



Other worms

Tapeworms (*Moniezia expansa*)

Small ruminants usually have mixed parasitic infections, which may include tapeworms. Because tapeworm segments are clearly visible in the manure (look like flecks of rice), tapeworms sometimes cause more concern (than they should) and get blamed for a host of health problems. Yet, in most cases, they are inconsequential to the health and productivity of their host, especially with light loads.

Tapeworms are big, flat, white, ribbon-like worms (cestodes) that live as adults in the small intestines of their host. Over a thousand species of tapeworms have been identified. The species that most commonly infects sheep, goats, and camelids is *Moniezia expansa*, also called the “sheep tapeworm. The term “milk tapeworm” is also used because the parasite most commonly affects young (nursing) animals.

In most cases, tapeworms are inconsequential to the health and productivity of their host.

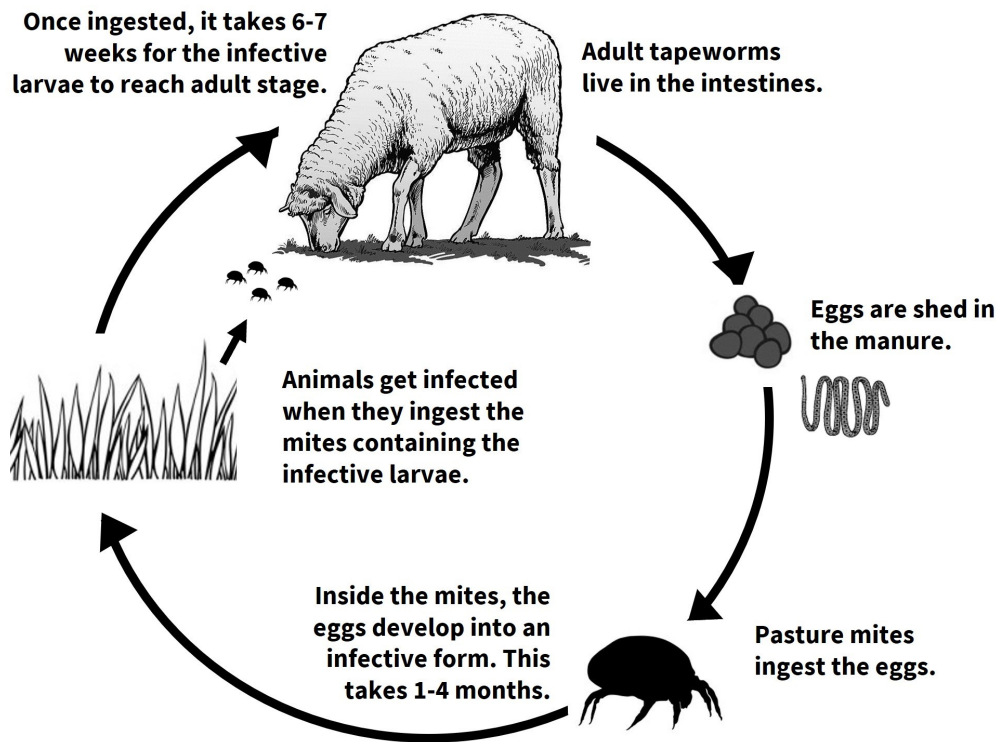
The intermediate host for the sheep tapeworm is a pasture mite (oribatid mite, like a chigger) that lives in the soil or on pasture. Normal pasture contains millions of these microscopic mites. Tapeworm infections are seasonal, in accordance with mite activity. The mites are most active in the summer months, although tapeworm larvae can overwinter in infected mites.

The life cycle starts when the pasture mites ingest the eggs that have been shed in the manure of grazing

LIFE CYCLE

Each tapeworm consists of a head (scolex) that has “suckers” that attach to the intestinal wall and various segments called proglottids (or egg packets). Tapeworms are hermaphroditic: each segment has two sets of male and female reproductive organs which fill the segment with eggs. When the segment is filled with eggs, it detaches itself from the adult worm and is passed in the feces. A mature tapeworm consists of hundreds or thousands of segments and may be up to several yards in length.

