



Because of the two different ways cattle can become infected, neosporosis can show itself as an abortion storm or sporadic abortions.
[PHOTO BY MATT GREENE]

Neosporosis

What you and your dog need to know about this little-known disease.

Story by
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Plenty of mishaps occur on a cow outfit, and Ol' Shep often gets the blame. Maybe he's named Buster, Buddy or Bingo, but he's been called a lot of other things, too. You know his kind — the kind of dog that robs the henhouse on a regular basis. Because of him, the barn cats suffer

permanent paranoia, and Momma is on the warpath since he dug up her flowerbed.

If those or similar transgressions aren't bad enough, consider that your canine companions, or the neighbors' dogs, may be capable of spreading disease to cattle. Never heard of such a thing? Well, many beef producers are not aware of a canine malady dubbed neosporosis, or that it has been associated with abortions in cattle. Some dairy producers may be more familiar with the disease and its causative agent — a protozoan parasite (*Neospora caninum*). When it is present, in dairy or beef herds, the bug can wreck reproductive performance.

A troublemaker

University of Missouri-Columbia Extension Veterinarian Bob Larson says neosporosis was first reported as

a parasitic disease of canines in 1984. It is suspected that it previously had been confused with toxoplasmosis, which is caused by a similar organism. Reports of *Neospora* abortions in cattle surfaced in 1989, involving dairy herds in California, Larson recalls. But, neosporosis is not limited to any particular region, and it has been recognized in sheep, goats, deer and horses.

"In Kansas, I saw neosporosis in a few beef herds," Larson says. "It can show itself in two different ways — as an abortion storm that can devastate a herd, or as a leaky faucet where abortions occur sporadically. It occurs differently because of the two different ways that cattle can become infected."

Larson says a neosporosis-related abortion storm within a herd is attributed to "horizontal" exposure to the parasite. This is where dogs and their kin come into the picture. Canines, including coyotes and foxes, are believed to be the definitive host for *Neospora*. Infected canines pass *Neospora* oocysts (eggs) in their feces, and cattle become infected after ingesting feces-contaminated feed or water.

"It seems to happen more often in dairies, where cattle are fed processed feed every day," Larson explains, noting that stockpiled feeds present more opportunity for contamination by infected canines. "But range cubes or hay fed to beef herds can become contaminated."

Some literature on neosporosis states that an infected cow is six times more likely to abort her pregnancy, compared to a noninfected cow. Abortion usually occurs after the third month of gestation, but some reports suggest it is most likely during the fifth or sixth month. An aborted fetus or the expelled placenta (afterbirth) from an infected cow then becomes a source of new or renewed infection to canines that may feed on it.

But, infected cows do not always abort, Larson says. Infected first-calf heifers appear to be most likely to lose their calves, but then they may acquire a measure of resistance to the effects of the parasite. Many will not abort subsequent pregnancies, but carry their calves to term. Sometimes calves are stillborn. Others may be delivered alive but suffer neurological problems, while many seem healthy with no apparent abnormalities. However, some reports say there is an 80% chance that live calves born to infected cows will also be infected.

This "vertical" transmission of neosporosis from a cow to her fetus is most often associated with smoldering endemic abortion within a herd. It happens, Larson explains, when heifer calves born with the parasite are kept as herd



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replacements, thus perpetuating the disease.

“It’s not contagious. An infected animal does not expose other animals through direct contact,” Larson stresses. “Cattle can only become infected if they ingest feces from infected dogs (or other canines), or if the parasite is passed from an infected cow (through the placenta) to her calf prior to birth.”

Cost unknown

Kansas State University Veterinarian Mike Sanderson believes some abortions blamed on neosporosis probably have other causes. The disease can be difficult to diagnose, and it is difficult to study, because the parasite’s life cycle is complex and is still not fully understood.

“We still don’t have a good handle on this one. More long-term study would be necessary, and that would be expensive. There hasn’t been funding for that kind of in-depth research, because we don’t really know what the economic impact [of neosporosis] is,” Sanderson says. “It clearly does cause abortions, and that can have a major impact on specific herds, but we don’t really know if it poses a high economic risk to the beef industry as a whole.”

Dairy-related studies have shown that decreased milk production may be attributed to neosporosis. There is some evidence suggesting infected feeder cattle are likely to exhibit reduced feedlot performance. Results of feedlot studies at Texas A&M University showed that infected steers may require more than 2 pounds (lb.) of additional feed for every pound of gain. This negative effect on feed efficiency was accompanied by lower rates of gain and lighter carcass weights. This further suggests that neosporosis may indeed cost the beef industry.

“But that evidence needs to be repeated before we have something to really hang our hats on,” Sanderson adds. “In my opinion, we don’t have enough information to show that neosporosis represents a huge threat to most beef producers.”

Still, when producers experience major abortion outbreaks and ponder potential causes, Larson advises them to include neosporosis among the usual suspects.

“After any abortion wreck, it would be high on my list of things to look for,” he adds.

Taking control

If neosporosis is suspected, heart and brain tissue of aborted calves can be submitted to a diagnostic laboratory for testing. Testing of the whole breeding herd is expensive. Many veterinarians recommend testing the blood of replacement heifers first. A high or moderate rate of infection among heifers indicates the possibility of a high rate of infection among mature cows. A low rate of infection among heifers would suggest that testing older cows may not be cost-effective.

A vaccine for protecting pregnant cows against neosporosis-related abortion is available. Immunization

involves an initial injection during the first trimester of pregnancy, followed by a second dose administered three to four weeks later. The vaccine is relatively new, and Larson says veterinarians report varied results.

Culling females that test positive may be advised, but Larson also recommends other measures to help break the cycle of infection. This would include disposal of

any aborted fetus, placenta or carcass that canines might ingest.

You don’t have to find a new home for Ol’ Shep. Maybe he’s not at fault this time. But controlling stray dogs or fox and coyote populations, or preventing their access to stored feeds, can help stop the spread of neosporosis.



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