## **Controlling and eradicating foot rot in sheep and goats** Dr. tatiana Luisa Stanton, Small ruminant extension associate, Cornell University

There are several contagious diseases that affect sheep flocks and goat herds in the NE United States. Herd productivity is difficult to improve without first eradicating these diseases from a herd. In a perfect world, goat and sheep owners purchase breeding stock that is free of these diseases or practice quarantine measures that identify infected newly purchased animals before they are exposed to the main herd. In reality, farmers are often faced with controlling a disease once it is established in their herd. This fact sheet addresses eradication programs for one of the most common infectious diseases, foot rot.

Foot rot is a chronic, debilitating disease. Although it is rarely life threatening on its own, it causes painful lameness. Animals respond by eating poorly and losing weight, further compromising their health. The disease is highly infectious. It is not to be confused with the "hoof rots" seen when hooves are allowed to get too long causing the hoof wall to separate from the sole of the hoof (as viewed from the bottom side) and pockets of decay to form in these spaces. Aggressive hoof trimming and topical application of a germicide readily cure most "hoof rots".

Instead, foot rot first shows up as a smelly blister or raw spot just above the hairline between the two toes of a hoof. This stage is often referred to as "foot scald". It exhibits the same signs as ovine interdigital dermatitis (OID), which is not nearly as contagious and is the true "foot scald" condition. **Unfortunately, in most cases when you observe the typical signs of foot scald in your herd or flock it is not OID but is instead the highly contagious condition called "benign foot rot".** Benign foot rot is very similar to athlete's foot in terms of smell, pain and contagiousness. In sheep, the disease then progresses to "foot rot" where the hoof walls separate from the skin at the hairline and/or the horny tissue of the hoof resulting in extremely thick, highly misshapen hooves and extreme pain. Goats generally do not progress past the benign foot rot stage, i.e., typical signs are foot scald, regardless of the severity of their foot rot infection. However, there are exceptions.

In trying to eradicate either benign foot rot (often misidentified as foot scald) or advanced foot rot, there are several things to keep in mind. Foot rot requires a **synergistic infection** between two bacteria 1) *Dichelobacter nodosus*, previously known as *Bacteroides nodosus*, and (2) *Fusobacterium necrophorum*. **However**, foot rot can only occur if *D. nodosus* is available, and the D. nodosus can only survive in feces, soil, or pasture for a maximum of 2 weeks. Thus, if you can get animals off a specific pasture or barn pen for two to three weeks, the barn floor or pasture will be free of the disease and no longer a source of infection. Instead, the sole source of infection will be carrier animals. Another thing to keep in mind is that the disease is far easier to eradicate under dry conditions than under wet (snow or mud) conditions. However, symptoms of the disease often disappear during dry conditions. It is easy for a farmer to fool him or herself into thinking that the disease has spontaneously cleared itself up and stop treating their animals right when conditions are best for ridding the flock of foot rot once and for all. Even though symptoms may disappear during dry weather, the disease is lurking, waiting for the next wet spell.

The goal in an infected flock is to control the disease as much as possible during wet seasons so that few of your animals become potential carriers. Hooves in infected herds should be trimmed regularly (there is now some disagreement on this) and trimmers disinfected between animals. Most commercial topical ointments used for thrush control in horses or diaper rash control in babies do not contain enough copper or zinc sulfate to combat foot rot. Instead, veterinarians will often recommend a combination of

foot bath solutions for the entire flock, and possibly, systemic oxytetracycline antibiotics for animals with severe symptoms. Foot baths can be made by cutting an old hot water heater in half lengthwise or out of wood. Plastic foot baths can be purchased from livestock supply companies. Plastic cement mixer tubs purchased from hardware stores tend to be less sturdy but can be used. You may need to build a chute around the bath to ensure that animals do not sidestep it. Two common effective foot bath solutions are 1) copper sulfate 10% (16 lbs in 20 gallons of water) or 2) zinc sulfate 10% (8 lbs in 10 gallons of water with 1/3 cup of laundry detergent to help with mixing). Both solutions can be toxic and care should be taken that animals do not drink them. Rags or wool tags can be put in the bottom of the foot bath to reduce splashing and discourage drinking. Dry baths of 10 lbs of zinc sulfate in 90 lbs of hydrated lime can be used in doorways if foot baths are unavailable but are normally less effective. However, they are often the only alternative in freezing conditions and have been shown to be effective at controlling although not necessarily eradicating foot rot during this very challenging time of the year. Smaller solutions of zinc sulfate for dipping hooves individually can be made by mixing 1 part zinc sulfate with 9 parts water and adding some detergent.

Once the dry season arrives or animals are being managed under dry conditions, eradication of the disease can take place in earnest. Animals should be carefully examined for lameness or interdigital blisters and separated into a symptomatic and an asymptomatic group. If hooves are to be trimmed, use separate hoof trimmers for each group and disinfect the trimmers between animals. The two groups should be regularly run through an effective foot bath and moved into separate uninfected pastures or pens. The symptomatic group should be run through the foot bath at least every three days for a minimum of 4 treatments. Animals should stand in the bath a minimum of 5 minutes, if at all possible. Standing in a foot bath for 1 hour results in rapid curing of the disease but is often not feasible. Symptomatic animals can be injected with an effective antibiotic such as oxytetracycline following your veterinarian's recommendations. However, antibiotic treatments are usually not recommended for asymptomatic animals as these treatments can make identification of subclinical and/or carrier animals which are not ready to be introduced into the "clean" group more difficult. A middle group can be established of animals that appear to become free of the disease. Any animal that relapses should be noted down and returned to the symptomatic group. Members of the middle group can be added over time to the clean group. One recommendation is that they be free of symptoms for at least 30 days and undergo at least 2 foot bath treatments in the middle group prior to joining the clean group. Once the flock has made it through a wet season without any signs of foot rot or foot scald, you can consider the flock disease free.

Animals that continually relapse or whose reintroduction into the clean group results in other animals getting infected are likely to be carriers and should be removed from the herd. If too valuable for culling, they can be isolated for special attention such as severe paring down of the hoof, daily packing and wrapping of the affected feet in a zinc sulfate, copper sulfate or Terramycin solution (1 packet of soluble terramycin powder mixed in ½ cup of water with enough alcohol added to end up with a 2 quart mixture). However, there is usually a predisposing factor that causes an animal to be a carrier. With the exception of founder, most of the factors that predispose an animal to becoming a foot rot carrier are related to genetics. Culling of suspected carriers is often the best decision for flock improvement.

Even in dry weather, the eradication of foot scald or foot rot is a time consuming task. However, as someone who eradicated it from their herd 15 years ago, I want to emphasize the long term rewards in labor savings and herd productivity that result from eradication. It is well worth the effort!