COMPARISON OF CIDR-BASED PROTOCOLS TO SYNCHRONIZE ESTRUS IN BEEF HEIFERS

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ABSTRACT

Estrus synchronization and artificial insemination (AI) are reproductive management techniques that allow beef producers to enhance the reproductive efficiency and genetic composition of their cow herd. However, U.S. beef producers have been reluctant to adopt these reproductive management tools, largely due to time and labor. Recent research to synchronize estrus, therefore, has focused on the development of estrus synchronization protocols that facilitate fixed-time AI (FTAI). Although protocols have been developed that allow the successful use of FTAI in beef cows, the same degree of success in beef heifers has not been realized. Additionally, no published research has focused on characterizing the physiological responses to long- and short-term CIDR-based protocols in beef heifers.

Experiment 1 evaluated ovulatory response to GnRH and synchrony of estrus and ovulation after $PGF_{2\alpha}$ (PG) in beef heifers. The CIDR Select and Select Synch + CIDR protocols were evaluated among estrous cycling and prepubertal beef heifers and the CIDR-PG and Select Synch protocols were evaluated among estrous cycling beef heifers. A reduced variance for the intervals to estrus and ovulation was detected for estrous cycling heifers treated with the CIDR Select protocol in comparison to the other 3 treatments. The combined results of the estrous cycling and prepubertal heifers revealed an increased ovulatory response to GnRH for heifers treated with the CIDR Select

protocol compared to the Select Synch + CIDR protocol, which ultimately resulted in a reduced variance for interval to estrus and ovulation after PG. Furthermore, no differences within treatment were detected in the variance for interval to estrus or ovulation among estrous cycling and prepubertal heifers treated with the CIDR Select protocol. These results suggest that the CIDR Select protocol may facilitate FTAI more effectively in mixed groups of estrous cycling and prepubertal beef heifers.

Experiments 2 and 3 evaluated modifications to the CIDR Select protocol. Estrous cycling beef heifers were used in Exp. 2. The hypothesis tested was that reducing the interval from CIDR removal to GnRH administration by 2 d would facilitate an improvement in the synchrony of estrus after PG. Although a larger number of heifers that were assigned to the 28 d protocol were on d 5 and 6 at the time GnRH was administered, response to GnRH was not improved and synchrony of estrus was not enhanced following PG.

In Exp. 3, a second modification to the CIDR Select protocol was evaluated using estrous cycling and prepubertal beef heifers. The hypotheses tested were: 1) reducing the interval from CIDR removal to GnRH may facilitate an improvement in the synchrony of estrus after PG, and 2) the addition of GnRH following CIDR removal is required to improve the synchrony of estrus after PG. Although no difference in estrous response was detected, mean intervals to estrus and variance for interval to estrus differed based on the interaction of treatment length, GnRH, and estrous cyclicity status. The results from Exp. 3 clearly suggest that further evaluation of long-term CIDR-based protocols is required.