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## Factors Affecting Conception Rates in Heifers and Cows Synchronized with Syncro-Mate-B<sup>®1</sup>

J.T. Brink, C.D. Middleton, and G.H. Kiracofe

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### Summary

In five trials during 1983 and 1984, 238 cows and 54 heifers were synchronized with Syncro-Mate-B<sup>®</sup> and artificially inseminated 48 hours after implant removal. The conception rate was 42.5% in cows that were cycling and 19.8% in cows that were not cycling before Syncro-Mate-B<sup>®</sup> treatment. Heifers started on the Syncro-Mate-B<sup>®</sup> treatment before day 11 of the estrous cycle had a higher conception rate (64.3%) than heifers started after day 11 (38.5%). Conception rates among the trials varied from 19.8 to 64.3%.

### Introduction

Syncro-Mate-B<sup>®</sup> was approved by the Food and Drug Administration in 1982 for use in the synchronization of beef and dairy heifers only. Conception rates have fluctuated between 20 and 60% in cattle synchronized with Syncro-Mate-B<sup>®</sup>. The objective of our experiments was to identify factors that affect these conception rates.

### Experimental Procedures

In our trials, 238 crossbred cows and 54 Angus, Hereford, and Simmental heifers were subjected to the standard Syncro-Mate-B<sup>®</sup> treatment which consisted of a 6 mg subcutaneous implant of norgestomet in place for 9 days and an intramuscular injection containing 5 mg of estradiol valerate and 3 mg of norgestomet given at the time of implanting. Both cows and heifers were artificially inseminated approximately 48 hours after implant removal. Calves were separated from cows between implant removal and insemination. Prior to Syncro-Mate-B<sup>®</sup> treatment, two blood samples were taken from each cow for serum progesterone analysis to determine if they were cycling. Heifers were heat checked twice daily and treated with Syncro-Mate-B<sup>®</sup> on known days of the estrous cycle.

### Results and Discussion

Cow data from four trials were pooled and the conception rate in cows cycling prior to synchronization was compared to that of cows not cycling. Only 19.8% (22 of 111) of the noncycling cows conceived to the synchronized insemination, while 42.5% (54 of 127) of the cycling cows conceived (Table 6.1). These data demonstrate the importance of having a high percentage of the herd cycling at the start of the breeding season when synchronization is used. Syncro-Mate-B<sup>®</sup> does induce estrus in some noncycling animals. However, our data

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<sup>1</sup> Syncro-Mate-B<sup>®</sup> is not approved for use in cows. The use of this product in our experiment was for investigational purposes only.

indicate only about 20% of cows that are not cycling prior to treatment will conceive. This percentage may be lower depending on how close cows are to cycling.

Stage of the estrous cycle when Syncro-Mate-B® treatment is initiated also appears to influence conception rate (Table 6.1). Heifers started on Syncro-Mate-B® before day 11 (estrus = day 0) of the cycle had a 63.4% conception rate (18 of 28), while those started after day 11 had a conception rate of 38.5% (10 of 26). This difference may account for some of the variability seen in the use of Syncro-Mate-B®.

Our results emphasize the importance of having as many cows as possible cycling before synchronization. Adequate postpartum interval, body condition, and plane of nutrition are all extremely important factors in getting cows to cycle early in the breeding season.

Table 6.1. Conception Rates of Cows and Heifers Synchronized With Syncro-Mate-B®

Group	Number Head	% Conceived to Synchronized Insemination
Cycling Cows	127	42.5
Noncycling Cows	111	19.8
Heifers (early cycle)	28	64.3
Heifers (late cycle)	26	38.5

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#### How Does Syncro-Mate-B® Synchronize Estrus?

The Syncro-Mate-B system consists of an implant containing synthetic progesterone, and an injection at implanting time of progesterone and estradiol. Nine days later, the implant is removed. The idea is to mimic progesterone output from the corpus luteum (CL). At ovulation, a CL forms on the ovary. If the cow is bred, the CL is maintained. The CL produces progesterone, helps maintain pregnancy, and prevents the cow from showing estrus. If the cow is not bred, the CL regresses in about 17 days, and the cow cycles again. With Syncro-Mate-B, the injection causes the CL to regress, but the implant provides progesterone. At implant removal, the decline in progesterone activity should allow estrus and ovulation.

Near normal fertility can be expected in cycling cows, and timed insemination can be as effective as breeding by estrus. Producers should, however, check estrus for a period before and after inseminating. Cows should be at least six weeks postpartum before implantation. Variation in fertility can be large, but synchronization usually works well with proper nutrition and management.

Syncro-Mate-B is approved only for use in dairy and beef heifers, and approval is being sought for use in beef cows.

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