Comparison of Long-term CIDR-based Estrous Synchronization Protocols on Estrous Response and Pregnancy Rates in Postpartum Beef Cows

J.G. Powell, *DVM, PhD;* **R.W. Rorie,** *PhD;* **T.D. Lester,** *MS*
University of Arkansas, Fayetteville, AR 72701

Introduction

Estrous synchronization and artificial insemination allow beef producers to maximize genetic improvement in their operations. However, many beef producers have been reluctant to incorporate this technology into their program due to the management requirements it entails. Therefore, any improvements to decrease time and/or labor inputs may increase the use of such technology. The CIDR-Select protocol is an effective method of synchronizing estrus in beef cows. This protocol involves 14 days treatment with a CIDR progesterone insert, GnRH treatment 12 days after CIDR removal, and treatment with prostaglandin F2alpha seven days after GnRH. The entire protocol requires over 33 days, from initial CIDR insertion to detection of estrus and insemination. Reducing the interval from CIDR removal to GnRH treatment would shorten the protocol and potentially make it more attractive for use by producers, providing effectiveness was maintained. The objective of this experiment was to characterize the estrous response and subsequent fertility of postpartum beef cows following synchronization utilizing the CIDR-Select protocol, in which the interval from CIDR removal to GnRH treatment was reduced from 12 to two days.

Materials and Methods

Angus cross beef cows (n = 72) at one location were randomly and equally distributed into two treatments groups based on BCS and days postpartum. Treatment 1 (TRT1) cows received a CIDR progesterone insert (Eazi-Breed CIDR, InterAg, Hamilton, NZ) on day 0. The CIDR was removed on day 14, followed by a 100 microgram dose of GnRH (Factrel, Fort Dodge, Fort Dodge, IA) on day 26, and a 25 milligram prostaglandin F2alpha (Lutalyse, Pfizer, Kalamazoo, MI) on day 33. Treatment 2 (TRT2) cows received a CIDR progesterone insert on day 10, with removal of the CIDR on day 24. The TRT2 cows received GnRH dosing on day 26 followed by a 25 milligram prostaglandin dose on day 33. A mount detection patch (Estrotect, Rockway Inc., Spring Valley, WI) was placed on all cows at the time of prostaglandin dosing. Cows were observed for estrus during a 96 hour period following prostaglandin dosing, and cows were artificially inseminated approximately 12 hours after the detection of estrus. Seven days following the end of the 96 hour estrus detection period, all cows were then exposed to fertile bulls for 56 days. Trans-rectal ultrasonography (Aloka 500V, Aloka Inc., Tokyo, Japan) was used to determine pregnancy status of cows 21 days after the removal of bulls. Fetal crown-rump length was used to determine if pregnancies resulted for artificial insemination or subsequent matings. Data were analyzed using statistical software (JMP, Version 8, SAS Inc., Cary, NC). Non-parametric data were evaluated using the Chi-Square analysis, and all other data were evaluated by analysis of the variance.

Results

The percentage of cows exhibiting estrus after synchronization was 83.3% and 77.8% in TRT1 and TRT2, respectively. The interval from prostaglandin F2alpha treatment to detected estrus was significantly less ($P < 0.01$) for TRT2 (61.8 hours) than for TRT1 (77.9 hours). The AI pregnancy rates were similar ($P = 0.472$), but TRT2 had a numerical advantage at 71.4% compared to TRT1 at 60%. Seasonal pregnancy rates were similar ($P = 0.164$) at 97.2% and 89% for TRT1 and TRT2, respectively.

Significance

Cows that received GnRH treatment two days after the CIDR removal in a 14-day CIDR-Select estrous synchronization protocol had earlier onset of estrus, and equivalent expression of estrus, AI pregnancy rates and seasonal pregnancy rates were similar to cows that received GnRH treatment 10 days after CIDR removal. Decreasing the total time of the CIDR-Select program by 10 days increased the convenience and may improve the overall utilization of this protocol, while maintaining protocol effectiveness.