

**ESTRUMATE, LUTALYSE AND SYNCHROMATE-B  
COMPARED FOR SYNCHRONIZING HEAT CYCLES IN BEEF HEIFERS**

**BY**

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Artificial insemination affords the stockman a tremendous potential for genetic advancement if he wants to commit himself and capital to the task. Commitment to an artificial breeding program comes in many ways: study, capital investment, facilities and adherence to detail. Using synchronization compounds to group heat cycles together has proven to save time and labor but doesn't replace management; on the contrary, it intensifies management.

University and industry scientists, using the advanced technology of reproduction, now have four compounds available for commercial use to synchronize reproductive cycles in beef and dairy heifers. Three of the compounds, Estrumate, Bovilene and Lutalyse are prostaglandins which, when given to heifers and cows with functional corpus luteums (C.L.) cause the animals reproductive cycle to start over again bringing them into heat 2-5 days later. The fourth product, Synchronate-B, has a totally different mode of action by hormonally restraining a cow from coming into heat until the desired time. It is a progestogen/estrogen combination that research has shown takes a nine day holding period. Upon removal, heat cycles have been shown to be tightly grouped.

In previous research at this station a single 25 mg injection of Lutalyse has proven to be the most economical, and highest conception rates have been obtained when inseminations were done according to estrus instead of on a timed basis. In a study by former NDSU reproductive physiologist Dr. Gary Williams, it was found that estrus synchronization and conception rates were unaffected when the recommended level of Lutalyse used was reduced from 25 mg to 15 mg per heifer. Reducing the dosage of Lutalyse lowered the costs of synchronization substantially.

Synchronate-B was released for use in beef and dairy heifers in the spring of 1983. One of the advantages for Synchronate-B is that it produces a very tight synchronization and is reported to be a compound that will truly allow cattlemen to artificially inseminate cattle without detecting heat.

The purpose of this investigation is to compare two of the prostaglandin compounds Lutalyse (natural origin) and Estrumate (synthetic formulation) with the Synchronate-B system, and to further evaluate use of reduced dosages of Lutalyse under field conditions.

Three years of data have been accumulated with these products. Heifers used were Hereford, Angus x Hereford, Milking Shorthorn x Angus x Hereford and Simmental x Hereford. Onset of puberty was recorded for all heifers using epididectomized marker bulls during the wintering period in drylot. The heifers were randomly allotted to one of the three treatments based on age, weight, breed, and number of heat cycles each had before the start of the breeding season.

On the day that detection and breeding began in the Estrumate and Lutalyse groups, heifers in the Synchronate-B treatment were implanted. The Synchronate-B system consists of an ear implant impregnated with a potent progestogen compound, norgestomet, and a 2 ml injection containing a solution of norgestomet and an estrogen, estradiol valerate. Implants and injection were made with strict adherence to the manufacturer's instructions. Asepsis is very important and therefore, the ear was clipped with an animal clipper, scrubbed with a detergent and nolvasan solution and further disinfected with alcohol before the implant was placed on the backside of the middle one-third of the ear. The implant remained in place for nine days and was removed the same time of day that it was installed. Removal was done by breaking through the scab and scar tissue with a forceps. Using the forceps to grasp and a thumbnail to apply pressure on the implant, it was slid out through the hole of entry.

The implanter needle was immersed in alcohol between implantings. The 2 cc. injection of norgestament and estradiol valerate were given using a 1½ inch x 16 guage needle and 2 cc hypodermic syringes.

The heifers were mass inseminated, beginning 48 hours after the last implant was removed, and placed with clean-up bulls after all heifers were out of heat.

The data have been summarized by year in Tables 1, 2 and 3. The combined results are shown in Table 4.

### **Summary:**

Comparing systems, Synchronate-B was easier to use since no heat detection was needed. Estrumate and Lutalyse required heat detection and additional labor.

Conception rates varied between years for all compounds. However, data for combined years shows that results from Estrumate and Lutalyse differed very little. The overall conception rates were 59.5% for Estrumate, 60.2% for Lutalyse and 44.6% for the Synchronate-B system. Conception rates obtained using Synchronate-B were the most variable ranging from a low of 23.5% to a high of 54.2%.

Using a reduced 15 mg dosage of Lutalyse was very effective. Conception rates were unaffected by the dosage reduction and the cost of synchronization was reduced proportionately.

For combined years, the synchronization cost per heifer conceiving using a conventional dosage of Estrumate was \$3.74 and the reduced dosage cost per heifer conceiving using Lutalyse was \$1.81. The cost for synchronization per heifer conceiving in the Synchronate-B group was \$13.45.

