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Common Sheep Parasites



COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U. S. DEPARTMENT OF AGRICULTURE

by L. J. KORTAN, extension livestock specialist—swine and sheep

Internal parasites are among the most troublesome problems affecting South Dakota sheep. A heavy infestation of destructive sheep parasites may cause death, and an even greater toll is taken in the form of setbacks in the entire flock. A "wormy" flock, for example, is seldom a profit maker.

Each parasite class includes several species. However, only those species most important to South Dakota will be considered here.

TWISTED STOMACH WORM (common stomach worm, *Haemonshus contortus*)

The Twisted Stomach Worm is the most destructive South Dakota sheep parasite. Lambs are most seriously affected. These worms are from $\frac{3}{4}$ to $1\frac{1}{2}$ inches long and about the size of a course hair in diameter. Live females are marked with a spiral striping, resembling a barber pole. In the host animal, the worms are usually confined to the fourth or true stomach (abomasum), though some may be found in the first part of the intestine.

Life History and Habits. The life history and habits of the stomach worm have been well established (see figure 1). The adult females, normally living in the abomasum, lay enormous numbers of microscopic eggs. These pass out with the feces. Under favorable temperatures and moisture condition, eggs hatch into larvae within a few hours. Larvae then molt twice and develop into the infective stage. This occurs within 2 weeks after passing from the host. When sufficient moisture is present, the young larvae crawls up on a grass blade,

coming to rest with evaporation and moving upward when the grass blade is again moist.

At this stage the larvae is greatly resistant to changes in temperature and moisture. While clinging to a blade of grass, it is in a position to be swallowed by the grazing animal. After being swallowed the larvae travels to the fourth stomach, develops into the adult stage, and lays eggs—thus starting another cycle. Each female can lay about 6,000 eggs daily.

The entire life cycle of the stomach worm may be completed in 21 days, conditions being favorable. Heavily infested sheep may pass as many as 3 million worm eggs in a period of 24 hours.

Symptoms. Sheep infested with stomach worms first become unthrifty and listless and later thin and weak. Membranes of the eyes, nose, and mouth become pale from loss of blood. Diarrhea may be present. The wool on heavily infested animals may eventually become loose and easy to pull out. Also a water swelling under the lower jaw sometimes occurs. This is referred to as "bottle jaw" or "poverty jaw." Swelling along the abdomen will also develop.

No symptom or group of symptoms is a positive clue to the presence of stomach worms. Identical symptoms may be exhibited in other cases of infestation by some other parasites. A correct diagnosis can only be made by post-mortem examination of the intestinal tract or by microscopic examination of the feces and identification of the eggs. In making post-mortem examinations, sacrifice a weak animal or obtain an animal immediately after death; otherwise the worms may disintegrate and be difficult to find.

TAPEWORM

Three species of tapeworm are common. These are the Broad tapeworm, *Moniezia expansa*, *M. benedini*, and the Fringed tapeworm, *Thysanosoma actinoides*.

Sheep may harbor several different species of tapeworms, in both adult and larvae stages. The common tapeworm, *Moniezia expansa*, and *M. benedini*, are long, flat ribbon-like worms which sometimes reach a length of several yards and a breadth of $\frac{3}{4}$ inch. Specimens 20 feet long have been found in lambs. The fringed tapeworm, *Thysanosoma actinoides*, derives its common name from the characteristic fringe which appears on the posterior of each of the segments. All species of

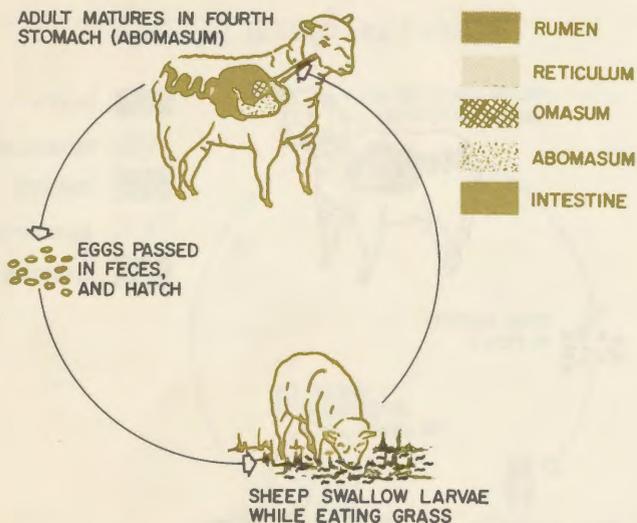
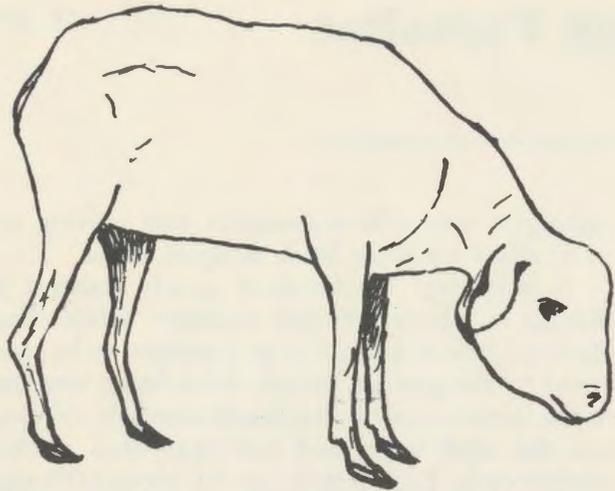


