

UCD VET VIEWS
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NEOSPORA ABORTIONS

The diagnosis of abortion diseases in cattle is difficult, time consuming, and often frustrating. Historically, a diagnosis is reached in less than 50% of the bovine abortion cases submitted to veterinary diagnostic laboratories. In 1984, veterinary pathologists at the University of California's Veterinary Diagnostic Laboratory System (CVDLS) in Tulare began noticing a new pattern in aborted fetuses from dairy herds. The abortions, which frequently happened as multiple cases on a single farm, occurred in 4 to 7 month fetuses. The fetuses had consistent changes or abnormalities in the muscle, heart and brain. These abnormalities were similar to those seen in animals affected with *Toxoplasma* spp, a protozoan that affects many mammals; however, there was no evidence of *Toxoplasma* infection in the affected cattle. The aborted fetuses that exhibited this pattern made up a relatively large percentage of the abortions coming from dairies. At about the same time, other researchers in the United States had discovered another protozoal agent that caused disease in dogs, *Neospora caninum*. Sharing knowledge and materials with these colleagues, researchers at UC-Davis CVDLS confirmed that the agent causing abortion in the dairy cattle was closely related to the agent causing disease in dogs. This abortion disease has since been referred to as **Bovine Neospora Abortion**. It is now recognized as the main cause of abortion in dairy cattle in California and is identified in about one third of the fetuses submitted to CVDLS. Additionally, through the efforts of CVDLS veterinarians, it has been recognized as a cause of abortions in cattle worldwide.

Through the work of University of California researchers and others, we are now more familiar with the characteristics of this disease. The agent is a protozoa closely related to *Neospora caninum*. With most protozoal parasites that cause disease there is a definitive host (or final host) such as a carnivore (dog, cat, etc.) that harbors a certain life stage and then spreads the organism to other species such as cattle. To date, the definitive host of *Neospora* has not been found. The *Neospora* agent can be grown in the laboratory under artificial conditions (cell culture) and these laboratory-grown *Neospora* can reproduce the abortion disease when put into susceptible pregnant cattle. Both dairy cattle and beef cattle are susceptible to infection and to the subsequent abortions that may occur. Do beef cattle naturally have abortions due to this protozoal agent? The answer is yes. Surveys done by the CVDLS and California Department of Food and Agriculture's Animal Health Branch of beef cattle abortions have shown that beef herds can experience losses due to *Neospora* abortions. *Neospora* abortions have occurred in beef cattle throughout California. However, the frequency of *Neospora* abortions in beef cattle herds appears to be much less than in dairy herds. The reasons for this are not clear and many questions regarding this disease remain. It is known that cattle can be chronically infected with *Neospora* and can abort more than once due to this disease. Also, some cows can pass this agent on to apparently normal calves during pregnancy. This may prove to be an important means of transmission of *Neospora*. Active research is being conducted in an attempt to identify a definitive host that spreads the agent to cattle.

Neospora is just one of many infections that may cause abortions in California beef cattle. For this reason it is important to submit suspect fetuses to your veterinarian for diagnosis. He or she can work with CVDLS to determine the cause of the problem. At the present time there is no known treatment or vaccine to prevent this condition. However, knowing the cause of the problem can be helpful in deciding which management changes might be of benefit or simply wasted effort.

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