



Vet Call

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Synchronization of estrus in mature cows

According to 1996 and 1998 surveys conducted by the National Animal Health Monitoring System (NAHMS), 8% to 13% of beef operations use artificial insemination (AI). In the 1998 survey, this ranged from 37% of herds with 300 or more cows using AI to 12% of herds with 50 or fewer cows. Even among herds that use estrus synchronization and AI with their replacement heifers, many do not use these management techniques with their mature cows. Synchronization systems and AI generally result in fewer pregnancies and are more difficult to accomplish in mature cows compared to replacement heifers because of the lack of fertility during the postpartum period (from calving to the resumption of heat cycles) and common extensive management systems whereby cows are grazing in large pastures, which makes daily handling inconvenient.

Synchronizing breeding seasons

The benefits of mature-cow synchronization and AI that encourage some producers to utilize these technologies are:

- improved herd genetics by using AI bulls with higher performance and higher accuracy expected progeny differences (EPDs) than they could afford to purchase as natural sires;
- reduction in the number of bulls that need to be maintained; and
- a concentrated calving season due to a high percentage of females being bred during the early part of the breeding season.

Some commercial herds also use synchronization and AI to simplify their breeding management and bull needs by using AI sires to produce replacement females and natural-service sires to produce feeder cattle.

One of the greatest constraints that reduces the success of synchronization and AI in mature cows is the length of the postpartum period of infertility and the percentage of the herd that calves early in the calving season. The postpartum period for suckled beef cows has been reported to range from 30 to 110 days. I generally estimate 40-60 days for most mature cows in good body condition, and 80 days for first-calf heifers in good body condition.

If you currently calve over a 70-day period and plan to calve at the same time next year, cows calving at the start of the calving season will be 82 days postpartum. Cows calving at the end of the calving season will be 12 days postpartum at the

start of the breeding season. Cows that calved during the first 40 days of the calving season will be between 42 and 82 days postpartum, meaning that most mature cows that calve during the first 40 days of the calving season will be cycling at the start of the breeding season if they are in good body condition, and some of the first-calf heifers, particularly those calving the earliest, will be cycling. Cows that calve toward the end of the calving season will not be cycling when the next breeding season starts.

If 75% of the cows are cycling at the start of the breeding season and 75% of those respond to synchronization and are bred artificially, then 56% of the mature herd can be inseminated during the first few days of the breeding season. If 75% of cows bred by AI become pregnant to that mating, it is possible to have more than 40% of the herd pregnant to an AI sire in the first few days of the breeding season. This percentage is very attractive to many producers who have the facilities and the expertise to utilize AI in mature cows.

In contrast, if fewer of the cows are cycling at the start of the breeding season because a higher percentage of the herd calved later in the previous calving season, or because body condition is inadequate to allow fertile heat cycles, the number of pregnancies achieved with synchronization and AI may not warrant the time and expense involved. For example, if only 50% of the cows are cycling at the start of the breeding season, 75% of cycling cows are bred artificially, and 75% of those bred become pregnant, then only 28% of the

herd would become pregnant to the AI sire in the first few days of the breeding season.

Using synchronization programs

Several synchronization protocols can be used in cows. The best one for your herd will depend on your cattle-handling facilities, labor availability and familiarity with the method. MGA® (melengestrol acetate) can be fed for 14 days, followed 17 days later by an injection with a prostaglandin product. Prostaglandin products may be injected twice, 14-17 days apart. Recently, a device that can be inserted into the vagina for seven days, called a CIDR® (controlled internal drug release) insert, was approved. When used in conjunction with an injection of Lutalyse® one day prior to removal, CIDR inserts will synchronize estrus.

Other modifications of these protocols have been reported. Any of these methods can be successful if the herd is in good body condition and a high percentage are 60 or more days past calving, resulting in a high percentage cycling prior to the start of breeding.

Using synchronization and AI in mature cows can be a very rewarding method to improve genetic traits affecting production, both for animals that are retained for breeding or that are sold as feeder cattle. The constraints of the fairly long postpartum period of infertility in cattle and the animal handling required for synchronization of estrus and AI require that these techniques be part of an overall management plan to have high herd fertility.

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Previous "Vet Call" columns dealing with estrus synchronization:
November 2002 — CIDR

March, April and May 1999 — Synchronization protocols

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