ural Extension Service ● University of Minnesota



FACT SHEET

# Leptospirosis in Cattle and Swine

VETERINARY SCIENCE NO. 12—1975
JERRY D. HILGREN

Leptospirosis is a very common infectious and highly contagious world wide disease of most warm-blooded animals. The disease causes its greatest economic losses in cattle and swine, but also hits sheep, goats, dogs, and horses. It also is known to occur in many wild animals such as deer, moose, elk, fox, wolves, rats, muskrats, raccoon, mice, and other warm-blooded wild animals. Leptospirosis is of public health significance because humans frequently contract leptospirosis by direct contact with infected animals or by swimming in water containing leptospiral organisms shed in the urine of infected animals.

Leptospirosis is one of the most common causes of abortions in cattle and abortions and the birth of weak or dead pigs in swine herds.

Interest in leptospirosis has increased during the last 20-25 years after a reliable diagnostic blood test was developed. Because of the somewhat limited symptoms other than abortions and because of the difficulty of clinical diagnosis, the incidence of this disease was not well known before effective diagnostic blood tests were developed.

Leptospirosis is seen primarily during the summer months because warm wet weather tends to promote disease transmission when pastures with pools of water and creeks contaminated by infected urine are available for cattle or swine to drink from or stand in. Even though it occurs primarily during the summer it also occurs during other seasons particularily in swine.

Leptospirosis is caused by a group of bacteria that are corkscrew or spiral like in shape. In cattle and swine the disease usually is caused by Leptospira pomona or Leptospira icterohemorrhagica. However, on occasion, Leptospira hardjo, Leptospira grippotyphosa, and others also are involved. A specific single type tends to be important within a particular connected group of lakes or water drainage area.

**Transmission of Leptospirosis**

Animals that have had leptospirosis usually maintain the infection in their kidneys and shed leptospiral organisms in their urine for months. Aborted calves or pigs, fetal membranes, and uterine discharges may carry leptospiral organisms. Leptospiral organisms from these sources may gain entrance to the nasal and eye membranes and transmit the disease or may enter drainage water and lakes, pools, or streams. Leptospiral organisms may live in natural water for several weeks. Susceptible cattle may stand in and drink contaminated water, and leptospiral organisms penetrate small skin abrasions or the membranes of the nose and eye infecting an animal and repeating the transmission cycle again so that nearly all of the cattle or swine on the farm acquire the disease. Cattle and pigs on the same farm frequently are infected by common drainage water. Leptospirosis also spreads from farm to farm by water flowing down a creek or by cattle from several farms with access to a common lake.

**Clinical Signs of Leptospirosis in Cattle**

The severity of leptospirosis varies greatly. Young cattle less than 1 year old are more apt to be severely ill than are adult cattle.

Leptospirosis symptoms vary in young cattle but may include some of the following:

- often many calves sick at once
- reduced appetite (most animals)
- inactive and depressed (most animals)
- body temperature elevated from 102 to 106° F. (most animals)
- port wine or coffee colored urine because of red blood cell breakdown (about 30 percent of animals)
- appear pale from breakdown of blood cells
- after several days of illness the cattle may become jaundiced and show yellowing of the normally pink membranes around the eyes
- if untreated, losses may reach 30-50 percent.

The symptoms in adult cattle vary more. Many adult cattle may not appear to be sick, so leptospirosis is difficult to diagnose by physical examination. The following signs are observed in some animals:

- Perhaps 95 percent of infected adult cattle are not observed closely enough to detect it even though they have the disease. In this sizable percentage of cattle, a veterinarian suspects leptospirosis because of abortions and retained placentas that develop 10-25 days after having the initial infection.
- In lactating dairy cows that may be observed quite closely, the following clinical signs of illness are sometimes seen:
  - acute severe disease as seen in younger cattle may develop but is extremely rare.
  - Port wine or coffee-colored urine is observed in about 5 percent of the cows.
  - elevation of body temperature to 103-106° for 2-4 days.
  - decreased appetite to one half or one third of normal.
  - development of a very flabby and soft udder with milk secretions on all four quarters approaching the consistency and color of cream. There may be a few soft fine clots on all four quarters. Rarely does the milk show evidence of being bloody. Milk production is very limited and may be reduced more than 75 percent. Milk from cows with leptospirosis may contain leptospiral organisms for a few days so should not be used for animal or human food. Pasteurization of milk does kill the leptospiral organisms.
- In cows pregnant over 3 months, abortion may occur 10-25 days after the cows have gone through the initial disease. Retained placentas and uterine infections usually follow abortions from leptospirosis. Most aborted calves are born dead but occasionally one is born alive.

- Remember that clinical signs of leptospirosis are not frequently observed in adult cattle especially beef cows that are not observed daily, and that abortions in a herd may be the only signs indicating that the disease may be going through the herd of cattle.

**Clinical Signs of Leptospirosis in Swine**

Only on extremely rare occasions do owners or veterinarians observe any clinical signs of leptospirosis in adult swine because they are not observed as closely as cattle. Signs that are occasionally seen in adult swine include bloody colored urine and occasionally enough kidney damage that a pig becomes very thin and eventually dies because of limited kidney function. Also, very rarely one may see an acute death in adult swine. The signs cited above are very uncommon and are not expected to be observed in the average group of swine with leptospirosis. More frequently the only clinical signs that leptospirosis exists in a group of adult swine are abortion which usually occurs during the last 3 weeks of pregnancy and, more frequently, the birth of weak, squealy pigs that seem to have the desire to nurse but generally die in 2-4 days even if treated.

Acute deaths of young pigs from leptospirosis, as occurs in young calves, is extremely rare and should not be anticipated.

In summary, leptospirosis is a clinical disease of such limited severity in adult cattle and most swine that, unless close observation is practiced, it is likely to go undetected. Abortions or retained placenta in cattle and abortion or the birth of weak, squealy pigs that usually die are the signs that indicate a potential leptospirosis problem.

**Diagnosis of Leptospirosis**

In cattle, a veterinarian usually is confronted with complaints of abortions or retained placenta. Occasionally severely sick young cattle or mildly sick adult cattle are observed.

In swine, owners usually complain of abortions or the birth of weak, squealy pigs that die in 2-4 days.

Based on disease signs as previously discussed and analysis of blood samples a diagnosis can be established.

