

## MANAGING INTERNAL PARASITES IN THE WOES OF SUMMERTIME

by Beth Johnson, DVM

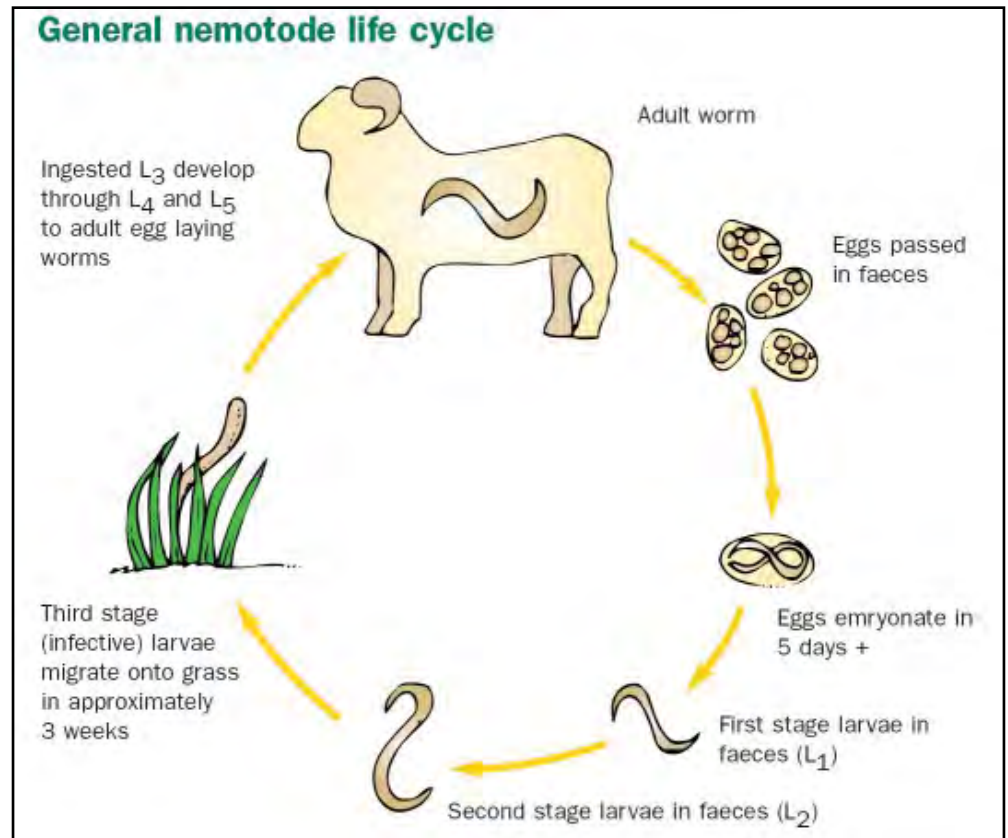
Summertime is when our animals flourish due to the abundant forages available in our state. But why does it seem that the young sheep and goats don't seem to perform as well as they should with the excellent forage available to them. Most of the time it is due to the increased parasite burden that they are challenged with during the late spring, summer and fall. Hopefully this article will help with managing your flock/herd while they are out grazing this summer.

We must first understand what parasites are exposed to our animals. **Enemy Number 1:** *Haemonchus contortus*. This is a very prolific blood sucking parasite that resides in the abomasum of sheep and goats. The life cycle of this nematode and other nematodes, i.e. *Trichostrongylus* and *Ostertagia* (HOT Complex) is pictured in **Figure 1**. As you can see the primary mode of transmission is ingesting the third stage larvae on a blade of forage. The larvae crawls up a blade of grass and is usually found within dew droplets on the blade of grass. The larvae usually aren't found any higher than 2 inches on the blade of grass. This is why it is important to graze pastures that are at least higher than 4-6 inches, and not graze any lower than 3-4 inches in height. Rotational grazing systems which are discussed later in this article are very important in parasite control for small ruminants.

**Enemy Number 2:** Tapeworms. Tapeworms are the only parasite that can be visualized in the feces of infected sheep and goats. Tapeworm segments which contain the eggs are small white flat worms easily visualized. There are two different life cycles of the tapeworm parasite, one of which involves a snail as an intermediate host. Similar to another parasite, *Paralephastromylus vulgaris*, commonly referred to as the meningeal worm.

