

Internal Parasites in Sheep

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Internal parasites of sheep are a major concern of sheep producers. Worms are a costly problem that can result in sickness or death. It is likely that most unexplained sheep deaths in July, August, and September are worm related. Parasite resistance to dewormers is a big problem in sheep and designing cost-effective deworming programs seems complex. However, good ideas and effective programs are available.

The Problem

Intestinal parasites produce losses in sheep by sucking blood, damaging the intestinal lining and affecting digestion and competing for nutrients with the host sheep. Losses from worms come from:

- Deaths - this is the most visible but least costly loss
- Cost of deworming - the cost of the dewormer and the labor to administer it can be significant
- Lowered resistance to other diseases - wormy sheep are much more likely to have other problems
- Lowered Productivity - Reduced weight gains are the biggest cost of worms in the flock

While many worms may cause problems in sheep, the most likely are the common stomach and small intestinal worms, *Haemonchus* and *Ostertagia*. Adult female worms lay eggs which are passed in the manure in about 48 hours. The eggs usually hatch into larvae in 24 hours or less. The larvae move out of the manure and climb up nearby blades of grass. Most will climb two inches or less. Grazing sheep eat the larvae with grass and swallow them. The larvae develop into adults and begin to do damage to the sheep while also beginning to lay eggs to start a new generation of worms. The entire process takes as little as three weeks. *Haemonchus* larvae survive best in hot dry weather such as July and August. *Ostertagia* do better in mild wet weather like we have in the spring.

Resistance to dewormers is a common problem. When sheep are dewormed with

an effective product, over 90% of the adult worms are killed. Those that survive may be just lucky worms. However, an occasional worm may be somehow different enough from the other worms to survive deworming with the product used. The surviving worms become the parents of the next generation. This generation has more resistant worms in it. Eventually, most or all of the population of worms are the offspring of resistant worms and that particular dewormer no longer works. Resistance to a dewormer generally means resistance to all dewormers in a chemical group. Once resistance occurs, it remains even though that dewormer may not be used again for years. Parasite resistance to dewormers is most frequently seen with benzimidazoles such as Safeguard, but is occasionally encountered with the levamisoles such as Ivermectin, and has been reported with the macrocyclic lactones such as Ivomec. Parasite resistance is more likely when too low a dose is used and when dewormers are used more often.

Local Research Findings

In 1999, a research trial was begun using a flock of sheep in Anderson County, Tennessee. Manure samples were taken at intervals from 10 days to 2 months to determine the presence of parasite resistance to dewormers and to see what changes occurred in parasite burden throughout the year. Manure samples were delivered to the parasitology lab at UTCVM. Technicians processed each sample using the McMaster technique for measuring worm eggs per gram of manure. Several things were learned:

- Resistance to benzimidazole dewormers was present. Deworming should result in a 90% or greater decrease in eggs per manure. In this case, the number went up after dewormer use and nearly doubled when findings on 3-30-99 are compared with those of 4-7-99.
- Either wormy sheep get sick or sick sheep get wormy. The ewe named “no tag” had unusually high egg counts from March to June and died of mastitis in late June.
- Some sheep such as 2041 and 9001 seem to always have low fecal egg counts while some such as 2005 and 5038 are consistently above average and are a source of larvae to the flock.
- Egg counts get higher in July, August, and September. #7061 has 23,750 eggs per gram on 8-13-99 and #9007 had 13,450 on 9-13-99. This is most likely due to *Haemonchus*.

Egg counts tended to be higher in March and April probably due to a decrease in worm resistance in ewes seen around lambing.

Deworming Recommendations

The following ideas should be used to formulate an effective deworming program:

1. Available dewormers for sheep belong to one of three chemical families. Resistance to one of a family probably means resistance to all of that chemical family.

Benzimidazoles

Safeguard
Valbazen
Synanthic

Macrocylic Lactones

Ivomec
Cydectin
Dectomax

Levamisoles

Levasole
Tramisol

Use the proper dose by weighing or measuring sheep to be dewormed. At the least, establish the weight of the largest of the group.

1. Rotate Dewormers annually to prevent resistance of worms to dewormers.
2. Use fences and pasture rotation to produce "safe" pasture. Infective larvae die off with time. However, it takes a while for larvae numbers to get really low. Pastures become fairly free of larvae after three months of not being grazed in the summer and six months in the winter. Since most larvae accumulate in the bottom two inches of grass, overgrazing makes a pasture less safe.
3. Use fecal egg counts on the flock to determine the presence of dewormers resistance in sheep. Fecal egg counts on the flock can also be used to decide when to deworm. Average egg counts of above 1000 in the spring and summer and 2000 in the fall and winter can be used to determine when deworming is needed.
4. Deworm all in a pasture, including rams, when you deworm. Lambs under two months of age need not be dewormed.
5. Deworm sheep about three days before moving to a new pasture.
6. That way they will have few adult worms and be passing few eggs onto fresh pasture which should have few larvae on the pasture.
7. Examples of using this "worm and move" strategy include:

- Deworm ewes after they lamb before they are turned out with the lamb.
- Deworm lambs at weaning before they are moved to a new pasture.
- Deworm newly purchased sheep and keep separate from the flock for three days.

Deworm all sheep before moving to a new pasture.

Internal parasites are a big problem in Tennessee flocks. However, the worse use of dewormers, pasture rotation and focal egg counts can effectively control worms in sheep.