

## 5-DAY CIDR SYNCH: THE MISSING PROTOCOL FOR DAIRY HEIFERS

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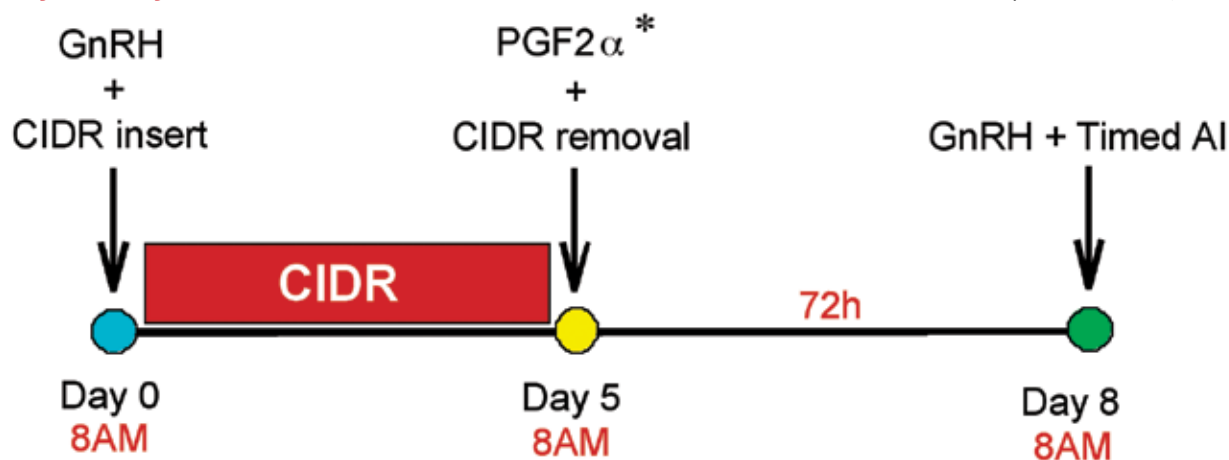
Although programs combining prostaglandin (PGF<sub>2α</sub>) treatments and heat detection are very effective for dairy heifers, many producers have to rely on Timed A.I. protocols to get their heifers bred due to a number of different reasons. Unfortunately, when the original Ovsynch protocol is used in heifers, conception rates are – in general – much lower than conception results achieved with breedings performed following estrus detection. These lower results with Ovsynch in heifers seem to be related

with faster follicular turn-over, lower ovulation rates, and higher percentage of heifers displaying premature estrus before scheduled A.I. (revised by Rivera et al., 2004). Most research groups tend to accept the fact that regular CIDR-synch-like protocols can efficiently reduce amount of heifers showing premature estrus during timed A.I. procedures; yet, conception rates don't seem to be ideal, and most frequently inferior to conception results attained with breedings following estrus detection.

In some countries such as Argentina and Brazil, synchronization protocols that combine estrogens with short half-life and progesterone devices, with or without equine gonadotropin (eCG) applied at the end of the protocol, are very popular and seem to produce more acceptable results in terms of conception in dairy and beef nuliparous heifers. Unfortunately, estrogens and equine gonadotropin are not available for synchronization purposes for cattle in U.S. Thus, this

(Source: Bridges et al., 2008)

**Chart 1. 5-Day CIDR Synch Protocol.**



\* A single PGF treatment at CIDR removal seems to be enough in heifers. However, a second PGF treatment given at 8 to 24 hours after first PGF is required in dairy and beef cows.

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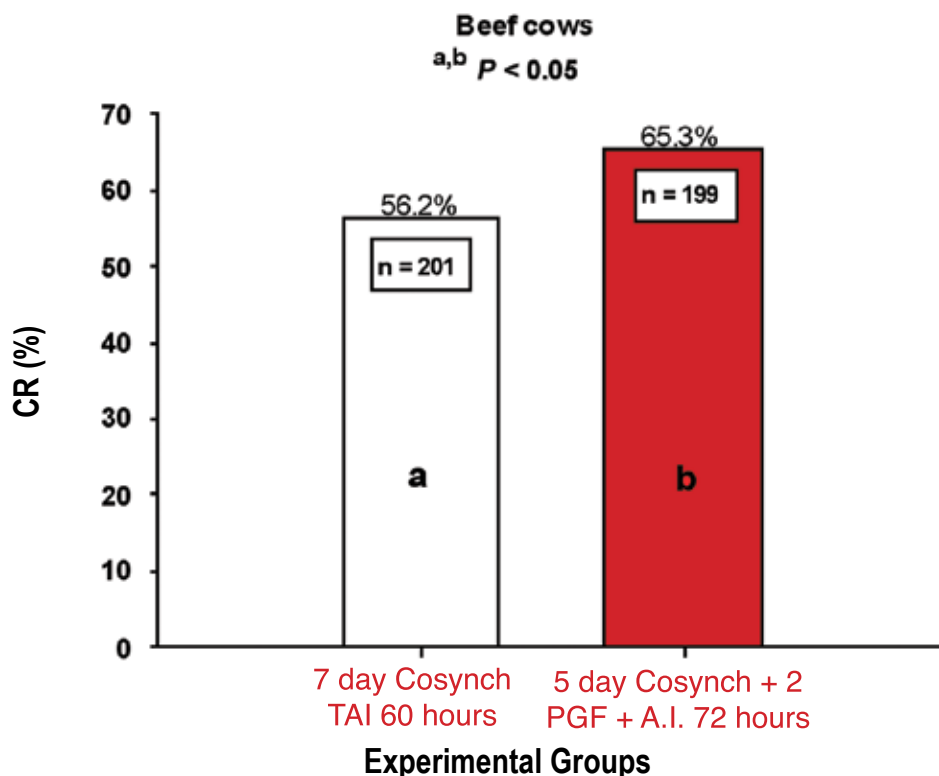
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**Table 1. Type of CIDR treatment and fertility of beef cows.**



