

# Internal Parasites of Horses

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## Facts About Internal Parasites of Horses

Internal Parasites are a significant threat to the health of horses. The horse is susceptible to more than 60 internal parasites, and may harbor several species of worms at any time. The effects of internal parasites are more evident in young and undernourished horses.

A horse with a parasite egg count of 2,000 eggs per gram of feces — not an uncommon amount — could easily discharge 25 million eggs per day and, provide a ready source of infection for its pasture or pen mates.

Examination of the horse's droppings may reveal the worm eggs. Eggs are not visible to the naked eye; special techniques together with a microscope are necessary to detect their presence. Adult worms can occasionally be seen in the droppings, but do not rely upon this method. Healthy worms are rarely passed in the feces and dead ones are often too decomposed to identify.

Seeing and counting worm eggs under the microscope can determine what type of parasite is present and estimate the severity of the infection. Your veterinarian has the equipment and training necessary to do this for you.



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# Internal Parasites Predominant in North Dakota Horses

The following table lists the most common and most damaging internal parasites of horses in North Dakota.

Parasite	Location	Damage
Large strongyles (Bloodworms)	Adults in large bowel; larvae in abdominal organs	Most harmful. Larvae block blood vessels and cause tissue damage. May be lethal.
Small strongyles	Large bowel	Irritation of intestinal wall; scours in foals.
Large roundworms	Small intestine; larvae migrate through lungs	Intestinal irritation and obstruction; migrating larvae damage lung tissue.
Threadworms	Small intestine	Diarrhea and weight loss (foals); irritation of bowel.
Pinworms	Large bowel	Restlessness; dullness.
Bots	Stomach	Gut inflammation; unthriftiness.

## Strongyles

Of primary importance are the large strongyles, known also as blood worms, palisade worms, and red worms. They are considered the most dangerous parasite of horses because 1) adults are voracious blood suckers and cause anemia, weakness, diarrhea, and damage of the intestinal lining, and 2) immature worms (larvae), before they reach maturity and settle in the large intestine, migrate to the branches of the intestinal (mesenteric) arteries where they may cause damage, irritation and parasitic aneurysm. An aneurysm is a bulging of the blood vessel wall which may hinder the flow of blood or may rupture, causing the horse's death by internal bleeding.

Blood clots may form in this area of irritation and eventually break away and lodge in the arteries supplying the intestines and cause colic if the intestinal vessels are blocked. A clot could also lodge in the vessels of the rear legs of the horse and cause lameness due to restriction of blood flow to the rear legs.

**It takes about six months for the immature worms to complete their migration before they settle, as adult worms, in the large intestine. Foals under six months of age will harbor strongyles in the migratory phase and not in their gut. Not all dewormers are effective against immature/migrating worms.**

## Large Round Worms

Known also as ascarids, these worms are quite large (8 to 10 inches) and white to yellow color. They are not blood suckers. Much of their damage is due to the migration of immature worms throughout the body. Small larvae are ingested by the horse, hatch in the intestine, burrow into the intestinal wall and migrate to the liver through the blood stream. From the liver, they reach the heart through the blood, enter small air sacs of the lung (alveoli), reach the trachea (wind pipe), are coughed, swallowed again, and finally reach maturity in the intestines. The lung can be damaged extensively, and pneumonia may occur. Large numbers of mature ascarids may block the intestines, particularly in foals, and cause severe digestive upset.

It takes 10 to 12 weeks for ascarids to complete their life cycle. Since most foals become infested (by immature larvae) soon after birth, most worms are maturing when foals are two and one-half to three months old. Treatment should start when foals are eight weeks old and should be repeated at eight-week intervals until they are at least yearlings.

## Threadworms

Threadworms affect primarily foals; fecal examinations seldom reveal threadworm eggs in adult horses. Foals may acquire the infection through larvae present in the mare's milk. Threadworm larvae are found in mare's milk from 4 to 40 days after foaling and foals may become severely infected by two to three weeks of age, exhibiting diarrhea, indigestion, and unthriftiness.

## Pinworms

Adult pinworms live in the large intestines (colon and cecum) and rectum of horses. Females migrate to the anus to deposit eggs in a cement-like mixture. This “egg-cement” dries, cracks, and along with the eggs, detaches from the skin in flakes causing irritation and severe itching and restlessness. The affected horse rubs its tail on any stationary object, causing a characteristic “rat-tail appearance.” Severe rubbing may cause irritation and secondary infection of the anus, tail, and surrounding skin.

## Horse Bots

Horse bots are not worms; they are the larvae of flies that have become highly specialized as parasites of horses. Three species of bots may parasitize horses: the common horse bot, the throat bot, and the nose bot.

In North Dakota, adult bot flies usually appear in mid- to late-June and remain active until the first frosts in the fall. During this time, the adult flies follow their sole purpose: reproduction.

Female flies lay their eggs (one common bot fly may lay 900 eggs in only three hours), and gluing them to the hairs of the horse's body; each bot fly species will use a different laying site. When flies attempt to lay, horses react by walking about and throwing their heads violently, running, or seeking shade and shelter. Horses being ridden may become unmanageable, run away or attempt to throw the rider.

