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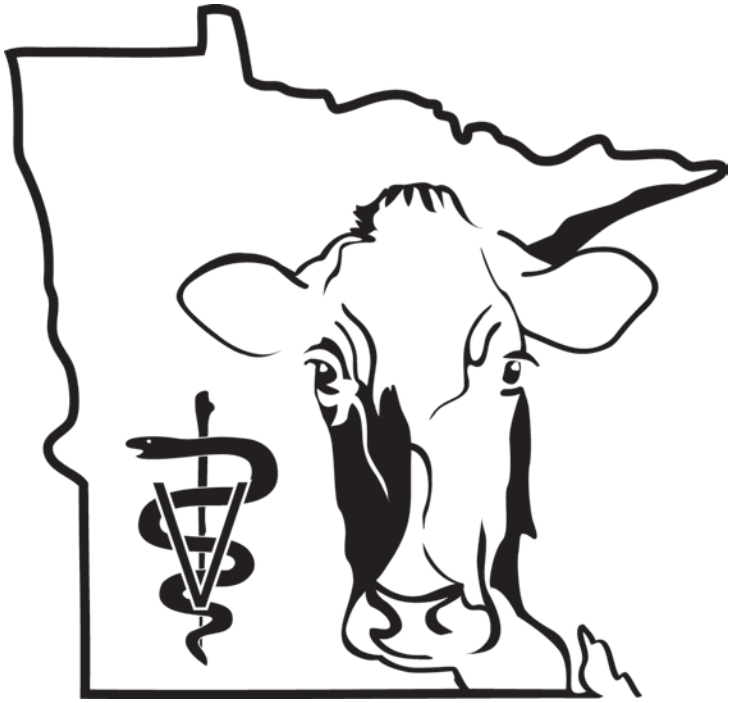

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Bovine Neospora Abortion

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Since its emergence in the late 1980's, bovine abortion induced by infection with *Neospora sp.* has been recognized as a major cause of reproductive failure in cattle. Neospora induced abortions have been documented in North American, Europe, South Africa, Australia, New Zealand and Japan. Abortions are of greatest economic significance in dairy cattle.

The life cycle of *Neospora sp.* is still unknown with tissue cysts and tachyzoites the only known stages. Besides cattle, *Neospora sp.* is known to infect dogs, cats, horses, goats, nonhuman primates, rabbits, mice, rats, sheep and pigs; however, an intermediate host has not been identified. Congenital infection is the predominant route of *Neospora sp.* transmission and in one study was determined as the source for 98% of calf infections with a postnatal infection rate of 1-2% at 12-19 months of age. Cows aborting a fetus infected with *Neospora sp.* were themselves most likely infected congenitally. The reason for transplacental infection is attributed to a recrudescence of subclinical *Neospora sp.* infection in the cow associated with the immune modulating effects of pregnancy.

Clinically, most *Neospora sp.* induced abortions occur at 5.5 months of gestation and can occur sporadically or in storms with reported incidence rates of 7-35%. Early reproductive failure has not been attributed to *Neospora sp.* Herds with endemic *Neospora sp.* infection tend to have a higher abortion rate when compared to uninfected herds with many of the abortions attributable to Neospora. Cows can abort in subsequent gestations although the incidence rate in one study was low (4/112). Even if *Neospora sp.* infected cows don't abort, their fetuses are commonly infected. Anti-Neospora antibody titers (IFA) in cows range from 1:320 to 1:5,120 at the time of abortion and decline over a 1-5 month period post abortion. Anti-Neospora antibody titers in rebred cows return to similar high titers at 4-5 months of gestation.

Diagnosis of *Neospora sp.* induced abortion is dependent on the demonstration of characteristic lesions in brain, heart and skeletal muscle. Immunohistochemistry is used to specifically identify tachyzoites or cysts in tissues although, the number of organisms is variable and a negative result does not preclude a diagnosis of Neospora abortion. Since Neospora infected cows have anti-Neospora antibodies at the time of abortion, serology may be of value in ruling out Neospora abortion if the affected cow is seronegative. Fetuses seroconvert subsequent to *in-utero Neospora sp.* infection regardless of the pregnancy outcome so fetal thoracic fluid anti-Neospora antibody titers are considered of little value. Specimens for the diagnosis of bovine abortion should include fresh and formalin fixed brain, heart, lung, skeletal muscle (diaphragm), liver, kidney, placenta and spleen and also thoracic fluid and abomasal content.

Management to prevent or control *Neospora sp.* abortion should include protection of feed and water from fecal contamination, elimination of domestic and feral animal contact with water and feed and proper disposal of fetuses.