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Early induction of luteolysis in FTAI protocols increases fertility in beef cows

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Complete luteolysis is essential for pregnancy success in beef cows submitted to FTAI protocols. The objective of this study was to evaluate the effect of PGF administration on Day 7 compared to Day 8 of a FTAI protocol on serum P4 concentration, estrus behavior, ovulatory follicle (OF) diameter, and pregnancy per AI (P/AI). A total of 469 non-lactating Angus cows (with CL, n= 359 or without CL, n= 110), BCS 2.9±0.2 (1 to 5 scale), maintained on pasture were used. Cows received a 1g progesterone-releasing intravaginal device (Reproneo; GlobalGen, Brazil) and 2mg of estradiol benzoate i.m. (Syncrogen; GlobalGen, Brazil) on Day 0. On Day 7, animals were randomly allocated into two groups. Cows were treated with 500mcg sodium cloprostenol, i.m. (Inducio; GlobalGen, Brazil), on Day 7 (PGF7, n= 238) or on Day 8 (PGF8, n= 231). P4 devices were removed and 0.5mg of estradiol cypionate, i.m. (Cipion; GlobalGen, Brazil) was injected in all females on Day 8. FTAI was performed 48 to 52 h after P4 device removal. Females had sacral region painted with appropriate paint (TELL TAIL, GEA, New Zealand) on Day 8 to detect expression of estrus. Transrectal ultrasonography (7.5 MHz linear transducer, MediSono P3V, USA) was performed on Day 0 to detect presence of CL, on Day 10 to measure OF diameter, and on Day 40 to diagnose pregnancy. Blood samples were collected on Days 8 and 10 to measure P4 serum concentration by radioimmunoassay. Estrus behavior and pregnancy rate were analyzed as binary outcomes using logistic regression (Proc GLIMMIX, SAS). OF diameter and P4 concentration were submitted to analysis of variance (Proc GLIMMIX, SAS). The estrus manifestation was greater (Odds ratio= 2.9; P = 0.0002) in females of PGF7 group (91.6%; 218/238) than PGF8 (78.8%; 182/231). The P/AI of cows that exhibited estrus was 60.2% (241/400) vs. 39.1% (27/69), resulting in higher chance (Odds ratio= 2.4) of pregnancy associated with estrus behavior (P = 0.0014). OF diameter did not differ (P = 0.0881) between PGF7 (11.7mm) and PGF8 (11.3mm). The P/AI was higher (P = 0.0034) for PGF7 group (63.9%, 152/238) vs. PGF8 (50.2%, 116/231). In group PGF7, P4 on Day 8 did not differ between pregnant (1.7ng/ml) and non-pregnant (1.9ng/ml) females. However, group PGF8 pregnant females had lower P4 concentration (2.6ng/ml) on Day 8 (P = 0.0005) than non-pregnant (3.4 ng/ml) females. On Day 10, P4 did not differ between treatments (PGF7 = 0.11ng/ml vs. PGF8= 0.09ng/ml) and did not affect fertility (P= 0.2515). According to results, OF diameter and P4 concentration on Day 10 were not influenced by the day of PGF administration, however, earlier PGF injection resulted in higher estrus behavior and increased fertility.