Based on these data, the Synchronate-B program used cannot be recommended. While the program is easy to use and heat detection is not necessary, breeding success with the program has not been adequate making the cost per heifer conceiving very expensive. When compared to Synchronate-B, the prostaglandins Estrumate and Lutalyse, which do require nine days of heat detection, have been more consistent synchronizers and are very economical to use.

**Table 1. Estrumate, Lutalyse, and Synchronate-B Compared for Estrus Synchronization in Beef Heifers, 1984**

<b>Treatment</b>	<b>Estrumate</b>	<b>Lutalyse</b>	<b>Synchronate-B</b>
No. Head	23	23	23
No. insemin. during 1 <sup>st</sup> 5 days of breeding	6	6	---
No. given synchron. drug	17	17	23
No. not detected and not inseminated	4	3	--- 1/
No. having synchron. AI sired calves	11	13	12
No. having calves sired by clean-up bull	9	5	9
No. open heifers	3	5	2
Conception rate	47.8%	56.5%	52.2%
<b>Amount of Drug Used</b>	<b>500 mg/2cc</b>	<b>15 mg/3cc</b>	<b>Implant &amp; 2cc Injection</b>
Cost/heifer treated, \$	3.50	2.10	6.00
Total cost/group, \$	59.50	35.70	138.00
Cost/heifer conceiving to synchronized estrus, \$	5.40	2.75	11.50

1/ All heifers inseminated by appointment.

**Table 2. Estrumate, Lutalyse, and Synchronate-B Compared for Estrus Synchronization in Beef Heifers, 1985**

<b>Treatment</b>	<b>Estrumate</b>	<b>Lutalyse</b>	<b>Synchronate-B</b>
No. Head	33	33	24
No. inseminated during 1 <sup>st</sup> 5 days of breeding	14	19	---
No. given synchron. drug	19	14	24
No. not detected and not inseminated	1	3	--- 1/
No. having synchron. AI sired calves	21	19	13
No. having calves sired by clean-up bull	10	13	9
No. open heifers	2	1	3
Conception rate	63.6%	57.8%	54.2%
<b>Amount of Drug Used</b>	<b>500 mg/2cc</b>	<b>15 mg/3cc</b>	<b>Implant &amp; 2cc Injection</b>
Cost/heifer treated, \$	3.50	2.10	6.00
Total cost/group, \$	66.50	29.40	144.00
Cost/heifer conceiving to synchronized estrus, \$	3.16	1.55	11.08

1/ All heifers inseminated by appointment.

**Table 3. Estrumate, Lutalyse, and Synchronate-B Compared for Estrus Synchronization in Beef Heifers, 1986**

<b>Treatment</b>	<b>Estrumate</b>	<b>Lutalyse</b>	<b>Synchronate-B</b>
No. Head	18	17	18
No. inseminated during 1 <sup>st</sup> 5 days of breeding	6	10	---
No. given synchron. drug	11	7	18
No. not detected and not inseminated	1	1	--- 1/
No. having synchron. AI sired calves	12	12	4
No. having calves sired by clean-up bull	6	4	11
No. open heifers	0	1	2
Conception rate	66.6%	70.5%	23.5%
<b>Amount of Drug Used</b>	<b>500 mg/2cc</b>	<b>15 mg/3cc</b>	<b>Implant &amp; 2cc Injection</b>
Cost/heifer treated, \$	3.50	2.10	6.00
Total cost/group, \$	38.50	14.70	108.00
Cost/heifer conceiving to synchronized estrus, \$	3.21	1.23	27.00

1/ All heifers inseminated by appointment.

**Table 4. Combined Synchronization Results for Estrumate, Lutalyse, and Synchronate-B Compared for Estrus Synchronization in Beef Heifers, 1984, 1985 and 1986**

<b>Treatment</b>	<b>Estrumate</b>	<b>Lutalyse</b>	<b>Synchronate-B</b>
No. Head	74	73	65
No. insemin. during 1 <sup>st</sup> 5 days of breeding	26	35	---
No. given synchron. drug	47	38	65
No. not detected and not inseminated	6	7	--- 1/
No. having synchron. AI sired calves	44	44	29
No. having calves sired by clean-up bull	25	22	29
No. open heifers	5	7	7
Conception rate	59.5%	60.2%	44.6%
<b>Amount of Drug Used</b>	<b>500 mg/2cc</b>	<b>15 mg/3cc</b>	<b>Implant &amp; 2cc Injection</b>
Cost/heifer treated, \$	3.50	2.10	6.00
Total cost/group, \$	164.00	79.80	390.00
Cost/heifer conceiving to synchronized estrus, \$	3.74	1.81	13.45

1/ All heifers inseminated by appointment.