In Synch

Preliminary data shows combining two common strategies appears to increase pregnancy rates in synchronization programs.

BY TROY SMITH

Like a lot of progressive cattlemen, Vance Uden relies heavily upon artificial insemination (AI) to gain optimum influence from sires selected for genetic superiority. And like many of his colleagues, the Franklin, Neb., breeder has sought to maximize the reproductive efficiency of his TC Ranch females through estrus synchronization.

Successfully inducing estrus at a predicted time can increase the percentage of females that become pregnant early in the breeding season, resulting in a shorter calving period and a more uniform calf crop. Studies have shown that females that conceived during a synchronized estrus calved earlier in the calving period and weaned calves that were, on average, 13 days older and 21 pounds (lb.) heavier than calves from unsynchronized females.

While Uden has enjoyed reasonably good results from several different programs for estrus synchronization of heifers and cows, he'll admit that young cows can present a challenge. Many producers using synchronized AI claim that 2- and 3-year-olds can be tough to get rebred and into a regular cycle of production. However, Uden reports "pretty successful" results following application of a synchronization protocol known as the MGA®-Select system.

Trying a new protocol

"We used MGA-Select to synchronize over 100 2-year-olds last year with very favorable results, compared to the other systems we've used," Uden offers. "We saw good heat response, and synchrony was tighter. Less than 3% checked open, and the vast majority settled early. This year, we used it on even more cows."

On Peggy Creek Ranch, near Reva, S.D., commercial rancher Philip Jerde tried the MGA-Select system and was pleased with improved synchrony and higher conception rates. The system also saved time and labor.

"We usually expect to get about 70% conception," Jerde says, "but this system has bettered that by 10%. We eliminated the early heats, and because more cows showed heat within a shorter period, we spent less time heat-detecting."

Researched by the University of Missouri (MU), with funding from Select Sires and support from Pharmacia Animal Health, the MGA-Select system might be considered a combination of old and new synchronization tools.

Combining systems

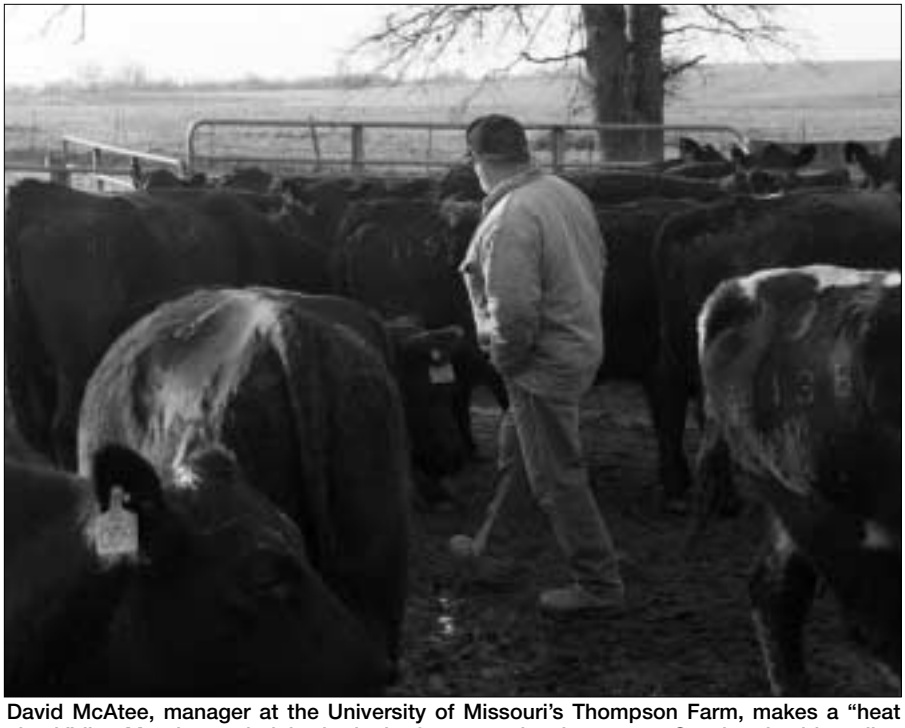
Old AI hands might be most familiar with the toolbox that included injectable prostaglandin (PGF) products, such as Lutalyse® or Estrumate®, used to stimulate the process leading to heat and ovulation. And since tighter synchronization can be achieved when cows share a similar stage of the estrous cycle, a progestin (MGA) often was introduced through the feed first to induce cycling.

