

Evaluation of a novel estrus detection device (Flashmate™) in Holstein heifers

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Current estrus detection systems used on Holstein heifers generally involve a combination of visual observation and use of estrus detection aids. Recently, a range of technologies have been developed to facilitate estrus detection such as the FlashMate™ device (Farmshed Labs, Waikato, NZ). This device contains a microchip, is touch-sensitive and, following activation, flashes a red light for 26 h to indicate the ideal insemination window. The objective of this study was to evaluate the efficacy of the FlashMate™ device on estrus detection and ovulation in Holstein heifers. Estrus was synchronized with a single prostaglandin F2 α (PGF) treatment (Day 0) in 59 Holstein heifers housed in a free-stall barn. Devices were affixed on Day 0, using a contact adhesive (3M Super 77), on the right-hand side approximately 5 cm lateral to the midline and 10 to 15 cm anterior to the tail base. Device activation and standing estrus (visual observation) were assessed 5 times daily for 5 d following PGF treatment. Ovulation was determined by transrectal ultrasonography twice daily from device activation until ovulation or on Day 5 if device was not activated. Four heifers (6.8%) lost the device and were removed from the study. A total of 8 heifers did not ovulate during the study; 2 of those heifers had an activated device but did not exhibit estrus behaviour. Another 13 heifers were not observed in standing estrus but 7 of those had an activated device and ovulated. The sensitivity (Se; % identified as + that are truly +) and specificity (Sp; % identified as - that are truly -) of the FlashMate™ device to identify heifers that ovulated were 100 and 75%, respectively. While, the Se and Sp for visual observation were 85 and 100%, respectively. The accuracy (true + plus true - / total heifers) for FlashMate™ was 96.4%. The interval (mean \pm SD, range in h) from device activation to ovulation was longer and more variable ($P < 0.05$) compared to the interval from first standing estrus event to ovulation (31 ± 17 , 10-79 vs. 22 ± 6 , 7-34). Moreover, activation of the FlashMate™ device happened 60 to 24 h before first standing estrus event in 25% of the heifers.

Take Home Message: The FlashMate™ device had greater sensitivity than visual observation to identify estrus and ovulation in heifers housed in a free-stall barn, however, the premature device activation might result in early inseminations in 1/4 of the animals.

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