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Beta-carotene, ADE vitamins and biotin supplementation in the feeding on reproductive performance of timed-fixed-inseminated beef cows

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Resumo

Seasonal climatic variations mainly in tropical areas, is an import factor for decreasing of the reproductive performance. Thus, the necessity to developing management strategies to reduce the impact of fluctuations in forage availability and quality throughout the year, such as deferral of pastures and supplementation with additional sources of protein, energy, and minerals. This study aimed to evaluate the effect of supplementation with beta-carotene and vitamins (ADE and biotin) on the reproductive performance of lactating zebu cows submitted to FTAI. The experiment was conducted on a private property, during rainfall season, enrolling 395 cows blocked by body condition score, beta-carotene dosage, breed and sex calf, in two lots: Control (n = 195) and Treated (n = 200). The animals were kept on pastures and supplemented with mineral mix (no added vitamins; 150g / animal / day). For the treated group, the same product was added, plus a vitamin premix (500mg β -Carotene, 70,000 IU Vit. A, 10,000 IU Vit. D3, 500mg Vit E and 10mg Biotin, 200g / animal / day). The treated animals were supplemented by 90 days starting at D-30 until D60 (considering D0 the beginning of the protocol of synchronization of ovulation for FTAI). Blood samples were collected for serum levels of beta-carotene and beta-hydroxybutyrate, as well as a transrectal ultrasonographic examination to determine the cow's cyclicity, diameter of the dominant follicle and later to confirm pregnancy. Statistical analysis showed that serum betacarotene concentration was higher in the control group (P = 0.05; Control: 4.53 vs. Treated: 4.27) and that in this group there was also a higher rate of estrus manifestation (P < 0.001; Control: 89.92% vs. Treaty: 78.84%). Although there was no difference (p> 0.005) between the groups for the pregnancy rate (Control: 63.50% vs. Treated: 56.92%). The expression of estrus had a positive correlation with the pregnancy rate in the FTAI when disregarded the effect of the groups. Interaction of the pregnancy rate with the diameter of the dominant follicle was also demonstrated. Thus, beta-carotene and vitamins (ADE and biotin) do not impact on reproductive performance of zebu lactating cows in the rainfall breeding season. Maybe in the transition from dry-rainfall season it could present a positive effect.

Keywords: beef cattle, fertility, nutrition, reproduction