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Fertility at Timed-AI and bull service after induction of precocious puberty in Nelore heifers with or without application of PGF2 α

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The aim of this study was to evaluate fertility of Nelore heifers after hormonal induction of puberty with progesterone (P4), with or without PGF2 α . Two lots of pasture-raised heifers (supplemented with protein-salt; 3g/kg body weight) were evaluated (n=389 animals). Heifers of lot1 presented 14.5m of age and mean weight of 310kg (n=193) and of lot2 presented 14.0m and 296kg (n=196). The protocol for induction of puberty consisted in insertion of P4 intravaginal device (4th use; CIDR, Zoetis) during 12d. On the day of device withdrawal, half of the animals received 1mg i.m. of Estradiol Cypionate (ECP, Zoetis) (CONT) and the other half received 1mg i.m. of ECP plus 12.5mg i.m. of Dinoprost (Lutalyse, Zoetis) (gPGF). Twelve days after device removal, Timed-AI protocol was initiated in all animals: on D0, CIDR (Zoetis) of 4th use and 2mg i.m. of BE (Gonadiol®, Zoetis) were applied. On D9, 12.5mg i.m. of Dinoprost (Lutalyse, Zoetis) and 1mg i.m. of ECP (Zoetis) were applied and CIDR was removed. Timed-AI was performed 48h later (D11), using semen from only one bull in all heifers from both lots. All heifers received 2.3g of melengestrol acetate/animal/day (MGA, Zoetis) in the protein-salt between D13 and D18 post AI. Twenty days after AI, 15 bulls were included in each lot, remaining for 40d. Pregnancy diagnosis was performed 33d after timed-AI to assess conception rate at first service (CR1). Females diagnosed as non-pregnant in this first examination were re-evaluated 30d after the bulls were removed (CR2). Data from CR1 and CR2 were transformed and compared between groups (CONT and gPGF) by Fisher's test on GraphPad INSTAT, considering P<0.05. For CR1, statistical difference (P=0.0009) was observed between lot1 (63.7%, n=123/193) and lot2 (46.9%; n=92/196), so both lots were evaluated separately. In lot1, no effect of BCS (P=0.2321) and no effect of AI Technician (AT; AT1=64.2% and AT2=63.3%; P=0.8929) were observed for CR1. Additionally, no effect of treatment was observed for CR1 (CONT=61.8%, n=60/97; gPGF=65.6%, n= 63/96; P=0.5881), nor for CR2 (CONT=64.9%, n=24/37; gPGF=66.7%, n=22/33; P=0.8806). At the end of this reproductive program, total CR of lot1 was 87.6% (169/193), being 86.6% (84/97) for CONT and 88.5% (85/96) for gPGF (P=0.6849). For lot2, no effect of BCS was observed (P=0.1214), although an effect of AI Technician on CR1 was detected. AT1 presented better (P=0.0050) CR1 for CONT (56.2%; n=27/48) and gPGF (59.1%; n=26/44) compared to AT2 (CONT=38.9%, n=21/54; gPGF=36.0%, n=18/50). No effect of treatment was observed on CR1 (CONT=47.0%, n=48/102; gPGF=46.8%, n=44/104; P=0.9733) nor on CR2 (CONT=35.2%, n=19/54; gPGF=50.0%, n=25/50; P=0.092). At the end, total CR of lot2 was 69.4% (136/196), being 65.7% (67/102) for CONT and 73.4% (69/94) for gPGF (P=0.121). It was concluded that the addition of PGF2 α at the end of hormonal protocol for puberty induction did not improve fertility of heifers submitted to timed-AI

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