



Whipworms (*Trichuris ovis*)

The whipworm (*Trichuris ovis*) is best known for its unique football-shaped egg with distinct plugs at each end and gets its name from the adult worm in the colon of sheep and goats appearing whiplike. The head end of the whipworm that is imbedded in the intestine is thin and the worm's body becomes thicker going to the far end, giving the appearance of a whip with the popper end being imbedded in lining of the colon and the handle being the part of the worm that is free in the center of the colon.

The whipworm is very seldom a problem by itself. It is seen in low numbers in most fecal counts, but often seen in significant numbers when there are large numbers of other worm species present. High numbers of *Trichuris* are a good indicator of negligent animal management. The *Trichuris ovis* infects only sheep, goats and deer. Llamas are infected by *Trichuris tenuis*. There is a whipworm species for almost every mammal species. The whipworm is a different family (*Trichuroidea*) as compared to most worms that affect small ruminants (*Trichostrongyloidea* family) and therefore has some unique characteristics such as life cycle and egg characteristics.

The egg of the whipworm is football-shaped and has plugs at each end making it is easy to identify this species in a fecal egg count. The egg also has some unusual characteristics. A very important characteristic of the egg is that it is very resistant to the envi-

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Distinctive football-shaped whipworm egg

Image courtesy of Anne Zajac

ronment and may remain infective for years. This is an important consideration in control of the whipworm. All bedding and feces must be regularly cleaned out the animal's environment to prevent re-infection. The egg is not infective when produced and contains a single cell which develops to a third stage infective larva over about a month period of time. When The egg containing a third stage larva is ingested into a suitable host, the end plugs are digested and the released larva penetrates the small intestine epithelium and develops for 2-10 days before moving to the cecum and developing to an adult. The whipworm consumes epithelial tissues and therefore causes tissues to bleed into the digesta.

Since there is no larval stage of *Trichuris* in the feces, nematophagus fungus such as *Duddingtonia flagrans* is not effective against it. It is unlikely that the whipworm has a high level of resistance to dewormers since it is present at low levels and not a highly repro-

ductive worm. However, some research has identified a low level of resistance to levamisole (Prohibit®) and Monepantel dewormers. However, if the main species of worms are controlled, the whipworm will be suppressed by the immune system. Several studies have shown that extracts from tannin containing plants control this worm like many other nematode species.

The period of time between the animals consuming an egg that has developed to a third stage larvae until it become an adult worm producing eggs is about 3 months. There are not any published reports of monospecific whipworm infections in small ruminants since it is almost always seen as a mixed infection. When young cattle are infected with a massive whipworm infection, there may be fatal hemorrhages into the cecum. In those cases, usually only one animal in the herd is affected. In various animal species, a monospecific whipworm infection causes abdominal pain, diarrhea, sometimes bloody, dehydration, lack of appetite and slow growth. There are no published reports of monospecific infections in small ruminants.

Whipworms are an indicator species, indicating that the animal's immune system is overwhelmed or depressed and the animal needs medical intervention.



Image courtesy of Susan Schoenian

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AUTHORS:

Steve Hart, PhD (retired)
Langston University
Langston, Oklahoma

Jessica Quijada Pinango, DVM, MS
Langston University
Langston, Oklahoma

Edited by Susan Schoenian

REVIEWERS:

Margo Hale, MS
NCAT-ATTRA
Fayetteville, Arkansas

James Miller, DVM, MPVM, DACVM, PhD (retired)
Louisiana State University
Baton Rouge, Louisiana

Ray Kaplan, DVM, PhD, DACVM, DEVCP
St. George's University
St. George's, Grenada, West Indies

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