Evaluation of a modified GnRH-based TAI protocol associated with estrus detection in cyclic beef heifers inseminated with sex-selected semen

M.G. Colazo[1], P. Whittaker[2], D. Bignell[1], and R.J. Mapletoft[3]

[1]Livestock Research Section, Alberta Agriculture and Forestry, Edmonton, Canada. [2]Leduc Veterinary Hospital, Leduc, Canada. [3]WCVM, University of Saskatchewan, Saskatoon, Canada.

BACKGROUND & OBJECTIVE

- **The initial gonadotropin-releasing hormone (GnRH) treatment in a 5-day Co-synch protocol for timed-AI (TAI) has been shown to be unnecessary in cyclic dairy and beef heifers inseminated with conventional semen** (Theriogenology 2011;76:578; Reprod Fertil Dev 2015;28:135).

- **This study compared pregnancy per AI (P/AI) between sex-selected and conventional semen in cyclic beef heifers subjected to the modified (without initial GnRH) 5-day Co-synch protocol and evaluated the usefulness of an estrus detection (ED) patch to identify heifers that were most likely to conceive.**

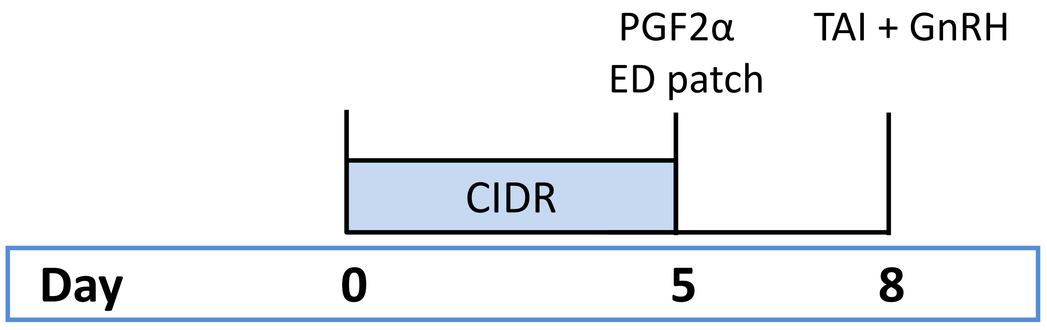
MATERIALS & METHODS

- **1034 beef heifers (325 to 523 kg of body weight and 13 to 15 months of age).**

- **Three locations, 2 sires, sex-selected or conventional semen, and 1 technician.**

- **Ultrasonography to determine cyclicity and reproductive normalcy (Day 0) and pregnancy status (27 or 48 d after TAI).**

Figure 1. Illustration of treatments.



CIDR= insert containing 1.38 g P4 (CIDR, Zoetis Animal Health)
$PGF_{2\alpha}$ = 500 µg cloprostenol i.m. (Estroplan, Vetoquinol NA Inc.)
GnRH= 100 µg i.m. (Fertiline, Vetoquinol NA Inc.)
ED patch = Estrotec™ (Estrotect Inc.)

Table 1. Estrus detection patches scoring based on color change between application (Day 5) and TAI (Day 8).

Score 0	Score 1	Score 2	Score 3
			
Unchanged	< 50% change	≥ 50% change	Missing

- **Statistical analyses: PROC GLIMMIX in SAS 9.3.**

RESULTS

- **890 cyclic and normal heifers were used; CIDR retention rate was 98.0%.**

- **P/AI did not differ (P>0.05) between sires (58.4 vs. 58.0%), but it was greater (P<0.01) for conventional semen than sex-selected semen (63.7 vs. 52.6%).**

- **Overall, P/AI was greater (P<0.01) when ED patches were scored 2 (64.8%) than 0 (42.9%) or 1 (46.8%), with score 3 (missing) intermediate (58.5%).**

- **P/AI with sex-selected semen was greater (P<0.05) when ED patches were scored 2 or 3 (Table 2).**

Table 2. Effect of ED patch score and type of semen on P/AI.

	Score 0 (n=170)	Score 1 (n=79)	Score 2 (n=526)	Score 3 (n=65)
Sex-selected, %	36.1[a]	37.2[a]	59.8[b]	58.3[b]
Conventional, %	49.4[c]	58.3[cd]	69.6[d]	58.6[cd]

[a,b]Within a row , percentage without a common superscript differed (P<0.05).
[c,d]Within a row , percentage without a common superscript differed (P<0.01).

SUMMARY

- **P/AI was greater in heifers inseminated with conventional semen.**

- **The Estrotec ED patches could be used to identify animals for TAI with sex-selected semen.**

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