



## Neosporosis in Beef Cattle

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*Neospora caninum* has been recognized as a cause of reproductive loss in cattle since 1988. The organism, *Neospora caninum*, is a microscopic protozoan parasite. The disease caused by *N. caninum* is known as Neosporosis.

In 1988 dogs were identified as the definitive host for *Neospora caninum*. *Neospora caninum* can complete its life cycle in dogs, definitive hosts, resulting in shedding of oocysts in feces. Coyotes have also been identified as a definitive host for *N. caninum*.

*N. caninum* can only undergo part of its life cycle in intermediate hosts such as cattle, where the parasite remains encapsulated in tissues and is not shed in feces. Scavengers, such as dogs, may then become infected though the consumption of *N. caninum* infected tissues such as placenta or aborted fetuses. Cows and white-tailed deer have been shown to be common intermediate hosts.

Abortion in cattle from *N. caninum* usually occurs during the early second trimester but may occur throughout gestation. If cows do not abort they have a high probability of passing the infection onto the fetus. If the fetus is absorbed prior to 3 months of gestation, cows may come back into heat.

Calves born infected with *N. caninum* usually develop normally and the probability of passing the infection onto their fetus is high. This form of transmission is known as

vertical transmission and results in the perpetuation of *N. caninum* in the herd. There is no cow to cow transmission of *N. caninum*.

In herds that have ongoing problems with *N. caninum* the heifers, retained for breeding, are more likely to abort during their first pregnancy.

Diagnosis of *N. caninum* usually includes both blood testing of the aborting dam and examination of the aborted fetus by a diagnostic lab. The fetal brain is the most consistent infected tissue used to diagnose *N. caninum*.

A killed vaccine for *N. caninum* is available in the U.S. Administration of the vaccine has been associated with a statistical reduction in abortions in areas where *N. caninum* is prevalent. Once the vaccine has been given to a cow, the blood test for *N. caninum* is no longer useful.

In 2000 a team of researchers investigated an outbreak of Neosporosis in a beef cattle herd in Nebraska. Laboratory examination, of aborted fetuses and calves born prematurely, revealed *N. caninum* in each case. Most of the abortions occurred during the third trimester.

In a herd of 241 cows, 43 cows aborted, had stillborn calves or had calves that were premature but did survive.

Serological analysis of the outbreak of Neosporosis in

this herd revealed the abortions and stillbirths resulted from a point source of infection. Ingestion of contaminated feed or water by a large number of susceptible animals over a short period of time describes a point source epidemic.

Cows were initially fed a mixed ration, which was suspected to be contaminated by *N. caninum* oocytes, when most of the cattle had been pregnant for 5 or 6 months. This may explain why all of the aborted fetuses occurred in the third trimester and many calves were born prematurely.

Feedstuffs on this farm, used in the mixed ration, were not protected by a fence and were stored outdoors. The silage and hay used in the mixed ration had scat from raccoons, skunks, opossums, deer and dogs on and around the feed.

As this outbreak emphasizes, management procedures should include reducing the risk of dog or coyote feces in feed sources. Work with your veterinarian to develop a comprehensive plan to prevent and control *Neospora caninum* in your beef herd.