Figure 1. Life Cycle of Twisted Stomach Worm



This drawing shows how a sheep holds his head when he is suffering with "bottle jaw," or "poverty jaw," a watery swelling under the jaw, caused by a heavy and prolonged infestation of the common stomach worm.

tapeworms are commonly found in the small intestines of the host animals. But in addition, the fringed tapeworm may occur in the cystic duct, gall bladder, and in the duct of the liver and pancreas.

Sheep in all parts of South Dakota may become infested with one or more species of tapeworms. *Moniezia expansa* (broad tapeworm) occur throughout the state. The fringed tapeworm appears to be more prevalent, however, in the range bands of the western part of South Dakota, but it has occasionally been found in eastern sections.

Life History and Habits. The life history of the fringed tapeworm is unknown, but it is thought to require an intermediate invertebrate host through which it must pass before it can infest sheep. The life history of the broad tapeworm and the *M. benedeni* appears to be about as follows. The microscopic eggs and segments containing eggs pass out with the feces. On being infested by a suitable intermediate host, oribatid mites and beetle mites, the eggs develop into an intermediate larvae stage. Sheep become infested by swallowing such larvae.

The larvae travels to the small intestine of the host, where it develops into an adult worm by the growth of segments back of the head. With reproduction, a new life cycle is started.

Symptoms. Diarrhea and retarded growth or loss of condition appear to be chief symptoms of tapeworm infestation of sheep. Infected animals usually have normal appetites. The fringed tapeworm may cause death of the host through blocking the cystic duct, gall bladder, and the ducts of the liver and pancreas. A post-mortem should be considered.

CONTROLLING INTERNAL PARASITES

Common stomach worms, tapeworms, and other internal parasites are a constant threat to the health of any sheep flock. Generally the damage is done before the owner realizes that anything is wrong.

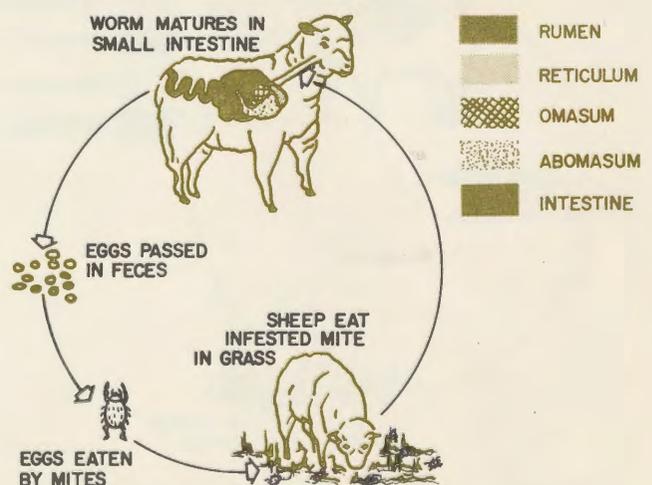
Clean pastures do not spread stomach worms, but grass contaminated with larvae will infect sheep.

1. Pasture rotation—rotate sheep every three weeks.
2. Provide sanitary feed and water equipment.
3. Wean lambs early and do not allow lambs to graze with ewes after July 15.
4. For early lambing programs, hold lambs in drylot while pasturing the ewes (in and out). Follow a timely drenching schedule. Destroy the adult worms. Where permanent pastures are used and where feed and other conditions are less favorable, drench the entire flock once a month during the grazing season. Alternate phenothiazine each month with another drench such as copper sulfate-nicotine sulfate solution (Cu-Nic), or with Thiabendazole.
5. Drench the ewe flock at least three times during the year.

Feeder Lamb Drenching Recommendations

1. Treat all lambs immediately upon purchase (copper sulfate drench desirable for one of the drenches).
2. Treat all lambs a second time, in one month (use mineralized phenothiazine for one drench if Cu-Nic drench is not used).

Figure 2. Life Cycle of Tapeworm



Timely drenching for the breeding flock means:

When	Month	Flock	Treatments
1. Weaning time	May-June	brood ewes and lambs	Phenothiazine
2. Breeding time	3 weeks before breeding	entire flock	Phenothiazine, Cu-Nic or Thiabendazole
3. Pre-winter feeding	November	entire flock	Phenothiazine, Cu-Nic or Thiabendazole
4. Pre-pasture (early spring)	By May 1	brood ewes and lambs	Phenothiazine-Arsenate

Timely drenching for growing and fattening lambs means:

1. After weaning until market	every 30 days while on pasture	Phenothiazine-Arsenate. Alternate once with Thiabendazole or Cu-Nic.
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Phenothiazine-Salt Mixture

Choose one of these salt mixtures: 1) 60 lbs. trace mineralized salt, 30 lbs. dicalcium phosphate, and 10 lbs. phenothiazine; or 2) 9 to 14 lbs. trace mineralized salt and 1 lb. phenothiazine.

