

TIGHTER and WIDER

By Wes Ishmael

A new progesterone application allows producers to narrow the window of synchronization and efficiently time-breed heifers and cows, while jump-starting anestrous females.

If progesterone is Mom Nature's magic potion for suppressing heat, thereby enhancing the effectiveness of a beef cattle synchronization program, then the CIDR® technology—currently awaiting US approval—is surely the closest man has ever come to harnessing the power of that magic.

“The possibilities are endless. There is no heat detection and the heats are strong,” says Joel Andrew excitedly. “This can take the impact of genetics in your herd from zero to 100 miles per hour. You can use 10 different bulls in one breeding and get 70 percent conception.” Andrew, an ABS Representative and commercial cattle producer from Androssam, Alberta is talking about the power of using CIDRs – approved for use in Canada a couple of years ago, and about every other



major cattle-producing nation but the U.S.—in tandem with prostaglandin for synchronizing and time-breeding beef cows and heifers.

“It's easier to set a couple of days aside for this work than a couple of hours every day for a month,” emphasizes Andrew Yaremko of Carpathian Farms at St. Paul, Alberta, the first commercial producer in the province to use the new synchronization tool on a significant number of females. “Last year our conception rate was 70 percent, and from what we're seeing so far this year, it should be higher.” When Yaremko began using artificial insemination five years ago in order to tap genetics he couldn't afford to buy as bulls, he accepted the drudgery of heat detection and bred about 25% of his herd artificially. This year, with a CIDR and prostaglandin program that enables timed-breeding, Yaremko bred 90% of his herd artificially.

Likewise, Representative Andrew turned to A.I. several years ago to acquire the kind of genetics he wanted to build into his females. He then attended an A.I. school and seized the opportunity to become a Representative for ABS.

What happened next? The CIDR. “The sky is the limit with this thing,” says

Andrew. “We can breed 100 cows in an afternoon easily. You can functionally breed 200 plus head in a day.”

So, What's a CIDR?

Basically, a CIDR is a tiny, plastic intravaginal device that looks like a Y-shaped witching rod with a plastic string fastened to the longest leg of the Y. This device contains the hormone progesterone, which is absorbed at a controlled rate into the bloodstream of the animal.

“It's very simple to use and it's not complicated physiologically,” says Dr. Matt Lucy, an associate professor of animal science at the University of Missouri. “This device contains a natural hormone. It's the exact same hormone that's already in the cow's bloodstream. It's a natural hormone being applied at a natural level.”

Obviously, using progestins in estrus-synchronization programs is nothing new. However, after a popular ear implant containing Norgestomet (Synchromate-B®)—a progesterone – like compound that was removed from the market a few years ago, the only widespread and practical progesterone alternative available to producers was venerable melengestrol acetate (MGA)—a progesterone – like feed additive approved for use in suppressing heat in feedlot heifers.

So, the CIDR – containing progesterone itself—ushers in a world of new opportunity. “The CIDR allows us to take advantage of a natural phenomenon we began seeing in cows a few years ago,” explains Dr. Rick Hardin, a long-time synchronization researcher who is also a district sales manager for ABS Global. “Just after calving and before a cow begins cycling regularly, there will be a natural increase of progesterone in her system. The CIDR mimics this natural phenomenon, so you'll jump-start

Table 1

Efficacy of Intravaginal Progesterone Insert and Prostaglandin (beef cows, beef heifers, dairy heifers)

Percentage in Estrus**Anestrous**

Control	67%
Prostaglandin	68%
CIDR + Prostaglandin	66%

Cyclic

Control	82%
Prostaglandin	88%
CIDR + Prostaglandin	91%

First Service Conception Rate**Anestrous**

Control	58%
Prostaglandin	60%
CIDR + Prostaglandin	61%

Cyclic

Control	64%
Prostaglandin	67%
CIDR + Prostaglandin	65%

Pregnancy Rate**Anestrous**

Control	42%
Prostaglandin	47%
CIDR + Prostaglandin	46%

Cyclic

Control	58%
Prostaglandin	65%
CIDR + Prostaglandin	71%

Source: Journal of Animal Science 2001 79:982-995

Table 2

Pregnancy Status in Beef Cows Treated With Co-Synch or Co-Synch + Progesterone

	Co-Synch	Co-Synch + Progesterone
Station		
Illinois	52%	43%
Kansas	54%	66%
Minnesota	38%	51%
Missouri	53%	71%
Body Condition Score		
=4.5	30%	31%
4.5-5.5	41%	51%
=5.5	59%	85%
Days Postpartum		
=50	38%	47%
51-60	47%	67%
61-70	62%	57%
71-80	44%	67%
>80	59%	58%

Source: Journal of Animal Science 2001 79

some cows that aren't cycling. GnRH (gonadotropin-releasing hormone) does that too, but not as effectively as a progestin."

