

Deworming

BY MARIE ROSENTHAL
ANNE M. EBERHARDT PHOTOS

Owners are often concerned about internal parasites—maybe a little too concerned—and their actions to rid horses of all parasites are leading to the unintended consequences of making some deworming products ineffective.

To get a better handle on controlling equine internal parasites, owners need to understand parasites, their life cycles, and the effects deworming has on a herd. Many oral medicines are available over the counter to treat common parasites, but the problem is they have been over-used, fueling parasite resistance to these compounds.

Some owners believe if they don't deworm all of their horses frequently, then they are not doing everything they can to protect their horses, explains Dr. Debra Collins Ruffin Taylor, an associate profes-

sor at Auburn University's College of Veterinary Medicine, in Alabama.

While their fear of parasites is understandable, she notes, it can prompt an overreaction that is counterproductive. "We don't have any savior drugs in the pipeline," she says, "which makes this a crucial time to be smart and to understand the life cycles and minimize the use of the currently effective products."

Just as it is normal and nonthreatening for bacteria to be on people's healthy skin without causing disease, a horse's immune system can handle some parasites, and the horse does not need to be dewormed every couple of months, experts say.

Dr. Craig R. Reinemeyer, president of East Tennessee Clinical Research Inc., in Rockwood, notes, "Parasites in horses are inevitable. If you have a horse on pasture, you have a horse with parasites."

Understanding the nature of parasites,

and the world they live in, is key to a more reasoned and successful targeted response, he adds.

Basic Life Cycle

Most worms tend to start their lives as eggs, which mature into larvae. The juvenile parasite becomes an adult that lays more eggs, and the life cycle begins again. Once inside the horse's body, whether ingested as an egg or larva, each worm has a different life cycle and migration pattern, but most worms are transmitted by the fecal-oral route. That means that one horse defecates worm eggs or larvae in his manure, and he (or another horse) ingests those eggs or larvae when he grazes on the pasture.

For most worms there are few clinical manifestations that tell the owner the animal is infected, although the horse might be a little less "thrifty" or seem a little malnourished, underweight, or not growing



Strategic treatment deworming reduces pasture contamination

as well as expected because he is sharing his nutrition with the parasites. His hair coat also lacks shine. A serious infection can lead to colic and impactions. But if the horse is receiving good nutrition and is otherwise healthy, you might not be able to detect that he has parasites.

Many owners think a harsh, cold winter will rid the pasture of parasites, but experts say that is not the case. "There is no such thing as a 'killing frost' for most of these parasites," said Dr. Martin K. Nielsen, assistant professor in the Department of Large Animal Sciences at Denmark's University of Copenhagen. "Some larvae survive longer in cold winters (than hot summers)."

Because parasite eggs and larvae are picked up in the environment, their numbers can be reduced by keeping said environment clean. However, it is impossible to eliminate all of them.

Regardless, it is a good idea to avoid overgrazing and to clean up manure. Horses have two areas in the pasture: kitchen (the lawn) and toilet (the rough). Roughts have 15 times the number of parasites than lawns.

"You can look at the horse pasture and decide whether it is being overgrazed," said Taylor. "If we overcrowd them and force them to eat across their roughs, they will be picking up 15 times more parasites than if they ate on the lawn."

Pasture hygiene is very important, agreed Nielsen. "If you pick up manure on a weekly basis during the grazing season, it will be extremely effective. Nowadays you can buy machines to vacuum clean the pastures.

"Other strategies include mixed or alternative grazing with ruminants (sheep or cattle), or moving the horses to clean pastures in midsummer," he added. "Plowing and reseeding pastures is also a very efficient way to control parasites. But the most important thing is to keep stocking rates low and prevent overgrazing."

Ascarids

One of the first parasites a horse encounters in his life is the large roundworm called the ascarid (*Parascaris equorum*), which typically infects young foals. Ascarids are the largest of the common parasites and can grow to be 15 inches long. When the weather is mild, between 45°F and 90°F, the larvae inside the eggs in the horse's environment start to develop. They stay inside the eggs until a horse ingests the eggs, and the eggs can remain viable and infectious in the environment for up to 10 years. Ascarid eggs are one of the few parasite egg types that can be found anywhere in the environment, not just on the pasture, because they are coated with a sticky protein that enables them to adhere

to all types of surfaces, such as the barn wall, buckets, troughs, etc. They can even be on the mare's udder if she lies down on the dirt. When the foal nurses, eats hay, or rubs his nose against a fence post, he can become infected.

