Response to GnRH Administration at Artificial Insemination in Crossbred Temperate Dairy Cattle Supperovulated under Tropical Environment

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Gonadotrophin Releasing Hormone (GnRH) plays a key role in the endocrine control of superovulation in cattle. The objective of this study was to assess the effectiveness of GnRH injections at the time of artificial insemination (AI) in super ovulated temperate (Friesian-Jersey crossbred) dairy cows reared in a tropical environment (30–32 ^{o}C and 19–22 ^{o}C, day and night, respectively, with 77–80% relative humidity). Superovulations were conducted using 1st parity, 3-3.5 body condition score, 3–4-month post-partum, imported cows (n = 12) in January–June 2020 at the veterinary teaching farm. Cows were administered an intramuscular (IM) injection of PGF2α (500 µg) 7 days before the intravaginal progesterone devisors (CIDR) insertion on day 0 of the programme. Superovulations were conducted with IM injections of FSH (20 mg/mL) in the morning and evening for 4 consecutive days (2.2, 1.6, 1.1, and 0.6 mL/dose, respectively) from day 7. On day 9, CIDR was removed, and PGF2α was administered in the morning (500µg) and the evening (250µg). Cows were divided into two groups (treatment-TG, control-CG) equally. Twelve hours after the commencement of estrous, 2 AIs were done in 12-hour intervals for both groups. Cows in the TG received GnRH (100µg) at the first AI, and the CG didn't receive it. A replicate was conducted following the cross-over design. Embryos were collected by the non-surgical retrograde flushing technique on day 7 post-AI and classified according to the FAO guidelines. The ovulation rate tended (P=0.083) to be higher, while the median number of embryos recovered (P=0.003), embryo recovery rate (P=0.008) and percentage of transferrable embryos (P=0.019) were significantly higher, with notably lower degenerated oocytes in the TG. Results revealed that administration of GnRH at the time of AI in superovulation would be highly beneficial in Friesian-Jersey crossbred cows in tropical environments.

Keywords: Artificial insemination, Cattle, Embryo transfer, GnRH, Superovulation

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