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## Internal Parasites: Strategies for Effective Parasite Control

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*A Bayer Animal Health Brochure*

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Internal parasites, or worms, are silent thieves and killers. They can cause extensive internal damage without you even realizing your animals are heavily infected. The effects of internal parasites on a horse range from a dull haircoat and unthriftiness to colic and death. Internal parasites lower the horse's resistance to infection, rob the horse of valuable nutrients, and in some cases, cause permanent damage to the internal organs.

In terms of management priorities, establishing an effective parasite control program is probably second only to supplying the horse with clean, plentiful water and high-quality feed. It's that important!

### **TYPES OF INTERNAL PARASITES**

There are more than 150 species of internal parasites that can infect horses. The most common and troublesome are the following:

- Large strongyles (bloodworms or redworms)
- Small strongyles
- Roundworms (ascarids)
- Tapeworms
- Lungworms
- Pinworms
- Bots
- Threadworms

Probably the most important, in terms of health risk, are the first four: large and small strongyles, roundworms and tapeworms.

The lifecycle of most internal parasites involves eggs, larvae (immature worms), and adults (mature worms). Eggs or larvae are deposited onto the ground in the manure of an infected horse. They are swallowed while the horse is grazing, and the larvae mature into adults within the horse's digestive tract (stomach or intestines). With some species of parasite, the larvae migrate out of the intestine, into other tissues or organs, before returning to the intestine and maturing into egg-laying adults.

### **Large Strongyles**

Large strongyles, as larvae, penetrate the lining of the bowel and migrate along the blood vessels that supply the intestines. Even small numbers of these larvae can cause extensive damage and possibly death.

Infection with large strongyles can cause unthriftiness, weight loss, poor growth in young

horses, anemia (low numbers of red blood cells) and colic. In most cases, colic caused by these parasites is relatively mild, but severe infections can result in loss of blood supply to a portion of the intestine, leading to severe and potentially fatal colic. Fortunately, large strongyles can be effectively controlled by most available dewormers for horses.

### **Small Strongyles**

Small strongyles have become a group of major importance. Unlike the large strongyles, small strongyle larvae do not penetrate the intestinal wall or migrate through the tissues. Instead, they burrow into the lining of the intestine and remain dormant, or "encysted" (enclosed in a cyst-like structure), for several months before completing their life cycle. During this time, the larvae are resistant to most dewormers.

Small strongyle larvae can cause severe damage to the lining of the intestine, especially when large numbers of larvae emerge from the encysted stage all at once. Adult small strongyle females are very prolific and their eggs comprise over 95 percent of those found in fecal egg counts of horses. Colic and diarrhea are common in heavily infected horses. These parasites also cause weight loss, slowed growth in young horses, poor coat condition and lethargy or lack of energy. While lighter infections are not obvious, it is common for a horse's general health and performance to improve after treatment for these parasites.

The early and late larval stages (before and after they burrow into the lining of the intestine) and the adult parasites are susceptible to several dewormers. But currently there are only two types of dewormer that are effective against the encysted larval stage—the stage that causes the most damage. Strategic use of these products is called larvicidal therapy, as it is targeted at the encysted larvae. Ask your veterinarian which products are currently most effective.

### **Roundworms**

Roundworms, or ascarids, are most often a problem in young horses (especially foals, weanlings and yearlings). Adult roundworms are several inches long and almost the width of a pencil; in large numbers they can cause blockage (or impaction) of the intestine. In addition, roundworm larvae migrate through the internal organs until they reach the lungs. They are then coughed up and swallowed back into the digestive tract to complete their life cycle. Large infections can lead to damage to the liver or lungs due to migration of these larval forms. Expectant mares should be dewormed 30 days before foaling and/or at foaling to reduce the new foal's exposure to these parasites.

Roundworm infection in young horses can cause coughing, poor body condition and growth, rough coat, pot belly and colic. Colic is most likely in older foals (over 3 months of age) that are heavily parasitized with roundworms when dewormed for the first time. By this stage, the roundworms can have matured into adults that could cause an impaction. In this situation, it is a good idea to have your veterinarian deworm the foal or recommend a deworming plan for the foal. Resistance to many of the dewormers has become a big problem in controlling ascarid infections in foals over the past 8 years.

### **Tapeworms**

Until recently, tapeworms weren't considered to be a significant problem in horses. We now know that tapeworms can cause colic, ranging from mild cramping to severe colic that requires surgical treatment. The tapeworm life cycle involves a tiny pasture mite as an intermediate host, and horses are at a risk of developing tapeworm infection when they eat this mite in the grass, hay or grain.

Until recently, no equine dewormer was approved for use against tapeworms. Praziquantel has been demonstrated to be highly effective against tapeworms. Several pharmaceutical companies have developed combination products that offer a complete antiparasitic spectrum of activity. Horses should be dewormed for tapeworms annually. Consult your veterinarian for advice on the best product to use for your situation.

### **Other Internal Parasites**

Lungworms cause chronic coughing in horses, ponies, and mules. Donkeys are the natural host of this parasite, so typically they don't show any obvious signs of infection.

Pinworms lay their eggs on the skin around the horse's anus. The irritation they cause makes the horse repeatedly rub its tail.

Threadworms are mostly a problem in young foals, in which they can cause diarrhea. Bots don't usually cause major health problems, although they can damage the lining of the stomach where they attach. Since ivermectin has become such an easy deworming medication to obtain, bots are rarely found in properly dewormed horses. They may also cause small areas of ulceration in the mouth, where the larvae burrow into the tissues for a time after the eggs are taken into the mouth.

