THE EFFECTS OF MGA[1] FED PRIOR TO NATURAL SERVICE ON REBREEDING PERFORMANCE OF POSTPARTUM BEEF COWS

G. E. Selk[2], K. C. Barnes[3], and J. Flusche[4]

Story in Brief

Fifty-two mature Brangus cows were allotted into two groups to examine the effects of short term feeding of melengestrol acetate on postpartum reproduction of beef cows. The treatment group (n = 27) received 1 mg melengestrol acetate in supplemental pelleted feed for 10 days prior to the breeding season. The control group (n = 25) received similar supplementation with no melengestrol acetate added. Two fertility tested bulls were placed with each group for the three months breeding season. Cows records were grouped by month of calving in 1986 for analysis of treatment effect on calving interval and percentage calf crop. Among cows calving in March, treatment cows had increased calf crop percentage and decreased calving intervals compared to control cows. Similar, non-significant trends were evident for cows calving in February and April. Cows that calved in February could be expected to have returned to estrus by the start of the breeding season. Cows that calved in March and later were more susceptible to the effects of the synthetic progesterone, melengestrol acetate.

(Key words: MGA, beef cows, postpartum reproduction, natural service)

Introduction

Beef cow-calf producers can profit in many ways by shortening the time period between the date the first calf is born and the date the last calf arrives. Among the benefits gained from a shorter calving season are: more uniform calf-crops; heavier calves at weaning time; more convenient, herd nutrition and herd health management; and better planning of labor needs. Reducing the calving interval (days from parturition in one year to the next) could aid in shortening breeding seasons by moving late calving cows forward to give birth with the remainder of the herd.

Melengestrol acetate (MGA), when fed to beef heifers for periods of 2 weeks, has been shown to induce estrus in some cattle (Selk, et al. 1987) and tends to synchronize estrus in cycling females, upon removal from the diet. Therefore an experiment was conducted to determine the effect of short term MGA feeding to naturally bred postpartum beef cows on calf crop percentage, uniformity of calving time, and calving interval.

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[1]Product of Upjohn Co., Kalamazoo, Michigan [2]Assistant Professor, Animal Science [3]Area Specialized Agent, Animal Science [4]Brangus breeder, Muskogee County, Oklahoma

Materials and Methods

Fifty-two mature lactating Brangus cows were divided into two groups with 27 cow-calf pairs and 25 cow-calf pairs in each of two 160 acre bermuda grass pastures. Two pounds/head/day of pelleted grain (14% C.P.) were fed to each group starting on April 25. (A three day period of acclimation to the feed was used to insure uniform consumption by the cows). On April 28, MGA-treated cows began to receive 1 mg/day of MGA (melengestrol acetate) at the rate of .5 mg per pound of pelleted feed. Control cows received two pounds of the pelleted grain per day throughout the trial. On May 8, feeding was terminated for both groups. At this time, the cows averaged 60 days postpartum and ranged from 96 days to 1 day postpartum.

On May 8, all cows were individually assigned a body condition score. The body condition scoring system used a 1 through 9 scale with 1 = emaciated and 9 = very obese. At this time, two bulls were placed in each pasture (approximate cow/bull ratio = 13:1). The bulls had previously passed a breeding soundness examination and were left in the breeding pastures for 90 days. Dicalcium phosphate and salt were available free choice and all cows were exposed to dust bags/and or backrubbers for external parasite control. All cows were pregnancy checked and length of pregnancy estimated on October 10 by a veterinarian. Non-pregnant cows were culled from the herd. Calving dates in the spring of 1987 were recorded. From these comparisons of 1986 and 1987 calving dates, the effects of MGA feeding on calving interval were evaluated.

Treatment effects on pregnancy rates, 1987 calving dates, and calving intervals were tested by analysis of variance. Treatment effects on pregnancy rates and calving intervals were examined by month in which the 1986 calf was born. These tests also were conducted by analysis of variance of those cows calving in those individual months.

Results and Discussion

Upon preliminary analysis, the 1986 calving date was found to be the major source of variation accounting for the differences in calving interval and pregnancy. Therefore, an analysis of the cows calving within each calendar month in 1986 was performed. Table 1 summarizes the calving dates, calving intervals, and pregnancy percentages for MGA-fed and control cows by month in which they calved.

Figure 1 illustrates the treatment effects on pregnancy rates and figure 2 represents the treatment effects on calving interval of cows calving in February, March, April, and May, respectively. Those cows that calved in February averaged more than 80 days postpartum at the start of the breeding season, therefore both treatment and control cows had ample opportunity to return to estrus by the time of first exposure to the bulls. Consequently any estrus induction effect of the MGA supplementation would be negated, as all of the cows would be expected to have returned to estrus by the breeding season.

The March-calving cows, however, were 56 days and 50 days postpartum for control and treatment cows, respectively, when the breeding season began. Fewer of these cows would be expected to have returned to estrus by the first of the breeding season. Even with this limited number of cows, there was a greater ($p < .01$) percentage of cows that became pregnant (100 vs 63) and a reduction ($p < .05$) in average calving interval (356 vs 377) for cows fed MGA compared to control cows.

Table 1. Mean 1986 and 1987 calving dates, mean calving intervals, pregnancy rates, and pre-breeding body condition scores (BCS) of MGA-fed (MGA) and control (C) cows by month in which 1986 calving occurred.

