

# Optimizing the Performance of the SCR eSense Activity Monitor in Heifers with Timing of AI

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In total, 281 dairy heifers from a commercial farm near Edmonton, AB were fitted with an ear tag activity monitor (SCR eSense, Allflex) once they were eligible for breeding (>13.5 months of age). Heifers were synchronized using prostaglandin, given 2 weeks apart, and were also given estrus detection patches (Estroject). Heifers were bred at random times based on activity alert from the system or if the estrus patch had 50% colour change. All heifers received sex-sorted semen for the first AI and conventional semen for subsequent breedings. Pregnancy diagnosis was performed at 30 days post AI and heifers had 4 opportunities to become pregnant to AI. Data from six non-pregnant heifers were not used for statistical analyses. In a subset of heifers (n = 150), ovaries were scanned every 12 h starting at the time of AI until ovulation. The system recorded a heat index, maximum activity change, maximum rumination change and duration of heat. The average (range) interval between onset of activity alert and ovulation, and peak activity and ovulation was 28 h (16 to 46 h) and 22 h (10 to 40 h), respectively. Overall, pregnancy risk using conventional (72.5%) and sexed semen (72.0%) were not associated with any heat characteristics measured by the system. For conventional semen, each hour increase in interval from onset of activity or peak activity to AI reduced the predicated probability of pregnancy (PPP) by 3.8 and 4.2%, respectively. For sex-sorted semen, the greatest PPP was observed 12 to 16 h and 0 to 2 h after the onset of activity and peak of activity, respectively. **Take Home Message:** When using conventional semen, the sooner you breed heifers after estrus alert, the better. When using sex-sorted semen, delaying breeding to as close to peak activity as possible will result in the best pregnancy outcome. Thank you to the Agriculture Funding Consortium for financial support, and to Brevliet Ltd and SCR by Allflex.