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Evaluation of MGA¹ and Prostaglandin⁵
as an Estrous Synchronization² Procedure
Under Field Conditions²

P. L. Houghton³, L. R. Corah⁴
and T. B. Goehring⁴

Summary

When fed MGA (0.5 mg./hd/day) for 14 days, followed by a prostaglandin injection 17 days later, a total of 736 out of 1112 heifers at 11 locations expressed signs of estrus within 5 days following the PG injection for a 66.2% response to synchronization. Response rates between locations ranged from 33 to 95% ($P < .05$). In a comparison of prostaglandin forms at 5 locations, using 789 heifers, response to synchronization was similar ($P = .66$) between Lutalyse® (62.7% response) and Bovilene® (59.6% response). First-service conception rate was compared in 411 heifers at two locations and was higher for Lutalyse (68.9%) than Bovilene (59.9%) ($P < .08$). First-service conception rate varied by technician ($P < .05$) and ranged from 48.7 to 83.6%.

Introduction

Estrous synchronization can increase profitability of beef cow herds by increasing the number of females showing heat during a short period early in the breeding season. This makes artificial insemination more practical. The availability

¹MGA (melengestrol acetate) is a progestational steroid that is approved for use in feedlot heifers and is marketed by the Upjohn Company. It is not currently approved for synchronization.

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⁵Lutalyse® is a prostaglandin developed and marketed by the Upjohn Company.
Bovilene® is a prostaglandin developed and marketed by Syntex Animal Health, Inc.

of semen from bulls of superior genetic potential results in faster growing calves and higher quality replacement females. Other advantages include shorter, earlier breeding and calving seasons and older, heavier calves at weaning.

Melengestrol acetate (MGA), an orally active progestin, is inexpensive (1 to 3 cents/hd/day) and can be mixed and fed with supplemental grain. Recent research has indicated that short-term feeding of MGA followed by a single prostaglandin injection 17 days after MGA withdrawal successfully synchronizes estrus in beef heifers without lowering first-service conception rates below satisfactory levels.

Experimental Procedures

Yearling beef heifers (1112 head) at 11 locations were estrus-synchronized using a combination of MGA and a prostaglandin injection. Beginning 33 days prior to the start of the spring breeding season, heifers were fed 0.5 mg/hd/day of MGA in a ground milo supplement for 14 consecutive days. Seventeen days after the last day of MGA feeding, heifers were injected with prostaglandin (either 2 ml of Bovilene subcutaneously or 5 ml of Lutalyse intramuscularly). Twenty-four hours after the PG injection, heifers were checked for heat at least 3 times daily for the next 4 days and those detected in estrus were artificially inseminated approximately 12 hours later. Then, heifers were exposed to clean-up bulls for the remainder of the breeding season. Pregnancy and first-service conception rates were determined by fetal aging via rectal palpation at approximately 60-75 days following synchronization.

Results and Discussion

Seven hundred thirty-six of the 1112 heifers expressed estrus within 5 days following PG injection for a 66.2% response rate. Response rates ranged from 33 to 95% ($P<.05$) at various locations (Table 3.1). Low response groups (<50% expressing estrus) included 328 heifers at 2 locations and high response groups (>50% expressed estrus) included 784 heifers at 9 locations. These groups averaged 33.5 and 80.0% response to synchronization, respectively ($P<.05$). In the low response herds, there was a high incidence of prepuberal heifers, associated with age, nutrition, and breed.

In a comparison at 5 of the 11 locations (Table 3.2) response of 789 heifers to synchronization was similar ($P=.66$) between Lutalyse (62.7%) and Bovilene (59.6%). In a comparison at 2 locations (411 heifers), first-service conception rates were higher for Lutalyse (68.9%) than for Bovilene (59.9%) ($P<.08$). First-service conception rate varied by technician ($P<.05$) and ranged from 48.7 to 83.6%.

These data suggest that feeding 0.5 mg/hd/day of MGA for 14 days followed by a PG injection 17 days later is effective for synchronizing beef heifers when they are puberal and of proper breeding age.

Table 3.1. Estrus Response to Synchronization Location

Field Location % ²	Estrus Response % ²
A	36/ 50 = 72
B	39/117 = 33
C	15/ 22 = 68
D	71/211 = 34
E	89/117 = 76
F	26/ 45 = 58
G	265/330 = 80
H	21/ 22 = 95
I	71/ 81 = 88
J	32/ 36 = 89
K	71/ 81 = 88

¹Data for this study were collected at locations throughout Kansas and one location in South Central Nebraska.

²Percent of treated females in estrus within 5 days following prostaglandin injection.

Table 3.2. Effect of Prostaglandin (PG) Treatment on Reproductive Parameters of Heifers

Treatment	Estrus Response (%) ¹	First Service ² Conception Rate (%)
Lutalyse	248/395 = 62.8	141/205 = 68.8 ^a
Bovilene	235/394 = 59.6	123/206 = 59.7 ^b

^{a,b}Numbers within columns with different superscripts differ (P<.08).

¹Percent of treated females in estrus within 5 days following prostaglandin injection.

²Percent of artificially inseminated heifers that conceived; determined by fetal aging via rectal palpation at 60 to 75 days following synchronization.