Month of Calving	(Treatment)	No. of cows	BCS	Mean* 1986 calving date	Mean* 1987 calving date	Mean Calving interval (days)	% Pregnant in 1987
Febr.							
	(MGA)	9	5.5	2-16±2.5	3-12±6.2	389	100
	(C)	14	5.3	2-11±1.8	3-13±6.4	394	93
Mar.							
	(MGA)	9	5.0	3-19±2.8	3-11±3.8	356[a]	100[a]
	(C)	8	5.4	3-13±3.7	3-24±6.9	377[b]	63[b]
Apr.							
	(MGA)	7	5.1	4-16±4.8	3-26±6.8	339	71
	(C)	3	5.5	4-17±7.0	4-2 ----	350	33
May							
	(MGA)	2	5.2	5- 7±0.0	4-20 ---	348	50
	(C)	0	---	-------	--------	---	--
All							
	(MGA)	27	5.2	3-17±5.5	3-16±3.9	364	89
	(C)	25	5.3	3- 1±4.8	3-17±5.5	386	76

*Means ± Standard errors

abMeasurements for cows calving within the same month are different ($p < .05$)

Treatment and control cows calving during April had identical averages of 21 days post partum at the start of the breeding season. Although the trends for increased pregnancy rates and decreased calving intervals were similar to March-calving cows, no significant differences were found. The April cows and those calving in May would not be expected to be as responsive to a synthetic progesterone as cows that were longer in days postpartum.

Previously reported research has provided mixed results as to the effectiveness of the feeding of MGA to the postpartum beef cow. Beal and Good, (1986) reported that MGA-prostaglandin treatments consistently induced estrus in 50% of anestrous beef cows. In contrast, Boyd, et al. (1986) noted that low percentages of postpartum lactating beef cows fed MGA for seven days were induced to begin estrus. The current study

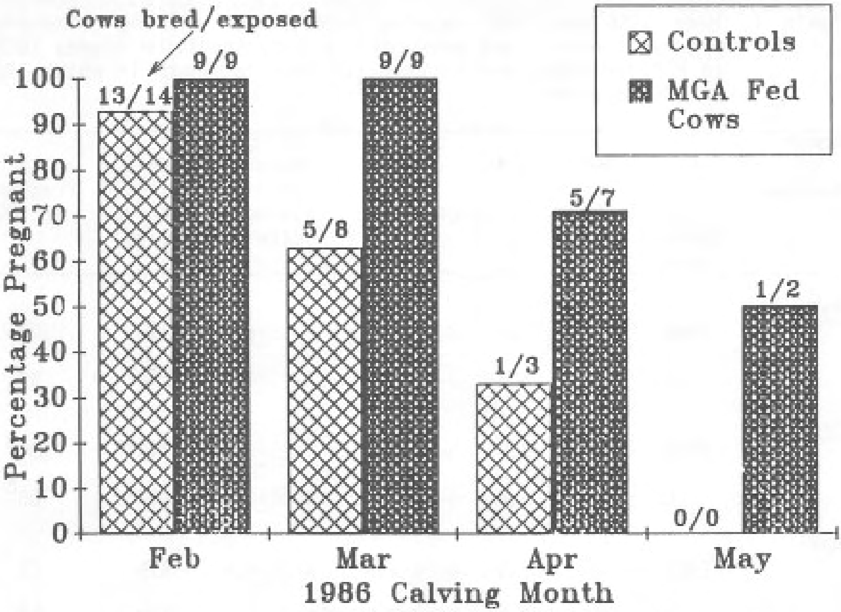

Figure 1. Percentage of cows that became pregnant during 1986 breeding season for MGA-fed and control cows graphed by month in which 1986 calving occurred.

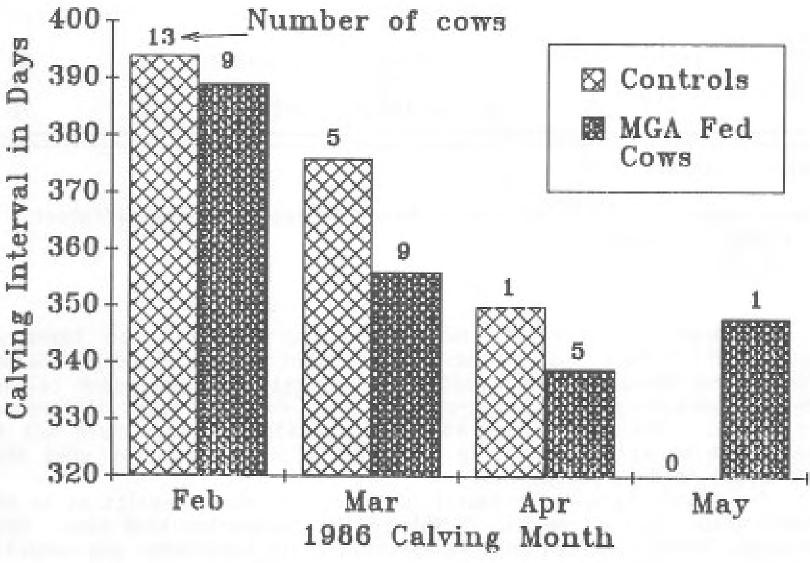

Figure 2. Year to year calving intervals (in days) for MGA-fed and control cows graphed by month in which 1986 calving occurred.

suggests that synthetic progestins may be more effective at inducing estrus in cows that are approximately 50 days postpartum and nearing the time of normal onset of ovarian activity. Any induction of estrus by feeding a synthetic progestin may be partiallly offset by the apparent reduction in fertility noted in first estrus after withdrawal of the drug (Beal, et al. 1988). More research is needed to better understand the estrus induction response caused by synthetic progestins and the subsequent effect on fertility and overall pregnancy rate.

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