### **SIGNS OF PARASITISM**

Contrary to popular belief, horses can have potentially dangerous numbers of internal parasites while still appearing to be relatively healthy. But in some individuals, especially young horses, parasites can take a visible toll. Common signs of parasitism include the following:

- Dull, rough haircoat
- Lethargy (decreased energy) or depression
- Decreased stamina
- Unthriftiness or loss of condition
- Slowed growth in young horses
- Pot belly (especially in young horses)
- Colic
- Diarrhea

### **FECAL EGG COUNTS**

One of the most useful tools in a parasite control program is the fecal egg count—microscopic examination of fresh manure for parasite eggs. This simple test allows the veterinarian to determine which parasites are present and whether the infection is light, moderate, or heavy. This information is important in developing a deworming program for your horse or farm, and in monitoring the effectiveness of the program.

Fecal egg count involves collecting two or three fresh manure balls from the horse to be tested and sending the manure sample to a veterinary laboratory. Results are expressed as eggs per gram (epg) of manure. A fecal egg count of less than 200 epg suggests a light parasite load. Horses with high fecal egg counts of 500-1000 epg suggest the interval between deworming is too long.

It is important to note that a negative fecal examination does not mean the horse is free of internal parasites. Some types of parasites produce eggs only intermittently. Larvae do not

produce eggs at all, and may be present in large numbers in a horse with a fecal egg count of zero. And tapeworm eggs may be missed with routine fecal egg count techniques. The results are most useful when several horses on a farm are tested on the same day. This information gives the veterinarian and farm manager a good idea of the level of parasitism on the property.

## **DEWORMERS**

There are several different dewormers, or anthelmintics, currently available. Most are broad-spectrum, meaning that they are effective against several different types of parasites. It is generally best to use a broad-spectrum dewormer as the basis of your deworming program. If a specific problem is identified, such as tapeworms or encysted small strongyles, a more specific dewormer can be used.

No deworming product is 100 percent effective in ridding every horse of all internal parasites. However, it is not necessary for a product to kill every worm in order to improve the horse's health, minimize the risk of serious disease, improve feed efficiency, and reduce pasture contamination with parasite eggs and larvae.

### **Daily Dewormers**

Daily dewormers can be worthwhile in grazing horses. With these products, a small quantity of dewormer is fed to the horse each day, usually in a small amount of feed. They effectively prevent new infections by larvae picked up during grazing. But they may not resolve existing infections and they do not kill bots, so they should not be relied upon as the sole method of parasite control. Since the use of the level of drug given each day only prevents infection, it is important to remove existing infections with an effective purge dewormer prior to beginning daily treatment.

### **Treatment Interval**

The various deworming compounds each have benefits and weaknesses against different parasites as well as a defined period of time for which they are effective. It is a good idea to have your veterinarian help you determine the best deworming interval for your horse. Fecal egg counts can be very useful in this regard, as well as in evaluating the effectiveness of the product you are using.

### **Methods of Administration**

There are three main ways of administering dewormers:

- Oral paste syringe
- Feed additive (powder, liquid, or pellets)
- Nasogastric (stomach) tube

All three methods are effective, provided the proper dose is given at the right time, and the horse receives the full dose. The dose must be calculated based on the horse's body weight. Weight tapes are an accurate enough way of estimating a horse's body weight for this purpose.

Deworming pastes and feed additives are convenient and easy to administer. However, some horses find them unpalatable and spit them out or refuse to eat them. So be sure that all of the dose you've given is actually consumed by the horse.

Tube deworming is a highly effective means of ensuring that the horse receives the proper dose because the dewormer is delivered directly into the horse's stomach. However, with

the range of dewormers now available, it is seldom necessary for a veterinarian to deworm a horse by this method.

## **DESIGNING A DEWORMING PROGRAM**

There are two basic types of deworming programs:

- Continuous— feeding a daily dewormer year-round or throughout the grazing season
- Strategic— deworming only at certain times of the year or when fecal egg counts rise

Combination programs can also be used. For example, continuous deworming can be supplemented with strategic deworming for bots.

There is no single deworming program that suits all horses and all situations. The ideal program for your horse(s) depends on the type, number and ages of the horses on your farm, pasture management and your geographic location. It is best to have your regular veterinarian help you devise an appropriate deworming program for your horse or farm.

## **Monitoring**

Having your veterinarian perform fecal egg counts to determine the amount of egg shedding that your horse has is important. This information will help ensure that the dewormers that are being used are effective and also help determine the frequency of deworming necessary to keep your horse healthy. The outlay of time and money will be well worth it.

## **A COMPLETE MANAGEMENT PROGRAM**

Chemical control using dewormers is just one part of a complete parasite control plan. As parasites are primarily transferred through manure, good management is essential:

- Keep the number of horses per acre to a minimum to prevent overgrazing and reduce pasture contamination with parasite eggs and larvae
- Pick up and dispose of manure regularly (at least twice a week, even in dirt or sand yards)
- Do not spread manure on fields to be grazed by horses; instead, compost it in a pile away from the pasture
- Mow and harrow pastures periodically to break up manure piles and expose parasite larvae to the elements (larvae can survive freezing, but they cannot tolerate extreme heat and drying for very long)
- Consider rotating pastures by allowing sheep or cattle to graze them, thereby interrupting the life cycles of equine parasites
- Keep foals and weanlings separate from yearlings and older horses to minimize the foals' exposure to ascarids and other parasites
- Use a feeder for hay and grain rather than feeding on the ground
- Remove bot eggs regularly from the horse's haircoat (flea combs work well in some instances)
- Consult your veterinarian to set up an effective deworming program for your horse(s) and monitor its effectiveness.

For more information, contact your veterinarian.

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