

## Livestock Health Series

# Pregnancy Diseases in Sheep and Goats

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### Introduction

The sheep and goat industries face several disease challenges, but abortions are the most costly. An abortion rate of 5 percent within a flock or herd is common. If more than a 5 percent abortion rate occurs, producers should become concerned and begin investigating the cause to help prevent an abortion epidemic.

Abortion is the loss of the fetus during gestation. Usually, the loss is detected during the final two months of gestation with evidence of the expelled fetus. In contrast, early embryonic loss results in resorption of the fetus and can sometimes be detected when the female unexpectedly returns to estrus or develops bloody vaginal discharge. Either way, abortion is always a frustrating event to a livestock producer.

Noninfectious causes of abortion, such as nutritional deficiencies and environmental causes, may be shared by sheep and goats. However, infectious causes of abortion can be species-specific. This fact sheet explores the common causes of abortion, how to prevent them and how to treat them. Several of the infectious diseases can also infect humans (zoonotic disease); therefore, personal protection is recommended for people handling aborted fetuses.

### Chlamydiosis

Chlamydiosis is caused by the bacterium *Chlamydia abortus*, formerly *Chlamydia psittaci*, and is one of the most common causes of

bacterial abortion in sheep and goats in the United States. Sheep and goats are exposed to the organism through contact with aborted fetuses and/or placenta, vaginal discharge or contaminated newborns. Males may also contract Chlamydiosis and infect females. Abortions typically occur between 60 to 90 days after infection. The only way to truly diagnose Chlamydiosis is through a diagnostic laboratory. The disease may be prevented by adding tetracycline in feed, which requires veterinary supervision. A vaccine labeled for sheep is available.

### Campylobacter (Vibriosis)

Campylobacter, also known as Vibriosis, is a disease caused by the bacterium *Campylobacter fetus* or *Campylobacter jejuni* and is a significant cause of abortion. Vibriosis is more commonly seen in sheep than in goats. Sheep are exposed to the bacteria when ingesting feed or water contaminated with infected fetal membranes and fluids. A bloody, pus-like discharge before or after abortion is a common sign. Abortions tend to occur in late gestation. The disease may be prevented by using tetracycline in the feed and having a vaccination program in place to help prevent Vibriosis.

### Brucellosis

Brucellosis, caused by the bacterium *Brucella ovis*, is transmitted to ewes from infected rams. Ewes that contract the disease may experience delayed conception for one to two heat

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cycles, stillbirths, weak lambs and abortions in the last trimester of gestation. For this reason, breeding soundness exams on breeding rams is important to identify infected rams for subsequent removal from the flock. *Brucella spp.* can also infect humans causing undulant fever.

## Leptospirosis

Leptospirosis is a zoonotic disease caused by the bacterium *Leptospira interrogans*. Animals come into contact with the organism by ingesting water that has been contaminated by infected urine. Abortion usually occurs in the final trimester of pregnancy. The female can show clinical signs of anorexia, jaundice and anemia, which may mimic symptoms of copper toxicosis. Controlling the rodent population is important, as they typically are carriers. Vaccines are available, but their use in sheep and goats is extra-label; therefore, you must consult a veterinarian for use of the vaccine.

## Listeriosis

Listeriosis, also called Circling Disease, is caused by the bacterium *Listeria monocytogenes*. The bacterium survives in temperate environments in the soil. Infected, aborting females acquire the infection via the intestine by ingesting contaminated forage, silage, feed or water from infected cattle, birds, dogs, cats, rodents and wildlife species. Abortions are usually seen mid- to late-gestation, but females may give birth to premature, weak or stillborn offspring. Signs of infection in the female often include disorientation and circling. Other signs include mastitis and conjunctivitis (pink eye). Preventing environmental contamination by infected feces and ensuring high-quality forage and properly fermented silage are best in preventing this disease. An antibiotic regimen may be given if the disease is detected early. No vaccine is currently available. *L. monocytogenes* can infect humans.

## Toxoplasmosis

Toxoplasmosis is a disease caused by the protozoan *Toxoplasma gondii*. The definitive host for the organism is cats, which can shed infective oocysts through their feces. Sheep and goats ingest the oocytes in contaminated feed or water. Resorption or abortion may occur if infected early in gestation. Stillbirth or weak offspring result if infection occurs in late gestation. Once a female aborts, she becomes immune. There is no effective treatment. Prevention is best achieved by keeping cats away from feed and water sources. There is no vaccine available to prevent toxoplasmosis.

