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EFFECTS OF BULL EXPOSURE ON POSTPARTUM INTERVAL AND REPRODUCTIVE PERFORMANCE IN BEEF COWS A PROGRESS REPORT

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Summary

The effects of bull exposure on time from calving until estrus, conception rates and calving interval were studied for mature beef cows. In the spring of 1985 and 1986, cows were randomly allotted to one of two treatment groups. Cows were exposed to vasectomized bulls after calving until breeding or no bull exposure. Cows were heat detected twice daily and blood samples were collected weekly to determine progesterone levels. Heat detection data and progesterone levels indicated onset of estrous cycles occurred earlier in bull exposed cows than nonexposed cows. Conception rates to a timed insemination were not different between the two groups. Bull exposed cows tended to calve earlier.

(Key Words: Cows, Bull Exposure, Postpartum Interval, Reproductive Performance.)

Introduction

Maintenance of a 365-day calving interval is important for optimum production. The period of postpartum anestrus is 40 to 60 days. To maintain a 365-day calving interval, the cow must conceive on the first or second estrus postcalving, when fertility is relatively low.

It has been found that ewes in the presence of a ram begin cycling earlier in the breeding season than ewes not exposed to a ram. Additionally, the presence of a boar reduces the postpartum period in lactating sows as well as age at puberty in gilts. If cows return to estrus sooner after calving in the presence of a bull, it would allow the producer to have calves born earlier, thus resulting in increased calf weights at weaning. The purpose of this study was to determine if exposure to vasectomized bulls after calving influences the interval from calving to estrus, conception rates and calving interval.

Experimental Procedure

Purebred Angus (n = 22), Shorthorn (n = 17), Simmental (n = 9) and crossbred (n = 2) cows were randomly allotted to one of two treatments after calving in the spring of 1985. The experiment was repeated with Angus (n = 20), Simmental (n = 13) and crossbred (n = 8) cows in the spring of 1986. Treatments consisted of cows exposed to vasectomized bulls (approximately 10 cows/bull) 3 to 7 days after calving until the beginning of the breeding season or not exposed to bulls. There were no bulls in close proximity to the nonexposed group. Cows were maintained on pasture and provided corn silage, alfalfa haylage and trace mineral salt until pasture was adequate in May.

Cows were heat detected twice daily beginning approximately 4 weeks after the beginning of calving until synchronization to determine resumption of estrus. In 1986, blood samples were collected weekly by jugular venepuncture during this time. Serum progesterones were determined by radioimmunoassay to confirm estrus. All cows were synchronized with Synchro-Mate B and bred without estrus detection in a timed insemination program. Calves were removed from the cows for 48 hours following Synchro-Mate B implant removal. All cows were then inseminated beginning 48 hours after the last implant had been removed. Vasectomized bulls were then run with all cows for a 30-day AI period and then an intact bull was turned in for clean up for the last 30 days of a 60-day breeding season.

Estrus detection data were utilized to determine days to first estrus and percentage cycling for 1985. For 1986, a combination of progesterone levels and estrus detection data was used. Any cows that had calved less than 30 days before the end of the trial were not included in these calculations. Records of calving dates

were used to estimate percentage conceiving to the timed insemination and average calving date. Rectal palpation for pregnancy at approximately 100 to 130 days after breeding was used for cows that were sold. All cows in the study were considered in calculating percentage conceiving to timed insemination, pregnancy rates and average calving date.

A group of 14 to 16 cows were selected and cannulated upon heat after Synchro-Mate B implant removal. Blood samples were collected every 15 minutes for 2 hours and then every 2 hours for 48 hours. These samples will be analyzed by radioimmunoassay to determine LH, estrogen and prolactin levels.

Results and Discussion

Bull exposure after calving reduced the interval to first estrus in 1985 ($P<.01$) and not in 1986 ($P>.05$; table 1). Initiation of estrus cycles occurred 25 days earlier ($P<.01$) in bull exposed cows than in nonexposed cows in 1985 (46 ± 18.8 vs 71 ± 18.1 days after calving). The percentage exhibiting estrus prior to insemination was 77.5% for bull exposed cows and 19% for nonexposed cows ($P<.01$). In 1986, there was no significant difference ($P>.05$) in the days to first estrus after calving, 45 ± 14.4 vs 52 ± 18.8 for bull exposed and nonexposed cows, respectively. There was also no difference in the percentage of cows showing estrus by synchronization time ($P>.05$), although there tended to be a greater percentage of the bull exposed cows cycling (81% vs 65%). There was no difference ($P>.05$) in the percentage of cows conceiving to the timed synchronization in 1985 (63.3% for bull exposed vs 43.3% for nonexposed). The percentage pregnant did not differ between the two groups. The bull exposed cows calved an average of 7 days earlier in 1986 than nonexposed cows, but there was no statistical difference ($P>.05$).

TABLE 1. REPRODUCTIVE PERFORMANCE

	1985		1986	
	Bull exposure	No exposure	Bull exposure	No exposure
No. of cows	35	37	20	21
Avg calving date before treatment	3/24[a]	3/25[a]	3/27[a]	3/30[a]
Avg date of first estrous cycle	5/8[a]	6/2[b]	5/6[a]	5/12[a]
Avg days calving to first estrus	46.5 ± 18.8[a]	71.3 ± 18.1[b]	45.0 ± 14.4[a]	52.0 ± 18.8[a]
% cows in estrus by synchronization (cows 30 days postpartum excluded)	77.5[a]	19.0[b]	81.0[a]	65.0[a]
% conception to timed synchronization	63.3[a]	43.3[a]		
% pregnant	93[a]	97[a]		
Avg calving date after treatment	3/24[a]	3/31[a]		

[a,b] Values with unlike superscripts differ within years ($P<.01$).