



# Controlling Common Internal Parasites of the Horse

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## Control of Common Equine Parasites

Internal parasite control is a long-term continuous program. Control of internal parasites in the horse is achieved by combining management practices with chemical (dewormer) treatment. The goals of parasite control in horses are:

- Limit parasite infections so animals remain healthy and clinical illness does not develop.
- Control the contamination of the environment with infective stages of parasites when environmental conditions are ripe for egg and larval development.
- Time the use of dewormers to match these environmental conditions which will control the spread of infective larvae and eggs from horse to horse.

It is impossible to eradicate all parasites from an individual nor is that even desired. In recent years, parasites that are resistant to dewormers have been increasingly identified in horses.

It is now considered imperative that a certain amount of refugia, or untreated parasites not exposed to anthelmintics remain in the environment.

## Anthelmintic Resistance

Anthelmintic (drugs which kill parasites) resistance issues are seen internationally among the common parasites that infect horses. With no new drugs on the near horizon, we should take a hard look at responsible use of our current anthelmintics and our current management practices.

It has been known for some time that ascarids and cyathostome (small strongyles) populations have developed resistance to some drug classes, including benzimidazoles and the tetrahydropyrimidines or pyrantel salts, which include pyrantel pamoates and pyrantel tartrate.

The other major drug classes of dewormers are the macrocyclic lactones or avermectins/milbemycins. Many horse owners would know these more commonly as the ivermectin or moxidectrin. These dewormers have been extremely popular to use because of the broad spectrum of parasites, which they eliminate. Compared to benzimidazoles and tetrahydropy-

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rimidines which kill large and small strongyles, ascarids and pinworms; the macrocyclic lactones also eliminate bots and stomach worms and moxidectrin also eliminates several of the larval stages of small strongyles. However, because of their broader range of efficacy, this has led many individuals to rely almost exclusively on these drugs in their management plan. There is a growing body of evidence that suggests that resistance issues to these drugs have begun to develop.

So why is resistance a growing issue? Misguided attempts to keep horses completely parasite free has led to the overuse of anthelmintics. As discussed already, many individuals have also relied exclusively on one type of dewormer. Eventually, as is typical in nature, organisms adapt to their environment to be more successful and to pass on their genetic code to future generations. Once the worms adapt, or a few individuals survive a purge deworming, they are able to pass on these enhanced genetics to a future generation of worms, which will have that advantage of being immune to that drug. If they are never exposed to a different type of dewormer, essentially the horse owner is just developing a breeding program for resistant worms.

One strategy to adopt when thinking about "breeding" worms is to increase the number of refugia, or the population of worms which have not been exposed to dewormers. These non-exposed worms actually help to dilute out the population of resistant worms, and allow them to breed and pass on their genetics. Sources of refugia can include parasites residing in untreated horses, as well as free living larvae, and encysted cyathostome larvae in the gut wall of the horse.

To this end, many veterinarians now recommend that a fecal exam is performed on a horse prior to choosing to deworm much like we do with dogs and cats. Therefore, horses, which have low egg counts, would not be unnecessarily dewormed. We treat only those horses with a significant worm burden. For example, a target concentration of 200 eggs per gram can be used. This lowers the usage of anthelmintics and targets their use only in individuals that demonstrate need.

## Parasite Control

Many variables affect the selection of a specific parasite prevention and control programs. For example, type of environment in which the horse lives (climate), age of the horse, stocking rate, amount of time spent at pasture and land type all influence choices in parasite control.

Management choices regarding pasture rotation, cross-grazing and manure removal can also impact decisions regarding a parasite control program.

Internal parasite prevention programs can be divided into two basic areas— environmental control and chemical treatment.

## **Environmental Control of Equine Parasites**

Management programs that interrupt the life cycle of the parasite before infestation occurs are the key to successful control without an over-reliance on chemicals. Prevention of contamination of the environment with infective stages of parasites when environmental conditions are ripe for egg and larval development and survival is critical. Eggs hatch and develop into infective larvae under conditions of moderate temperature and moisture. Dry periods or droughts actually aid in cyathostomin control. Conversely, wet years with heavy rainfall will aid in their dispersal and increase the larval burdens on the pasture.

Obviously the larger the area in which horses are kept, the less likely they are forced to graze near infective piles of horse manure. This will decrease their chances of picking up larvae. Horses in confinement graze pastures in patterns of roughs and lawns, cropping some areas of grass short to the ground, while leaving other areas quite long. Typically, horses defecate in these “rough” areas. Worm larvae will tend to be located in the thicker grass areas of the pasture and down in the thatch layer, where moisture remains longer. The highest potential for infection will occur if your horse crops the grass close to the ground. As stocking density of the pasture increases, or vegetative growth decreases, such as in times of drought, the horses will be forced to eat nearer these thick areas of grass teeming with larvae. If the grass becomes too short, supplemental hay should be provided to avoid forcing the horse to graze in the roughs.