"The foals pick them up while investigating their environments," Reinemeyer explained. "They are just everywhere in the foal's environment, and you know a foal has his mouth on everything. They can constantly infect themselves from anything in the environment."

Once the eggs are ingested, they hatch in the small intestine, where the larvae pen-

etrate the gut tissue and migrate through the body in the bloodstream. They travel through the liver to the lungs, where they are coughed up and swallowed before traveling to the intestine. There they grow to be adults and lay eggs. The complete cycle from ingested egg to adult takes about 2½ months.

For the most part, the owner is not likely to pick up on the fact that the foal is infected, although there might be some respiratory signs when the immature worms are in the lungs; the foal might cough a bit or have a runny nose.

Colic and impactions can occur, how-





HORSEMEN'S LABORATORY

Does Your Horse Really Have Worms?

Have your horse tested to find out.
Avoid needless deworming.

Visit our web site or call toll free to order your fecal test kit. You will receive:

- Test kit containing fecal container, mini spoon, plastic bag, instructions, and prepaid self-addressed envelope
- Test results via e-mail and U.S. Postal mail
- E-mail reminder when it's time to retest

Dedicated to effective worm control

www.horsemenslab.com • 1-800-544-0599

Dandy Products, Inc.

Padding & Flooring Specialists



"Padding At Its Best"

Breeding Sheds, Stocks, Stalls, Trailers, Exercise & Training Areas,
Induction & Recovery Rooms Table & Surgical Pads, Neo-Natal Foal Beds

Non-Slip Safety Floors for All Areas

Pavesafe Bricks & Tiles, Trac-Roll & Vet-Trac Floors, Wash Stall, Grooming, Aisleway and Trailer Mats

Toll-Free 888-883-8386 • 513-625-3000 • FAX 513-625-2600
3314 State Route 131, Goshen, Ohio 45122 • www.dandyproducts.net

Horsemen's Laboratory

Horsemen's Laboratory provides a quick, convenient, cost-effective way for you to have a fecal egg count performed on your horse's stool sample. Testing kits containing fecal container, mini spoon, plastic bag, instructions, and prepaid self-addressed envelope can be ordered online or by phone. You will receive test results as an e-mail PDF followed by postal mail copy and receive an e-mail reminder when it's time to retest.

Our Clients Recommend Us

Clients often comment on the convenience and speed of the service.

- My first time using Horsemen's Lab and it could not be easier! Unbelievably fast turnaround time (five days), results sent by e-mail... Highly recommended. —Leslie, Millerton, N.Y.
- Great service. Quick and easy to follow instructions in the kit. Fast response! Website easy to navigate. Nice to see that there are also educational articles here on worming in general. —Debby, Yorkville, Ill.

About Horsemen's Laboratory

Dr. John Byrd created Horsemen's Laboratory in 1992 so that horse owners could easily monitor parasites in their horses, evaluate the effectiveness of their worm control programs, and make informed decisions about deworming their horses. Dr. Byrd has extensive experience with racing and breeding horses and maintains Westbrook Boarding Stable. Spouse Becky Byrd serves as office manager, answering your calls and managing daily operations.

For More Information

Visit www.horsemenslab.com to order your kit, and to learn more about Horsemen's Laboratory, parasites, and evaluating your worm control program. Contact Dr. John Byrd with test result or parasite-related questions:

- e-mail hlab@horsemenslab.com
- telephone 1-800-544-0599
- contact form at www.horsemenslab.com

ever. "There is one very severe syndrome that can result from ascarids," Reinemeyer said. "Because they are very large, if they are present in large numbers and you deworm the foal, they can get tangled up and obstruct the bowel. Ascarid impactions require

immediate veterinary attention, and some of these foals will require surgery to alleviate the blockage.

"Sanitation is helpful, but not absolute," Reinemeyer added. "If you keep a really scrupulously clean environment, you can reduce the number of parasites, but it is almost impossible to avoid them all."

In addition to practicing good general pasture hygiene, which is a strategy useful for reducing loads of the aforementioned parasites, never spread foal manure on pasture to fertilize it, and feed foals out of hay feeders instead of off the ground. Taylor says you can scrub the stable walls to remove some of the eggs, and some owners wash the mares' udders, although she's not sure that is worth the effort.

The dewormers used against ascarids are not effective against early stages of the parasite; they only kill adults. Therefore, experts say, it is important to wait before deworming the foal.

"We are now recommending that foals never be treated for these worms earlier than about 60-70 days of age," Reinemeyer said. "We think resistance emerged because of the tendency of some operations to treat these foals way too young. But if you wait until the worm becomes an adult, you will get much better efficacy."

