



The Barber Pole Worm: How to Cope With a Killer

By Jackie Nix

Internal parasites, particularly roundworms, are the number one health concern in goat production. Of the many different roundworms, the most important is the barber pole worm (*Haemonchus contortus*). The barber pole worm is so named because it has a red and white striped appearance, like a barber's pole. This parasite feeds on blood (thus the red striping) causing blood loss in the affected goat. In severe enough cases, anemia will occur. Anemia can be detected by paleness around the mucus membranes of the eyes, inside of the mouth or inside edge of the rectum or vagina. A condition called bottle jaw (swelling under the jaw) may also occur. Barber pole worms reduce feed efficiency by damaging intestinal cells, thus interfering with adsorption of digested feed. Diarrhea may also occur but sometimes the goat dies before diarrhea can develop. Other symptoms include loss of weight, poor growth, unthriftiness, and a marked decrease in milk production.

All goats are infected with barber pole worms to some extent. The key concept to remember is that infection is not paramount to disease. Contrary to what one might think, it is actually not in the goat's best interest to have a worm-free herd. By continual exposure to small numbers of internal parasites, the goat's immune system is able to maintain natural resistance. In the absence of this exposure the goat's body will not be able to mount a defense quickly enough to stave off disease symptoms when faced with a large parasite challenge and will easily die. So with proper management, we can strive to **control** rather than eradicate internal parasites.

As with all parasites, it is necessary to understand their life cycle in order to control them. First, the goat ingests infective barber pole worm larvae from forages they graze. These larvae pass into the stomach or intestines where they mature into adult worms. Here they mate and produce eggs. An adult female barber pole worm has the potential to lay in excess of 5,000 eggs per day. These eggs are passed through feces into the pasture. Successful development of larvae outside the host depends on climate. Barber pole eggs and larvae love warm, moist conditions and hate cold or very hot, dry conditions. Once they find favorable conditions, the eggs hatch and the barber pole larvae progress through two non-infective stages. The third larval stage is infective. These larvae climb up on forages (usually in the mornings when there is dew on the grass and usually only 1 to 2 inches up the plant) where they are ingested by the goat, thus completing the cycle. It usually takes about 3 weeks to complete this life cycle, however this time may be shorter or longer depending on environmental conditions.

Barber pole larvae can also undergo a process called **arrested development** where they sit quietly in the abomasum (the true stomach of ruminants) following infection and don't become adults until several months later. This is an important adaptation for keeping the worm around through cold winters when eggs and larvae don't survive well on pasture.

Another important adaptation of the barber pole worm is a phenomenon called **periparturient rise**. Very simply, the female worms, triggered by hormonal changes in does about to give birth, produce

massive numbers of eggs that will be shed about the same time as the does kids. This adaptation ensures that the next generation will become infected and thus continue the parasite cycle.

So what are some things that can be done to control barber pole populations? The key is to break the cycle at one or more points. Some management practices that can accomplish this are:

1. Avoid grazing goats on less than 3 inches of pasture canopy. Larvae are unable to climb higher than this on the grass and thus will not be ingested.
2. Increase use of browse in grazing systems. Parasite larvae cannot climb up onto browse so goats don't ingest them.
3. Rotate species on pastures. For example graze cattle or horses behind goats. Because parasites are species specific, when a cow or horse ingests a goat parasite it simply dies without causing damage. An important exception is that this will not work with sheep as they share many parasites with goats.
4. Do not feed on the ground. Elevated feeders help to eliminate fecal contamination and thus parasite transmission.
5. Make sure that water and mineral sources are not contaminated with feces.
6. Allow pastures to "rest" for at least one year before allowing goats back on them. Larvae will have a hard time surviving that long without a host and therefore the pasture will be relatively worm-free.
7. Utilize annual forages in your pasture systems and till the ground between crops. The act of plowing tends to kill or disrupt the larvae and eggs, reducing transmission. Additionally, annual forages tend to do best when grazed at higher levels (4 to 6 inches of canopy).

Anthelmintics (anti-parasite drugs) can be use with the above practices or alone; however drugs alone do not give long term satisfactory worm control. Some common anthelmintics are thiabendazole (Thibenzole), fenbendazole (Panacur or Safeguard), oxfendazole (Systamex), alvendazole (Valbazen), levamisole (Nelverm) and ivermectin (Ivomec). *See your local veterinarian for recommendations on dosage and type of anthelmintic, as most are not labeled for use in goats.*

The FAMACHA[®] monitoring system is now the method of choice in deworming for barberpole worms. FAMACHA[®] involves careful monitoring of the goats' inner eyelids for signs of anemia using a standardized chart. Only goats showing signs of anemia are treated with anthelmintics. This method also identifies chronically parasitized animals, which are then culled, creating a more resistant herd. Training workshops for this method are being held across the country. To learn more visit famacha@vet.uga.edu.

In summary, barber pole worms are a major health care concern. Since eradication is impossible, management techniques must strive to control them. A combination of management practices and anthelmintics works best. Use of dewormers alone offer the poorest control for barber pole worms.

Remember that a goat's ability to resist the effects of parasites depends, in part, on its nutritional status. The mineral status of a goat is essential in its ability to mount an adequate immune response to parasitic challenge. Copper is especially important in this respect. Be sure to provide a complete mineral/vitamin supplement for your goats year-round that contains adequate copper levels. The **Sweetlix[®] 16:8 Meat Maker[®]** mineral for meat goats, **Sweetlix[®] Caprine Magnum-Milk** mineral for dairy goats and **Sweetlix[®] Meat Maker[®] 20% Pressed Block** and **Sweetlix[®] Meat Maker[®] Roughage Balancer Tub** for all classes of goats are formulated to provide essential minerals (including copper and selenium), vitamins and other nutrients needed to keep goats healthy and productive. Call 1-800-325-1486 or visit our website at www.sweetlix.com to receive a free product brochure or more information.

Sources:

The Goatkeeper's Veterinary Book by Peter Dunn.

Gastrointestinal Parasites by Dr. Jean-Marie Luginbuhl, North Carolina State University
FAMACHA[®], Univ. of Tennessee College of Veterinary Medicine

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