

How does the eSense Ear Tag Activity Monitor Perform in Dairy Heifers?

K. Macmillan², M. Gobikrushanth³, G. Plastow² and M.G. Colazo¹

¹Alberta Agriculture and Forestry; ²University of Alberta; ³University of Saskatchewan; E-mail: marcos.colazo@gov.ab.ca

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 an estrus detection patch (Estroject). Heifers were bred 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. All heat events were confirmed using estrus patches and/or transrectal ultrasonography (lack of a CL > 20 mm; presence of uterine fluid and tone). The system recorded a heat index, maximum activity change, minimum rumination change and duration of heat. The pregnancy to first AI was 66.5% and total proportion of heifers pregnant after 4 breedings was 97.9%. Out of 469 heat events, the sensitivity (ability to correctly identify heat; true positive) was 91%, with 8% false positives (the system incorrectly identified a heat) and 8% false negatives (the system missed a heat). When comparing true to false positive heats, there was a significant increase in heat index (84 vs. 35), heat length (12 vs. 3 h), activity change (68 vs. 33) and rumination change (-52 vs. -12). There was also an increase in activity (68 vs. 17) and rumination change (-52 vs. -35) when comparing true to false negative heats. Interestingly, 85% of false positive heats had a heat index <45 and a rumination change < -20, while 82% of false negative heats had a rumination change \geq -20 combined with a positive activity change. **Take Home Message:** The eSense SCR system showed a high sensitivity to identify heifers in estrus, which resulted in a high pregnancy rate. Our data would indicate that producers may be able to further identify true heats using a combination of heat index, activity and rumination information. Thank you to the Agriculture Funding Consortium for financial support, and to Breevliet Ltd and SCR by Allflex.