The eggs of the common bot are laid on the hairs of the front legs of the animals. The eggs are hatched soon after they are laid, but actual hatching does not take place until they are rubbed by the warm, moist lips of the horse. The eggs may remain in place several weeks, but as soon as this stimulus occurs, the larvae emerge and attach themselves to the mucous membranes of the mouth. The larvae then penetrate the mucous membranes of the mouth, lips, and tongue. They burrow there for a short time and finally migrate to the stomach where they attach to the lining of the stomach by means of strongly developed mouth hooks.

The female of the nose bot fly lays her eggs on the hairs of the lips and mouth. The eggs hatch in a few days and burrow in the mucous membrane of the lips and gums where they stay for about six weeks. The larvae then migrate to the stomach and attach to the lining of the stomach. The majority of the larvae attach near the exit of the stomach into the intestine (pylorus).

All species of bots require about 10 to 11 months to develop, eventually passing out of the intestine in the feces.

The larvae of the nose bots will attach themselves to the rectum and anal region before finally dropping to the soil to pupate. At this time, the horse will exhibit discomfort by rubbing or switching its tail.

Horses may harbor large numbers of bots with resultant damage of the lining of the stomach. This may cause deprivation of some

nutrients, irritation of the intestines as bots pass through the intestinal tract, and blockage of the normal passage of food through the digestive tract. In cases of heavy infestation, death can occur.

## Use of Dewormers

Not all dewormers are equally effective in controlling the internal parasites of horses and many of them will not take adequate care of the migrating larvae (immature stages). In addition, extended use of the same chemical may render the parasites resistant to the drug. Rotating and alternating dewormers is important to maintain their effectiveness.

An accurate diagnosis of the type of worms present in a farm or stable is paramount to proper control. Deworming horses once a year is better than no deworming at all. However, well-managed horse operations will have a deworming program tailored to the needs of their brood mares, foals, studs, geldings, etc., in such a way that the best parasite control is achieved. This program may include as many as six treatments per year.

The table on the following page summarizes information about many dewormers available as of this writing. It is intended only as a guideline. One must read labels and discuss with a veterinarian the specific dewormer used for any individual horse. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the North Dakota State University Extension Service is implied.

## Examples of Equine Anthelmintic Compounds.

Class	Anthelmintic	Mean Efficiency (%) <sup>1</sup>				
		Bots	Ascarids	– Strongyles –	Pinworms	
				Large	Small	
Avermectin	Ivermectin	99	100	100	100	100
Milbemycin	Moxidectin	90	100	100	100	100
Benzimidazole	Fenbendazole	0	85	95-97	97	97
	Oxibendazole	0	85	97	97	97
Pyrimidines	Pyrantel-pamoate	0	95	70-77	95	50
	Pyrantel-tartrate	Prevents infective larvae from entering tissue				

Encysted Small Strongyle Larvae:

- Moxidectin – larvicidal efficacy 59 to 92%<sup>2,3,4</sup>
- Benzimidazole class – certain dosage regimens have been reported to be effective.<sup>2,3,4</sup>

<sup>1</sup> Klei, Thomas R., Parasite control programs. *Current therapy in equine medicine 4*, Robinson, Edward N. W.B. Saunders Co., 1997.

<sup>2</sup> Scholl, Phillip, Ph.D. Moxidectin 2% equine oral gel. *Equine practice*, Vol. 20, No. 3, March 1998.

<sup>3</sup> Abbott, E.M. BVMS, Ph.D., MRCVS. Larval cyathostomosis, Part 1. *Equine practice*, Vol. 20, No. 3, March 1998.

<sup>4</sup> Paul, John W. DVM, MS. Equine Larval cyathostomosis, *Parasitology*, Vol. 20, No. 4, April 1998.

## Sanitation and Management Recommendations

1. Remove manure from premises daily. Spread on cropland or other ungrazed areas, or compost in a covered pit. Composting results in heat that kills parasite eggs and larvae. A covered pit prevents fly breeding.
2. Practice frequent mowing and chain harrowing of pastures. This exposes eggs and larvae, and decreases their chance of survival.
3. Rotate pastures as much as practical to reduce parasite build-up and increase chances for natural death of parasite eggs and larvae.
4. Avoid overstocking of pastures that encourages parasite build-up and close grazing.
5. Graze weanlings and yearlings separate from older horses.
6. If possible, graze horses alternately with cattle or sheep. Generally, parasites of ruminants do not infect horses; parasites of horses do not infect ruminants.
7. Provide bunks, mangers, or racks for hay and grain. **Do not feed on the floor or on the ground.**
8. Provide a clean water supply free of manure contamination.
9. Yearly fecal examination by a veterinarian will evaluate how well your internal parasite control program is working.
10. Alternate anthelmintic classes to decrease possible parasite resistance. (Always refer to and follow label directions.)

For more information on this and other topics, see: [www.ag.ndsu.nodak.edu](http://www.ag.ndsu.nodak.edu)

