Texas Dairy Matters
Higher Education Supporting the Industry

TIMING OF PREGNANCY DIAGNOSIS AND INITIATION OF RESYNCHRONIZATION

Todd Bilby, Kevin Lager, and Ellen Jordan
Extension Dairy Team
Department of Animal Science
Texas A&M AgriLife Extension Service
The Texas A&M University System

Resynchronization of non-pregnant cows continues to be a challenge for reproductive performance of dairy cows. According to published studies and on-farm data, pregnancy per AI (P/AI) of cows diagnosed not pregnant and resynchronized with the Ovsynch protocol is usually less than 30%.

For best results, it is critical that cows start the timed AI protocol between day 5 and 9 of the estrous cycle. The length of the estrous cycle of lactating dairy cows is approximately 22 days.

Thus, one could suggest that resynchronization protocols should be started between 27 and 31 day after AI. Several studies have evaluated P/AI of cows that started the resynchronization protocol at different intervals after AI. Although strong evidence exists to suggest that starting the resynchronization protocol 19 to 21 days after AI results in reduced P/AI, other studies have not proven that starting the resynchronization protocol at 25 to 28 days after AI results in different P/AI compared with starting resynchronization 32 to 33 days after AI. The explanation for these results is that only approximately half of previously inseminated cows return to estrus between 20 and 24 days after AI. This is caused by the following factors:

- 15% of cows are not properly synchronized by timed AI protocols and 10% of cows inseminated in 'estrus' are not actually in estrus;
- 15% of cows have short luteal phases after first postpartum AI; and,
- although 55% of cows have a viable embryo 6 days after AI, 30% of them have embryonic loss between 6 and 28 days after AI.

These are cows that have altered patterns of return to estrus and would not be in early diestrus if resynchronization protocols were started between 27 and 31 day after AI.

Therefore, it becomes evident that methods to presynchronize your resynchronization protocol have to be developed and implemented to increase P/AI of cows diagnosed not pregnant. However, the presynchronization programs before resynchronization should be utilized with caution since the type of treatment used (i.e. GnRH or prostaglandin) can either reduce or increase estrous detection, respectively. Beginning GnRH injections for a resynchronization program prior to 24 days after insemination may greatly reduce the number of cows observed in estrus and increase the number of cows that receive timed AI.

Another consideration for when and what synchronization program to utilize is the timing of pregnancy diagnosis. Research continues to explore ways to reduce the interval between inseminations to increase the number of cows pregnant and reduce the number of days open. Several alternatives for pregnancy diagnosis are currently available, such as utilizing blood pregnancy tests as early as day 25 after AI. Also, ultrasonography can be utilized at approximately 27 days after insemination and transrectal palpation is normally recommended no earlier than 32 days after insemination, depending on technician skill level.

Most dairies initiate resynchronization programs either prior to or at non-pregnancy diagnosis. The time at which pregnancy diagnosis occurs with subsequent initiation of the synchronization program may reduce estrous expression depending on the timing and type of treatment utilized. For example, if a dairy farm has implemented an ultrasound for non-pregnancy diagnosis at 28 days after insemination and begins an Ovsynch56 program one week prior to non-pregnancy diagnosis (day 21 after insemination) the number of cows that come into estrus after day 21, which is half of the animals, is reduced. In turn more cows enter the synchronization program and receive timed AI. This may reduce fertility and increase treatment costs, provided cows detected in estrus conceive at rates similar to or greater than timed AI.

The same result can occur if utilizing rectal palpation at 35 days after AI and implementing the GGPG protocol with the first GnRH occurring 21 days after AI (GnRH – day 21, GnRH – day 28, $PGF_{2\alpha}$ – day 35, GnRH – day 37.5, timed AI – day 38). If synchronization protocols are implemented based on when non-pregnancy diagnosis occurs, carefully consider the type of protocol utilized and timing of pregnancy diagnosis to maximize fertility and profitability.

The Texas A&M AgriLife Extension Service provides equal opportunities in its programs and employment to all persons, regardless of race, color, sex, religion, national origin, disability, age, genetic information, veteran status, sexual orientation, or gender identity.
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating