



Increasing Your Lamb Crop Series

Disease Prevention and Treatment

Introduction

Transmissible diseases are preventable when producers implement biosecurity practices. To help prevent spread of disease, a two-week quarantine of newly purchased sheep, those returning from a show or from being bred elsewhere should be enforced. Quarantine includes keeping these sheep separate from the home flock. The stress of movement can trigger underlying diseases in sheep. Testing for Ovine Progressive Pneumonia virus (OPPV) and Johne's disease will prevent introduction to the flock.

Lamb mortality is largely responsible for limiting profitability. For decades, lambs have died due to disease that can be prevented. Lamb deaths can be categorized in three ways:

- Lambs die prior to and at birth
- Lambs die at pre-weaning
- Lambs die post-weaning, but before marketing or retention

Common sheep diseases that affect the size of a producer's lamb crop fall into categories of nutritional, infectious, management-induced and metabolic causes. Many of these diseases are preventable with best health management practices, including sound nutrition, timely vaccinations, parasite control and improved biosecurity practices. New or small flock producers should become familiar with the signs and symptoms of specific diseases.

Sheep production can be more profitable through consultation with professionals, such as a knowledgeable veterinarian. However, sheep health work often comprises only a minority of most veterinarians' practices, so there may be instances in geographic areas where interest or expertise are lacking. Additional information can be accessed on the Maryland small ruminant website, sheepandgoat.com, and the *SID Sheep Production Handbook*, vol.8.

Chronic diseases

Major diseases that negatively affect lamb crop can be chronic in nature and result in ewes or rams with poor body condition scores (BCS), thus producing fewer embryos, fetuses and, ultimately, the birth of fewer live or less vigorous lambs. Examples of chronic diseases that can influence flock productivity include foot scald,

foot rot and foot abscess. Diagnosis requires examination by an experienced individual. Treatment and prevention hinge on the correct diagnosis. For example, scald may be treated with a walk-through foot bath or individual application of 10% zinc sulfate and then moving the group to drier footing. Area around animals' water sources and feeders should be kept dry.

Foot rot treatment requires a more intensive approach involving examination of all feet of every sheep in the affected group, individual antibiotic treatment and housing on dry ground during treatment. Unresponsive sheep must be culled.

While buying sheep from foot rot-free flocks is an option, guidance is appreciated by flock owners with foot rot present in their flock. Eradication of foot rot is possible during the non-spread periods, or dry times of the year. Producers should examine every foot with minimal trimming to assess infection status. Infected sheep can be culled or treated with long-acting tetracycline or gamithromycin and kept on dry ground. The group of uninfected sheep must be re-checked to ensure they remain uninfected. Another approach is to treat all of the sheep in the flock with the antibiotic and keep sheep off contaminated areas for a minimum of two weeks. Foot abscess is an individual animal problem that may or may not respond to antibiotic treatment and foot soaking in an antiseptic solution, depending on the chronicity and extent of the abscess. Amputation of the affected claw may be necessary.

OPPV has been shown to result in a lower lamb crop through multiple factors. OPPV infected ewes can be in a lower BCS, which itself contributes to lower reproductive rates. This virus targets both halves of the udder resulting in an accumulation of cells and scar tissue, which reduces milk production. Affected ewes that lamb with twins or triplets may be unable to successfully raise them (Keen J. 1997). Thorough explanations of testing for, controlling and eradicated OPPV are available at oppsociety.org.

Bacterial mastitis is another production-limiting condition of the sheep udder. But unlike OPPV, bacterial mastitis only affects one side of the udder. The timing of infection varies in the ewe. This condition is rarely a flock problem but has a significant impact

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► Chronic diseases (cont.)

on milk production. Chronic low-grade mastitis infections often go unnoticed by producers until an affected ewe's lamb is found starving. There is also an acute form of mastitis where an affected ewe becomes very sick from absorption of systemic toxins from the infected mammary gland causing a high fever and generalized toxemia. The usual cause of this type of mastitis is either one of two possible bacteria, *Manheimia hemolytica* or *Staphylococcus aureus*. The affected gland is destroyed by this infection. Environment plays a role in the occurrence of bacterial mastitis. Mastitis risk increases from damp, dirty bedding in confinement housing or bedding in the same location especially under trees where limited shade concentrates animals or after wet weather. Immune function also contributes to the occurrence of mastitis. Immune function is affected by micromineral (copper, selenium, zinc, manganese) intake. Producers should routinely feel ewes' udders at lambing and weaning, for asymmetrical halves and hard lumps, record findings, and cull ewes with damaged udders. Attention should be paid to the dryness and cleanliness of the environment of lactating ewes by bedding pens or moving grazing ewes to minimize areas that are muddy or have a concentration of sheep feces.

During pregnancy, contagious infectious agents can cross the placental barrier and infect the gestating fetus, resulting in late-term abortion. If infected earlier in pregnancy, the fetus can be resorbed and the infected ewe appears open during ultrasound scanning or at lambing. The three most common agents that cause abortion in sheep are *Campylobacter* spp., bacteria; *Toxoplasma gondii*, a protozoan parasite; and *Chlamydomphila abortus*, a rickettsia bacterium. These agents are transmitted through sheep's oral consumption. Toxoplasmosis is spread by young, immunologically naïve cats eating infected rodents and those cats defecating on feed, including stored grain, hay or pasture. The other two agents are spread by infected sheep via feces or aborted material. In the face of an outbreak from Chlamydial abortions, long-acting injections of oxytetracycline may be helpful. In the face of an outbreak from *Campylobacter*, an antibiotic sensitivity should be performed as these bacteria have become less predictable regarding which antibiotic may be effective.

► Reduce risk of abortion

- Keep ewes in good BCS throughout pregnancy
- Provide access to mineral specifically formulated for sheep, every day
- Avoid overcrowding
- Use feeders to limit feeding off the ground
- Keep stored feed safe from fecal contamination by young cats
- Remove known and suspect aborting ewes from the rest of the pregnant flock

These disease agents frequently enter a previously uninfected flock via purchased ewes. When possible, ewes of different sources should be kept separate during their first pregnancy and mixed after lambing. Vaccines are available in the United States for some *Campylobacter* spp. and *Chlamydomphila abortus*. Annual vaccination against *Campylobacter* or chlamydial abortion pre-breeding and at mid-gestation is advised in at-risk flocks where the disease has been diagnosed or is suspected, or in recently purchased ewes.

Preventative feed additives, such as Deccox®, have been proven to be effective against toxoplasmosis. Veterinary assistance is critical in guiding a flock's specific approach when faced with an abortion outbreak. Aborted fetuses and placentas must be submitted to a veterinary diagnostic laboratory to diagnose the cause of abortion.

► Late gestation disease

Metabolic diseases of late gestation include pregnancy toxemia, which is also referred to as ketosis, and hypocalcemia. Pregnancy toxemia can affect multiple ewes in a flock that are usually pregnant with two or more lambs. These ewes are not eating enough energy for their needs. Regrouping the affected and at-risk ewes will reduce further cases. This can be done by sorting the late pregnant ewes with BCS of ≤ 2 into a "special needs" group. Ewes with very large bellies should also be sorted into this group as they are most likely carrying triplets. This group needs to be fed more energy, which can be accomplished a variety of ways depending on feedstuffs available.

Hypocalcemia can be seen in late pregnant ewes after a feed change or after stressful episodes. The calcium demands 3 to 4 weeks prior to lambing are high, and will continue to increase due to calcification of fetal bones. Since it takes 24 hours for calcium to be mobilized from bones of the ewe to the fetus, ewes are susceptible to developing low-serum calcium. While this condition is straight-forward to treat, producers should consult a nutritionist to determine feed changes. Rapid response to calcium treatment is a means of identifying low calcium from ketosis. Most hypocalcemia cases occur in late gestation in sheep.

Lamb Resource Center



The Lamb Resource Center is your one-stop shop for industry resources and information. Visit www.LambResourceCenter.com to learn more.



While there are many diseases that overlap between pre- and post-weaning, the primary cause of mortality in grazing lambs is parasitism, including stomach or intestinal worms and coccidiosis. While both infections can be managed, producers should consult their veterinarian if unfamiliar with symptoms and treatment.

Pre-weaning disease

The most common pre-weaning lamb health issues are hypothermia, starvation, naval infections, pneumonia and diarrhea. The prevalence of these diseases is affected by the health status and BCS of the ewes and adequacy and management of the lambing facilities. Producers should record lamb losses to guide future management changes. Inexperienced producers should work out a base cost for lamb necropsies to be performed by their veterinarian. Recommendation of prevention options for the top three conditions diagnosed should be included with this service.

Hypothermia can be a primary cause of death when the ambient conditions are too cold and/or wet for newborn lambs. It can also be a secondary cause of death when a lamb has been milk-deprived over a few days during cooler weather. Starvation occurs due to lack of milk because of mastitis, poor genetics, udder/teat conformation or inadequate ewe nutrition. Naval infections result from exposure to a wet environment prior to umbilical cords drying and falling off. Insufficient colostral intake may be a risk factor in these infections. Pneumonia in neonatal lambs is often the result of inadequate ventilation and deficient tissue mineral levels necessary for immune function. Diarrhea in baby lambs can result from different infectious agents where contamination levels become higher because of overcrowding, poor sanitation, and poor colostral intake and absorption. Causes include bacteria such as *E. coli*, *Salmonella* spp., or *Clostridium perfringens* type C, or viruses including strains of rotaviruses which may be acting in combination with *Cryptosporidium parvum*.

Post-weaning disease

Common post-weaning diseases include acidosis and enterotoxemia. Lambs on lush pasture or free choice concentrate,

that have not received a complete series of vaccinations against *Clostridium perfringens* type D are susceptible to rapid overgrowth of this bacteria. The condition shows up as a very sick lamb that dies within a few hours of becoming ill. Often a few lambs are initially affected. The group should be re-vaccinated immediately. Half to one pound of dry hay should also be fed in addition to the lambs' regular feed. The outbreak generally stops after vaccination.

Acidosis is caused by excess intake of concentrates when:

- Lambs eat too much at self-feeders
- Varied feed consumption changes due to groups of lambs being turned in together
- Feed intake fluctuates because of dramatic changes in weather or the ration is aggressively changed to include higher percentages of concentrates

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Flock owners should employ best health practices that are specific for their region and management style. Information to guide which local practices to adopt are readily available from fellow sheep producers, local veterinarians, extension staff, and peer-reviewed websites including sheepusa.org, wormx.info and sheepandgoat.com.

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More information

U.S. Lamb Resource Center

<http://lambresourcecenter.com/production-resources/productivity/>

National Sheep Improvement Program

<http://www.nsip.org>

U.S. Sheep Industry Roadmap

<http://lambresourcecenter.com/reports-studies/roadmap/>

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American Consortium of Small Ruminant Parasite Control website: wormx.info



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