(Source: Adapted from Bridges et al., 2008; Exp. 4)

article will try to present some insight about recent and promising findings towards developing an efficient synchronization program for heifers utilizing hormones that are available in the U.S. market.

Currently, one of the best protocols for dairy heifers in terms of conception seems to be the newly developed 5-Day CIDR Synch (Bridges et al., 2008). This is the sequence of injection during the 5-Day CIDR protocol: on Day 0, CIDR is applied together with a GnRH injection. Five days later (5 complete days after CIDR insertion!), CIDR is removed and a PGF<sub>2α</sub> treatment is given at the same time. A second PGF<sub>2α</sub> is required in beef and dairy cows (but not on heifers), sometime between 8 to 24 hours after CIDR removal. Then, three days after CIDR removal

(Day 8), animals are bred together with an additional GnRH treatment at the time of A.I.

The original work to develop the 5-Day CIDR protocol was done by Bridges et al. (2008) using beef cows as experimental units. Their results suggested that reducing CIDR insertion from 7 to 5 days, associated with longer pro-estrus intervals improved conception rates. It is important to highlight that Bridges et al. (2008) used two PGF<sub>2α</sub> injections in all trials to enhance CL regression, the first PGF<sub>2α</sub> was done at CIDR removal and the second PGF<sub>2α</sub> was given 12 hours later.

This pioneer work was done by Bridges et al (2008) and served as rationale for several further trials using beef

(Kasimanickam, et al., 2009), dairy cows (Chebel et al., 2009), and dairy heifers (preliminary results shown by Dr. Thatcher at DCRC meeting – Minneapolis, MN 2009). In addition, a number of other ongoing experiments are to be published in the next couple of months, and they will provide more knowledge about the use and efficacy of the 5-Day CIDR protocol.

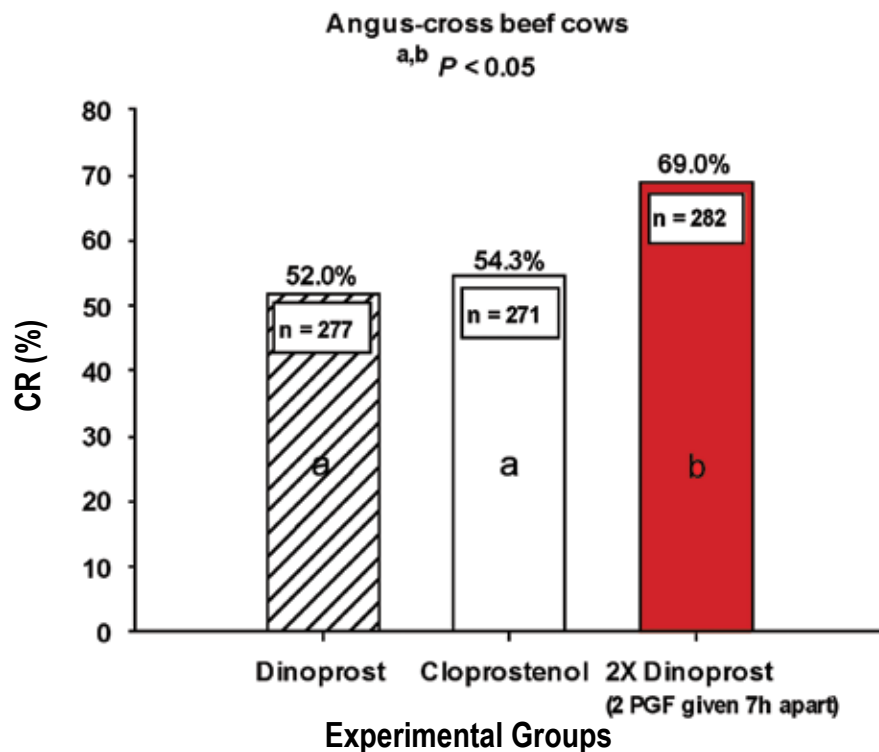
For instance, Kasimanickam et al. (2009) tested whether two PGF<sub>2α</sub> treatments are actually needed at CIDR removal when a 5-Day protocol is used in beef cows. Secondly, in this same trial, they compared two types of PGF products (dinoprost vs cloprostenol) when a single PGF treatment was given at CIDR removal. In summary, they found no difference between the two PGF<sub>2α</sub> products. However, two PGF<sub>2α</sub> treatments seem to be necessary for maximum conception rates in beef cows receiving the 5-Day CIDR protocol.

