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Impact of supplementation during the rainy and dry seasons on ovarian responses in Girolando cows

Impacto da suplementação na resposta ovariana de vacas Girolando durante a estação seca e chuvosa

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Most of the nutrients obtained by dairy cattle in tropical regions come from forage. However, in the dry season the energy level may not achieve the nutritional requirements to ensure optimal nutrition for reproduction and production. Moreover, the more pronounced heat stress associated with the dry season in tropical regions may impair fertility in dairy cows. Based on these considerations, the objective of this study was to evaluate the effect of supplementation and seasons (rainy vs dry) on the ovarian responses in Girolando cows submitted to TAI protocols. Thirteen lactating Girolando cows from the Brazilian Agricultural Research Corporation (Embrapa - Rondônia) experimental farm, managed in grass pasture (*Urochloa brizantha* cv. Marandu), were submitted to an estradiol progesterone-based TAI protocol (Day 0, 2 mg of EB + CIDR[®] insert; Day 8, CIDR[®] removal + 150 µg of d-Cloprostenol + 1 mg of ECP) in the rainy and dry season. It was used in a 2X2 cross-over design in which all cows received all four treatments, as follows: 1) Not supplemented cows in the rainy season; 2) Supplemented cows in the rainy season; 3) Not supplemented cows in the dry season and 4) Supplemented cows in the dry season. The supplement consisted of corn-soybean meal formulated to contain 30% of crude protein and 90% of dry matter. The supplement was supplied daily to the cows at a proportion of 1 kg per 2.5 kg of milk produced for cows with milk production > 8Kg. To detect ovulation and interval to ovulation, after CIDR[®] removal, the cows were examined by transrectal ultrasonography every 12 h. The black globe humidity index (BGHI) was calculated for each period according to Buffington et al. (1981). All statistical analysis was performed on SAS 9.0 software (1998). BGHI variable was analyzed by one-way ANOVA and factorial analysis of variance was used to evaluate the effect of season, supplementation and its interaction on the diameter of the ovulatory follicle (POF) and interval to ovulation. The means were compared among treatments using Tukey's test. The proportion of cows that ovulated were analyzed using Chi-square test. The mean value of BGHI was higher in the dry season compared to rainy season (89.5 vs 82.0; P < 0.001). Diameter of POF was larger in not supplemented cows compared to supplemented ones (13.8 ± 0.4 and 12.08 ± 0.2 mm, respectively; P=0.001). Ovulation rate and ovulation interval were not influenced by supplementation (P≥0.05). No effect of season was observed in the diameter of POF (P=0.82). However, the ovulation rate was higher in the dry compared to rainy season (92.3%, 24/26 and 69.2%, 18/26, respectively; P=0.03). In contrast, cows ovulated earlier in rainy compared to dry season after CIDR[®] removal (65±2.7 h vs. 51.3±3.7 h; P=0.005). There was no interaction among season*supplementation in diameter of POF, ovulation rate and interval to ovulation (P>0.05). The results from this study demonstrated that the supplementation did not impact the ovarian responses in Girolando cows on pasture submitted to TAI protocols. However, Girolando cows ovulated earlier in the rainy season, in which BGHI was reduced in comparison to dry season.

Key-words: Dairy cows, Nutrition, Reproduction, TAI