

## Effect of the calving-FTAI interval on pregnancy rate and gestational losses in primiparous beef cows

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The aim of this study was to evaluate the influence of the FTAI-calving interval, according to animal category, on the fertility of beef cows. Early Nelore primiparous cows ( $n = 879$ ;  $24 \pm 3.3$  months;  $BCS 2.75 \pm 0.42$ ), and conventional Nelore primiparous cows ( $n = 2370$ ,  $36 \pm 4.6$  months,  $BCC 3 \pm 0.48$ ) were enrolled. The average number of days after calving and the day of FTAI artificial insemination (PPP-AI) for Early Post-Partum cows was  $68.55 \pm 22.87$  days and for conventional primiparous cows it was  $65.26 \pm 21.32$  days. Data from 6 reproductive seasons from commercial farms (2019-2023) were evaluated. Cyclicity was not considered in our study. On d-11, cows were treated with 1 mg of estradiol benzoate (Gonadiol<sup>®</sup>; Zoetis, SP, Brazil), i.m., and a first use, intravaginal progesterone-releasing device containing 1.0 g of progesterone (P4) was inserted (DIB<sup>®</sup>; Zoetis, SP, Brazil). On d-2 the P4 device was removed followed by the i.m. injection of 12.5 mg of PGF (Lutalyse<sup>®</sup>; Zoetis, SP, Brazil), 0.6 mg of estradiol cypionate (ECP<sup>®</sup>, Zoetis, SP, Brazil), and 300 IU of eCG (Novormon<sup>®</sup>, Zoetis, SP, Brazil). FTAI was performed on d-0. Pregnancy diagnosis was carried out at 32 and 120 days after AI. Optimal cut-off points for determining the relationship between the days PP and pregnancy status at first postpartum TAI were studied. The ROC curve analyses identified that the ideal interval between calving and TAI was 49.5 days PP for conventional primiparous cows ( $AUC = 0.54$ ;  $P = 0.0004$ ) and 56.5 days PP for early primiparous cows (area under the curve 0.53;  $P = 0.062$ ). Therefore, in each animal category, the cows were separated into two groups: Early Primiparous - EEP (EEP,  $n = 584$ ; PPP-AI  $47.60 \pm 6.0$  average days), Late Pos- Partum - ELP (ELP,  $n = 295$ ; PPP-AI  $66.05 \pm 11.65$  average days), Conventional Primiparous: Early Pos-Partum - CEP (CEP,  $n = 699$ ; PPP-AI  $42.65 \pm 6.5$  average days) and Late Pos- Partum - CLP (CLP,  $n = 1671$ ; PPP-AI  $63.96 \pm 11.31$  average days). Pregnancy by AI (P/AI) and gestational losses (GL) before and after the ideal cut-off point were calculated by logistic regression, and the variables farm, reproductive season and BCS were included in the model. The P/IA of early cows was 50.68% (296/584) and 59.66% (176/295) for EEP and ELP, respectively ( $P = 0.014$ ). The GL was 13.85% (41/295) for EEP cows and 9.65% (17/176) for ELP cows ( $P > 0.05$ ). The P/AI was 47.5% (332/699) and 55.95% (935/1671) for CEP and CLP, respectively ( $P < 0.0001$ ). The GL for CEP cows was 10.30% (34/330) and 10.18% (86/930) for CLP ( $P > 0.05$ ). This study highlighted the importance of specific management strategies, in terms of calving-TAI interval, for early and conventional primiparous cows. So, we conclude that the interval between calving-FTAI interval for early primiparous cows (57 days PPP) should be 7 days longer than for conventional primiparous cows (50 days PPP), with significant impacts on the conception rate.