

Modification of a CIDR/OvSynch Timed Artificial Insemination Protocol for Reproductive Management of Dairy Heifers

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Introduction

Acceptable pregnancy rates (PR) after timed AI (TAI) could improve reproductive management of dairy heifers. In beef cattle (Helser, 2006) the CIDR/OvSynch TAI protocol was improved by reducing the interval between GnRH and PGF to five days, giving two injections (AM/PM) of PGF and administering GnRH and TAI at 72 h after withdrawal of the CIDR to increase the proestrus period. The overall PR was 65.3%. Using this procedure in dairy heifers, PR was 58.3% at day 32 post TAI (Thatcher, 2007). Objectives of Exp. 1 were to compare PR of dairy heifers relative to whether one vs. two injections of PGF is required for effective use of the CIDR/OvSynch TAI protocol, and to compare PRs to CIDR/OvSynch TAI resynchronization programs of non-pregnant heifers involving estrus and no estrus detection. A second objective was to evaluate PR in two additional groups of heifers using the CIDR/OvSynch TAI protocol with one injection of PGF for first and second service without estrus detection (Exp. 2).

Materials and Methods

Exp. 1: 199 heifers were assigned randomly to receive one or two doses of PGF in the CIDR/OvSynch protocol (d0 = GnRH and CIDR in; d5 = CIDR out and 1 or 2 doses [i.e., at ~12 h apart] of PGF; d8 = GnRH + TAI). For the second breeding, heifers were assigned randomly to either: resynchronization with the CIDR/OvSynch TAI protocol using one dose of PGF for the non-pregnant heifers detected by ultrasound (US) at 32 d after 1st TAI (No ED); or were AI at detected estrus after the 1st TAI (ED) and those not detected in estrus and non-pregnant at day 32 were resynchronized with the CIDR/OvSynch TAI protocol. Exp. 2: Two replicate groups of heifers (n = 203 and n = 214) were managed under the CIDR/OvSynch TAI protocol with one dose of PGF for the first and second (resynchronization with no detection of estrus of non-pregnant heifers) TAI. In both experiments semen was from the same sire, except for the second re-synchronized TAI of replicate two in Experiment 2.

Results

Exp. 1: PRs to 1st service were 56.1% (55/98) and 57.4% (58/101) at 32 d (US) and 53% (52/98) and 55.4% (56/101) at 60 d (rectal palpation) for one and two doses of PGF, respectively (P = 0.88). Overall pregnancy loss for the first TAI was 4.4% (5/113). For the 2nd service, PR was 51.2% (22/43) and 51.2% (22/43) at 32 d (US) and 48.8% (21/43) and 51.2% (22/43) at 60 d for ED and No ED re-synchronization groups, respectively. Overall pregnancy loss for the second AI was 2.2% (1/44). Total PR at 60 d to the 1st and 2nd service was 75.8% (151/199). Exp. 2: Reproductive management responses to TAI for replicate group 1 (n = 203) were PRs of 61.5% (125/203) and 59.6% (121/203) at 32 d and 59 d, respectively for first TAI and a pregnancy loss of 4%. For the second resynchronized TAI, PR at 37 d was 61.0% (47/77). Total PR for first (i.e., 32 d) and second (i.e., 37 d) TAI services was 85.1% (172/202). Reproductive responses for replicate 2 (n = 214) were a PR of 58.8% (126/214) at 32 d and 57% (122/214) at 63 d for the first TAI, with a pregnancy loss of 3.1%. For the second resynchronized TAI, PR at 35 d was 46% (40/87). Total PR for first (i.e., 32 days) and second (i.e., 35 days) TAI services was 75.7% (162/214). In both experiments, no differences in PR due to TAI technician were detected.

Significance

In dairy heifers, one injection of PGF at the time of CIDR withdrawal is as effective as two injections of PGF given approximately 12 h apart in the modified CIDR/OvSynch protocol for first and second TAI. Pregnancy rates were the same regarding the use of estrus detection or not prior to resynchronization of non-pregnant heifers with the CIDR/OvSynch TAI protocol. The CIDR/OvSynch TAI program is an efficient management program for timed insemination of dairy heifers that can reduce extra handling and labor costs related to daily estrus detection and AI.