Understanding synchronization programs

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Reproductive inefficiency continues to plague dairy producers across the nation. For many years the biggest impediment to A.I. programs was finding cows in estrus. Over the last 10 years reproduction programs have been revolutionized by the development and adoption of estrus synchronization programs such as Ovsynch.

Initially, many producers used these programs to insure that problem cows were inseminated. Recently, more and more producers are using synchronization programs for first service. Instead of identifying cows in estrus after a defined voluntary waiting period, producers now decide when to breed cows for the first time.

Ovsynch is designed to control the time of ovulation so that timed insemination can be used, minimizing the reliance on estrus detection. Research studies show conception rates are similar between cows inseminated at a fixed time following Ovsynch and those bred based on observed estrus. To obtain these same results in the field, strict adherence to tested protocols is required.

Ovsynch is based on three hormonal treatments. On day 0 cows receive GnRH (gonadotropin releasing hormone). This causes release of FSH (follicle stimulating hormone) and LH (luteinizing hormone) from the cow’s pituitary gland. The LH stimulates ovulation of any dominant follicle that is present on the ovary at the time of treatment. In addition, FSH stimulates a new follicular “wave” to develop. One of the follicles from this wave then becomes dominant, growing larger than other follicles on the ovary.

On day 7 prostaglandins are used as the second treatment. The prostaglandin causes the corpus luteum to regress. Progesterone levels fall so the developing follicle can continue maturing, becoming a pre-ovulatory follicle.

The final treatment is a second dose of GnRH given 48 hours after the prostaglandin. The GnRH again causes a surge of LH to be released from the pituitary. The LH induces ovulation of the pre-ovulatory follicle, usually between 24 and 32 hours later. The remnants of the follicle then develop into a corpus luteum, which produces progesterone.

Getting the most return on your investment in a synchronization program requires exact adherence to the timing of these treatments. For example, if the final dose of GnRH is given at 24 hours instead of 48 hours, many of the follicles will be too immature to ovulate.

The initial study of Ovsynch evaluated inseminating cows at 0, 8, 16, 24 and 32 hours after the second GnRH. The highest conception rate occurred at 16 hours, thus it is the recommended interval. There are slight reductions in conception rates when insemination occurs at 0, 8 or 24 hours after the second GnRH.

Because there is only a slight reduction in fertility, some producers may elect to inseminate at one of these times to avoid the hottest part of the day or for other management reasons. Under no circumstances should the timing of inseminations be delayed to 32 hours, as conception rates are lower and pregnancy loss is increased (see Table 1). This increase in pregnancy loss means even fewer cows calve.

Research over the last 10 years indicates that although estrus synchronization proto-

Table 1: Comparison of percent of cows conceiving and calving in an Ovsynch program when insemination occurs at varying intervals after the second GnRH treatment.

| (time after second GnRH until AI) | 0 hrs | 8 hrs | 16 hrs | 24 hrs | 32 hrs |
| % conceiving | 37 | 41 | 45 | 41 | 32 |
| % calving | 31 | 31 | 33 | 29 | 20 |

Figure 1: Variations in presynchronization programs used. (PG=prostaglandins).

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Time to winterize manure management systems

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Every one’s getting back into their usual routine now that children are back in school. Fall is right around the corner and winter isn’t far behind. Now is the perfect time to make a few notes and winterize your manure management system before cold temperatures set in.

The manure management system can be evaluated through its various components. Some practices serve a dairy better during summer than winter months. It’s important to review, evaluate your facility, identify practices that better serve your facility in winter, and be sure these are operational and available.

Source generation: Do you (or should you) do things differently in winter months?
• Evaluate animal drinking water use, pipes, floats, and valves.
• Monitor cow cooling systems and drain water from lines if necessary.
• Evaluate parlor water use, especially water used for udder hygiene and cleaning the parlor.

Can or should any of these sources that put additional water to the waste stream be modified? Also, as part of source generation identify if any changes need to occur in bedding management. Proper attention to animal beds can result in cows arriving at the parlor in cleaner condition, thereby needing less water to prepare for milking.

In areas where cattle are housed indoors be sure ventilation systems are fully functional and they have had their regularly scheduled maintenance. Cold temperatures result trigger fewer air exchanges, resulting in greater buildup of gases in the housing system. Be sure gaseous concentrations are acceptable for animal well being as well as worker safety.

Storage: Evaluate available storage and make modifications to increase storage if land application of nutrients complies with the farm nutrient management plan. Management activities can reduce storage needs. Reduction in parlor water use and maintenance and proper operation of rain gutters with diversion spouts can result in large diversions of water from liquid storage systems. Physical inspection of storage structures (solid, liquid or slurry) is important on a regular basis. Check structures for integrity, cracking, slumping, erosion, vegetation, animal burrows, and visible seepage. Be sure liquid storage structures will not discharge to surface waters.

Perform maintenance on all pumphouses associated with liquid transfer to be sure they are in top operational condition. Evaluate ditches, drains, and perimeter berms to be sure any rain runoff is maintained, contained, and controlled on property. Allow off-site discharge only when it is legal to do so. Evaluate diets to be sure excessive amounts of nitrogen, phosphorus and salts are not sneaking back.

Production area runoff: Clean and re-locate manure nutrients from corrals and outside pens. Grade pens to an area/location where runoff can be collected and transferred to the appropriate storage structures. Establish property berms (if necessary) to prevent uncontrolled runoff from the animal production area. Be sure all pens and feed storage areas drain to a location where nutrients (and runoff waters) can be controlled.

Land application area runoff: Evaluate history of manure application to land. Take into consideration local, state and federal restrictions on discharge of manure from land application areas to surface waters.

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