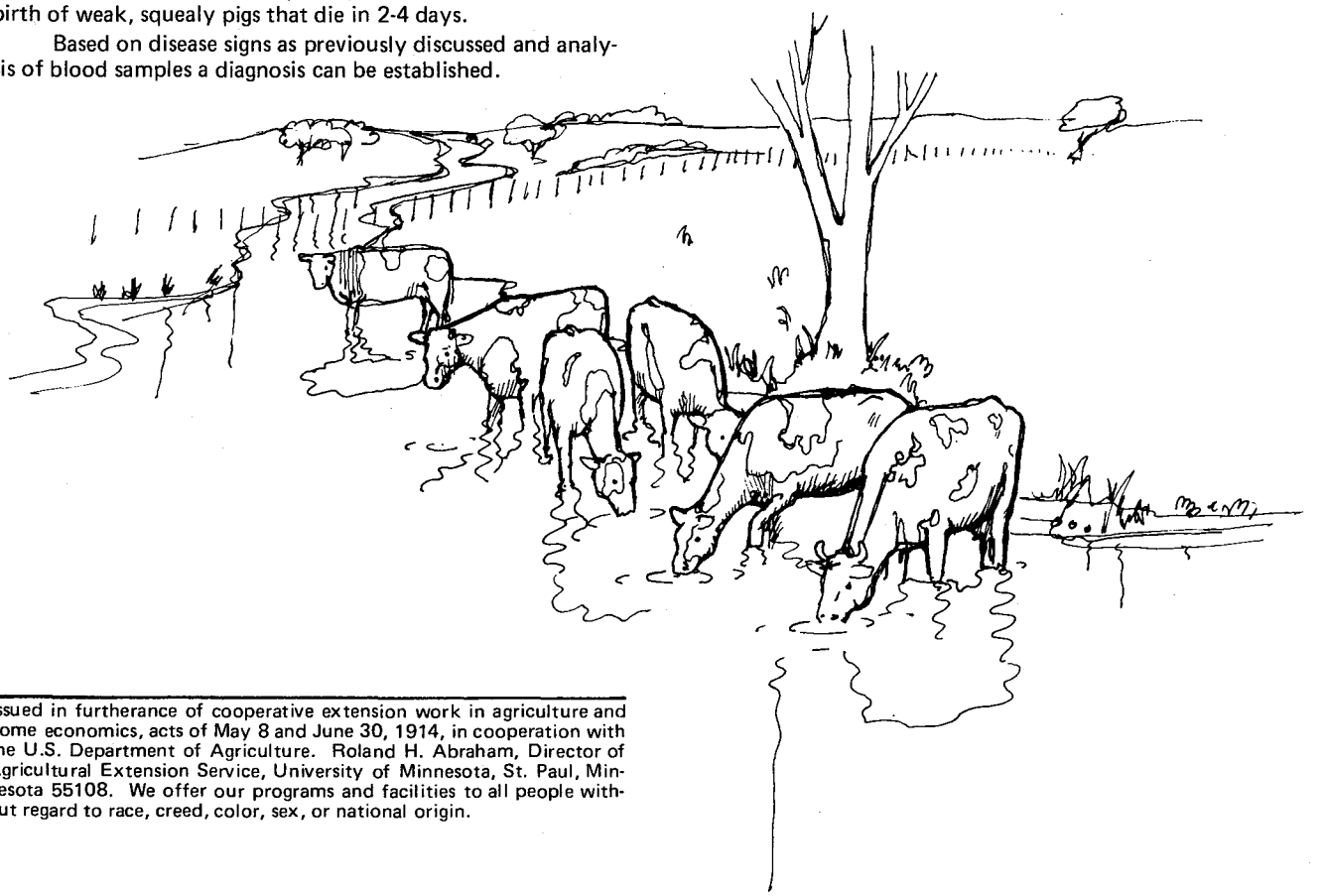
**Treatment, Control, and Prevention of Leptospirosis**

Because most of the economic losses caused by leptospirosis are due to abortions of calves or pigs, most effort is placed on a correct diagnosis and preventive control programs. In very sick animals, combinations of blood transfusions, antibiotics, and other supportive drugs may be needed to bring the animal back to health. Because recovered animals often shed leptospiral organisms in their urine for months and serve as a source of infection for other animals in close contact or by infected urine getting into waterways, it is sometimes desirable to eliminate this disease-carrier state. Your veterinarian must decide the importance of carriers of leptospirosis under your particular management and rearing programs. If he or she sees the need to treat carrier animals, it can be done effectively with appropriate drugs.

Leptospirosis carriers may show no evidence of carrying the disease, so the disease may be introduced into your cattle or swine if you bring in cattle or swine from outside sources. Purchased cattle or swine should be from herds of known health and vaccination status. Newly introduced animals should be kept separately from home stock and handled as your veterinarian advises.

Leptospirosis is an expensive disease that can be controlled effectively with good quality vaccines. The quality of leptospirosis vaccines available for use varies considerably. Seek the advice of your veterinarian before purchasing any leptospirosis vaccine. The correct type of vaccine to use is based somewhat on the type or types of leptospiral organisms causing the disease in your particular area. Your veterinarian can best advise you about the age and time of the year that vaccination would offer you the greatest protection. Usually leptospirosis vaccines are given once or twice yearly.

In summary, leptospirosis is a very expensive abortion-producing disease that spreads rapidly but can be controlled effectively with quality vaccines.



Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Roland H. Abraham, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55108. We offer our programs and facilities to all people without regard to race, creed, color, sex, or national origin.