Although ascarids typically infect young horses, there have been some recent reports of ascarid detection in older horses, but no one knows why this is occurring.

Strongyles: Big and Small

All internal nematodes live in the large intestine as adults. The eggs of large and small strongyles are indistinguishable from one another. "So I can look at a fecal sample of a horse and I can say this horse has strongyles, but I cannot tell you if that egg came from a large or a small strongyle," Reinemeyer said.

The eggs are passed in the manure, but until the parasites hatch, they cannot infect your horse. "You can feed 1 million strongyle eggs to a horse and it would never get a single worm because it is not at the right stage," he said.

Hatching is regulated by climate and temperature. Eggs need moderate temperatures (45°F to 85°F) to hatch and develop to the infective stage. Once infective, however, they persist longer under cold temperatures.



GENUINE RUBBER for stalls, alleyways, trailers, grooming areas and wash racks

Deluxe "Soft Stall" Mats make horse sense



Mats lay flat without curling and resisting shifting. Install over any surface. Sure-traction surface for natural footing. Cut bedding and disposal costs to 75%. Made in USA.

IN-STOCK FOR IMMEDIATE DELIVERY:

10' x 10', 10' x 12', 12' x 12', 12' x 14' and 12' x 16'.

NO CHARGE for custom trimming.

NEW PRODUCTS! One source for your horse!

- I-Block PAVERS - Perforated RING MATS - ARENA RUBBER



Linear Rubber Products, Inc.

Factory-Direct Pricing! Low Shipping Costs!

1-800-558-4040 www.rubbermats.com

“The immature larvae can survive for months on pasture under ice and snow,” Taylor said. “When the right temperature occurs in the spring, they become infective.”

Strongyles are transmitted almost exclusively on pasture. The large strongyle used to be the worm most destructive to horses in the United States, but recommendations to control them implemented in the 1960s have pretty well done the trick, and they are now less of a threat in the United States, according to Taylor.

“Some people believe that the current methods that we use to deworm horses may eliminate large strongyles in some populations of horses on some horse farms,” Taylor said.

The life cycle of small strongyles (cyathostomes) is similar to that of large strongyles, except that the larvae do not migrate outside the intestine. They burrow into the wall of the large colon instead.

The victorious campaign against large strongyles was a double-edged sword, however. Of all the worms parasitologists worry about most, it is the small strongyles that are No. 1. This is because the deworming measures used to control large strongyles have overexposed small strongyles to dewormers, and now they have become resistant to many different types of these compounds.

Pinworms

Pinworms are more of a nuisance than anything else, say our experts. They live in the large intestine near the anus because the female parasite has a different reproductive behavior than other worms. Instead of laying eggs that are passed into the environment in the manure, female pinworms leave the gut and lay the



Egg count is done by fecal testing conducted in a lab setting

Antiparasitic Compounds for Major Internal Parasites

(Commercially available as of March 2010)

Class	Generic Name	Large Strongyles	Small Strongyles	Ascarids	Pinworms	Bots	Tapeworms
Avermectins	Ivermectin	X	X	X	X	X	0
	Ivermectin plus*	X	X	X	X	X	X
	Moxidectin	X	X	X	X	X	0
	Moxidectin plus*	X	X	X	X	X	X
Benzimidazoles	Fenbendazole	X	X	X	X	0	0
	Oxibendazole	X	X	X	X	0	0
Piperazines	Piperazine	0	X	X	X	0	0
Pyrimidines	Pyrantel**	X	X	X	X	0	X

eggs on the skin of the anus.

“This is very irritating to the horse because it causes pruritus (itchiness),” said Reinemeyer. “The horses rub their butts and tails on the walls, on the fence post, trees, or stalls, and the hair starts to break off. In a show horse, this is not desirable. They get pretty ratty-looking tails.”

As horses rub their butts and tails on the inanimate objects, the eggs are deposited in the environment and wait for the next horse to lick the object and ingest the egg.

QUILLIN
Leather & Tack

- Track Halters \$58.95
- Black Track Halters \$62.95
- Race Track Shank \$39.95
- Black Track Shank \$39.95

Our New Black Line Features Stainless Steel Hardware And Nickel Over Brass Name Plates.