**Enemy Number 3:** Coccidiosis. Coccidiosis involves a protozoal organism that colonizes in the small intestinal tract

Figure 1. Life cycle of Gastrointestinal Nematodes (GIN)



and undergoes multiplication and eruption from the mucosal epithelial lining of the intestines. This eruption causes significant damage to the intestinal epithelium which affects nutrient digestion and absorption. Coccidiosis is a disease that can be controlled by keeping the environment clean and through the use of coccidiostats in the grain or minerals provided to sheep and goats. Minimizing overcrowding and overgrazing are two important management tools used to control intestinal parasites and coccidiosis.

### Hypobiosis

Understanding parasitism requires one to understand hypobiosis which is the ability of nematode larvae to arrest development and persist in the host until times more conducive for infectivity either in the environment or within young neonates.

Periparturient rise is a phenomenon which occurs in the pregnant sheep and goats that allows the arrested development of hypobiotic larvae to develop into adults insuring pasture contamination of infective eggs and subsequent larvae to young lambs and kids which are extremely susceptible to these parasites. Strategic deworming, i.e. deworming the dam at lambing or kidding, reduces the load of infective larvae on the pasture.

We also see hypobiosis during periods of good immune function in the host and subsequent maturation of hypobiotic larvae during periods of suppressed immune function, i.e. sickness, stress, lambing/kidding. Parasites can also enter a state of hypobiosis when the environment is not conducive for survival of the parasite. Examples of harsh environmental conditions include the severe cold of the winter and dry hot environments during

the summer. Therefore, understanding the physiology of the host and the parasite, and utilizing anthelmintic treatments during these periods will aid in reducing parasite infectivity on pasture and improve performance of your lambs and kids, especially in the spring, summer and fall.

### Maintaining Refugia

Refugia is a term used in parasite control to maintain a population of parasites which are susceptible to the anthelmintic treatments utilized on a farm. One important way to maximize refugia is to only deworm the sheep and goats within your flock/herd that need it. Remember that research has demonstrated that 20% of animals within a herd can produce 80% of the eggs. Identification of the sheep or goats utilizing FAMACHA and/or Five Point Check®, and deworming only animals exhibiting signs of parasitism will maximize refugia within the herd.

The Five Point Check® method involves evaluating sheep and goat's ocular membranes (FAMACHA score), jaw (presence of bottle jaw), nose (are nasal bots present), back (body condition score) and tail (dag, i.e. presence of diarrhea, score).

The Five Point Check® allows a producer to determine if an animal is heavily parasitized by more than just *Haemonchus contortus* whereas the FAMACHA method only identifies those feeling the effect from *H. contortus*, i.e. anemia.

### Anthelmintic therapy

When the sheep or goat appears to require anthelmintic treatment there are essentially three classes of compounds to choose from:

- Benzimidazoles
  - Fenbendazole (Safeguard, Panacur)
  - Albendazole (Valbazen, Synanthic)
- Avermectin / Milbemycins
  - Ivermectin (Ivomec)
  - Moxidectin (Cydectin, Quest)
- Imidazothiazoles/  
Tetrahydropyrimidines
  - Levamisole (Prohibit), morantel (Rumatel)

The current thought is to utilize two drugs from different classes when a sheep or goat is dewormed. i.e. safeguard/cydectin

When introducing new sheep or goats onto your farm you may want to use a drug from all three classes. i.e. safeguard/

cydectin/prohibit and perform fecal exams 7-10 days after deworming. If the animal is still harboring eggs then they may possess parasites that are resistant to anthelmintic drugs and you should be concerned about introducing that animal into your flock/herd.

**Strategic deworming** utilizes deworming during periods of stress, periparturient rise, and environmental conditions which are conducive to parasite infectivity. For example, only deworming sheep or goats that have a FAMACHA score of 3, 4 or 5. Through strategic deworming sheep and goats we maintain high levels of refugia within the flock/herd.

### Alternative parasite control therapies: Copper Oxide Wire Particles (COWP)

Copper is a mineral which is essential to both sheep and goats. Many sheep do not require much copper in their diet but we are diagnosing more cases of copper deficiencies in sheep and goats due to the lack of copper in the environment, feedstuffs, and minerals. Copper deficient animals experience reduced immune

*Internal Parasites continues on pg. 26*

## Mountainview Livestock

Farm • Ranch • Custom Livestock Equipment



**TUFF • DURABLE • LONG LASTING**  
[mountainviewlivestock.com](http://mountainviewlivestock.com)



PH: 605-253-2018  
 47324 309TH ST  
 BERESFORD, SD, 57004

## PARIS STOCKYARDS

**SHEEP & GOAT  
 SALE EVERY FOURTH TUESDAY  
 3:30pm**

1120 Millersburg Road, Paris, KY. (859) 987-1977

**Receiving 8am-1pm**

**"Farmers Doing Business with Farmers"**

For More Information Contact:

Kathy Meyer 859-749-7594

**Cattle Sales every Thursday  
 9:15 am**

For More Information Contact:  
 Craig Taylor, (859) 771-0146 or Sara Evans, (859) 987-9945

function, increased susceptibility to internal parasitism, weakness, fetal abnormalities, poor hair coat, etc.

