

# A COMPARISON OF TWO PROGESTIN-BASED PROTOCOLS TO SYNCHRONIZE ESTRUS PRIOR TO FIXED-TIME AI IN POSTPARTUM BEEF COWS

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## **Introduction:**

Artificial insemination (AI) is a tool that allows cattle producers to cost-effectively introduce superior genetics into their herds. Artificial insemination can be a labor-intensive procedure, however estrus synchronization enables producers to predict the time that cows will be in estrus. Research shows that females that conceived to a synchronized estrus calved earlier in the calving season and weaned calves that were on average 13 days older and 21 pounds per calf heavier than calves from nonsynchronized females (Schafer et al., 1990). Despite these advantages current surveys indicate very few (> 5%) beef producers use AI or estrus synchronization (NAHMS, 1994, 1998). Another survey reports the number one reason for not implementing these practices was “lack of time and labor” (NAHMS, 1998). The development of effective estrus synchronization protocols that induce a fertile ovulation allow application of fixed-time artificial insemination, thereby reducing or completely eliminating the time and labor required for visual estrus detection. Therefore, the development of an economical method of artificially inseminating beef cows or heifers at a fixed time with high fertility would result in a dramatic increase in the adoption of artificial insemination in beef herds (Patterson et al., 2003).

Previous research by our laboratory has shown the MGA Select protocol to be effective when used in conjunction with fixed-time AI performed at 72 h after PG (Perry et al., 2002; Bader, 2003; Stegner et al., 2004). Other research demonstrated that pregnancy rates resulting from fixed-time AI after treatment with the CO-Synch + CIDR protocol were optimized when AI was performed at 66 h following CIDR removal and PG administration (Bremer et al., 2004). To date no direct comparison has been made evaluating the efficacy of MGA Select and the CO-Synch + CIDR protocols in fixed-time AI programs for postpartum beef cows.

## **Materials & Methods:**

In the spring of 2004, 650 crossbred, lactating, beef cows at four locations [Thompson Farm (n = 210); Forage Systems Research Center (n = 158); Greenley Center (n = 88); and MFA Research Farm (n = 194)] were assigned to one of two treatments. Cows assigned to the MGA Select treatment (MGA Select; n = 327) were fed MGA at a rate of 0.5 mg/hd/day for 14 days, an injection of GnRH (100µg, i.m. Cystorelin) was given on day 26, and PG (25 mg i.m. Lutalyse) was injected on day 33 (Figure 1). CO-Synch +

CIDR treated cows (CO-Synch + CIDR; n = 323) were injected with GnRH (100µg, i.m. Cystorelin) at the time of EAZI-BREED CIDR insertion (CIDR; 1.38g progesterone) and PG (25 mg i.m. Lutalyse) was injected and CIDRs were removed one week later (Figure 1). Artificial insemination was performed at fixed-times for cows in both treatments at 72 h after PG for MGA Select and 66 h after PG and CIDR removal for CO-Synch + CIDR cows, respectively. All cows were injected with GnRH (100µg, i.m. Cystorelin) at the time of AI.

Blood samples were collected 8 days and 1 day prior to feeding of MGA or carrier to determine estrous cyclicity status of cows prior to initiation of treatments. Pregnancy rate to AI was determined by transrectal ultrasonography between 40 and 45 d after AI. A final pregnancy diagnosis will be performed approximately 45 d after the end of the breeding season.

