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Abstract

Recently, a new product, Eazi-Breed CIDR (a vaginal insert containing progesterone), was approved for estrus synchronization in beef heifers. In previous studies the CIDR has produced excellent estrus synchrony, but it is more costly than the commonly used progestin, melengestrol acetate (MGA). Therefore, the objective of this study was to compare the CIDR to MGA in a shorter-term timed breeding program. Seventy-seven commercial beef replacement heifers were assigned to one of two treatments, CIDR (n=38) or MGA (n=39). Each heifer in the CIDR treatment group received a CIDR on day 1, which was removed on day 7. The MGA treatment group received MGA in the feed each day from day 1 to day 6. All heifers in both treatment groups received an injection of prostaglandin F2α(PGF) on day 7. Forty-eight hours after the PGF injection (day 9), all heifers received an injection of gonadotropin hormone-releasing hormone (GnRH) and were artificially inseminated. Pregnancy status was determined by ultrasonography 29 days post-breeding. A greater percentage (P=0.05) of heifers were pregnant in the CIDR treatment (55%) than in the MGA treatment (33%).

Keywords

Cattlemen's Day, 2004; Kansas Agricultural Experiment Station contribution; no. 04-242-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 923; Beef; Progestin estrus synchronization; CIDR vs. MGA; Insemination

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SHORT-TERM PROGESTIN ESTRUS SYNCHRONIZATION WITH TIMED INSEMINATION FOR BEEF HEIFERS: CIDR VS. MGA

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Summary

Recently, a new product, Eazi-Breed CIDR (a vaginal insert containing progesterone), was approved for estrus synchronization in beef heifers. In previous studies the CIDR has produced excellent estrus synchrony, but it is more costly than the commonly used progestin, melengestrol acetate (MGA). Therefore, the objective of this study was to compare the CIDR to MGA in a shorter-term timed breeding program. Seventy-seven commercial beef replacement heifers were assigned to one of two treatments, CIDR (n=38) or MGA (n=39). Each heifer in the CIDR treatment group received a CIDR on day 1, which was removed on day 7. The MGA treatment group received MGA in the feed each day from day 1 to day 6. All heifers in both treatment groups received an injection of prostaglandin $F_2\alpha$ (PGF) on day 7. Forty-eight hours after the PGF injection (day 9), all heifers received an injection of gonadotropin hormone-releasing hormone (GnRH) and were artificially inseminated. Pregnancy status was determined by ultrasonography 29 days postbreeding. A greater percentage (P=0.05) of heifers were pregnant in the CIDR treatment (55%) than in the MGA treatment (33%).

Introduction

Less than six percent of the nations beef cows are artificially inseminated every year. This translates into an opportunity for many beef producers to improve genetics and improve profitability. The problem is convenience. There are many tools available to producers, but no tool available will ever be as convenient as turning in bulls for natural service. The purpose of any estrus-synchronization system is to maximize the number of pregnant animals, while minimizing time and labor costs. Estrus synchronization provides unique opportunities for beef producers to group calf ages for uniform calf crops and to choose when calving season will begin and end. It also allows producers to improve genetics without purchasing a superior sire. For some producers, the use of timed insemination would be preferred to eliminate estrus detection.

There are several different methods of synchronizing estrous cycles. Progestins are used to extend the luteal phase of the cycle. Progestin use synchronizes estrus, but does not synchronize ovulation; therefore, it does not allow for effective timed insemination. Other synchronization systems use gonadotropin hormone-releasing hormone (GnRH) in combination with prostaglandin $F_2\alpha$ (PGF) to synchronize both the luteal and follicular phases of the estrous cycle. These systems allow for the use of timed insemination.

The standard synchronization protocol for beef replacement heifers requires feeding the oral progestin, melengestrol acetate (MGA), for 14 days, followed by an injection of PGF 17 to 19 days later, and then several days of estrus detection. Although this is an effective system, it requires 31 to 33 days before estrus detection begins. The purpose of the current experiment was to test a shorter-term timed artificial insemination system for heifers, us-

ing progestins in combination with PGF and GnRH.