In addition to dosing at the times recommended, a salt mixture containing one pound of phenothiazine powder mixed with 9 to 14 pounds of salt may be fed "free choice" to the flock while at pasture. Frequently sheep will not eat this mixture at first, but later may become accustomed to it.

Ingestion of phenothiazine in such small quantities will not kill worms present in infected animals, but can lower their egg-producing capacity and decrease the fertility of those eggs passed out. Thus it may be an aid in lowering the contamination of pastures. *Salt mixtures do not take the place of drenching.*

Lead-Arsenate Mixture

Lead arsenate is an effective treatment against tapeworm. It is administered without fasting. Give one gram to sheep or lambs weighing 60 pounds or more. The usual method is to give it in a hard, gelatin capsule.

Phenothiazine-Lead Arsenate Mixture

Fine-particle phenothiazine is an effective drug for the removal of many different kinds of round worms in sheep. When combined with a small amount of arsenate of lead it is particularly valuable in the control of most round worms and the common tapeworms of sheep as well.

Use 64 grams of lead arsenate with a small amount of water. Mix thoroughly with one gallon of phenothiazine drench.

For lambs under 50 lbs. use one ounce. Sheep over that weight need two ounces. For extremely large sheep use three ounces. Administer without fasting.

Phenothiazine

1. Handle sheep gently and carefully.
2. Do not starve sheep before treatment.
3. If treatment is given before turning the flock out to clean pasture, hold the flock at least 24 hours in order to give the drug a chance to act on the worms. After 24 hours there is little danger of contaminating pastures.
4. *Do not treat within a month before lambing and 10 days after lambing.*
5. Phenothiazine is safe and effective if used properly.
6. Stir all phenothiazine drenches thoroughly just before using. Phenothiazine is effective against common stomach worms. With Arsenate it can be used for the common tapeworm.

Before using any new worm remedy, treat two or three animals to be sure that no unexpected results occur. Read and follow strictly all directions and precautions on the manufacturer's label. Use your judgment in modifying doses for weak animals.

Copper Sulfate-Nicotine Sulfate Drench (Cu-Nic)

Preliminary starvation for 12 to 18 hours before dosing is often practiced; otherwise take the same precautions as those for phenothiazine. Lambs should be at least two months old before receiving their first treatment. Preparation of the drenching solution:

*1 oz. Cooper Sulfate (blue-stone)
1 fluid oz. 40% Nicotine Sulfate
3 qts. soft (rain) or distilled water*

The Cu-Nic drench is effective against common stomach worms and common tapeworms.

Dissolve the copper sulfate in a glass, earthenware or enamel crock. Do not add the nicotine sulfate until just before use. *It is safer to purchase this drench already mixed and ready for water to be added.*

One eight-ounce bottle of concentrated copper nicotine sulfate mixed with water will drench 64 (100-120 pound) sheep. Recommended dosage:

- Lambs 40-60 lbs.—1 fluid oz. (of the above 3 qt. mixture)
- Lambs under 40 lbs.— $\frac{1}{2}$ fluid oz. (of the above 3 qt. mixture)
- Sheep 80-100 lbs.—2 fluid ozs. (of the above 3 qt. mixture)
- Sheep 100-120 lbs. 3—fluid ozs. (of above 3 qt. mixture)

CAUTION: Have your druggist weigh and measure the ingredients—this is a deadly poison if directions are not followed.

Deaths will result if the recommended dosages are exceeded. Cu-Nic drench is satisfactory for common intestinal tapeworms. Measure dosages accurately. Test syringes by discharging them into a bottle graduated in ounces. In case of overdose of drench, immediately give $\frac{1}{2}$ to 1 pint of raw linseed oil.

Thiabendazole

Thiabendazole usually comes as a water dispersible powder in a plastic bottle. Series of research and field tests conducted in several states indicate that thiabendazole offers another drug, as an anthelmintic for treating sheep and lambs, which possesses 1) high degree of effectiveness, 2) broad anthelmintic spectrum, and 3) wide margin of safety.

Thiabendazole has been particularly effective against round worms and at least 12 species of the following: Trichostrongylus, Haemonchus, Ostertagia, Nematodirus, Chabertia, and Oesophagostomum.

Thiabendazole is not recommended for the common tapeworm (Moniezia).

Drenching Procedure

1. Use a bottle or dosing syringe.
2. Keep the sheep off feed for 12 to 18 hours before drenching and four hours after drenching, when copper sulfate-nicotine sulfate is used.
3. Be sure that sheep is standing on all four feet.
4. Do not raise the sheep's nose higher than his eyes.
5. Take your time—don't choke the sheep.
6. Late lambs, thin lambs and lambs not sold at weaning time—shear, drench, feed grain until fat.

Lambs on clean pasture, nursing their mothers, gaining $\frac{2}{3}$ pound or more daily, and sold in May or June, ordinarily do not need drenching.

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