

Mastitis in Small Ruminants

Mastitis, one of the most common health problems affecting sheep and goats, often reduces performance and productivity of the animals, and farm profitability.

What Is Mastitis?

Mastitis is an inflammation/infection of the mammary gland, or udder, that may occur in sheep, goats, cows or any other milk producing animal. It is caused by different factors such as stress, physical injury or bacteria. Risk factors increasing mastitis infections include udder and teat shape, improper milking procedures, high milk production, raising multiple lambs/kids, or keeping animals in wet, dirty or crowded conditions.

Most cases of mastitis occur during the first weeks after lambing/kidding or immediately before weaning. The most common strains that may cause mastitis in small ruminants are *Streptococcus* sp., *Staphylococcus* sp., *Pasteurella* sp., and coliforms, such as *E. coli*. The exact type of bacteria causing the mastitis can only be determined by laboratory analysis. Various pathogens may cause either contagious or environmental mastitis. Contagious infections are associated with transmission between animals or even between human-animal interactions, while environmental mastitis is directly related to the hygiene of the environment where the animals are kept.

Types, Signs and Symptoms of Mastitis

There are two types of mastitis, clinical or subclinical. **Clinical mastitis** can be either chronic or acute and involves physical changes in the udder. The udder usually become swollen and warm, and sometimes painful to the touch. Ewes/does affected with clinical mastitis may develop fever (105-107°F), go off feed, become depressed, and often require supportive care. Additionally, they may hold their rear foot up, as if they are lame,

and refuse to allow their lambs/kids to nurse. As a consequence, lambs/kids may die from lack of milk or from a bacterial infection from consuming infected milk.

Milk of ewes/does affected by clinical mastitis may be watery, contain clots/flakes, a foul-smell, and changes in color. In severe cases, blood supply to the udder is affected and a blue discoloration of the udder may occur.

Subclinical mastitis is more common and difficult to identify than clinical mastitis. It is only detectable either by using the California Mastitis Test (CMT), by measuring the number of somatic cells (i.e., inflammatory cells) in the milk or by culturing milk in the laboratory. In case of a positive CMT, it is recommended that additional laboratory tests are performed to determine the type of organisms causing the infection.

In some cases of subclinical mastitis, the udder may be firm and hot and lambs/kids of affected ewes/does may have poor growth rates with occasional deaths. Usually, ewes/does with subclinical mastitis appear healthy, but decreases in milk production and development of lumps (i.e., scar tissue) in their udders may occur. Reduced health, inadequate facilities and deficient nutritional management may trigger the progression from subclinical to clinical mastitis.

Mastitis Treatment

Treatment vary depending on the case; however, mastitis is generally treated with the use of either injectable or intramammary antibiotics. A veterinarian can help with correctly diagnosing the condition and determining the infectious pathogen as well as the proper treatment. There are no antibiotics that are labeled for use in small ruminants for the treatment of mastitis. Therefore, all treatment of udder infections in small ruminants is considered extra-label and must be done through the advice and under the supervision of a veterinarian.

A dry period (i.e. 60 days before parturition) is recommend allowing the mammary systems to recuperate and prepare for the next lactation. The use of intramammary dry off treatment may help with treatment and/or prevention of mastitis during the dry period. This treatment also must be done under the direction of a veterinarian as there are no dry off treatment antibiotics labeled for small ruminants.

When using antibiotic therapy, it is very important for producers to follow drug withdrawal intervals to prevent contaminated meat and/or milk from entering the food chain.

Mastitis Costs

Mastitis is one of the most costly diseases of small ruminants. Direct costs include decreases in milk production and lower levels of milk components, early culling and replacement costs, treatment costs and increases in management costs. The greatest indirect cost come from premature culling and replacement loss.

Mastitis Prevention

Mastitis can be prevented with good management and sanitation. Clean housing and proper milking practices are the key to the prevention of mastitis in small ruminants. The risk of mastitis increases greatly in dirty environments. When dairy goats lie down, their udders are in direct contact with the floor, thus, bedding, living and birthing areas should be clean and dry at all times. There should be good drainage around the housing and lots, to help eliminate muddy areas. Additionally, animals should not be overcrowded, and milking procedures should be followed properly and consistently. Milking clean, dry and properly stimulated teats allows the most efficient harvesting of milk and reduces the risk of udder infections. These management measurements help reduce the chances of an animal coming into contact with harmful bacteria, especially animals that have a higher risk of becoming contaminated, such as those in early or late lactation and those that sustain any type of physical injury to the udder. Moreover, good ewe/doe nutritional management and maintenance of the health of ewes/does and lambs/kids can also aid in the prevention of mastitis.

Preventing respiratory disease in lambs/kids also contributes to prevent mastitis. *Pasteurella hemolytica*, the bacteria that causes baby lamb/kid pneumonia is a major cause of ewe/doe mastitis. Sore mouth is another contributing factor, as lambs/kids with mouth lesions can infect their dams and any other ewe/does that they may nurse.

Using good management practices and acting quickly if mastitis is discovered will help keep this particular health issue to a minimum. Ewes/does which show signs of mastitis should be separated from the rest of the herd and treated accordingly. Contaminated milk should be discarded and lambs/kids of contaminated ewes/does should be bottle fed.

Weaning lambs/kids from ewes/does whose milk production has not declined sufficiently puts severe stress on the udder; therefore, proper management at weaning is also necessary to prevent mastitis. Restriction of feed and water of ewes/does for 1 to 2 days after weaning will contribute to a rapid decrease in milk production. Another alternative to lessen the occurrence of mastitis is to delay weaning until after milk production has decreased sufficiently. The udders of all ewes/does in the herd should always be examined after weaning and before breeding. It is recommended that ewes/does with hard lumps in the udders, or that have permanent damage to one or more teats should be culled, as these ewes/does will become increasingly poor producers of milk. Additionally, producers should consider culling ewes/does with severe mastitis that do not show an immediate response to treatment.

Summary

Mastitis is a complicated and costing disease. Good housing hygiene practices and consistent milking procedures are crucial to control and minimize the negative impact of this disease. Proper diagnosis, treatment and replacement of chronically infected animals contributes for the reduction of the detrimental effects of mastitis in small ruminants.