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NEW RESEARCH ON TIMING OF SYNCHRONIZATION AND EFFECTS ON ESTROUS DETECTION

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In a recent study conducted by our group, timing of when synchronization began had a dramatic effect on the number of cows that entered into the timed artificial insemination (AI) program. We evaluated the effects of two resynchronization timed AI protocols beginning at different intervals after AI on fertility in dairy cows.

Lactating cows from two dairies located in TX (n = 2233) and MN (n = 3077) were assigned to one of four timed AI protocols 17 ± 3 days after AI. Cows assigned to Early Resynch or Resynch received the OvSynch56 protocol starting 24 or 31 days after AI, respectively. Cows assigned to Early GGPG or GGPG received a presynchronizing GnRH 17 or 24 days after AI, respectively, 7 days before the start of OvSynch56. Any cow observed in estrus was inseminated on the same day.



Fewer Early GGPG and more Resynch cows were re-inseminated in estrus (Table 1). Treatment did not affect pregnancies per AI at 66 days for cows re-inseminated in estrus. Cows re-inseminated in estrus, however, had greater pregnancies per AI at 66 days (36.0 vs. 23.9%) than cows that received timed AI. However, treatment did not affect P/AI 66 days after re-insemination. On day of first GnRH of Ovsynch56, more Early

GGPG and GGPG cows had CL and progesterone levels greater than 1 ng/mL (Table 1). We concluded that early start of resynchronization and presynchronization with GnRH reduced the number of cows re-inseminated in estrus. Neither the timing nor the resynchronization protocol affected overall P/AI.

Table 1. Effects of 2 resynchronization timed AI protocols beginning at different intervals after AI on fertility in dairy cows

Items	Treatments				P – value
	Early Resynch	Resynch	Early GGPG	GGPG	
Number of cows	637	840	635	736	
Percentage inseminated on estrus after first AI, %	41.6	57.6	23.7	49.0	< 0.01
P/AI at 31 d after first AI, %	29.3 ^a	34.6 ^b	33.0 ^b	39.6 ^b	< 0.01
P/AI at 66 d after first AI, %	26.1	30.4	29.4	30.4	0.11
Number of CL at first GnRH of Ovsynch	76.6 ^a	73.2 ^a	83.8 ^b	88.8 ^b	< 0.01
Progesterone < 1 ng/mL at first GnRH of Ovsynch	50.0	59.0	63.1	76.3	< 0.01

This study illustrates how the number of cows detected in estrus is affected by timing of GnRH injections. Caution should be exercised when recommending synchronization programs based on GnRH, particularly to herds with good AI submission rates and good P/AI to cows inseminated in estrus. If no benefits to overall reproductive performance are achieved by implementing protocols that reduce estrous expression, a significant increase in cost of reproductive programs will be observed because a greater percentage of cows have to be enrolled in fixed time AI protocols. Therefore, it may be advantageous for farms with acceptable estrous detection and conception rates to utilize synchronization programs that are PGF_{2α}-based (i.e. Presynch-Ovsynch or modified Presynch-Ovsynch) compared with GnRH based protocols (i.e. GGPG, G6G or Double-Ovsynch) due to the effects that these protocols have on reducing estrus. For example, in several studies it has clearly been shown that cows re-inseminated in estrus had pregnancies per AI seven to twelve percentage units greater than cows that were re-inseminated at fixed time. Some of this reduction is possibly due to a less fertile population of cows entering the synchronization protocol due to more fertile cows displaying estrus and being removed from the synchronization protocol.