Copper deficiency may be diagnosed through measuring the level of copper in the serum. Unfortunately this is not the most accurate method for detecting the true mineral status of the sheep or goat. Liver biopsy mineral assays or performing mineral assay on the liver of a deceased animal yields a more accurate picture of herd mineral status. It is always wise to have a thorough necropsy completed on animals that die within your flock/herd to determine death of the animal. If a necropsy is completed, always request a liver mineral analysis.

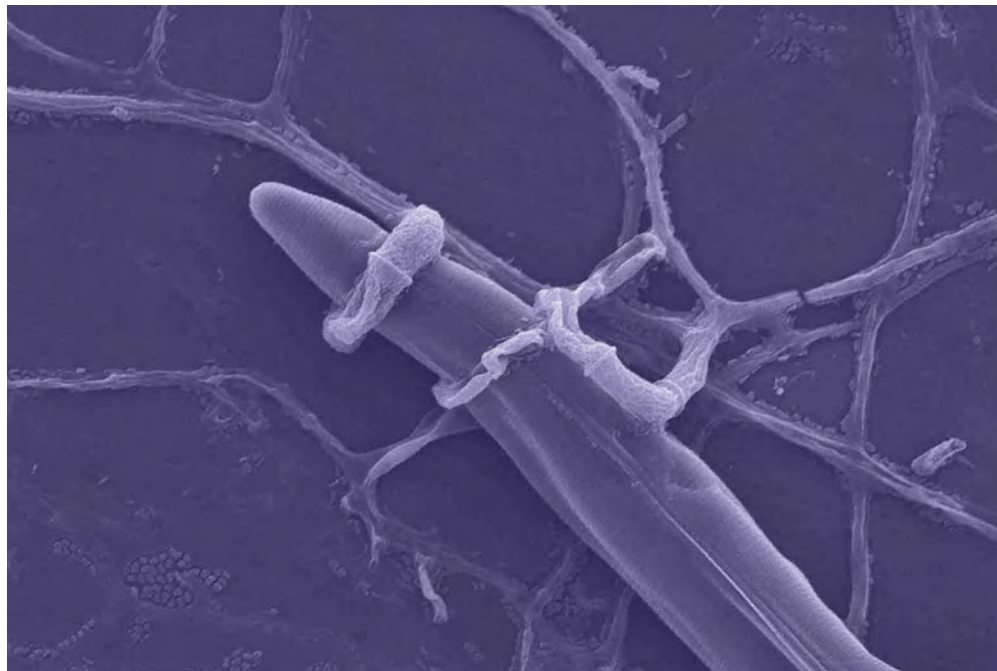
If copper deficiency is a concern within a flock or herd, the free choice mineral provided should be evaluated. Copper oxide wire particles have been shown to assist as an alternative parasite control method. This is especially true if the herd or flock is deficient in copper. Fortunately there are copper oxide wire particle capsules that are commercially available in 2g & 4g sizes. Prior to using COWP's on a sheep flock, copper analysis should be done. Goats are usually not as susceptible to copper toxicity. Sheep flocks with diagnosed copper deficiency should use the 2 gram boluses in animals >80lbs. Goats can receive a 4 gram bolus in animals >80lb or a 2 gram bolus in animals <80 lbs.

### High tannin containing forages

There has been quite a bit of research studying the effects of high tannin forages and how they assist in controlling intestinal parasites. Research indicates that there is a reduction in total fecal egg output in small ruminants grazing AU Grazer, a variety of lespedeza. Other high tannin forages are: chicory, birdsfoot trefoil, and sainfoin.

Secirea lespedeza is easily grown and goats and sheep tolerate it well in the early stages of growth. There are commercially available lespedeza pellets produced by several feed companies. There has been some research indicating a benefit to controlling gastrointestinal nematodes (GIN) and coccidia when these pellets are fed. A mixed grass/legume hay with lespedeza in it may also be beneficial.

