

Comparison of 5-day versus 7-day CIDR CO-Synch protocol in crossbred commercial beef cows

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Introduction

Artificial insemination (AI) is used by only approximately 10% of beef producers in the United States. Estrus synchronization and timed AI (TAI) minimize time and labor relative to heat detection; however, these factors are still a big constraint for producers. In literature, conception rates following TAI using various synchronization protocols range from approximately 30 to 65%. One commonly used protocol is CO-Synch, which consists of a shot of GnRH on day 0, a shot of PGF2 α on day 7, and another shot of GnRH at breeding (72 hours after PGF2 α). Several variations of CO-Synch that minimize labor but maximize conception rate have been identified, and comparisons are ongoing. Although the 7-day CIDR CO-Synch has been used with relative success, recent studies have suggested that a similar 5-day protocol may result in improved conception rates. Although the 5-day protocol may yield higher conception rates, especially in heifers, it also may require a second dose of PGF2 α given six hours after CIDR removal, which will significantly increase time and labor required. Several recent studies have compared the 5-day to the 7-day CIDR CO-Synch, but cow numbers were too low to detect small differences. Further comparison of these two protocols is necessary to determine the benefit versus the cost of the 5-day CIDR CO-Synch.

Materials and Methods

Angus-cross commercial beef cows (n=1,797) were managed at 14 farms in Virginia. Cows were blocked by age and, within farm, were randomly assigned to either a 5-day CIDR CO-Synch or a 7-day CIDR CO-Synch. All cows were given 100 μ g of gonadorelin hydrochloride (GnRH) and a Controlled Internal Drug Release (CIDR®, 1.38 g progesterone) on day 0. Cows in the 5-day group received two doses of 25 mg of dinoprost (PGF2 α), one at CIDR removal on day 5, and one six hours later. Cows in the 7-day group received 25 mg of PGF2 α and CIDR removal simultaneously on day 7. All cows were given

100 μ g GnRH at the time of AI, 72 hours after CIDR removal. Kamar® patches (Steamboat Springs, CO) were applied to all cows at CIDR removal, and Kamar status was recorded at the time of AI. Cows were palpated for pregnancy at approximately 55 days and 100 days after AI. A PROC MIXED (SAS) procedure was used to evaluate the effect of farm, body condition score (BCS), days postpartum (DPP), Kamar status, and treatment on TAI conception rate.

Results

Cows in both protocols were bred a mean of 71.7 hours after CIDR removal. Season had an effect in the model: TAI conception rate for fall and spring cows was 55.4% and 58.9%, respectively ($P < 0.05$). Cows with activated Kamar patches had a significantly ($P < 0.05$) higher TAI conception rate (64.9%), compared with that (46.7%) for cows with inactivated Kamar patches. After controlling for location, season, DPP, BCS, and Kamar status, treatment had a significant ($P < 0.05$) effect on TAI conception rate for 5-day (60.4%) vs. 7-day (54.8%) CIDR CO-Synch.

Significance

Studies evaluating the 5-day CIDR CO-Synch in heifers have shown it to be the preferred protocol over the 7-day CIDR CO-Synch. However, several studies comparing these two protocols in multiparous cows have shown conflicting results. Additionally, for the 5-day protocol, it has been shown that the administration of two doses of PGF2 α , six hours apart significantly increases TAI conception rate compared with the TAI conception rate after administration of a single dose of PGF2 α . Our results indicate that the 5-day CIDR CO-Synch protocol resulted in more AI pregnancies than did the 7-day CIDR CO-Synch. Further economic analysis is required to determine whether the 5-day protocol would pay for itself in increased returns from additional AI calves in larger herds.