

A Comparison of Heat Synchronization Methods in Mature Cows

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The number of cattlemen that utilize artificial insemination in their breeding program make up a small percentage of the total number of producers breeding cattle. While the number is small, those using AI and synchronization have a definite need. This study is part of the ongoing beef breeding program at the Dickinson Experiment Station.

More than one method is commercially available to synchronize heat cycles. Lutalyse[®] has been available for several years and Synchronate-B[®] was released for use in beef and dairy heifers only in the spring of 1983. While Synchronate-B is a relatively easy program to use, since it requires no heat detection, it is a more costly product to use. Lutalyse, when used as a single injection following five days of conventional AI breeding has been shown in studied at this station and across the country to be an effective synchronizer at a lower cost per cow conceiving. In an attempt to further lower the cost of synchronization, the progestogen feed additive compound melengestrol acetate (MGA[®]) used as a pre-synchronizer in advance of Lutalyse poses a potential to further lower the cost of synchronization.

The primary objective of this investigation is to evaluate the three methods and identify the method which produces the best synchrony at the lowest cost per cow conceiving.

A description of each synchronization method follows.

Synchronate-B - Synchronization with this product consists of placing a 6 mg. norgestomet implant on the back of the middle portion of the ear for 9 days and giving a 2 cc. intramuscular injection containing 3 mg. norgestomet and 6 mg. estradiol Valerate at the time of implantation. The ear was clipped, scrubbed with a detergent and nolvasan solution and bathed with alcohol from a squeeze bottle before the implant was placed in the ear. Upon implant

removal, all calves were removed from their mothers, confined next to their mothers with a calf shelter and commercial calf ration for 48 hours. Inseminations were constructed by appointment (no heat detection) between 48 and 52 hours after implant removal.

Lutalyse (single injection method) - Cows in this group were observed for heat during a five day conventional breeding period. On the morning of the sixth day (8 AM), all cows not previously detected in heat were injected with 25 mg. (5 ml) of Lutalyse deep in the rump muscle using a

1 $\frac{21}{16}$ " x 16 gauge needle. Inseminations were conducted 12-14 hours after detection in standing heat.

Melengestrol acetate (MGA) / Lutalyse combination - this treatment was added in the second year of the study. Cows in this group were fed .75 mg MGA feed additive in one pound of a barley pellet containing 1% phosphorous. MGA feeding began five weeks before the start of the normal breeding season and was fed in wooden bunks for a period of fourteen days. Following a three week holding period after MGA had been removed from the cows diet a single injection Lutalyse program began as described above.

The progestogen compound MGA has been studied extensively. Research pointed out that MGA could be used as a synchronizer but that a temporary infertility occurred when the compound was fed longer than 9 days. However when fed for 9 days or less adequate synchrony could not be obtained. Based on this information we elected to begin feeding MGA five weeks before the start of the breeding season to allow the cows to have one heat cycle in between MGA feeding and the start of the breeding season. We predicted that a three week holding period would alleviate the temporary infertility problem.

Assignment of cows to treatments was based on cow age, post-partum interval and cow breed. A minimum interval between calving and the start of the breeding season was 60 days.

Crested wheatgrass was grazed from turnout time in early May until after the artificial breeding season was complete. During this time five pounds of barley was fed per head daily as a flushing feed.

A brief summary of synchronization results and economics for 1984 and 1985 are shown in tables 1 and 2. A summary for combined years is shown in table 3.

Summary

Breeding artificially in mature cows following synchronization with Lutalyse, Synchromate-B and an MGA / Lutalyse combination has generated some very useful information for the cattlemen using artificial insemination in his breeding program.

Two years of data have been collected for Lutalyse and Synchromate-B. An MGA / Lutalyse combination treatment was added in the second year of the study and therefore, only one breeding seasons data is available.

Conception rates with Synchromate-B and Lutalyse have been variable between years and within years. In year one conception rates for the two products were 77.7% and 76.0% for Lutalyse and Synchromate-B respectively. In year two however, conception rate for Lutalyse increased 4.9% while Synchromate-B's rate fell 14.1%. Technician fatigue is a possible explanation for the reduction, but is doubtful.

Conception rate with the MGA / Lutalyse combination after one breeding season was 60%. Our primary objective for using this combination was an attempt to improve upon the success previously obtained Lutalyse while lowering the cost of synchronization.

Comparing using Lutalyse alone with the MGA / Lutalyse system revealed two important aspects. First, using MGA as a pre-synchronizer increased the number of cows in heat and inseminated during the first five days of the breeding season by 46% and secondly, the conception rate with MGA was 20% lower. It would appear to us that the three week period between MGA feeding and when breeding began was not sufficient time to allow the temporary infertility associated with MGA to correct itself.

Economically, Lutalyse has been shown to be the most consistent synchronizer, being a very competitive and easy product to use. Cost per cow conceiving after two breeding seasons is \$3.90. Synchromate-B under the conditions of this study has not been as consistent, requires placing cows in a squeeze chute twice before breeding, and is the most costly product per cow conceiving at \$10.78. Although the conception rate with MGA / Lutalyse system was depressed, the cost per cow conceiving was more in line with the Lutalyse system costing \$4.61.

This trial is being continued with one change. MGA level was lowered from .75 mg/head/day to .50 mg/head/day in the 1985 breeding season.

Table 1. Summary of Synchronization Methods, 1984		
	Single Injection Lutalyse	Synchromate-B
No. head	27	25
No. cows conceiving at synchronized estrus	21	19
No. cows in heat 1 st 5 days of breeding (%)	6 (22.2%)	0
No. cows open and sold	0	1
No. cows not having synchronized calves	6	5
Conception rate, %	77.7	76.0
Economics:		
No. cows treated	21	25
Cost/cow treated, \$	4.00	7.50
Total cost for synchronization in each treatment, \$	84.00	187.50
Synchronization cost/cow conceiving, \$	4.00	9.87

Table 2. Summary of Synchronization Methods, 1985.			
	Single Injection Lutalyse	MGA/Single Injection Lutalyse	Synchromate-B
No. head	23	25	21
No. cows conceiving at synchronized estrus	19	15	13
No. cows in heat 1 st 5 days of breeding (%)	5 (21.7%)	17 (68%)	0
No. cows open and sold	1	2	3
No. cows not having synchronized calves	3	8	5
Conception rate, %	82.6	60.0	61.9
Economics:			
No. cows treated	18	9	21
Cost/cow treated:			
Lutalyse, \$	4.00	4.00	---
MGA, \$	---	1.33	---
Synchromate-B,\$	---	---	7.50
Total cost for synchronization in each treatment, \$	72.00	36.00 + 33.25 = 69.25	157.50
Synchronization cost/cow conceiving, \$	3.79	4.61	12.11

Table 3. Combined Results of Synchronization Methods, 1984 and 1985.

	Single Injection Lutalyse	MGA/Single Injection Lutalyse	Synchromate-B
No. head	50	25	46
No. cows conceiving at synchronized estrus	40	15	32
No. cows in heat 1 st 5 days of breeding (%)	11 (22%)	17 (68%)	0
No. cows open and sold	1	2	4
No. cows not having synchronized calves	9	8	10
Conception rate, %	80.0	60.0	69.5
Economics:			
No. cows treated	39.00	9	46
Cost/cow treated:			
Lutalyse, \$	4.00	4.00	---
MGA, \$	---	1.33	---
Synchromate-B,\$	---	---	7.50
Total cost for synchronization in each treatment, \$	156.00	36.00 + 33.25 = 69.25	345.00
Synchronization cost/cow conceiving, \$	3.90	4.61	10.78

¹Only one years data.

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