONTROL	SMB
Spring						
0-Brahman	37	34	81	80	91	90
1/4-Brahman	49	45	78	80	93	89
1/2-Brahman	43	43	94	77	100	93
Average	43	40	84	73	95	88
Fall						
0-Brahman	40	38	74	78	87	83
1/4-Brahman	50	40	78	72	84	83
1/2-Brahman	55	46	78	90	89	94
Average	49	41	77	80	87	87

Literature Cited

Smith, R.S. et al. 1985. Effect of Synchromate-B on estrous response and pregnancy rate in Brahman crossbred beef cows. Okla. Agr. Exp. Sta. MP-118:300.