More specifically, Dr. Jeff Stevenson, a reproductive physiologist at Kansas State University says, "With progesterone (in a GnRH+prostaglandin program) we see a 10-20 percent increase in pregnancy rates." He explains the boost comes from both more anestrous cows coming into heat and a tighter window of synchrony.

For the record, progesterone effectively suppresses heat and the release of both follicle-stimulating hormone (FSH) and luteinizing hormone (LH). In turn, the prostaglandin regresses the CL, synchronizing the time when females should be ovulating which makes time-breeding possible. Moreover, at least where CIDRs are concerned, the above is true whether progesterone is used with prostaglandin alone (Table 1) or in tandem with GnRH (Table 2).

Closer to home, Andrew explains, the CIDR prevents estrus from occurring while it's in place. "Basically what you're doing that first seven days is using progesterone to make sure that all of the cows, no matter what stage of heat they are in, start out on the same playing field." Consequently, producers have a truer crack at breeding all cycling females. "When you pull out the CIDR, the progesterone crashes and it's like switching on a light. With a shot of prostaglandin they come into heat," says Andrew.

Stevenson points out, "The prostaglandin is essential to regress the CL in those cows where the CL has not regressed spontaneously during the CIDR treatment."

Promises Proven

According to Lucy, "The primary advantage of CIDRs is for anestrous cows. The progesterone will cause cows that aren't cycling to start cycling. But even in the cycling cow the advantage of the CIDR is that you get a tighter window of synchronization."

Hardin emphasizes, "When you use a CIDR in a prostaglandin system, clearly you are going to wind up with tighter synchronization, and you will jump-start some of the cows that aren't cycling. But you have to understand you'll never get cows to cycle that are unable to cycle due to nutritional stress or because it has only been three weeks since calving."

By the same token, Hardin says the progesterone in the CIDR increases the odds of synchronizing higher risk females. These higher risk females include those that might be on the edge of nutritional or postpartum stress. Even so, Hardin believes the narrower window of synchronization yielded by CIDRs is the stoutest incentive. He explains, "The CIDR will bring the tightest synchrony to the table, so if one-time A.I. is the primary goal of the synchronization program, then it has to push toward the top of the list of options."

For perspective, Hardin says a two-shot prostaglandin program opens the synchronization window the widest. Using GnRH with prostaglandin closes the window some, but CIDRs shut it down tighter than any.

As for security of application, Stevenson explains although a device or two may fall by the wayside, the retention rate is better than 95%. As well, there's no wondering if the cows are ingesting the progesterone, as with MGA, or

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wondering how long it will take progesterone levels to drop once the source is taken away. With the CIDR, you know they have it, and when you take it out, you know it's gone.

Most important to many producers, Lucy says the CIDR works consistently across a broad range of conditions. "I concluded from my work (research on the CIDR) that it is a robust treatment. From Florida to Montana all of the cows responded the same way, so I think this is the type of protocol producers can use with confidence and get consistent results."

Bottom line, Dr. Darrel De Grofft of Colorado Genetics, Inc., an embryo transfer firm, says, "When we think about synchronizing cows, the best thing to do, really, is to synchronize the ovulation and it appears the CIDR synchronizes both the estrus and the ovulation... If you want a group of cows to all come into heat Wednesday afternoon, this is the product to use." His assessment is based on his use of CIDRs in other countries.

In fact, the CIDR has earned its stripes throughout much of the world. Unfortunately, until FDA approves it for use in the United States, the opportunity will continue to elude producers here, save for the CIDRs that have come in for research, as part of a murky government program to pull up slack in donor programs when norgestomet left the market. "The pity is that we have a technology proven safe in every country but ours so we can't have access to it," says De Grofft, who is also vice president of the American

