

## WHAT ARE THE CAUSES OF ABORTIONS IN SMALL RUMINANTS?

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As I await the new arrivals this coming season, I often live on pins and needles until they make it safely here. We spend so much time lining up the breedings, and making sure the does and ewes are in good shape from breeding to delivery, that the last thing we want is to find an aborted fetus. There are several causes of abortions which will be discussed in this article as well as preventative and treatment protocols.

### BACTERIAL/PROTOZOAL CAUSES

Historically, the two major causes of abortions in sheep are *Campylobacter* and *Chlamydiosis*. These two diseases are increasing in incidence in goat herds which possibly could be due to commingling sheep and goats.

**Campylobacter** is caused by *Campylobacter fetus* or *C. Jejuni*. It can be spread throughout a flock or herd via feed contaminated by fecal matter or by environmental contamination from aborted fetuses, placentas and uterine discharges. It is usually seen as a late term abortion, stillborn or as weak lambs and kids. As you can see, it may be introduced through a persistently infected sheep or goat which contaminates the feed source with their feces in addition to aborted fetuses!

**Chlamydiosis** (Enzootic Abortion of Ewes, EAE) is caused by *Chlamydia abortus*. Chlamydiosis is spread primarily through aborted fetuses, placental membranes and fluids. It is highly contagious and causes abortions 60 to 90 days after the animal becomes infected. If a sheep or goat becomes infected in late term it will usually cause weak lambs and kids at birth. Abortion can occur at any time in the pregnancy but more prevalent in late term. Sheep will usually only abort once in their life from this organism, but those that do abort may remain infected for years and shed the organism during ovulation in subsequent breeding cycles. The organism infects the ram or buck and can be spread venerally. Nonpregnant sheep and goats that become infected may harbor the organism and abort

during their next pregnancy.

There is a commercially available vaccine to protect sheep from *Campylobacter* and *Chlamydia* abortions. Although not approved for use in goats, it has been used effectively. It should be given prior to breeding for optimum effectiveness but can be given in the face of an abortion storm. The vaccines do not provide long term protection; therefore, these vaccines should be given prior to each breeding season.

**Q fever** is caused by a rickettsial organism, *Coxiella burnetii*, and can survive in a dried condition for extended periods of time in the environment. A pregnant ewe or doe may become infected with this organism through inhalation or ingestion of the bacteria. The organism is concentrated in the placental tissue and fluids and can be spread through these tissues and fluids as well as milk, urine and feces. Although there may not be any clinical signs of infection in nonpregnant animals, an infected pregnant doe or ewe may be depressed and anorexic for several days prior to the abortion. The disease causes a necrotizing placentitis in pregnant ewes or does resulting in abortion. After abortion occurs the animal may become immune to abortions but may remain subclinically infected. The infected doe or ewe can carry the organism indefinitely, sporadically shedding it in the milk and at future parturitions. This disease carries huge zoonotic implications in humans consuming raw milk from animals harboring and shedding *C. burnetii* in their milk as well as individuals handling aborted fetuses and placental membranes and fluids.

**Toxoplasmosis** is caused by *Toxoplasma gondii* which is a protozoa primarily transmitted by infected cats. Cats are definitive hosts of this infectious organism and shed oocyst (eggs) in their feces. Consumption of feed (grain, grass or hay) that is contaminated by these oocysts infects pregnant sheep and goats causing abortions, weak lambs and kids, stillbirths, birth defects and mummification of fetuses. Infected cats do develop immunity and only shed oocyst once in their lifetime; therefore,

kittens under 6 months of age are more likely to transmit this disease. One method of prevention is to spay/neuter all barn cats and only allow cats that are over one year of age to be present in the barn. There is no vaccine available in the U.S. for toxoplasmosis.

Other bacterial causes of abortions, stillbirths and weak kids may be *Neospora caninum*, *E. Coli*, *Salmonella* sp., *Listeria monocytogenes*, *Brucella* sp. and *Leptospira* sp..

