

## ABSTRACTS: 34TH ANNUAL MEETING OF THE BRAZILIAN EMBRYO TECHNOLOGY SOCIETY (SBTE)

AI and IATF

**Use of automated monitoring device to detect heat in Holstein (*Bos taurus*) and Gir (*Bos indicus*) cows****Mariana Dulce Delle Vedove Ortolan Sayeg<sup>1</sup>, Luiz Fernando Rodrigues Féres<sup>2</sup>, Marcos Henrique Alcântara Colli<sup>1</sup>, Gabriela Dalmaso de Melo<sup>1</sup>, Luísa Helena Bartoci Liboni<sup>3</sup>, Carlos Alberto Souto Godoy Filho<sup>1</sup>, Pietro Sampaio Baruselli<sup>1</sup>**

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Precision dairy monitoring technologies have become increasingly popular for heat detection. The objectives of the studies were to validate the accuracy of an automated monitoring device collars (AMD, Ovalert tags, CRV, Arnhem, Netherlands) for heat detection in lactating Holstein cows (*Bos taurus*) and in Gir heifers (*Bos indicus*). In study 1, lactating dairy Holstein cows (n=91) received the AMD collars at D0 of the experiment. Cows were synchronized with intravaginal P4 device plus 2mg of estradiol benzoate (EB). On day 8, the P4 device was removed and all animals received PGF, no EB were applied at this time in this experiment. Ultrasound examinations (US) were done twice a day between day 8 and day 14 and on day 20 to evaluate follicular dynamics and ovulation. In study 2, Gir heifers (n=81) received the AMD plus intravaginal P4 device and 2mg of EB on day 0. On day 8, the P4 device was removed and all animals received PGF, 1mg of estradiol cypionate, 300 IU of eCG and a BIP. The US was done twice a day between day 8 to day 11 and on day 20 to evaluate follicular dynamics and ovulation. In both studies, the ovulation was used as a gold standard to calculate the test characteristics: sensitivity (SE), specificity (SP), accuracy (AC), negative predicted value (NPV) and positive predicted value (PPV). In study 1, 59.3% (59/91) of the cows were detected in estrus by CMA. The ovulation rate until d14 of the protocol was 81.3% (74/91). The average diameter of the ovulatory follicle was  $16.3 \pm 2.6$ mm. Fifty one animals were classified as TP (true positive - positive CMA and ovulation), 14 TN (true negative - no estrus on CMA and no ovulation), 3 FP (false positive - positive CMA and no ovulation) and 23 animals were classified as FN (false negative - negative on CMA, positive ovulation). The CMA SE was 68.9%, SP 82.4%, PPV 94.4%, NPV 37.8% and AC 71.4%. In study 2 95% (77/81) of the heifers were detected in estrus by the CMA. The ovulation rate until d11 of the protocol (d11) was 76.5% (62/81). The average diameter of the ovulatory follicle was  $12.1 \pm 1.55$  mm. Fifty-nine animals were classified as TP, 1 TN, 18 FP and 3 animals FN. The CMA SE was 95.2%, the SP was 5.3%, the PPV was 76.6%, the NPV was 25% and the AC was 74.1%. In conclusion, indices reveal great sensitivity, specificity, PPV and accuracy for CMA in lactating Holstein cows, low NPV were observed and our hypothesis is that part of the cows had silent heat. In experiment 2, although the specificity and the NPV were low we still recommend and validate CMA use in *Bos indicus* heifers. When analyzing why some animals have demonstrated estrus by CMA without ovulation it is suggested that there was a failure in the synchronization of the new follicular wave during the FTET protocol and the estrus identified by CMA would come from the application of estradiol benzoate in D8 of protocol. The data showed that the heat can be predicted using an AMD in lactating Holstein cows and in Gir heifers.