

## Livestock Health Series

# Leptospirosis

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Leptospirosis is a disease that can affect several species including cattle, sheep, pigs, dogs, horses, wildlife and man. This disease is caused by the bacteria *Leptospira interrogans*. Five strains mainly affect livestock: *hardjo*, *pomona*, *icterohaemorrhagiae*, *grippityphosa* and *canicola*. These five strains are targeted with a five-way leptospirosis vaccine.

*Leptospira* is well suited for wet environments. Cattle can be exposed from contaminated stock ponds, wildlife, rodents or other domestic animals. The pathogenic organism can penetrate mucous membranes (mouth, nose, conjunctiva and reproductive tract), open wounds and skin abrasions.

After an animal is infected, the bacteria spreads throughout the body then localizes in the kidneys, mammary glands and/or reproductive tract. Once the urinary and reproductive tracts become infected, the organism can be shed in urine, uterine discharge, semen and aborted fetuses/placentas. This shedding allows herd mates to become infected, resulting in decreased production and reproductive performance in the herd.

Typically, three syndromes occur in cattle, depending on which strain is involved, where in the body the infection localizes and the degree of animal immunity. The three effects noted with a *Leptospira* infection are hemolytic syndrome, milk drop syndrome and abortion/infertility syndrome. One or all three forms of the disease may show up when *Leptospira* affects a herd.

The hemolytic syndrome occurs mostly in calves that are infected with *L. pomona* or *L. icterohaemorrhagiae*. With this syndrome, affected animals begin to lose large numbers of red blood cells. Clinical signs include anemia, lethargy (sluggishness), yellowed mucous membranes, hemoglobinuria (red urine) and poor appetite. Unless appropriate treatment is given, these animals can die. In addition to the symptoms, this problem can be diagnosed by a blood test.

*L. hardjo* has been implicated in milk drop syndrome. When this bacteria localizes in the mammary gland after initial infection, it can lead to a significant decrease in milk production – hence the name “milk drop syndrome.” Infection with this pathogen will cause considerable performance loss, especially in dairy cattle.

All strains have been implicated as the cause of the abortion syndrome. Abortions due to *Leptospira* typically occur in the second or third trimester of gestation. Aborting cows frequently exhibit no other signs of illness. However, some cows may show clinical signs of the other syndromes associated with this disease. If cows are affected very late in gestation, they may give birth to weak or poorly developed calves.

Cows do not abort the fetus when they first contract the disease. Most cows abort 1 to 9 weeks after they become infected with *Leptospira*. The aborted fetuses are normally autolysed, necrotic and/or swollen.

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Therefore, it becomes difficult to isolate the organism from fetal tissues, but fetal tissues should be collected for laboratory submission to aid in diagnosis. Maternal urine and blood samples should also be submitted for laboratory evaluation. It is important to note that the aforementioned infected tissue and/or fluid can transfer the bacteria to people. Precautions should be made, such as wearing gloves and washing hands after handling potentially infected tissue or fluid.

## Prevention and Treatment

Oxytetracycline is the preferred antibiotic treatment for leptospirosis. As with all infectious

diseases, prevention is always better than treatment, and prevention of leptospirosis is best accomplished through vaccinations. Cow herd owners who have experienced problems with this disease in the past should be especially conscientious about vaccinating, because some cows that were infected in the past may become chronic carriers of the disease and continue to spread the disease in the herd. Cow herds should be vaccinated with a five-way *Leptospira* vaccine biannually. Vaccination should be done twice yearly because antibody levels for *Leptospira* do not remain high for long periods after vaccination.

For more information on developing a herd vaccination schedule, consult with your veterinarian.

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