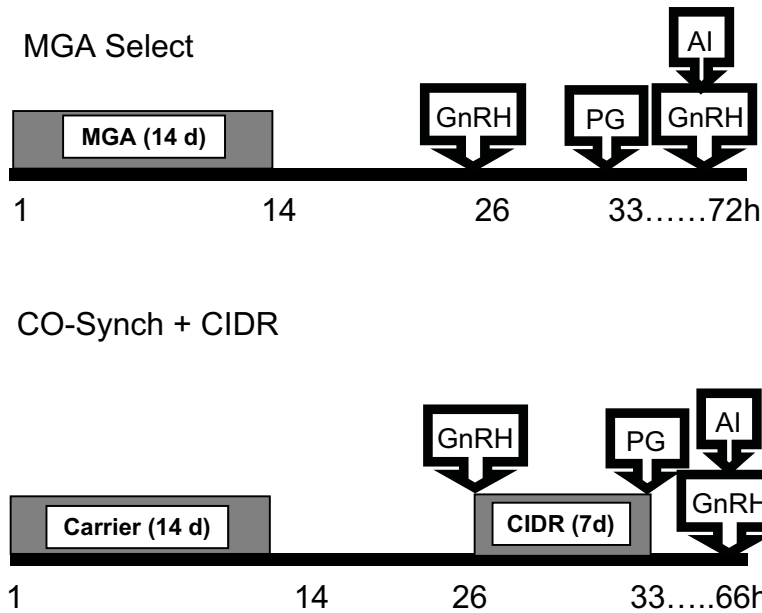
**Results:**

Pregnancy rates to fixed-time AI are summarized in Table 2 and Figure 2. After combining the data from the four locations there was no significant difference between the two treatments on the basis of pregnancy rate to fixed-time AI. Although there were no significant differences between the two treatments, there were numerically higher pregnancy rates among CIDR-treated cows at 3 of the 4 locations. This perhaps may be attributed to the fact that there is more precise control in administration of the CIDR treatment compared with the oral progestin, MGA. Therefore, the ability to get cows to effectively consume MGA, or the facilities available for inserting CIDRs are two questions that should be carefully considered when choosing which method to synchronize cows.

**Table 1.** Age, days postpartum (DPP), body condition score (BCS), pretreatment estrous cyclicity status, and response to treatments.

<b>Treatment</b>	<b>n =</b>	<b>Age</b>	<b>DPP*</b>	<b>BCS</b>
MGA Select	327	5.4	42.0	5.6
CO-Synch + CIDR	323	5.4	41.1	5.6
Total	650	5.4	41.5	5.6

\* Number of days postpartum at the time carrier with or without MGA began.

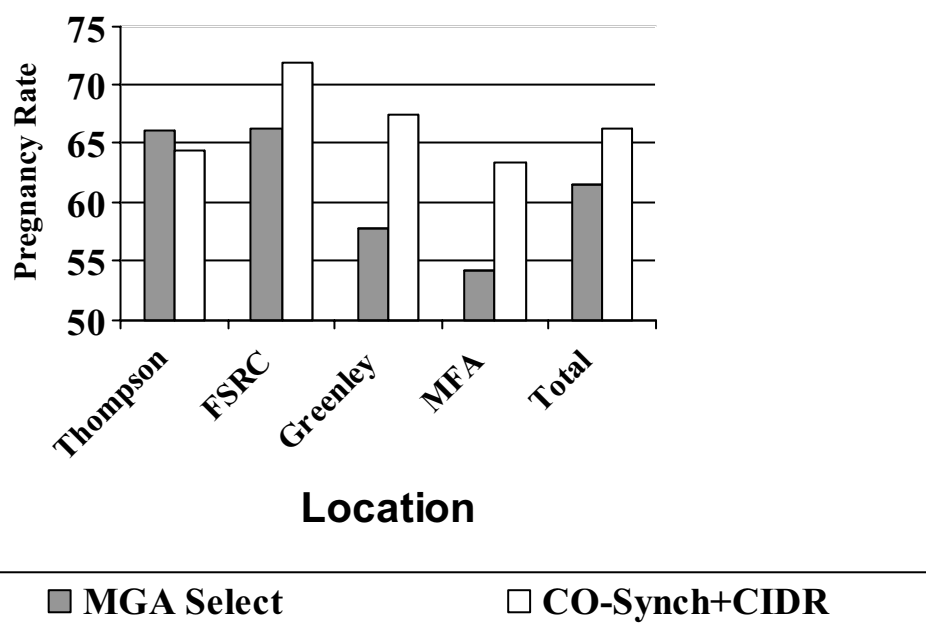


**Figure 1.** Treatment schedule for cows assigned to MGA Select or CO-Synch + CIDR. melengestrol acetate (MGA; 0.5 mg/hd/day); gonadotropin releasing hormone (GnRH; 100 µg Cystorelin); PGF<sub>2</sub> (PG; 25mg Lutalyse).

**Table 2.** Pregnancy rates to fixed-time AI (no. pregnant / no. inseminated) by treatment at four locations.

Farm / Treatment	MGA Select	CO-Synch + CIDR	Total
MU Thompson Farm	70/106 66%	67/104 64%	137/210 65%
FSRC	53/80 66%	56/78 72%	109/158 69%
MU Greenley Center	26/45 58%	29/43 67%	55/88 63%
MFA Farm	52/96 54%	62/98 63%	114/194 59%
<b>Total</b>	<b>201/327 (61%)</b>	<b>214/323 (66%)</b>	<b>415/650 (64%)</b>

## Pregnancy Rate to Fixed-Time AI



**Figure 2.** Pregnancy rate to fixed time AI [(no. pregnant / no. inseminated) X 100].

### Summary

The results from this experiment demonstrate that comparable pregnancy rates to fixed-time AI can be achieved using either of these protocols to synchronize estrus. Producers need to seriously consider the economic implications related to this change in breeding management including: marketing of calves, developing replacement females, or the consideration of subsequent breeding seasons.

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