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The influence of the antral follicle count and estrus expression on the conception rate in Nelore cows submitted to timed artificial insemination

Fernanda Amarante Mendes de Oliveira ^{1,4}, Fábio Lucas Zito de Moraes ², Denis Vinicius Bonato ³, Ana Clara Canto Souza ², Fábio Morotti ⁴, Marcelo Marcondes Seneda ⁴

¹ IFAM - Instituto Federal de Educação, Ciência e Tecnologia do Amazonas (Campus Tabatinga – R. Santos Dumont, s/n – Vila Verde, 69640-000, Tabatinga/AM, Brasil), ² Médico Veterinário Autônomo - Médico Veterinário Autônomo (Londrina/PR, Brasil), ³ UNIPAR - Universidade Paranaense (Praça Mascarenhas de Moraes, 4282 – Centro, 87502-210, Umuarama/PR, Brasil), ⁴ UEL - Universidade Estadual de Londrina (Rodovia Celso Garcia Cid, Pr 445 Km 380, Campus Universitário, Londrina/PR, Brasil)

Resumo

Antral follicle count (AFC) has been related to bovine fertility and response to reproductive biotechnologies, but its relationship to estrus expression during timed artificial insemination (TAI) is unknown. The study aimed to evaluate the relationship between the AFC and estrus expression on the conception rate in beef cows that received an ovulation synchronization protocol for TAI. For this, multiparous Nelore cows with up to 40 days postpartum were evaluated by an ultrasound to determine the AFC and were classified into low (≤ 15 follicles; $n=150$), intermediate (≥ 19 and ≤ 26 follicles; $n=150$), and high count (≥ 30 follicles; $n=150$). AFC evaluation was performed on Day 0 of the protocol for synchronization of the ovulation, on a random day of the estrous cycle. The animals received a conventional TAI protocol based on progesterone and estradiol benzoate. On day 8, the animals received cloprostenol, equine chorionic gonadotropin, estradiol cypionate, and a painting in the sacrococcygeal region. On day 10, TAI was performed, and estrus expression was evaluated. The estrus expression was classified as present or absent, present when the paint was totally removed, and absent when partially removed or full paint. Pregnancy diagnosis was performed by ultrasound 30 days after TAI. The data were analyzed using a generalized linear model and a binary logistic regression model ($P<0.05$). At the end of the TAI protocol, regardless of AFC, a high proportion of cows showed estrus expression (low – 61.3%; intermediate – 67.3%, and high – 58.7%), and no significant difference in estrus expression was observed between the AFC groups. The conception rate was influenced by AFC (low: 69.3% vs. high: 56.7%; $P=0.04$) and estrus expression (estrus present: 67.3% vs. estrus absent: 45.4%; $P=0.003$). In addition, an interaction ($P=0.008$) between AFC and estrus expression showed that low AFC cows and estrus present expression had the highest conception rate to TAI. In conclusion, AFC and estrus expression influenced the conception rate of Nelore cows in the TAI program. Furthermore, the interaction of AFC with estrus expression revealed that the best conception rate was observed in females with low AFC that express estrus.

Keywords: *Bos indicus*, ultrasound, synchronization, TAI, fertility.