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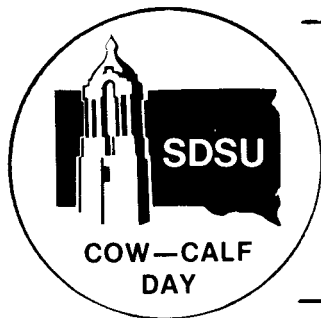
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## EVALUATION OF ONE OR TWO LUTALYSE® INJECTIONS FOR ESTROUS SYNCHRONIZATION IN BEEF CATTLE

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### Summary

Three hundred nine crossbred beef females were evaluated during the 1980, 1981 and 1982 breeding seasons to determine the effect of one vs two Lutalyse injections on conception rate. During the three breeding seasons, similar conception rates resulted. In 1980, conception rates were 58 and 61%, in 1981, 60 and 53% and in 1982, 48 and 58% for the one and two injections, respectively. For the first two years, single-injected cows that were less than 60 days postpartum had a 40% conception rate compared to 64% for single-injected cows bred 60 days or more after calving. Females given two injections had conception rates of 52 and 63% when AI was less than 60 days after calving or 60 days or more after calving, respectively. Average calving dates were April 9 and April 6 in 1981 and April 4 and 7 in 1982 for the one and two injections, respectively. Expected calving date in 1983 is April 6 for both injection regimes.

### Introduction

Researchers have been attempting to control estrous cycles in animals for the last 50 years. For the past several years, there has been considerable interest in the use of Lutalyse for estrous synchronization in beef cattle. For synchronization and artificial insemination to be successful, quality management and nutrition programs must be utilized. Some individual reports have indicated low reproductive performance using synchronization. Many times low reproductive performance can be accounted for by noncycling cows, poor management and semen handling techniques or technician efficiency.

This study includes data from the 1980, 1981 and 1982 breeding seasons using Lutalyse to synchronize estrous in beef cattle. The purpose of this research was to evaluate the effectiveness of Lutalyse on beef cattle using a single Lutalyse injection compared to two injections given 11 days apart.

### Procedure

In 1980, 134 crossbred beef females were randomly assigned to a one or two Lutalyse injection regime. All females were fed 4 lb of ear corn per head per day from calving until 3 weeks before Lutalyse injection. The cattle were also fed 15 lb of alfalfa hay per head per day and had access to grazing. Three weeks before injection, all animals were moved from the Range and Livestock Research Station, Philip, to summer pasture near Sturgis. Two lb of cake (14% protein) were fed per head per day from arrival at the summer pasture until breeding (AI).

Each group (one or two Lutalyse injections) was divided so cows could be inseminated during a short period of time. In each Lutalyse injection group there were two replications.

Eighty crossbred beef females in 1981 were randomly assigned to a one or two Lutalyse injection group. Cows were maintained in drylot from calving until 1 week after breeding (AI at the synchronized estrus) and then moved from the Range and Livestock Research Station to summer pasture near Sturgis. One-half of each injection group was given 2 lb of corn daily from calving to breeding. Both groups were fed all the alfalfa hay they would clean up.

In 1982, 95 crossbred beef females were given one or two Lutalyse injections for estrous synchronization. All cows were moved from Philip to Sturgis for summer grazing 3 weeks before Lutalyse injection.

The injection procedure is diagrammed in figure 1. Each year all females given two injections of Lutalyse (5 ml intramuscularly) were injected at 10 a.m. the first time and again at 10 a.m. 11 days later. They were mass inseminated 75 hours after the second injection. In the one-injection group, animals were heat detected for 5 days for estrus and inseminated. Females not detected in estrus were injected with Lutalyse on the fifth day at 10 a.m. Seventy-five hours later cows not previously inseminated were mass inseminated at 1 p.m. Clean-up bulls with chin ball marker were turned in with the cows 7 days after mass insemination. Cows were checked for breeding marks and those returning to estrus were recorded.

Conception rate for females inseminated at the synchronized estrous was determined by calving date in 1980 and 1981. In 1982, conception rate was determined by rectal palpation 120 days after mass insemination. All cows were in excellent body condition each of the 3 years before the breeding season.

### Results and Discussion

Conception rate for the three breeding seasons is presented in table 1. A higher conception rate was recorded for the two Lutalyse injection groups in 1980 and 1982. However, in 1981, the cows given one injection had higher conception rates than the cows given two injections. Conception rates were 58 and 61% in 1980, 60 and 53% in 1981 and 48 and 58% in 1982 for cows given one or two Lutalyse injections, respectively. In 1980 and 1981, conception rates were determined by calving date and by rectal palpation 120 days after insemination in 1982. Conception rate of beef females given one or two Lutalyse injections was not different ( $P < .05$ ) using chi-square analysis. Over the three breeding seasons, cows given one Lutalyse injection and artificially inseminated had a 55% conception rate compared to 57% for cows given two Lutalyse injections.