## Q Fever

Q fever is a highly contagious disease caused by the bacterium *Coxiella burnetii*. The disease may cause late-term abortions, stillbirths and weak newborns in sheep and especially in goats. The bacteria can be found in milk, urine, feces, uterine fluids and placentas. Many species of ticks can carry and transmit the disease as well as cattle, pigs, cats, dogs and wildlife in addition to sheep and goats. When a female aborts and has Q fever, retained placentas are not uncommon. Abortion may occur at any stage of gestation. Tetracycline may be added to feed to help treat the disease, but veterinary supervision is required. There is no vaccine for the prevention of Q fever. *C. burnetii* can cause Q fever in humans. When diagnosed in animals, the Arkansas Health Department should be notified.

## Pregnancy Toxemia (Ketosis)

Pregnancy Toxemia, also known as ketosis, is a metabolic disorder caused by increasing demands on the bodies of females during late pregnancy and is typically seen in older females carrying multiple offspring or under- or over-conditioned females. Although the disorder does not cause abortion directly, often the fetus is purposely aborted to save the female. It is important to note that ideally conditioned animals on an acceptable ration can develop the disorder as well.

In the last 30 days of gestation, the liver increases gluconeogenesis rapidly to allow glucose distribution to the developing fetus. This shift in distribution causes a negative energy balance for the female. Furthermore, mobilization of fat stores increases, which may overwhelm the liver's capacity and result in ketone body development (ketosis) or hepatic lipidosis (fatty liver). Individual variances of the female's response to insulin or capacity for mobilizing fat influence the severity of symptoms.

Early in the process, the female may act lethargic, grind her teeth, have labored breathing and urinate frequently. She may also appear unsteady and may walk in circles. As the female progresses into the latter phases of ketosis, she is unable to stand, thus complicating feed and water intake. This leads to recumbency and death.

Ensuring pregnant females maintain an ideal body condition is the best way to prevent pregnancy toxemia. If clinical signs are seen, contact your veterinarian as intervention is critical for survival. If caught early, females can be treated by administering oral or intravenous glucose and giving oral propylene glycol (a glucose precursor) until the female recovers or gives birth. Other electrolyte

imbalances will also have to be addressed. Treatment after the female becomes recumbent is often not rewarding. If the fetuses are alive and within three days of a calculated due date, then an emergency cesarean section may be considered after the female is stabilized. Another alternative is to chemically induce parturition while providing medical support. Regardless of the therapeutic plan, the animal should be offered a proper nutritional plan.

## Summary

Many of the infectious causes of abortion are zoonotic, meaning people can become infected. Caution should be used around any animal suspected of having an infectious disease. Contaminated fluids, urine and feces are highly infectious for people and susceptible animals, especially when these body fluids contact mucous membrane surfaces or abrasions and cuts. Biosecurity measures should be taken when assisting females during birth or when cleaning up after a female has aborted. Wear protective gloves, clothing and boots. If in a barn setting, goggles and masks should be worn when hosing contaminated areas. If you are pregnant or think you are pregnant, refrain from assisting with the birthing process or with animals that have experienced an abortion. It is a good idea to dispose of aborted fetuses and placentas by burying or burning them to help prevent any further contamination.

Pregnancy loss can be kept to a minimum by following a sound herd health plan developed in collaboration with a veterinarian. Producers must consult with a veterinarian to obtain a Veterinarian Feed Directive (VFD) to utilize tetracycline, and veterinarians can assist in creating sound vaccination

programs. Veterinarians may also help producers when a female aborts by collecting samples to send to the diagnostic lab to better determine the cause.

Additionally, providing a balanced, high-energy diet for pregnant animals will prevent pregnancy toxemia and help boost the immune system. If treating a pregnant animal, drug labels should be read carefully prior to administration. Giving the animals plenty of room and access to clean water and feed will reduce disease transmission. Keeping cats, dogs and wildlife away from feed and water sources is also important. By planning ahead and following a few simple management strategies, sheep and goat abortions can be controlled. For more information on controlling abortion in your flock, consult with your local veterinarian.

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