Finally, there is sufficient scientific evidence proving the effectiveness of the 5-Day CIDR protocol in dairy heifers (data summarized and presented by Dr. Thatcher at DCRC meeting in Minneapolis, MN – 2009). Briefly, these researchers observed in a series of field trials that a single PGF<sub>2α</sub> treatment given at CIDR removal is enough to produce good CL regression, and outstanding conception results that are comparable to conception results achieved when heifers are bred after regular estrus detection.

Dr. Thatcher also reported similar conception rates in heifers treated

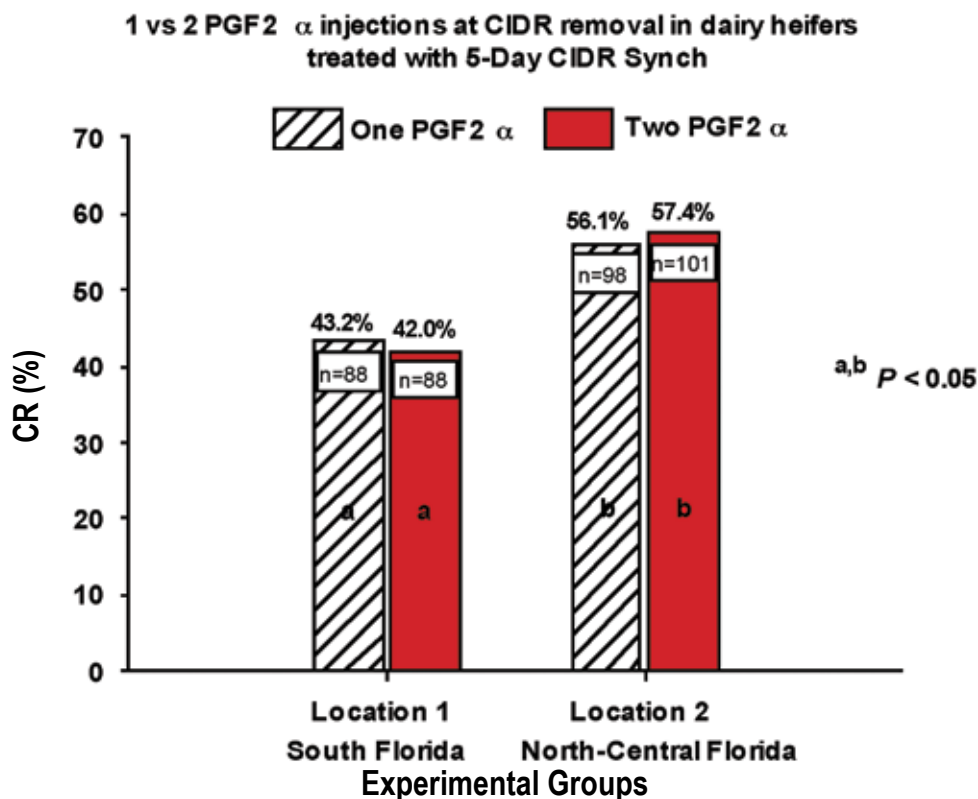


**Table 2. Type A & D Single vs. Double PGF in Beef Cows.**



(Source: Adapted from Kasimanickam et al., 2008)

**Table 3. Effect of One vs. Two PGF in Dairy Heifers.**



(Source: Adapted from Thatcher et al., 2009 - DCRC)

with new (59.7%) vs 5-day used CIDRs (61.2%). Obviously, correct handling, sanitization, and even autoclaving are important details when re-utilizing CIDRs, mostly, to avoid horizontal spread of infectious diseases within the herd.

The new 5-Day CIDR Synch might also be a good option for those who want to use sexed semen associated with Timed A.I. in heifers. In fact, according to later findings (DCRC 2009), the 5-Day CIDR protocol produced acceptable conception results even after the use of sexed semen in heifers. For example, in one of the trials that they used the 5-Day CIDR protocol with a single PGF2 $\alpha$  at CIDR removal, they found that conception rates for dairy heifers bred with sexed semen was 43% (43/100) compared to 53.1% (52/98) for heifers inseminated with regular semen. Thus, conception results with sexed semen in heifers treated with the 5-Day CIDR Synch are in the same range of the results achieved when sexed semen is used after estrus detection, but further trials are necessary to confirm these encouraging findings.

**In Summary**, here are some of the advantages of the 5-Day CIDR Synch program:

- 1) No pre-synchronization is needed
- 2) Minimum amount of handlings – very simple to apply.
- 3) Consistent conception results and comparable fertility to heat detection breedings, even in heifers.



4) The entire protocol lasts only 8 days, which makes it an attractive option for re-synch breedings for heifers, as well as for beef and dairy cows (future research needs to validate this for dairy cows).

5) 5-Day CIDR synch provides acceptable results following sexed semen breedings in heifers.

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