

# SHEEP HEALTH

Fact Sheet . . . No. 8



## CONTROL OF INTERNAL PARASITES OF SHEEP

Internal parasites, or worms, cause major economic losses to the sheep industry. In addition to death loss, especially of pastured lambs in mid-to-late summer, major costs are reduced feed efficiency, slow rate of gain, poor reproductive efficiency, labor, and drugs associated with control. Internal parasite control is essential if a sheep enterprise is to be profitable.

The major internal parasites of sheep are roundworms (nematodes), which infect the stomach and intestinal tract; tapeworms; lungworms; and liver flukes. Of these, nematodes cause the most economic loss. Isolated problems with lungworms, tapeworms, and possibly liver flukes may occur.

### Nematodes

The four gastrointestinal nematodes that are economically most important to Midwestern sheep producers are listed in the chart below.

These worms are all quite small, slightly larger than an eyelash, and can be seen with the unaided eye only upon close examination of the stomach or intestine wall. Dead worms are rapidly digested by the animal. A veterinarian should do periodic fecal examinations on the flock. Necropsies (post-mortem examinations) should be performed soon after an animal's death.

Gastrointestinal nematodes interfere with breakdown, digestion, and absorption of nutrients and cause loss of tissue fluids, serum protein, and blood. Poor weight gains, anemia, weakness, diarrhea, constipation in some cases, and death may occur.

Unthrifty, debilitated sheep with a heavy worm burden are more susceptible to infectious diseases. Reproductive efficiency may be seriously impaired. Young animals are much more susceptible to parasitism than adults.

Control procedures must be adjusted to each flock situation. Knowledge of the basic life cycle of the nematodes will aid effective control procedures and minimize medication expense, labor, and disease losses. New knowledge about how the major sheep nematodes reproduce, survive from one season to the next, and build up on pastures and in sheep makes effective and practical control possible.

Adult worms, whether in the stomach or small intestine, produce vast numbers of eggs that are passed in the feces. After an incubation period, these hatch and form tiny first-stage larvae called  $L_1$ . These go through a second maturation to form  $L_2$  larvae that, in turn, become  $L_3$  larvae. Only the  $L_3$  larvae are infective for sheep. This cycle occurs on pasture and not in drylot. The larvae migrate from the feces onto grass and are ingested by grazing sheep. They then enter the wall of the stomach or small intestine and become fourth-stage larvae,  $L_4$ . After a variable period of time, the  $L_4$  larvae mature and become adults, completing the cycle. The adults do the most damage in the digestive tract.

In the fall, the  $L_4$  larvae of several species go into a dormant state called hypobiosis. The larvae do not mature until near lambing time when a series of body changes causes resistance to become quite low. The  $L_4$  larvae then mature into adults and begin laying eggs in

Scientific name	Common name	Location in animal
<i>Haemonchus contortus</i>	Large stomach worm	Stomach (abomasum)
<i>Ostertagia circumcincta</i>	Medium stomach worm	Stomach (abomasum)
<i>Trichostrongylus axei</i>	Stomach hairworm	Stomach (abomasum)
<i>Trichostrongylus colubriformis</i>	Intestinal hairworm	Small intestine

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massive numbers. Pastures become heavily contaminated with worm larvae. In addition, some larvae of the major nematodes survive the winter on pasture and are a second source of infection for grazing sheep in the spring. Baby lambs, grazing with the ewes, pick up the new crop of L<sub>3</sub> larvae and become heavily infected, and also multiply the larvae population on pasture.

Strategic use of anthelmintics (drenches) and pasture management can break this cycle and lead to effective worm control. Effective medications should be used as follows in a lambing operation.

