

Animal Sciences



Choosing an Estrous Synchronization Program for Replacement Beef Heifers

*Allen Bridges, Scott Lake, Ron Lemenager, Matt Claeys, Patrick Gunn, Kyle Culp
Purdue Beef Team, Department of Animal Sciences, Purdue University*

Two Options

Of the many estrous synchronization and artificial insemination (AI) programs available for use in beef heifers, two programs deliver more acceptable AI pregnancy rates of approximately 60 percent:

- 5 day CO-Synch + CIDR (controlled internal drug releasing insert) and
- CIDR Select.

Both programs have practical limitations, however. For the 5 day CO-Synch + CIDR program, producers must handle animals twice in a day to deliver two injections of PGF_{2α} 12 hours apart. For the CIDR Select program, the long duration (33 days) and the fact that producers must handle the animals five times may prohibit broad use in the industry.

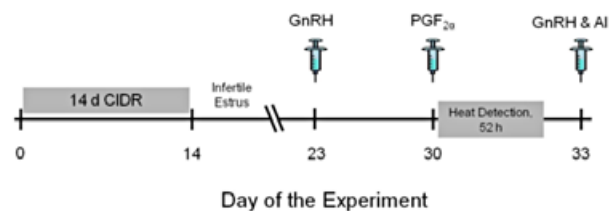
Despite these limitations, many beef producers may decide that the ability to get nearly two-thirds of their heifers pregnant with a limited period of heat detection may justify the labor involved. However, until now there had been no direct comparison of AI pregnancy rates between these two programs, so producers had no data to help them choose the program that will deliver the best AI pregnancy rates.

Comparing the Top Two

Recent data compares AI pregnancy rates between the 5 day CO-Synch + CIDR and CIDR Select programs in replacement beef heifers (Figures 1 and 2). In tests of both programs, heifers were checked for heat for 52 hours after PGF_{2α} injection. Heifers in

heat were inseminated 12 hours later. Heifers not in heat by 52 hours received GnRH and were timed-AI 72 hours after PGF_{2α} injection.

Figure 1: CIDR Select Protocol



CIDR Select: Heifers assigned to the CIDR Select protocol received a controlled intravaginal drug releasing device (CIDR®, Pfizer Animal Health, New York, NY) on day 0, which was removed 14 days later (day 14). Nine days after CIDR removal (day 23) heifers received GnRH (100 µg; Cystorelin®, Merial, Duluth, GA) and were administered PGF_{2α} (Lutalyse®, Pfizer Animal Health, New York, NY) on day 30.

Figure 2: 5 day CO-Synch + CIDR Protocol



5 day CO-Synch + CIDR: Heifers assigned to the 5-day CO-Synch + CIDR protocol received 100 µg of GnRH and a CIDR on experimental day 0. On day 5 CIDR were removed and heifers were administered PGF_{2α}. All heifers in the 5 day CO-Synch + CIDR treatment received a second 25 mg injection of PGF_{2α} approximately 12 h after the initial injection.

Conception rate, timed-AI conception rate, AI pregnancy rate, and breeding season pregnancy rate are summarized in Table 1 and were essentially the same for the two programs. Estrous response was slightly greater in the CIDR Select than the 5-day CO-Synch + CIDR treatment; however, the AI pregnancy rates and breeding season pregnancy rates were the same.

When a period of estrous detection followed by timed-AI is done, the CIDR Select and the 5-day CO-Synch + CIDR programs are both effective estrous synchronization protocols in beef heifers. So, a producer choosing between the two AI programs can focus on how each fits with the operation and management strategies, rather than choosing one based on conception rates.

Table 1. Estrous response rate, conception rate, timed-AI pregnancy rate, AI pregnancy rate, and breeding season pregnancy rate for beef heifers at Heaton Land & Livestock in which estrus was synchronized with either the CIDR Select or 5 day CO-Synch + CIDR protocol.

Treatment	Estrous Rate, % ^a	Conception Rate, % ^b	Timed-AI Conception Rate, % ^c	AI Pregnancy Rate, % ^d	Breeding Season Pregnancy Rate, % ^e
CIDR Select	101/159 = 63.5% ^f	76/101 = 75.2%	36/58 = 62.1%	112/159 = 70.4%	141/153 = 92.2%
5 d CO-Synch + CIDR	85/159 = 53.5% ^g	65/85 = 76.5%	47/74 = 63.5%	112/159 = 70.4%	132/150 = 88.0%

^a Proportion of heifers that were observed in estrus within 52 hours of PGF administration.

^b Proportion of heifers that were detected in estrus, AI, and conceived.

^c Proportion of heifers that were not detected in estrus, were timed-AI 72 hours following PGF, and conceived.

^d Proportion of heifers that conceived to AI after being detected in estrus or timed-AI.

^e Proportion of heifers pregnant at the end of the breeding season.

^{f,g} Estrous response rate tended ($P = 0.07$) to be greater in the CIDR Select compared to the 5 day CO-Synch + CIDR treatment.