### VIRAL CAUSES

**Bluetongue** infection is caused by an orbivirus primarily transmitted by biting midges of the *Culicoides* sp. in the fall of the year. It can cause a transient fever and swelling of the face, muzzle and ears with small ulcers on the roof of the mouth primarily in sheep. In goats, you may not see any of these signs except for fetal issues. It can also cause inflammation of the coronary band resulting in lameness. Fetal infections result in abortions, stillbirths, weak lambs/kids, fetal mummification and congenital brain malformations. There are no vaccines commercially available in the United States at this time. One method of control is to breed when the midges are not present, i.e. after a hard freeze.

**Border Disease** is caused by a pestivirus which is similar to the virus causing Bovine Viral Diarrhea (BVD) in cattle. Usually only seen in sheep. Infection is usually introduced by a persistently infected animal or can be transmitted venerally by an infected ram. Abortion occurs at any stage of pregnancy but this virus can also cause weak lambs and congenital abnormalities. Live infected fetuses usually are undersized, and they often have congenital tremors and an abnormally hairy coat (hairy shaker lambs).

**Cache Valley virus** is a mosquito-transmitted *Orthobunyavirus* sp. virus and causes infertility, abortions, stillbirths, and multiple congenital abnormalities in sheep and goats. Infection before 32 days of pregnancy results in early embryonic death. Whereas infection between 32 and 37 days of pregnancy results in musculoskeletal and CNS lesions such



Cache Valley fetus

as cerebral and cerebellar hypoplasia, arthrogryposis, scoliosis, and torticollis. Infection between 37 and 48 days results in primarily musculoskeletal lesions.

There is no vaccine available for this disease, and similar to bluetongue, control is limited to breeding in seasons where risk of infection is low. If a flock or herd can switch to late fall or winter breeding then the risk is greatly reduced since it is a vector transmitted disease.

### Conclusion

As you can see, there are many causes of infertility, abortions and congenital

abnormalities. It is a wonder that we ever have a live, normal fetus, but many are born every day! Two main factors with abortifacients is that most of them are zoonotic and control depends on good biosecurity to prevent introduction. The zoonotic potential is greatest for pregnant women. It is highly encouraged that pregnant women avoid the lambing/kidding areas. If possible, protective clothing/gloves should be worn when delivering lambs/kids. And, of course, proper sanitation should be a must after delivery.

Biosecurity begins with isolating any new purchases for a minimum of 10-14 days. If possible, purchase virgin rams/bucks. These males have never been exposed to ewes/does at the time of purchase. When purchasing older females, be sure to receive a breeding history and avoid those animals that have aborted or unsuccessfully raised their lambs/kids. Also, ask the seller if they have experienced any infertility/abortion issues in their flock/herd. Good reputable breeders will provide this information.

If you experience an abortion,

contact your veterinarian immediately. Determining the cause of an abortion is sometimes very difficult but certain diseases can be ruled out through submission of the fetus, placental tissue and serum on the ewe/doe. After determining that an abortion problem exists, many veterinarians elect to use chlortetracycline(CTC)/oxytetracycline (oxytet 200 or 300mg/ml injectable) to prevent future abortions. Use of a CTC orally through the feed requires a Veterinary Feed Directive from your veterinarian so it is always wise to establish a veterinary-client-patient relationship (VCPR) with your local veterinarian early on so they will be available when you need them most. Hope that your kidding/lambing season ends up with many bouncing kids/lambs!

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The **Kentucky Sheep and Goat Check-Off Program** began in 2010 and collects \$.50 for every \$100 worth of sheep and goats sold in the Commonwealth. According to Kentucky law, Check-Off funds must be used for the purpose of promoting the increased use and sale of sheep and goats.

**To date, Check-Off has provided:**

- \$50,000 in New Farmer Recruitment loans have been given to 25 new/beginning producers in Kentucky since 2012
- \$25,000 given for special projects to help producers increase marketing efforts throughout the state since 2012
- \$13,800 spent in promotion of sheep and goat products in 2017

KY Sheep & Goat Check-Off Sponsors the Tim Farmer's Country Kitchen Cooking Show  
KY Sheep & Goat Check-Off Sponsors the Try Something Different Tonight marketing campaign

**# of people who tasted lamb and goat products: 25,000**  
**# of people who have learned about products and cooking techniques: 5 million**

To learn more details about the Kentucky Sheep and Goat Check-off Program  
visit [www.kysheepandgoat.org/Check\\_Off.html](http://www.kysheepandgoat.org/Check_Off.html)