

Texas Dairy Matters

Higher Education Supporting the Industry

UNDERSTANDING OVSYNCH

Ellen R. Jordan, Ph.D.
Extension Dairy Specialist
Department of Animal Science
Texas A&M AgriLife Extension Service
The Texas A&M University System

Reproductive inefficiency continues to plague dairy producers in Texas and across the nation. For many years, the biggest impediment to artificial insemination programs was finding cows in estrus. Over the last 15 years reproduction programs have been revolutionized by the development and adoption of estrous-synchronization programs such as Ovsynch.

Ovsynch is designed to control the time of ovulation so timed insemination can occur, minimizing the reliance on estrous 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 treatments. On day 0, cows receive GnRH (gonadotropin releasing hormone). The GnRH causes release of FSH (follicle stimulating hormone) and LH (luteinizing hormone) from the pituitary. The LH stimulates ovulation of any dominant follicle that is present on the ovary at the time of treatment. In addition, FSH stimulates development of a new follicular wave. 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, administered 48 hours after the prostaglandins. The GnRH again causes a surge of LH to be released from the pituitary. The LH induces ovulation of the pre-ovulatory follicle, usually 24 to 32 hours later. The remnants of the follicle then develop into a corpus luteum, which produces progesterone.

To get 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 dose of GnRH (Table 1). The highest conception rate occurred at 16 hours, thus that is the recommended interval to insemination. 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 elect to inseminate the cow at one of these times to avoid the hottest part of the day or for another management reason. Under no circumstances should the timing of insemination be delayed to 32 hours as conception rates are lower and pregnancy loss is increased (Table 1). The increase in pregnancy loss in cows inseminated at 32 hours means even fewer cows calve.

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

	Time after Second GnRH until AI				
	0 hr	8 hr	16 hr	24 hr	32 hr
% Conceiving	37	41	45	41	32
% Calving	31	31	33	29	20

Using tools such as Ovsynch can help producers improve the reproductive efficiency of their herds; however when using these tools strictly adhere to the protocols to attain optimal results.