



Beef Cattle Handbook



BCH-3230

Product of Extension Beef Cattle Resource Committee
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Leptospirosis of Cattle

Leptospirosis is an infectious and contagious bacterial disease of most farm animals and many wildlife species. In cattle, leptospirosis can produce an abortion rate of up to 30 percent when it occurs during the final third of pregnancy. It may also be responsible for high mortality among young calves, decreased milk production, and blood-contaminated milk. Severity in adult cattle is extremely variable, ranging from inapparent infection to 5 percent mortality. The causative organisms, called Leptospire, are shed in urine and survive in surface water, streams, or moist, alkaline soil.

The source of infection is most often urine containing leptospire that splashes into the eyes of susceptible animals or contaminates pasture, drinking water, or feed. Swine may act as carriers, often infecting cattle.

Leptospirosis may be transmitted to cattle by many infected species—rats and other rodents, raccoons, skunks, foxes, opossums, and dogs. The disease can also be transmitted to people, and swimming in waters frequented by infected animals should be avoided.

There are more than 100 serotypes of leptospira, but only seven serotypes have been recognized in U.S. cattle. The manifestations of this disease can vary greatly depending on the infecting serotype.

The incubation period is generally 3 to 7 days in all animals, and clinical signs of disease, if present, last 3 to 5 days. The leptospire localize in the kidney of the recovered animal and are shed in the urine for as long as 4 months. The disease may be acute (toxic blood infections causing high fever, anemia, jaundice, labored breathing, mastitis, reduced milk flow, secretion of yellow, thickened, and sometimes blood-contaminated

milk, abortion); subacute (milder, intermittent fever, abortion usually following in 1 to 4 weeks); or subclinical (mild or no clinical signs other than abortion and infertility). All clinical signs are usually not present in either acute or subacute leptospirosis. The clinical picture may be influenced by the infecting serotype, number of organisms, and the condition of the animal.

The organisms usually enter through the broken skin or mucous membranes, multiply in the liver, and migrate via the bloodstream to the kidneys, releasing toxins that damage red corpuscles, liver cells, and kidney tubular cells. Consequently, the acutely ill animal may die from septicemia, hemolytic anemia, or malfunction of the liver and kidneys (uremia), but usually as a result of a combination of these causes.

If the victim is a pregnant cow, and in the second half of pregnancy, the fetus is usually invaded by the leptospire, becomes infected, and subsequently dies. In the first half of pregnancy the placenta is more resistant to penetration, and abortion seldom occurs.

Fever and reduced milk production, as well as thickened milk contaminated by blood, are among the most frequently recognized acute signs of leptospirosis, but abortion often occurs without any accompanying signs.

Diagnosis

The causative leptospire thrive within a narrow set of environmental conditions, appearing in most tissues for only a limited time, except in the kidney where they may persist for months. The leptospire die rapidly in dead animals, aborted fetuses, or undiluted urine samples. Also, symptomatic variation is great. As a result, it is dif-

difficult to make a diagnosis of leptospirosis from an individual animal. The presence of leptospiral antibodies can be more easily determined by testing serum samples from at least 10 percent of the animals in a herd, including normal animals and those showing characteristic clinical signs or having a history of abortion.

These diagnostic tests should be augmented whenever possible with herd history. Testing of samples from other livestock as well as wildlife and rodents that have access to livestock water supplies can also be helpful in determining the source of the disease.

Good Management Can Pay Off

Good management is effective in the control of leptospirosis, and involves:

1. Eliminating access of cattle to surface water or streams used by other livestock.
2. Removing trash that harbors wildlife and rats.
3. Limiting access of rodents and wildlife to livestock feed.
4. Eliminating urine drainage into water sources.
5. Reducing contacts between cattle, other livestock, rodents, and wildlife as much as possible.
6. Cleaning, disinfecting, and drying barns, pens, and other confinement areas after use by infected cattle.
7. Draining or fencing swampy areas likely to harbor the leptospire.
8. Vaccinating susceptible animals for relevant serotypes.

Infected bulls, of course, should never be used for natural service or artificial insemination until they have been treated to eliminate shedding and are subsequently tested, examined, and found free of disease.

Effective vaccines containing the five most important strains of leptospire are available and should be administered to calves at 4 to 6 months of age, with annual revaccination. The protection engendered by vaccines against leptospirosis lasts 12 months in cattle in closed herds. Herds receiving periodic additions should be revaccinated at 6-month intervals.

The vaccination of animals less than 3 months old is not recommended due to possible residual antibodies, but vaccination of cows in early to mid-pregnancy will protect their calves. The best time to vaccinate cows is 30 days before breeding.

Treatment Procedures Are Available

The object of treatment for leptospirosis is to control the infection before irreversible damage is done to the liver and kidneys. At the first signs of an apparent infection a veterinarian should be contacted immediately.

Treatment has proven most effective when animals are treated during the leptospiremia. However, antibiotic therapy during chronic infection may reduce the carrier status.

The hemolytic anemia that accompanies acute leptospirosis in cattle may be treated by blood transfusions.

When infection storms through a herd, especially when many pregnant cows are involved, simultaneous treatment and vaccination of all animals will reduce new cases and abortions if treatment is administered early in the herd infection.

Annual revaccination will usually limit infections and control outbreaks. It is prudent to regularly test sera of animals to determine if new leptospiral strains have been introduced, especially when clinical signs of leptospirosis are apparent in previously vaccinated animals.

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