The two injection regime eliminates heat detection when mass insemination is employed but represents more than twice the expense in Lutalyse cost.

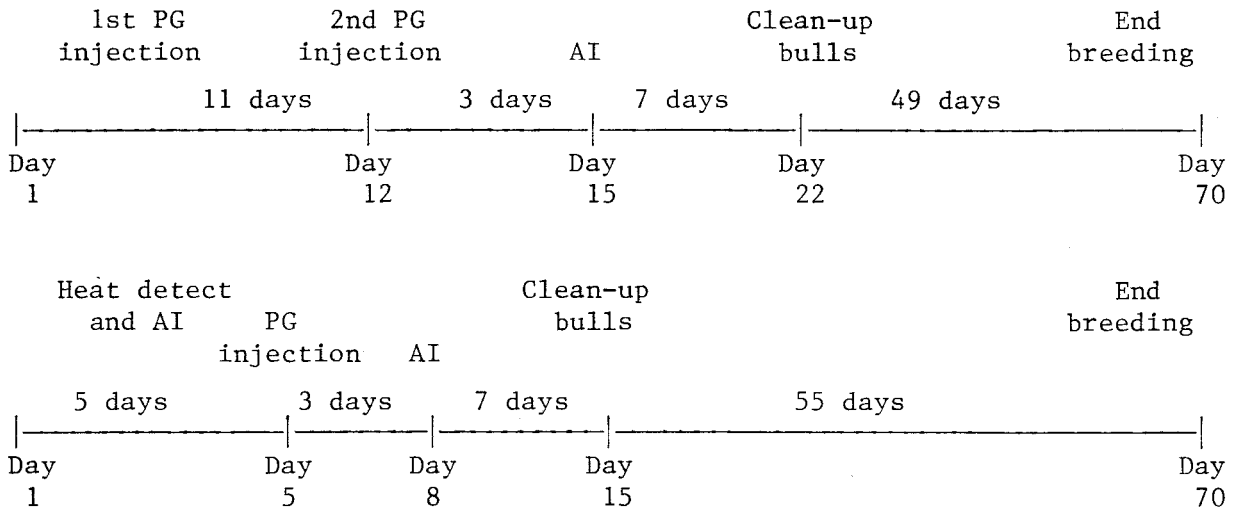


Figure 1. Experimental procedure for one or two Lutalyse injections.

Table 1. Conception Rate (%) to One or Two Lutalyse Injections and Mass Insemination

Year	One injection	Two injections
1980	58 (39 of 67)	61 (41 of 67)
1981	60 (24 of 40)	53 (21 of 40)
1982	48 (23 of 59)	58 (21 of 36)
Total	55 (91 of 166)	57 (82 of 143)

When cows were inseminated less than 60 days after calving (postpartum), there was a decrease in conception rate (table 2). Cows were 45 days postpartum before Lutalyse was given. There was a greater difference in conception rate due to time postpartum when cows were inseminated in 1981 than 1980. However, a larger number of cows were less than 60 days postpartum in 1981 than 1980 at the time of insemination. In 1980, conception rate at the synchronized estrus for cows less than 60 days postpartum was 33 and 63% compared to 62 and 63% for cows more than 60 days postpartum for one and two Lutalyse injections, respectively. In 1981, cows less than 60 days postpartum when inseminated had conception rates of 42 and 47% compared to conception rates of 71 and 64% for cows more than 60 days postpartum for one and two Lutalyse injections, respectively.

Table 2. Conception Rate (%) of Cows to One AI Service After One or Two Lutalyse Injections

Year/time	One injection	Two injections
<u>1980</u>		
Less than 60 days postpartum	33	63
More than 60 days postpartum	62	63
<u>1981</u>		
Less than 60 days postpartum	42	47
More than 60 days postpartum	71	64

It appears average calving date should be earlier in a one-injection regime compared to two Lutalyse injections. When giving one injection, cows are heat detected for 5 days and given Lutalyse on day 5 with insemination on day 8. In the two-injection regime, the second Lutalyse injection is given on day 12 and insemination on day 15. However, in two of the three years, average calving dates were the same or earlier in the double Lutalyse group (table 3). Average calving dates were April 9 and 6 in 1981 and April 4 and 7 in 1982 for one and two Lutalyse injections, respectively. In 1983, expected average calving date is April 6 for both injection regimes.

Table 3. Average Calving Date for Cows Given One or Two Lutalyse Injections

Year	One injection	Two injections
1981	April 9	April 6
1982	April 4	April 7
1983 (estimated)	April 6	April 6