

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 spirochete *Leptospira interrogans*. Five strains mainly affect livestock: *hardjo*, *pomona*, *icterohaemorrhagiae*, *grippotyphosa* and *canicola*. These five strains are targeted with a five-way leptospirosis vaccine.

Cattle become infected with this pathogen when exposed to the causative organism. *Leptospira* is well suited for wet, moist 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. Once an animal is infected, the organism spreads throughout the body and 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. Oxytetracycline is the preferred treatment for this, as well as for other *Leptospira* syndromes.

L. hardjo has been implicated in milk drop syndrome. When this bug 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.

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

Prevention and Treatment

Prevention of leptospirosis is best accomplished through vaccinations. Cow herd owners that 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.

Other control measures can be taken to help decrease the possibility of exposure, such as draining or fencing off standing water and limiting populations of rodents and other wildlife which may contaminate drinking water. Oxytetracycline should be administered as treatment for cattle that have current infections of *Leptospira*. If not used for diagnostic tissues, always remember to dispose of aborted fetuses and placentas, so that other animals in the herd do not become exposed from these contaminants. For more information on leptospirosis and other cattle diseases, contact your county Extension office.

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