

A COMPARISON OF HEAT SYNCHRONIZATION METHODS IN MATURE COWS

BY

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Since the late seventies, the evaluation of estrus synchronization products and their management has been an important part of the beef cattle research program at this station.

There are several estrus synchronization products on the market with Lutalyse Estrumate, and Synchronate-B, the most common. This station first tested Lutalyse in 1976. In 1983, Synchronate-B became available commercially for use in beef and dairy heifers. These products all offer a synchronization program allowing insemination by appointment. However, there is considerable variation in cost per cow treated.

To reduce the out of pocket costs, producers using Lutalyse and Estrumate can eliminate one injection by using conventional heat detection and insemination for a five day period. The remaining cows then receive a single injection and these cows can then be inseminated by appointment at 80 hours post injection, or the owner may continue to detect and breed for an additional four to five days.

Another experimental method of synchronizing estrus incorporates the feeding of melengestrol acetate (MGA) prior to the administration of a prostaglandin product (Lutalyse).

Prior research has shown MGA to be effective in preventing expression of estrus in breeding animals, but a temporary infertility occurs in the first estrus following removal of MGA. If MGA is fed for less than nine days, synchronization of estrus is not adequate or satisfactory. Theoretically, a combination of MGA feeding, a rest period and a single injection of Lutalyse would allow a maximum number of cows to be synchronized and inseminated at a minimal cost per cow treated.

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 nine 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 separated from their mothers, confined next to their mothers in pens equipped with a calf shelter and water trough and fed a commercial calf ration for 48 hours. Inseminations were conducted by appointment (no heat detection) between 48 and 52 hours after implant removal. Following insemination all cows and calves were rejoined.

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 (8AM), all cows not previously detected in heat were injected with 25 mg. (5 ml.) of Lutalyse deep in the muscle using a 1-1/2 inch 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 .5 mg MGA feed additive in one pound of a barley pellet containing 1% phosphorus. MGA feeding began five weeks before the start of the normal breeding season and was bunk fed 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.

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 A I breeding season was 60 days.

A brief summary of synchronization results and economics for 1984, 1985 and 1986 are shown in Tables 1, 2 and 3. A summary for combined years is shown in Table 4.

Summary:

Breeding artificially in mature cows following synchronization with Lutalyse, Synchronate-B or an MGA/Lutalyse combination has generated some very useful information.

Although Synchronate-B requires each cow to be handled twice for installation and removal of the implants, the program requires less labor since heat detection is not necessary. The cost for Synchronate-B continues to come down but the luxury cost for not detecting heat, even for a short period, is quite high. The overall conception rate per cow conceiving was 65.7% at a cost of \$9.13.

Using the MGA/Lutalyse program requires more planning, daily feeding of a grain supplement containing .5 mg. of MGA for fourteen days beginning five weeks before the start of the breeding season and a total of nine days for heat detection. The conception rate per cow conceiving with this program was 65.3%. This rate is equal to the breeding success experienced with Synchronate-B, however, the cost per cow conceiving was substantially less, costing \$3.78.

The single injection Lutalyse program also requires a total of nine days for heat detection. The overall conception rate per cow conceiving using Lutalyse was 72.9% and resulted in the lowest cost per cow conceiving of \$3.50.

Table 1. Summary of Synchronization Methods, 1984

Treatment:	Single Injection Lutalyse	Synchromate-B
No. Head	27	25
No. cows conceiving at synchronized estrus	21	19
No. cows in heat 1 st five 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:		
Lutalyse	21	
Synchromate-B		25
Cost/cow treated, \$	4.00	7.50
Total cost for syn. in each treatment \$	84.00	187.50
Syn. cost/cow conceiving, \$	4.00	9.87

Table 2. Summary of Synchronization Methods, 1985

Treatment	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 syn. calves	3	8	5
Conception rate	82.6%	60.0%	61.9%
Economics:			
No. cows treated:			
Lutalyse	18	9	
MGA		25	
Synchromate-B			21
Cost/cow treated:			
Lutalyse, \$	4.00	4.00	
MGA, \$		1.33	
Synchromate-B, \$			7.50
Total cost for syn. in each system, \$	72.00	69.25	157.50
Syn. cost/cow conceiving, \$	3.79	4.61	12.11

Table 3. Summary of Synchronization Methods, 1986

Treatment	Single Injection Lutalyse	MGA/ Single Injection Lutalyse	Synchromate-B
No. head	24	24	24
No. cows conceiving at synchronized estrus	14	17	14
No. cows in heat 1 st 5 days of breeding %	9 (37.5%)	17 (70.8%)	0
No. cows open and sold	3	2	1
No. cows not having syn. calves	7	5	9
Conception rate	58.3%	70.8%	58.3%
Economics:			
No. cows treated:			
Lutalyse	15	7	
MGA		24	
Synchromate-B			24
Cost/cow treated:			
Lutalyse, \$	3.50	3.50	
MGA, \$		1.33	
Synchromate-B, \$			6.00
Total cost for syn. in each system, \$	52.50	56.42	144.00
Syn. cost/cow conceiving, \$	3.75	3.31	10.28

Table 4. Combined Results of Synchronization Methods, 1984 thru 1986

Treatment	Single Injection Lutalyse	MGA/ Single Injection Lutalyse 1/	Synchromate-B
No. head	74	49	70
No. cows conceiving at synchronized estrus	54	32	46
No. cows in heat 1 st 5 days of breeding %	20 (27%)	34 (69.4%)	0
No. cows open and sold	4	4	5
No. cows not having syn. calves	16	13	19
Conception rate	72.9%	65.3%	65.7%
Economics:			
No. cows treated:			
Lutalyse	54	16	
MGA		49	
Synchromate-B			70
Cost/cow treated:			
Lutalyse, \$	3.50	3.50	
MGA, \$		1.33	
Synchromate-B, \$			6.00
Total cost for syn. in each system, \$	189.00	121.17	420.00
Syn. cost/cow conceiving, \$	3.50	3.78	9.13

1/ Only two years data.