Each genus and species of tapeworm has at least one intermediate host. This differs from the gastrointestinal worms which have direct life cycles.



Indirect life cycle of *Moniezia expansa*

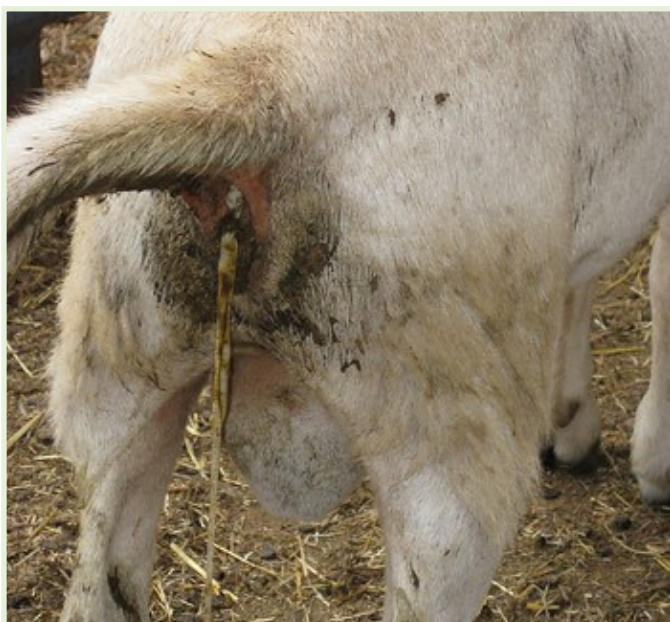
animals. The eggs hatch inside the mites and the larvae migrate to the body cavity where they develop into an infective form called a cysticercoid (a tapeworm head in a solid structure). This usually takes 1 to 4 months.

Sheep/goats get infected when they eat the mites (which are on grass) containing the infective larvae. The length of time from ingestion (of the mite) to egg laying (by the adult worm) is approximately 6 to 7 weeks. Adult tapeworms do not live very long – approximately three months. Infections are usually self-limiting.

IMPACT IN THE ANIMAL

Tapeworm infections are generally considered harmless and asymptomatic, even when the worms are present in large numbers in young animals. If they do cause problems, it is almost always less than the other parasites, especially the barber pole worm (*Haemonchus contortus*) and coccidia (*Eimeria* spp.) While tapeworms are thought to infect only young animals, they can infect stressed adult animals.

Reviews of scientific literature show that most of the time tapeworms do not impact the growth and well-being of lambs and that there is no advantage to treating for them specifically. Albeit studies with goats and camelids are lacking and there are few re-



Lamb passing a tapeworm



How common are intestinal blockages?

cent studies. A few studies have demonstrated a benefit to treatment for tapeworm (in lambs).

Symptoms of tapeworm infection may include pot-belly, dullness, poor growth, weight loss, and diarrhea, similar to other parasites and diseases. A belly full of tapeworms may trigger colic or cause constipation in a lamb/kid. Although thought to be rare, heavy infections may result in intestinal blockage and death.

It has also been hypothesized that heavy loads of tapeworms may alter intestinal function (gut motility) and predispose animals to other disease-causing organisms, including clostridium. In fact, heavy tapeworm infections have been associated with outbreaks of enterotoxemia (overeating disease).

TREATMENT

It is not necessary to treat animals every time you see tapeworm segments in the manure. In fact, most experts advise against it. It requires a heavy infection to have a significant effect on animal health. Regardless, some producers routinely treat their young lambs/kids (usually in the spring) for tapeworms, more as a preventative than a necessary treatment (to ensure optimal performance).

Because tapeworms are the only visible worm (to the naked eye) and unsightly, there may be some justification for treating small ruminants that will be exhibited publicly or slaughtered on-farm. To the unknowing person, the appearance of tapeworms may seem like a human health hazard or an animal welfare (disease) issue.