Typically, MGA [0.5 milligram (mg)/head/day] was fed for a period of 14 days, then a PGF injection was administered 17 days after MGA withdrawal. However, some cows fail to respond unless a second PGF dose is delivered 11 days after the first injection. That stretches the treatment period to 42 days.

More recently, estrus-synchronization strategies that shortened the time line and omitted MGA were developed. The Select Synch, Ovsynch and CO-Synch systems involve injection of gonadotropin-releasing hormone (GnRH). Each protocol is initiated by an injection of GnRH (available as Cystorelin®, Factrel® or Fertagyl®) followed seven days later with an injection of PGF.

Under Select Synch, it is recommended that heat detection begin as early as the fourth day after GnRH injection and continue through the fifth day after PGF is given. Animals observed in standing heat are inseminated 12 hours after detection. By contrast, Ovsynch and CO-Synch protocols involve timed mass insemination without heat detection.

While Ovsynch also begins with GnRH, followed in seven days with PGF, this strategy incorporates a second GnRH injection on Day 9 and mass insemination 16-24 hours after the second shot of GnRH. CO-Synch matches the Ovsynch treatment



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David McAtee, manager at the University of Missouri's Thompson Farm, makes a "heat check" list. Morning and night, he looks for cows showing estrus. Synchronized breeding will cut this time-consuming chore while shortening the resulting calving season.

except that timed insemination is scheduled with the second injection of GnRH, thus eliminating one run through the chute and shortening the time line by one day.

Eliminating early heats

While GnRH-PGF protocols have not been effective for synchronizing yearling heifers, advantages of their application to cows include simplicity of administration and shortened treatment periods. However, the major disadvantage is that too many cows actually exhibit estrus after the initial GnRH injection but before PGF is given.

"We've seen as many as 15% of cows exhibit early heat as soon as three or four days after GnRH, and it can happen up through the sixth day," says MU's David Patterson.

Patterson says former graduate student Stacey Wood did much of the work in comparing all of the aforementioned strategies with the MGA-Select system, which reintroduces MGA to the treatment protocol. Pretreatment with MGA prior to the GnRH-PGF injections eliminated the early-heat problem, further improved synchrony and enhanced fertility during the synchronized period.

A 33-day time line for MGA-Select involves feeding MGA (0.5 mg/head/day) for the customary 14 days. Twelve days later (on Day 26), a GnRH injection is given, followed in seven days (on Day 33) with administration of PGF. Heat detection and breeding follows immediately. If a timed mass breeding is desired, it is recommended that insemination occur 72 hours after the PGF injection (on Day 36) and that a second dose of GnRH be injected at that time.

At MU's Thompson Farm, MGA-Select was applied to 209 head, followed by insemination of only those cows detected in heat. Results showed 139 head, or 66.5%, were bred via AI.

When Jerde used MGA-Select on 92 2-year-olds, 75% were detected in heat by 72 hours, and the remaining cows were mass inseminated accompanied by an additional injection of GnRH. The ultrasound pregnancy check determined 74 head bred AI and 16 head pasture bred, with only two cows remaining open. That's 80.4% settled to AI service, with a 97.8% pregnancy rate for the entire group.

"Our data shows that with MGA fed on the front end, we can easily bring over 80% of cows into heat within a 48-hour period, beginning 48 hours after the PGF injection. And conception rates have been exceptionally high," Patterson says.

Citing field trials involving several herds and representing about 4,000 cows, Roy Wallace of Select Sires says the MGA-Select protocol has delivered the best results he has seen, even when cows were started just 20-25 days after calving. However, it is recommended that the treatment begin when the herd averages about 40 days postpartum.

"We know from previous data that, of all commercial cows, about 50% are anestrous on the day a synchronization program begins. Those cows need a jump-start. GnRH gives a pretty good boost, but with MGA added back in, we've boosted more while eliminating early heats," Wallace states. "We've seen the biggest improvements in groups of cows with cyclic problems, such as cows that are a little thin. And there's no question that we've got more 2-year-olds pregnant than ever before."

The University of Missouri's Freddie Kojima (left), postdoctoral fellow, and David Patterson, reproductive specialist, ultrasound cows for pregnancy at the university's Thompson Farm.