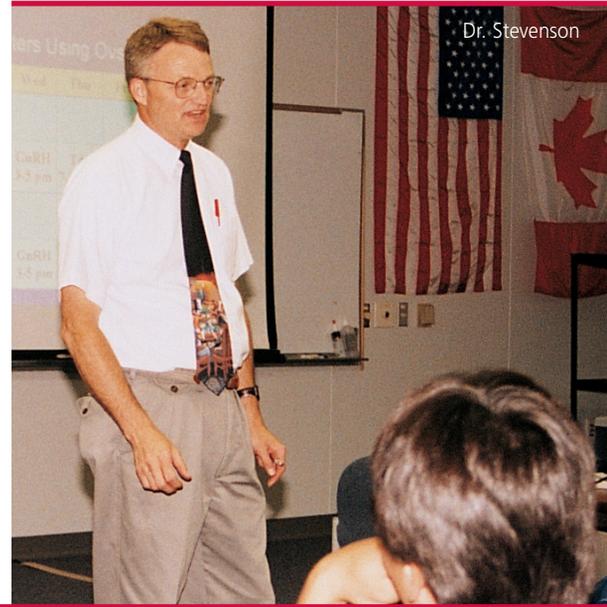
Embryo Transfer Association. "Hopefully, everyone will keep pushing FDA for approval so it can be approved for use here."

Indeed. Dr. Neil Michael, director of technical services for ABS Global says, "If we (the industry) can work toward more mass insemination with timed breeding instead of heat detection, I think we'll be better able to serve commercial producers."

As it is fewer than 5% of the beef cows in North America are artificially inseminated. "This product has been used so successfully in other countries to ensure a high percentage calf crop with A.I.," says Michael. "It allows producers to conduct a very intense breeding program for a very short period of time and get 75-80 percent of their cows bred in 30-40 days...Just tighten up the calving interval and the difference of the value of the offspring will be huge compared to what we have now."

Would-be Bumps in the Road

Given the excitement producers have for using CIDRs in synchronization, surely there has to be some bad news to balance the good, some steep downside that shatters the possibilities. Actually, it depends on your perspective if you determine that there are monsters lurking.



First, Stevenson points out that inserting the CIDR device does require the person doing the inserting to stand behind the cow, not always a pleasant or clean experience depending on one's perspective. However, he says it is a simple procedure made easier if another

person is employed to hold the tail, while a second person inserts the CIDR so that no one needs to stand directly behind the cow. In sum, he believes most producers would find it easier than sticking an implant in the cow's ear.

Next, depending on the specific protocol used, cows will be making their

using his own bulls, one of Andrew's clients estimates the time he spent pushing cows through the chute to use CIDRs so that he could artificially inseminate made him about \$360 per hour. And Andrew says most of the interest he's getting in the CIDR program is from commercial producers who have never used artificial insemination before.

Choosing an Application

Of course, Michael points out, the value of the CIDR program runs deeper than making A.I. easier to manage for commercial producers and increased A.I.



pregnancies. "This represents another level of performance because of the higher predictability," says Michael.

"Because the results are more predictable, producers can use even higher quality genetics, increasing the value of the calves even more, while holding expenses at the same level that they would be with less expensive semen but fewer pregnancies."

With that in mind,

way through the chute at least three times, counting insemination. More than anything, though, if CIDRs are approved for use in the US, based on reality in other countries, synchronization programs using them will increase in cost.

"We don't know for sure what the CIDR will be priced at in this country, but most estimates say it will cost more than a two-shot prostaglandin program," says Hardin. But Andrew says producers he deals with believe the price is reasonable considering the time saved to enjoy the usual added-value advantages of artificial insemination: benefits like more uniform calves in size and kind, using high accuracy sires, balancing performance traits, mixing and matching sires across the cowherd and accelerating genetic progress within the herd.

In fact, based solely on the increased weaning weight offered by A.I. sires versus

when a producer sits down to consider the merits of alternative synchronization programs, Hardin suggests asking, "What are the goals? Is it getting the greatest number of cows bred A.I.? Is it having to heat detect the fewest number of days? Is it running cows through the chute the fewest times?" Answer these questions and others like them and Hardin says using a combination of progesterone, GnRH and prostaglandin offers possibilities that reach as far as the imagination.

When it comes to considering CIDRs, though, Lucy adds, "A key to deciding whether to use them is determining the percentage of the cows that are cycling." In other words, although the goal is to have all cows cycling, if a high percentage of them already are, the benefits of using a system that jump-starts anestrus cows are diluted. "And, you have to be honest about it," says Lucy. "It can't just be, 'Well, they look like they're in good shape, so they must be cycling.'" He says the most objective way to determine cycling percentage is by palpating the cows – either physically or via ultrasound-for a CL, or by observing estrus behavior for a week.

"I'm convinced you will get an economic return if you compare the cost of an A.I. program like this to the cost of natural breeding everything," says Stevenson.

Whether it's with or without progesterone, utilizing synchronization or not, Hardin says, "The biggest thing folks have to be concerned about is what they want to accomplish. Put a plan on paper that will accomplish it, then do it." 🐮