Many people employ harrowing or dragging the pasture to break up manure piles and spread them through the pasture to prevent the formation of roughs and increase the grazing areas available for the herd. However, this strategy effectively disperses the eggs and larvae far more thoroughly than they could ever do themselves. Even on their own, larvae can spread 4 to 12 inches from their original fecal pile — even further if aided by heavy rainfall. Therefore, horses should be kept off the pasture for at least two weeks following harrowing and the dragging should be done in the hottest part of the year to expose the larvae to heat and dehydration. Cool temperatures allow the larvae to survive longer, so it is not advised to harrow during the spring and fall. If you must drag in cooler weather, prevent the horses from grazing for an even longer period of time. As strongyles larvae are especially hardy and can survive winter quite easily, this is really not a good strategy for trying to kill the larvae.

Finally, if you are spreading manure on pastures as a means of disposal or fertilization, never spread fresh manure. Make sure it has been thoroughly composted before applying it to pasture. Properly composted manure will destroy both fly larvae and parasite eggs and larvae. See Extension Fact Sheet BAE-1729 for information on effective composting.

Alternative grazing with ruminants and pasture rotation schemes will aid in disrupting the parasite life cycle. Grazing

ruminants in rotation with horses will reduce parasites in the horses. Equine parasites ingested by cattle will not complete their life cycle. Conversely, cattle parasites ingested by horses will also die, since most internal parasites are host specific. Pasture rotation may also help by decreasing incidence of overgrazing, thus decreasing ingestion of parasites. Obviously all of these strategies require a significant amount of acreage and fencing to be effective and may not work for everyone. Alternatively, if enough acreage is owned, grazing can be rotated with hay production to recover the forage not been grazed.

Vacuuming or collecting fecal material in the pasture is expensive, but it can be very effective. It should be done twice weekly for effective control.

Grouping horses in pastures according to age will help minimize young horses coming in contact with roundworms and heavy larval infestations. For example, pasture mares and foals away from other horses less than two years of age. Yearling horses often need a different control program than a broodmare. It can be more difficult to control parasites in a herd if all ages and classes of horses are in a pasture together. Be sure to isolate all new arrivals and have your veterinarian perform a fecal egg count on them.

When feeding horses, always provide hay feeders and feed bunks. Feeding horses on the ground instead of containers increases the risk of becoming infested with parasites. All feeders, buckets and water troughs should be routinely cleaned to help prevent fecal contamination of feed or water. While horses housed on pasture have the greatest risk of infestation due to the parasites life cycle, sanitation in the stall areas is essential.

## **Chemical Treatment**

An essential component of a parasite control program is a fecal egg count, which is microscopically evaluating fecal sample from your horse(s) for parasite eggs. Parasite fecal egg counts are useful to establish the shedding status of a horse. Provide your veterinarian with a fresh sample (take several samples from a manure pile and mix for best results) in a plastic baggie with as much of the air removed as possible before sealing the baggie. Maintain the sample in a refrigerator until delivered to veterinarian. All horses should be sampled because horses differ in their susceptibility to infection and level of shedding of parasite eggs.

Your veterinarian will advise the correct chemical dewormer or anthelmintic and the ideal scheduling for treatment. There are several commercial chemical dewormers currently on the market to remove internal parasites from horses and most are broad spectrum (labeled as effective against most parasites). It is important to concentrate drug treatments when the local climate favors parasite transmission. The treatments should be timed to kill adult worms before they pass large numbers of eggs into a fertile environment for development. Ideally, samples will be evaluated before and after deworming to be sure the chemical treatment is effective and resistant worms are not present.

Chemical dewormers are available in different physical forms, administered as feed additives, oral paste or stomach tube and are sold under several trade names. These chemical compounds are effective by all routes given, if an appropriate dose is administered based on the horse's weight. Many times

owners under-estimate the true weight of their horse therefore, use weight tapes or scales to determine body weights. Be sure the horse consumes the entire dose. One easy tip for owners is to make sure there is no feed present in the oral cavity of the horse. Flush the horse's mouth with water to remove feed prior to administering oral paste dewormers.

## **Overview of Parasite Prevention and Control Practices**

### **Suggested Practices:**

1. Regular rotation of pastures. Small pastures from one to ten acres can be divided into smaller areas, so horses can be rotated. This will help lower the worm burden, as well as give forage a chance to recover.
2. If possible, pasture cattle, sheep or goats behind the horse(s). These species will consume the infective larvae of the horses' parasites. These larvae will not complete their life cycle.

3. Clean stalls on a regular basis and compost manure.
4. Feed horses grain and hay from some type of rack or trough. This includes pastured horses.
5. Avoid overstocking pasture(s) as this prevents overgrazing and reduces risk of exposure to infective parasite larva and eggs.
6. Grouping horses in pastures according to age will help minimize young horses' exposure to ascarids (roundworms) and other parasites.
7. Have your veterinarian set up a deworming program to control internal parasites in your horse(s) and perform fecal egg counts to evaluate the effectiveness of the parasite control program.
8. Always refer to and follow the label instructions of a dewormer when administering it to a horse.
9. Deworm horses based on weight.
10. Harrowing pastures (dragging) is only recommended during extremely hot, dry conditions and when horses can be removed from the pasture for a minimum of two weeks.

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