Experimental Procedures

Seventy-seven commercial replacement heifers were stratified by weight and assigned to one of two treatments. Blood was collected from the heifers on days -20 and -8 and assayed for progesterone concentrations to determine pubertal status before treatments. The heifers were preconditioned to weigh 65% of mature weight at the time of breeding.

One treatment group (CIDR, n=38) received a CIDR, on day one for seven days. Heifers also received a carrier of grain sorghum and soybean meal. Heifers in the other treatment group (MGA, n=39) were fed MGA (0.5 mg/heifer daily), in a carrier of grain sorghum and soybean meal, for six days, starting on day 1.

All heifers in both treatment groups received an injection of PGF on day 7. Forty-eight hours after the PGF injections and CIDR removal, and 72 hours after the last MGA feeding, all heifers were given an injection of 100 µg of GnRH and artificially inseminated (Figure 1). Heifers were randomly assigned to be inseminated by one of two inseminators, using semen from one of four bulls. Ultrasonography was used to determine pregnancy status at 29 days post-breeding.

Results and Discussion

Overall, 34 of 77 (44.2%) heifers were confirmed pregnant by ultrasonography at 29 days after insemination. A greater (P=0.05) number of heifers were pregnant in the CIDR group (21/38; 55.3%) compared with the MGA group (13/39; 33.3%; Figure 1). There was no sire or inseminator effect on pregnancy rate.

All of the heifers except two were pubertal at the beginning of the experiment. The prepubertal heifers were assigned one per treatment. Neither heifer obtained pubertal status during the experiment.

The purpose of this experiment was to compare different progestins in two similar estrus synchronization protocols for timed artificial insemination. The treatment that used the CIDR resulted in 22% more heifers becoming pregnant than the treatment that used MGA.

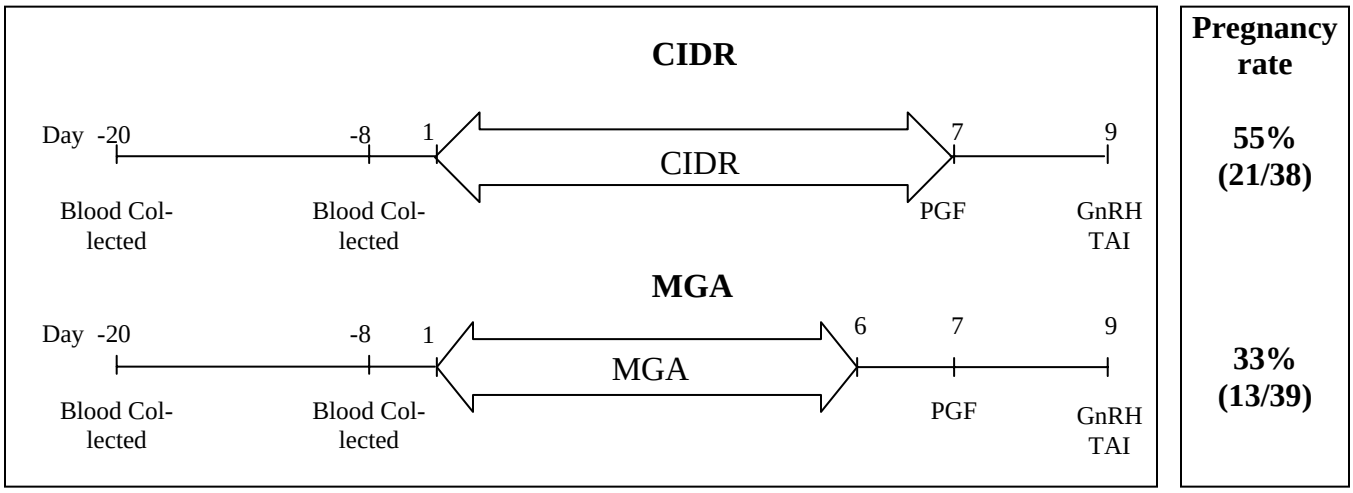

Figure 1. Experimental Protocol and Resulting Pregnancy Rate.