Figure 2. Newly marketed fungi, *Duddingtonia flagrans*, trapping nematode larvae



### Fungi that inhibit egg development into larvae.

A new biological product available in the United States is a fungi, *Duddingtonia flagrans*, which traps nematode larvae. See Figure 2. When fed to livestock, the fungal spores pass through the gut of the animal and are excreted with the worm eggs in the dung. The fungal spores then germinate and grow networks of traps that ensnare and kill the worm larvae soon after they emerge from the eggs. One important point is this new product does not kill the adult worm. Therefore it is important to deworm sheep and goats exhibiting signs of significant parasite loads, i.e anemia, exercise/heat intolerance, rough hair coat, weight loss, and weakness. Due to the effects of the fungi on the developing larvae and subsequent reduction in the number of larvae consumed by sheep and goats, reinfection is reduced on pasture.

An important concept is this product must be fed daily during periods of possible shedding of eggs onto pasture which is almost the entire year in Kentucky. The product is marketed as Livamol® with BioWorma® through International Animal Health Products (See Figure 3). It is important to feed this product as a top dress and should not undergo any processing which involves heat, i.e. incorporated into a complete pellet. It can be mixed in a textured feed mix which does not undergo heat during mixing.

Figure 3: Livamol® with BioWorma®



### Pasture Management:

When considering pasture management to reduce parasite load there are several areas to consider:

- Rotational Grazing
- Including browse
- Including tannin rich forages
- Grazing multispecies of animals
- Harvesting hay
- Increasing forage quality

**Rotational Grazing:** The majority of infective larvae will be found within the bottom three inches of plants; therefore, moving animals before overgrazing occurs will help control infection. As stated earlier, nematode eggs develop within 3-4 days to the infective L3 stage (see Figure 1). Best control may be achieved by moving animals

every 1-3 days to a new area. This will also reduce time spent in one loafing area within a grazing pasture which can lead to reinfection. Rotating pastures will also maximize forage quality. Pastures should not be grazed for a period of 28-60 days depending on regrowth and season of the year. One option is to mow the pastures that are not being grazed for hay. This also allows sunlight to kill eggs and larvae that are present on the pasture.

**Following Recommended Grazing Heights:** Depending on the type of forage (cool season perennial grasses, warm season perennial grasses, and/or warm season annuals), animals should be turned into pastures at optimum nutrient utilization and allowed to graze the forages to not less than 4-6 inches of height.

**Electric fencing** has made it easier to subdivide pastures into lots that can be rotated through to allow better utilization of forages and minimize parasite infestation on the pastures. Contact your local electric fence retailer to design a fence that is easiest for your operation and cost effective.

**Cutting pastures for hay** exposes the eggs and developing larvae to sunlight. These pastures can then be allowed to regrow and be grazed later in the season at minimal infectivity of gastrointestinal nematodes (GIN's).

**Grazing multiple species:** The gastrointestinal parasites that infect horses and cattle are different than the ones infecting sheep and goats; therefore, in a rotational system a producer may decide to graze them together. Or a better method is to graze the sheep and goats in a rotation with cattle or horses following after them. The only concern if grazed together is the supplemental minerals and/or feed that is provided to each species. One benefit to using multiple species is that they prefer to eat different plant species. Sheep and goats typically consume some of the more noxious weeds, making the pastures better utilized by keeping weeds to a minimum.

The bottom line to parasite control is to maximize nutrient intake by grazing quality pastures that have been properly maintained! If animal's nutritional needs are being met with the use of good forage, well balanced minerals, and plenty of good clean water then, you are well on your way

to controlling gastrointestinal parasites and increasing the weight gain on those young lambs and kids.

**References:**

- American Consortium for Small Ruminant Parasite Control (ACSRPC), <https://www.wormx.info/>
- Bioworma, <https://www.bioworma.com/index.html>
- Wormboss, <http://www.wormboss.com.au/programs/goats.php>
- Maryland Small ruminant page, <https://www.sheepandgoat.com/>

*Dr. Beth Johnson is a Staff Veterinarian in the Kentucky Department of Agriculture and has 40 years of experience raising and treating small ruminants. Her family farms in Parksville, KY where she raises Gelbvieh cattle and Boer goats.*



**Celebrating the 15th anniversary of KikoFest!**

# KikoFest 2019

**September 6-7, 2019**

**Cumberland County Community Complex  
Crossville, Tennessee**

**Consignment dates: June 1—August 1, 2019**

*For the first time AKGA and NKR registered goats may also be consigned to this yearly event.*

**A maximum of five does per consignor.**

**One buck may be consigned with five does.**

**There is a seven buck maximum for this sale.**

**Contact: Steve Maynard 931-704-0770 or Timothy Price 334-596-6602**