

# What You Need to

If you're experiencing unexplained reproductive losses in your herd, leptospirosis could be the culprit.

by Troy Smith

A few years ago, numerous public health organizations issued information regarding the emergence of an “infectious disease of global importance” — warning that reports of leptospirosis outbreaks were increasing among populations of both industrialized and developing nations. That kind of announcement may have sounded ominous to their city cousins, but many livestock people realized that leptospirosis was not a newly discovered disease. They may not have realized that it is zoonotic, meaning humans as well as multiple species of animals are susceptible to the bacterial infection.

Many cattle folk routinely vaccinate their cattle against “lepto,” knowing it is a potential cause of abortions in breeding herds. It's an insidious threat because pregnant cows or heifers may become infected and abort without having shown any previous symptoms. In some cases, abortions and other reproductive failures occur in herds thought to have been immunized against the disease through vaccination. Understanding how that can happen requires some basic knowledge of leptospiral bacteria.

## Lepto basics

“We're not talking about a simple pathogen,” explains Iowa State University Extension Veterinarian Grant Dewell. “Over 200 different serovars (strains) of *Leptospira* exist, and each is adapted to a different host. Cattle are the adapted host for the *hardjo-bovis* serovar, which is believed to cause a lot of fetal loss.”

That doesn't mean cattle do not become infected by other strains of *Leptospira*. They can. Historically, the five types considered to be of consequence to cattle are *pomona*, *grippityphosa*, *canicola*, *icterhaemorrhagiae* and



*hardjo*. The maintenance host or carrier species for *L. pomona*, for example, is swine.

“The old literature cited *pomona* as the likely cause of most leptospirosis in cattle. It probably was true back when many cattle producers also had pigs in the same barnyard. That's seldom seen now, but dogs and other animals, including rodents, skunks and raccoons, are hosts for other *Leptospira* serovars that can infect cattle,” says Dewell.

Regardless of serovar or the host to which it is adapted, *Leptospira* colonize the urinary tracts of infected animals and are shed into the environment through the animals' urine. According to Dewell, the bacteria can survive for months in a warm, wet environment — especially standing water. Cattle can become infected by ingesting contaminated water, or bacteria may enter through wounds or through mucosal membranes. On farms and ranches, earthen dams, stock ponds and mud holes provide

the most likely opportunities for cattle to come in contact with water contaminated with *Leptospira*. Transmission also may occur through direct contact with urine, vaginal secretion or discharges associated with a recent abortion. Infected cattle also may transmit *Leptospira* sexually.

While abortions during the second half of gestation may be the most dramatic result of leptospirosis, Dewell says subclinical infections often cause more subtle infertility problems — cows that fail to rebreed in timely fashion or early embryonic deaths. Or, cows may conceive but ultimately deliver stillborn or weak, poor-doing calves. Nor does leptospirosis cause reproductive problems only. In calves, the acute form may attack the kidneys. Symptoms include dark-colored urine, high fever and anemia.

## Vaccines

Vaccines for immunization against the five previously listed serovars have been available for many years. However, Dewell says the traditional “five-way” vaccines often are ineffective against *hardjo-bovis*.

# Know About Lepto



PHOTO BY SAMANTHA SCHERMER, 2012 NIAA/ANGUS JOURNAL PHOTO CONTEST

**Leptosporosis is an insidious threat because pregnant cows or heifers may become infected and abort without having shown any previous symptoms.**

Remember, that is the serovar that is host-adapted to cattle in the United States. It's not the same as the *hardjo-prajitno* included in traditional vaccines. Bovine infected with *hardjo-bovis* can become reservoirs of infection, harboring the bug for long periods of time, shedding bacteria into the environment, and causing leptospirosis to persist in the herd. Colonized in the reproductive tract, *hardjo-bovis* can be the cause of those subclinical reproductive problems. Bulls can become carriers, too, showing no signs of disease, but exposing females to infection with every service.

Dewell advises producers to consult

their veterinarian about an effective vaccination program. For producers in high-risk areas or those whose herds have persistent reproductive problems, a truly comprehensive immunization program probably requires use of both five-way vaccine and a vaccine that targets *hardjo-bovis* specifically. Annual vaccination is commonly recommended, usually four to six weeks prior to the start of breeding season, but some operations may benefit from vaccinating twice each year.

It's a good idea to make sure replacement animals are free of the disease and vaccinated before introducing them to the breeding herd. It's generally recommended that replacement heifers, or any females not previously vaccinated, receive a booster three to four weeks following the initial dose of any leptospirosis vaccine.

## Human transmission

Oklahoma State Veterinarian Rod Hall reminds producers that leptospirosis is transmissible to humans. It's an occupational hazard to producers and veterinarians who come in regular contact with infected animals

and their environment. In humans, says Hall, leptospirosis produces flu-like symptoms. These include high fever, severe headache, chills, muscle aches and vomiting, and may include jaundice (yellow skin and eyes), red eyes, abdominal pain, diarrhea or a rash.

Reported outbreaks of leptospirosis in humans are often attributed to participation in recreational activities in contaminated bodies of water. A majority of leptospiral infections are either subclinical or result in very mild illness and recover without any complications.

"Normally, there's not a huge risk of infection from livestock, if people use common sense and take routine sanitary procedures," says Hall. "Dogs can spread leptospirosis, and pets probably pose a greater risk for infecting humans. Rats and mice are commonly infected and can be a source of contamination to feed and the environment. They are likely responsible for contributing to the spread of leptospirosis among cattle and other animals, and possibly to humans. Certainly, routine vaccination of cattle is recommended and helps reduce the risk of infection for people that work with cattle."

## Testing

When a herd experiences unexplained reproductive problems, laboratory testing can determine whether leptospirosis is the likely culprit. According to Hall, urine can be cultured for leptospiral organisms, but an infection can be transient, so a negative test would not rule out leptospirosis.

"The best way to determine if a herd or an animal is experiencing problems due to lepto is to do blood tests on the cows that have aborted or to send a freshly aborted fetus to a diagnostic laboratory for testing," recommends Hall.

"The veterinarian will usually advise doing two blood samples on the cow. These are called 'paired' samples. Presence of a titer on the first sample could mean that the cow has lepto currently, has had it sometime in the past or has been vaccinated against lepto. Finding a higher or rising titer on the second sample is a very good indication that it is a current infection and was most likely the cause of the problem."

Veterinary consultation can also help producers decide whether testing is warranted, economically, for their individual herds.

