

REPRODUCTION

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Effect of grazing system on fetal development in Nellore cattle

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Intensive grazing systems for beef females, based on abundant availability of high quality forages and supplementary concentrates, may affect fetal development. The objective of this study was to determine the effect of grazing system on length of gestation, fetal development, and characteristics of the calf at birth. Twenty-four pregnant (bred to Nellore bulls) Nellore females were allocated into two groups. The control group (G1) grazed *Brachiaria decumbens* (signal grass) in a traditional (extensive) grazing system and the second group (G2) was managed on *Panicum maximum* cv. Tanzania 1 (Tanzania grass) in an intensive grazing system. Fetal development was evaluated by ultrasonography on Days 31, 45, 59, 94, 122, 220, and 255 of gestation. The diameter of the amniotic and allantoic cavities, crown-rump length, circumference and diameter of the head and ocular orbit were determined. At birth, calves were weighed and height, length, thoracic circumference, and ocular orbit and bi-parietal diameters were measured. There were no differences ($P > .05$) in fetal development. The G1 cows had a longer gestation period (4.5 d; $P < 0.05$) and their calves had greater ($P < 0.05$) weight, height, length, and thoracic circumference at birth. In conclusion, Nellore females raised under intensive pasture management conditions had significantly shorter gestation and smaller calves at birth than those raised under extensive pasture management conditions. Therefore, adoption of new management practices (e.g. intensive pasture management), should take into consideration animal behavior and productivity.

Key words: Fetal growth; Genotype; Grazing system; Cattle; Nellore; Ultrasound

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The use of HCG in embryo transfer

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The use of HCG to increase pregnancy rate was confirmed by Dr. W.W. Thatcher - University of Florida (Novel systems for reproductive Management of Lactating Dairy Cows and Strategies to improve embryo survival - experiment Sept. 1999) when he noted that administration of HCG increased the plasma progesterone when administered 5 days after AI. In accordance with this affirmation, we tried to improve the pregnancy rate in Holstein recipients by administration of HCG on the implantation day of an embryo frozen-thawed.

The HCG (human chorionic gonadotrophin) has different uses: stimulate the follicular development, induce the ovulation, maintain the state of corpus luteum and increase the secretion of progesterone by the corpus luteum.

We took two hundreds (200) Holstein heifers and cows divided randomly in three (3) groups; all of them were injected with HCG or placebo (sterile water) on the implantation day (6 or 7 days after oestrus). Randomly, half of each group received HCG and the other half received placebo. All these recipients were noted as good or bad recipients (bad means repeat breeder). All the embryos were ethylene glycol frozen embryos.

The Group 1 received 1700 I.U. HCG (Chorulon- Intervet), Group 2 received 2500 I.U., and the Group 3 received 3300 I.U. injected I.M.. This experiment took place on summer 2002 (particularly hot for the Quebec area).

Respectively, the results were for animals receiving HCG or placebo: Group 1 (75% vs 60%), Group 2 (52% vs 71%), Group 3 (64% vs 60%). For the animals classified as repeat breeders, the results were 50% vs 0%.

These results showed a light improvement of pregnancy rate in normal recipients (64% vs 60%) with the use of HCG. In the group of repeat breeders, although the group was very small, the result showed a marked increase for the recipients who received HCG, (50% vs 0%) and it is probably due to an accessory CL and an increase of progesterone to avoid or reduce the embryo loss.

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Neospora-associated abortion and field experience with a commercial vaccine in a dairy herd

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In cattle, the major mode of infection with *Neospora* is vertical. Calves infected in utero are commonly born alive with or without clinical signs. However, when *Neospora* infection results in abortion, it usually occurs during months 5 or 6 of gestation. Cows seropositive for *Neospora* are considered to be at significantly greater risk of abortion than non-infected cows. It is unclear precisely what determines whether or not a *Neospora*-infected cow aborts or carries her calf to term. It is speculated that the outcome of pregnancy is determined by the immune responses of both the fetus and dam.

Primiparous heifers are more likely to experience *Neospora*-associated abortion than are multiparous cows. This suggests that development of immunity to the organism may abrogate some of the tendency for abortion in subsequent gestations. As additional evidence for the development of protective immunity, it has been shown that exposure of cows six weeks prior to breeding reduced vertical transmission.

There is not a proven strategy for control of vertical transmission of *Neospora*. In this study, we have field tested a commercial *Neospora* vaccine in a dairy herd with a historically high incidence of *Neospora*-associated abortion. The herd consists of 250 head of registered Holsteins. As each animal was diagnosed pregnant by rectal palpation at 40-70 days gestation, individual cows were assigned to either control or vaccinated groups. The vaccine was administered according to manufacturer's recommendation; two injections four weeks apart during the first trimester of gestation. Prior to vaccination, blood was drawn to determine *Neospora* status by ELISA. A second blood sample was obtained 30 days later and a second vaccine dose administered to animals in the vaccine group. A third blood sample was obtained 30 days after the second sampling date. All cows were followed until the gestation ended either by delivery of a calf or abortion. Aborted fetuses and stillborn calves were examined grossly and microscopically to determine cause of abortion or death. Blood was obtained presuckling on calves delivered alive to determine if fetal antibodies were present against *Neospora*. Preliminary results indicate the vaccine reduces the incidence of *Neospora*-associated abortion but may not offer protection against vertical transmission of the parasite.

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