

# Leptospirosis in Cattle

**L**eptospirosis is a . . . bacterial infection of animals responsible for significant economic loss in livestock, particularly through abortion and stillbirth, and for zoonotic [animal to man] infection of people.”\* Leptospirosis occurs worldwide and threatens cattle in Alabama and the southeastern United States.

## What causes leptospirosis?

Leptospirosis (lepto) is caused by the bacterium *Leptospira interrogans*, which has over 180 subclassifications called “serovars.” The serovars of the *Leptospira* organism may cause disease in many types of mammals; however, each serovar is adapted to a particular animal host species. For example, the serovar *hardjo* is adapted to cattle while the serovar *pomona* is adapted to swine. The serovar adapted to a species tends to cause less severe disease in that species than in a species not adapted to it. For this reason, the serovar *pomona* tends to cause a more severe disease in cattle than in swine.

## What happens in a herd which is infected with lepto?

The signs of lepto depend on the herd’s degree of resistance or immunity. In herds with adequate resistance, developed through a good vaccination pro-

gram, some cattle may be infected with the organism but not show signs of disease. However, in herds with low resistance, animals infected with the organism may show signs of disease. Disease usually takes one of two forms: chronic (long lasting) or acute (short lasting).

The **chronic** form of lepto affects pregnant cows. It causes abortions, stillbirths, or the birth of weak calves. This is the most economically important form of lepto in the southeastern United States.

The **acute** form of lepto often affects calves, causing high fever, jaundice, and usually death. Older animals which are acutely infected usually do not die. Nursing cows which are acutely affected produce less milk. For a week or more their milk is thick and yellow. Unlike many other udder infections, lepto does not cause firmness of the udder.

Although lepto has been blamed for infertility problems in cattle herds, it has seldom been proven to cause infertility. In other words, lepto rarely causes a cow to fail to conceive or become pregnant. It usually causes abortion of an established pregnancy. If cows are not becoming pregnant in a herd, lepto is probably not the cause.

## How is lepto transmitted?

The *Leptospira* organism is usually transmitted to an uninfected animal in the urine of an

infected animal. The source can be an infected animal or water that has been contaminated with infected urine. The organisms reside in the kidneys of infected animals but can also infect the liver, the lungs, and the reproductive tract of pregnant cows. The organisms gain entry to the body though the membranes of the eyes, nose, mouth, and even the skin, especially if it is water-softened. *Leptospira* organisms have been known to survive in stagnant, standing water or in wet soil for months if the temperature is favorable (between 50° and 93°F). Some wild animals carry *Leptospira* organisms which can infect cattle.

## How can you tell if lepto is the cause of disease?

Several laboratory techniques are available to detect lepto. As in all cases of animal disease, your veterinarian is the best resource for information and service.

One diagnostic technique is called “immunofluorescent staining.” This technique can detect *Leptospira* organisms in the tissues or fluids of aborted fetuses or other infected animals. Another diagnostic method is to grow the organism on a culture medium, but this is difficult and often unsuccessful.

Still another commonly used diagnostic method is to draw blood from animals which are suspected to have been infected and then test it for antibod-

\*J. F. Prescott, Current Veterinary Therapy, 3d ed. (W. B. Saunders Co., 1993), 541.

ies to the various *Leptospira* serovars. The level of antibodies is referred to as the "titer." Ideally, two blood samples should be taken from each animal, one as close to the time of abortion or disease as possible, and the second 2 to 3 weeks later. It is best to take samples from several animals in the herd (10 percent is a guideline), not just those which may have aborted. Your veterinarian can help you interpret the reports. Unfortunately, these blood tests often fail to diagnose the cause of an abortion because the time of the sample collection may be widely separated from the time of infection.

The best way to diagnose an abortion is to have the aborted fetus and its surrounding membranes submitted to a lab. If you find an aborted fetus, take it to your veterinarian as soon as possible. Include as much of the fetal membranes, the placenta, as possible. If you cannot take the fetus in immediately, keep tissues chilled to slow further decomposition. The veterinarian will submit the tissue to the veterinary diagnostic laboratory.

### Can lepto be treated?

Antibiotics such as streptomycin and tetracycline can be used to treat animals with acute lepto. However, acute infection is relatively rare. The first sign of a chronic infection is an abortion. Treatment after an abortion is too late. Prevention through regular herd vaccination is the best approach.

### How can you prevent lepto from becoming a problem in your herd?

The entire breeding herd should be vaccinated at least once a year. Be sure to vaccinate bulls and replacement

heifers as well as mature brood cows. Most lepto vaccines for cattle in the United States include the five following *Leptospira* serovars which are most likely to cause disease: *hardjo*, *pomona*, *icterohaemorrhagiae*, *canicola*, and *grippityphosa*. This vaccine is commonly referred to as "five-way lepto vaccine."

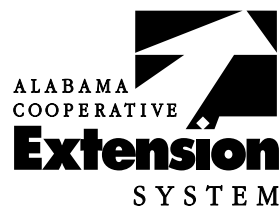
Twice-a-year vaccination for lepto is the preferred practice for the following reasons:

- Lepto vaccine is not expensive.
- Most cattlemen handle animals in the breeding herd at least twice a year anyway.
- Lepto vaccines do not provide a long-lasting resistance to infection; therefore, a second vaccination is necessary to insure resistance year-round.
- Most lepto vaccines are safe to use in pregnant cattle, making it possible to vaccinate during pregnancy checking.

The two vaccinations should be administered about 6 months apart. However, the main consideration is to vaccinate twice a year, even if the time between them is more or less than 6 months.

Replacement heifers and newly introduced young bulls should be vaccinated twice, about 3 to 4 weeks apart, as soon as possible after entering the herd. Like children, young animals require initial vaccinations followed by boosters.

Unfortunately, many cattlemen do not vaccinate for lepto because they claim to never have had a problem. This is a needless gamble. The price paid for a lepto outbreak in a herd is losing significant numbers of calves. Since calves are the salable product of the cow-calf herd, failure to vaccinate leaves a herd at risk for significant economic losses.



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