On farms where heavy tapeworm infections are common, it is important to do proper and timely vaccinations for enterotoxemia (*Clostridium perfringens* type D) and to practice good feedbunk management. These farms should also consider treating their young lambs/kids for tapeworms.

Which dewormer(s) to use

Of the three dewormer classes, the benzimidazole class (white dewormers) is the only one effective against tapeworms. Albendazole (Valbazen®) is FDA-approved for tapeworm removal in sheep. In goats, it is approved for the treatment of liver flukes. Albendazole should not be given in the first 45 days of pregnancy, as it may harm the embryos. Fenbendazole (SafeGuard®), although not labeled for tapeworm removal (or sheep) may be effective at higher doses.

The most effective drug for tapeworm removal is praziquantel. It kills the heads and segments of the worms, whereas albendazole only kills the segments. While not approved for use in small ruminants in the US, praziquantel can be found in several paste (or gel) dewormers for horses (e.g., Quest® Plus, Zimecterin® Gold, and Equimax®) and pet dewormers. In other countries, praziquantel is a component of some combination dewormers, especially “first drenches.”

Producers should always consult a veterinarian regarding any extra-label use of drugs to treat tapeworm or other parasitic infections. Only a licensed veterinarian has the legal right to use or prescribe drugs extra label.

It is important to understand that every time you use a broad spectrum dewormer (such as Valbazen® or SafeGuard®) to remove tapeworms from small ruminants, you are inadvertently selecting for resistant worms of the other species, (especially if you treat all the animals in the group), making their control more challenging. Dewormer resistance is a worldwide and growing problem in small ruminants.

IDENTIFICATION

Tapeworm infections are not difficult to diagnose, as the segments are quite visible in the manure. They look like grains of rice. They are much wider than



Tapeworm segments in the manure

they are long. Each egg contains one embryonic tapeworm. Sometimes, long strings of tapeworm segments can be seen coming out of an animal, probably due to death of the worm. You may see tapeworms being expelled after treatment.

While individual eggs (triangular in shape) can easily be seen in routine fecal exams, a microscope is usually not needed to diagnose infection. In addition, the presence of eggs is not indicative of the level of infection. Nor are they evenly distributed in manure samples. You may not see any eggs even if the animal is passing tapeworm segments. A post-mortem is probably necessary to reach the most accurate diagnosis.



Tapeworm eggs

Moniezia expansa

PREVENTION

Prevention is difficult. As with other worms, pastures cannot be treated to break the life cycle of tapeworms. Eradication of the intermediate host is probably not feasible, as pasture mites are bountiful. Bio-Worma® (nematode-trapping fungus) is not effective against tapeworm larvae.

As with other parasites, tapeworm infection is usually highest on pastures that have experienced heavy grazing, due to high stocking rates and/or long graz-

ing periods. It might help to keep young animals away from the areas where the mites live: wet grass.

Fortunately, small ruminants develop immunity to tapeworms at a relatively young age, 3-5 months, earlier than they do for stomach worms. Immunity does not prevent infection, but it may reduce the number and size of worms. Eventually, tapeworm infections are “self-cured,” especially in adults and older lambs/kids.

Tapeworms are not that different from other worms. You need to learn to live with them. Aim for control, not eradication. Implement the same best management practices as you would for other parasites.

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Sheep measles

Sheep/goats also serve as intermediate hosts for dog tapeworms (*Taenia ovis*). Dog tapeworms have no effect in sheep/goats or even the dogs. However, they can cause cysts in the meat of the intermediate host. The condition is called “sheep measles,” due to the appearance of the meat at slaughter. While it is a meat quality problem, there is no risk to human health. Sheep measles can be controlled by not allowing dogs to have access to raw meat, offal, or carrion. Visiting dogs and wild canines can play a role in the parasite’s transmission. Dogs should be treated for tapeworms in areas where sheep measles is common.



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