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EFFECT OF UTERINE MANIPULATION ON POSTCALVING FERTILITY OF BRAHMAN COWS AND FIRST-CALF HEIFERS

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SUMMARY

A single uterine manipulation performed between days 29 and 35 after calving is effective in increasing fertility in mature cows but not in first-calf heifers. Uterine manipulation at weekly intervals does not alter fertility in first-calf heifers but does dramatically decrease fertility in mature cows. A single uterine manipulation can increase the proportion of mature cows which would have their next calf within 365 days of calving by 29.5% over controls.

INTRODUCTION

Previous studies at Overton have shown that injection of prostaglandin at or near day 32 after calving will increase the cumulative frequency of return to estrus by 100 days after calving. Since the uterus produces prostaglandins, further experiments were conducted. These experiments demonstrated that uterine manipulation, when performed around day 35 after calving (between 28 and 42 days), stimulates prostaglandin production by the uterus. When intervals from calving to estrus were analyzed, it was found that uterine manipulation was effective in increasing the cumulative frequency of return to estrus by day 80 in pluriparous cows but not in primiparous heifers.

It is well known that cows with shorter intervals from calving to estrus tend to have a subfertile first estrus. Therefore, the fertility of the first estrus after uterine manipulation or prostaglandin injection could be questioned. The objective of this experiment was to evaluate the effect of different frequencies of uterine manipulation upon postcalving fertility in Brahman and first-calf heifers.

PROCEDURES

One-hundred thirty-two Brahman cows and 63 first-calf heifers calving in the spring of 1988, fall of 1988 and spring of 1989 were utilized. These animals were randomly allotted within calving date, age and sex of calf to three treatment groups: 1) control, no uterine manipulation, 2) 2 minutes of gentle uterine manipulation per rectum, one time between 29 and 35 days after calving (n=67) or 3) uterine manipulation at weekly intervals from 7 through 51 days after calving or until first estrus (n=63). All animals were bred by natural service.

RESULTS

Treatment did not affect pregnancy rates in first-calf heifers (Table 1; controls = 50.0%, a single uterine manipulation = 57.1%, weekly uterine manipulations = 55.0%). Pregnancy rates in mature cows (Table 1) receiving weekly uterine manipulations were lower ($P < .01$; 60.5%) compared with controls (83.7%) and the single uterine manipulation group (89.1%). Conception rate at first estrus after calving (Table 2) was not affected by treatment in first calf heifers but was affected by treatment in mature cows. Conception rates in the mature cows were lower ($P < .01$; 3.3%) when given weekly uterine manipulations compared with the control (30.3%) or the single uterine manipulation groups (36.4%). Pregnancy rates were higher in the single uterine manipulation treatment group on day 85 (78.3%), 95 (80.4%) and 105 (80.4%) compared with control (48.8, 55.8 and 60.5%, respectively) or weekly uterine manipulation groups (34.9, 51.2 and 55.8%, respectively). Proportion of pregnant cows conceiving early (by 85 days) was higher in the single uterine manipulation group (87.8%) compared with the controls (58.3%) or weekly uterine manipulation (57.5%).

Single gentle uterine manipulation between 28 and 42 days after calving is effective in shortening the interval from calving to estrus and from calving to conception in mature beef cows. We believe that this should be an effective management tool to improve reproductive performance in the beef herd.

TABLE 1. PREGNANCY RATES AFTER THE COMPLETE BREEDING SEASON

Treatment	Cows		First-calf heifers	
	# Pregnant/Total	%	# Pregnant/Total	%
Control	36/43	83.7 ^a	11/22	50.0
1UM ^c	41/46	89.1 ^a	12/21	57.1
WUM ^d	26/43	60.5 ^b	11/20	55.0

^{a,b}Means in a column with different superscripts differ (P < .01).

^c1UM = one uterine manipulation.

^dWUM = weekly uterine manipulation.

TABLE 2. CONCEPTION RATES AT FIRST ESTRUS AFTER CALVING

Treatment	Cows		First-calf heifers	
	# Pregnant/Total	%	# Pregnant/Total	%
Control	10/33	30.3 ^a	3/17	17.6
1UM ^c	12/33	36.4 ^a	2/14	14.3
WUM ^d	1/30	3.3 ^b	6/17	35.3

^{a,b}Means with different superscripts differ (P < .01).

^c1UM = one uterine manipulation.

^dWUM = weekly uterine manipulation.