Call Or Drop By Our Expanded Shop
Visit & Order OnLine At Quillin.com
Kentucky's Largest Custom Shop ... We Ship World Wide

1929 South Main Street • Paris, Kentucky • 40361
(800) 729-0592 • Fax (859) 987-0730 • www.Quillin.Com



The goal of deworming is to minimize the risk of future infections by reducing the number of infective stages in the environment

Before you treat the horse for pinworms, remember that other conditions cause hair loss and/or itchiness. These include alopecia, lice, and mange. "It is kind of a Catch-22," said Reinemeyer. "Pinworms are the most common cause of anal pruritus, but they are not the only one. It is a common assumption of horse owners—and some veterinarians—that persistent tail rubbing after deworming is a reliable indication that the dewormer has failed. But if you deworm the horse and it fails to cure the itchiness, maybe the horse does not have a pinworm problem."

Although most owners consider pinworms a problem with younger horses, there are reports of pinworms in older horses, too, he adds. "We see them routinely now in adults and geriatric horses, and that was not the case 20 years ago," said Reinemeyer. "This is probably due to frequent deworming. They are changing their biology in response to the dewormers. They are changing the game plan."

Tapeworms

The tapeworm is different from other equine internal parasites. First, females don't lay eggs. Instead, segments containing eggs break off from the tapeworm and are passed in the manure.

Second, tapeworms have an indirect life cycle. Before they can be infective to a horse, they must live in an indirect host. The horse passes eggs in the manure, and oribatid (forage) mites that live on the pasture ingest these eggs. The tapeworm eggs hatch and develop into larvae that are infective to the horse. While the horse is grazing, he eats mites containing the infective larvae. The larvae are released upon the horse's ingestion of the mites and they travel to the gut and live in the ileocecal valve, where the large and small intestines meet. They begin shedding segments full of eggs around six to 10 weeks later.

There are three species of tapeworms—*Anoplocephala perfoliata*, *Anoplocephala magna*, and *Paranoplocephala mamillan*—that can be found as adults in horses.

"Virtually all horses are exposed to tapeworms at some time in their lives," said Reinemeyer. "We are not sure if they will develop immunity, but roughly 50% of all horses will have antibodies in their blood, which indicates that they were infected at one time."

Recent studies suggest that tapeworms might be a risk factor for certain untoward conditions. "They cause colic (spasmodic, specifically) and impactions of the ileum, which is the last part of the small intestine, as well as causing a telescoping of the small intestine into the large intestine," Taylor said. "This can be pretty nasty and requires surgery to correct."

Bots

Bots are internal parasites, but they are not worms. They are the larval stage of a fly, explains Reinemeyer. About the size of a honeybee, these hairy brown flies dart around the horse and glue their tiny eggs to the hairs of the horse's legs, mane, and flanks. One botfly, *Gasterophilus nasalis*, attaches eggs to hairs in the horse's throat area.

The horse licks and ingests the eggs; this licking and chewing likely is what causes the eggs to hatch. The larvae spend a short time—about three weeks—in the lips, gums, or tongue before migrating and attaching to the lining of the stomach or small intestine.

Bot larvae spend the winter in the host and live in the gut for about seven months before being passed into the environment in manure. The larvae enter the soil, where they pupate and emerge as adults (flies) to lay eggs.

Take-Home Message

Better pasture and paddock management will only decrease the parasitic load; it won't eliminate it. Therefore, owners need to use dewormers. But that use should be judicious, our experts say. (Read the article on page 33 for in-depth information about parasite resistance and control.)

Taylor says your veterinarian can help you tailor a treatment plan to the needs of your horse and his environment.

On any farm about 20% of the horses shed 80% of the parasites. If you can identify these shedders, you can design your farm's deworming schedule accordingly. Instead of deworming every horse every couple of months, you can deworm the horses that shed the most eggs. This strategy will not only save the efficacy of the precious drugs, they will save you time and money in the long run.

"Horses do not have to be completely parasite-free to be healthy," Taylor reminded us. "Their immune system can handle a small parasite load." 🐾



Visit our website at
www.thepondlady.com

Lake & Pond Management

859-278-POND (7663)

Working full time on lake management ...
So you don't have to



Lynn
Rushing

Weed Control ~ Algae Control ~ Ultra Sonic Algae Control

Products & Services Offered:

- Lake Studies & Consultations
- Fountains & Aeration Systems
- Monthly or Bimonthly Caretending Visits
- Goose Control
- Flower Islands
- Aeration Windmills

For Healthy Lakes & Ponds

- Aeration Controls
- Fish Kills
- Foul Odors
- Unsightly Algae
- Muck Accumulation
- Mosquito & Midge Fly



Licensed by the Department of Agriculture as an aquatic applicator, Lynn Rushing is a member of the North American Lake Management Society (NALMS) and the Midwest Aquatic Plant Management Society (MAPMS).