

Reproductive Management of Dairy Heifers using timed-AI

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Recently, we obtained acceptable pregnancy per AI (P/AI) to first insemination with a modified 5-d timed-AI (TAI) protocol in dairy heifers inseminated with both conventional and sexed semen. In addition, we have shown that 20-25% of heifers ovulate before TAI; the identification of these animals would reduce drug costs and potentially improve the overall P/AI. In the present study, we investigated the efficacy of the modified 5-d TAI protocol for first and subsequent inseminations, and determined the optimal interval for resynchronization and if the inclusion of a short period of estrus detection would improve overall P/AI. Holstein heifers (n=217), 14 to 15 mo of age, were assigned by age to receive a progesterone-releasing vaginal insert (CIDR, Zoetis, Canada) with (standard) or without (modified) an im injection of 100 µg of GnRH (Fertiline, Vetoquinol Canada Inc.). Five days later, CIDRs were removed and 500 µg of cloprostenol (Estroplan, Vetoquinol Canada Inc.) was given im. Estrus was detected by visual observation twice daily for 48 h after CIDR removal. Heifers in estrus were inseminated based on the AM/PM rule. Those not observed in estrus received a GnRH treatment concurrently with TAI 72 h after CIDR removal. Approximately 24% of the heifers were inseminated with sexed semen (Alta Genetics Inc.). Pregnancy diagnosis was done by ultrasonography 27 d after AI. Non-pregnant heifers were resynchronized up to four times with one of the two TAI protocols initiated at 27 or 34 d after previous insemination (interbreeding intervals of 35 or 42 d). A total of 362 breeding were recorded; the cumulative pregnancy after 4 inseminations was 96.8%. P/AI was not affected by insemination number nor TAI protocol (58.4 vs. 57.9% for standard and modified protocol). Inseminations with conventional semen (61.9%) resulted in a higher ($P<0.01$) P/AI compared to sexed semen (46.3%). Fourteen percent of heifers were inseminated after estrus detection and their P/AI were greater compared to TAI ($P<0.05$, 70.2 vs. 56.2%). An interbreeding interval of 42 d resulted in more P/AI than 35 d ($P<0.07$, 70.8 vs. 51.1%) because more heifers in the former group were inseminated based on estrus ($P<0.07$, 29.2 vs. 4.4%).

Take Home Message: A modified 5-d TAI protocol is a viable alternative to achieve high cumulative pregnancy rates after 4 inseminations in a short period of time. The inclusion of sexed semen in this reproductive management approach is also feasible.

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