1. Worm ewes shortly before (1 to 2 weeks) lambing. This is a critical treatment because populations of adult worms may be quite high at this time. It also eliminates worms from the sheep that would contaminate pastures at turnout in the spring.
2. Lambs born and kept in confinement and fattened on a high energy concentrate ration usually do not need to be treated for nematodes.
3. Lambs and yearlings turned out to pasture should be wormed twice at 3 and 6 weeks after turnout to pasture. This strategic treatment schedule helps prevent a buildup of infective larvae on pasture in mid-to-late summer and will help reduce the need for continuous drenching during the summer and fall.
4. Move the lambs in mid-July to a clean pasture, preferably a regrown hay meadow, where no sheep have grazed since the previous fall, if possible. Worm all sheep at this time.
5. Worm ewes prior to breeding because they are usually moved to a breeding pasture at this time.
6. Monitor pastured lambs and yearlings carefully for evidence of worms.
7. Treat all rams according to this schedule and monitor closely for evidence of worms.

This strategy can be adapted to most operations.

Farm flock owners who have only one pasture for small farm flocks should give serious consideration to at least dividing the pasture into two grazing areas, with a treat-and-move strategy instituted about the second week in July. Rapid pasture rotation every few weeks will not reduce exposure of sheep to worm larvae because these pastures

remain contaminated for long periods of time. A drench-and-move strategy in early July, coupled with treatment of all sheep 3 and 6 weeks after turnout in the spring, will usually yield more effective worm control.

### **Drenches (Anthelmintics)**

Effective nematode control is predicated on anthelmintics that are effective, safe, and economically practical. At present only three classes of wormers are approved for use against gastrointestinal nematodes.

1. Phenothiazine—Long used by sheep producers, phenothiazine will remove a significant percentage of adult worms, and a few larvae. In succeeding drenches, effectiveness will be much lower so the use of phenothiazine drench can seldom be justified. It cannot be used in advanced pregnancy and causes significant staining of wool. Due to only marginal worm control, development of resistance, wool staining, and long-term damage to pasture, continuous feeding of low-level phenothiazine blocks is a questionable management procedure.
2. Thiabendazole—This drug belongs to a class of compounds called the benzimidazole group. Unfortunately, resistance of *Ostertagia*, *Haemonchus*, and *Trichostrongylus* species is widespread in the sheep population. Resistance to one drug in the benzimidazole group usually indicates resistance to all in the group, so that use of other benzimidazole drugs, such as fenbendazole, is not warranted if resistance to thiabendazole is encountered.
3. Levamisol—This compound remains highly effective (95-99 percent) against the major nematodes of sheep and, at present, is the drug of choice on a continuous basis. Resistance to levamisol has not been proven in the U.S. Most cases of suspected resistance are actually due to rapid reinfection on heavily contaminated pastures. It is also effective against lungworms.

The ivermectin group of anthelmintics are effective wormers, but do not kill tapeworms. They also appear to be effective against several major external parasites, and, if ultimately approved for use in sheep, will add greatly to effective available anthelmintics.

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## Lungworms

Lungworms can be an occasional problem. They cause fever, coughing, nasal discharge, rapid breathing, weakness, and poor performance. Secondary invasion by bacteria may cause death. Wet, low-lying pastures and cool, damp weather favor the development of lungworm disease in sheep. Infected sheep should be treated with levamisol, ivermectins, or other effective compounds and moved to well-drained pastures if possible.

## Tapeworms

Tapeworms are often diagnosed when small tapeworm segments resembling grains of rice are passed in the feces. These are seen most frequently from

midsummer through the fall months. Although dramatically large numbers of tapeworms may occupy the small intestine, damage to sheep is much less than that done by the gastrointestinal nematodes such as *Haemonchus* and *Ostertagia*. There is evidence that lamb growth rates may be affected when large numbers of tapeworms are present. Feedlot lambs carrying large numbers of tapeworms may be more susceptible to intestinal problems and diseases such as enterotoxemia.

## Liver Flukes

Liver flukes are seldom a problem in native Iowa sheep.

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File: Animal Science 9

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914 in cooperation with the U.S. Department of Agriculture. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.