

Estrumate[®], Lutalyse[®], and Synchronate-B[®] Compared For Synchronizing Heat Cycles in Beef Heifers

By

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It has been the goal of cattlemen to be able to have all heifers cycling at the start of the breeding season, complete breeding in a very short time, use superior high indexing sires and obtain a high conception rate on the first service without the labor of heat detection when breeding artificially.

Scientists and the advancing technology of reproduction now have three compounds available for commercial use to synchronize reproductive cycles in beef heifers. The first compound, Estrumate[®] manufactured by a British company, Havre-Lockhart, is distributed in this country by Bayvet Division of Cutter Laboratories, Inc. Estrumate[®] is the registered trade name for cloprosteral sodium, a synthetic analog of prostaglandin F-2 Alpha. Lutalyse[®] is Upjohn Company's trade name for the prostaglandin F-2 substance that occurs naturally in animal systems. Prostaglandins in the animal system do more than one thing, but they are most known for their ability to cause the corpus luteum that forms in the ovarian follicle to regress resulting in a return to heat in 2 to 5 days after it is given. Synchronate-B[®], on the other hand, has a completely different mode of action than the prostaglandins and is manufactured by CEVA laboratories. It is a progestin/estrogen combination that keeps cattle from coming into heat for nine days, and when it is removed heat cycles are tightly grouped.

Previous research at this Station with the 25 mg prostaglandin compound, Lutalyse[®] has shown that a single 25 mg injection system is most economical and that highest conception rates are obtained when inseminations are done according to estrus instead of on a timed basis. Also, in a comparative study using reduced rates, Dr. Gary Williams, NDSU, Reproductive Physiologist, found that synchronization results were the same when the dosage per heifer was reduced from 25 mg to 15 mg. This reduction reduced the cost 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 was clearly shown to be a compound formulation that would truly allow cattlemen to artificially inseminate cattle without detecting heat.

Comparing these products, while using reduced dosages of Lutalyse[®], under field conditions is the purpose of this investigation. The different parameters measured include: the result when reduced dosages of Lutalyse[®] are used, ease of use, number of days labor required for heat detection and handling, labor requirements needed for placement and removal of ear implants, conception rate and overall economics of each method.

Comparison of these compounds was done using Hereford and Angus X Hereford replacement heifers wintered at the Dickinson Experiment Station. Onset of puberty was recorded for all heifers using epididectomized marker bulls during the wintering period in drylot. The heifers were randomly allotted to the three treatments by age, weight, breed, and number of heat cycles each had before the start of the breeding season.

Heifers in the Estrumate[®] and Lutalyse[®] groups were detected for heat during the five day conventional pre-synchronization breeding period. On the morning of the 6th day all heifers not inseminated during the 5 day period were given either 2 cc Estrumate[®] or 3 cc Lutalyse[®] intramuscularly using a 1" X 16 gauge needle. After these two compounds were given the heifers were inseminated 12-14 hours after being detected in standing heat. Sterile marker bulls were used to simplify heat detection.

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 progestin compound, norgestamet, and a 2 ml injection containing a solution of norgestamet and an estrogen, estradiol valerate. Implants and injections 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 back through the hole of entry.

The implanter needle was immersed in alcohol between implantings. The 2 cc injection of norgestamet and estradiol valerate were given using a 1½" X 16 gauge needle and 2 cc hypodermic syringes.

The heifers were inseminated once and then placed with Milking Shorthorn and Polled Hereford clean-up bulls for a total breeding period of 50 days.

SUMMARY:

Success in terms of conception rate didn't differ substantially. The highest conception percentage was obtained with Lutalyse[®] using a reduced dosage of 15 mg/hd. Conception rates were 47.8%, 56.5% and 52.2% for Estrumate[®], Lutalyse[®] and Synchronate-B[®]. Although the chemistry of Lutalyse[®] and Estrumate[®] are quite different, they performed in much the same manner. The major difference was that conception rate in the Estrumate[®] group was 8.7% lower.

The most dramatic difference in this field study was the cost of synchronization drug per heifer conceiving. Synchronate-B[®] required no heat detection and two handlings. Neither method was particularly difficult. The most economical method was Lutalyse[®] at the 15 mg level per head,

costing \$3.92 per heifer conceiving. By contrast, the Synchronate-B[®] system cost \$17.72 per heifer conceiving. Estrumate[®] was slightly higher than Lutalyse[®] at \$6.56 per heifer conceiving.

Table 1. Estrumate[®], Lutalyse[®], and Synchronate-B[®] Compared For Estrus Synchronization in Beef Heifers

	Estrumate[®]	Lutalyse[®]	Synchronate-B[®]
No. Head/Treatment	23	23	23
No. Head inseminated during 5 day pre-synchronization breeding period	6	6	----
No. Head given synchronization drug	17	17	23
No. Head not detected in heat and not inseminated	4	3	-- <u>1</u> /
No. Head having AI sired calves	11	13	12
No. Head having calves sired by clean-up bull	9	5	9
No. of open heifers	3	5	2
Conception Rate, %	47.8%	56.5%	52.2%
Amount of Drug Used/Head	500 mg/2 cc	15 mg/3 cc	Implant and 2 cc Injection
Cost/Heifer treated, \$	4.25	3.00	9.25
Total Cost/Lot, \$	72.25	51.00	212.75
Cost/Heifer conceiving to synchronized estrus, \$ <u>2</u> /	6.56	3.92	17.72

1/ All heifers in this treatment were inseminated by appointment at 50 hours after implant removal.

2/ Value is for synchronization only; semen costs were \$10/straw.