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Internal Parasite Control for Horses in Central Florida

There have been (and still are) many different programs for internal parasites of horses. They vary from low dosages of antiparasitics (wormers or de-wormers) to no use of chemical de-wormers. The goal is not to eliminate parasites, but to control them. Internal parasites can lead to: weight gain failure and weight loss; colic; diarrhea; and death. Heavy worm infestation can result in weakening of the immune system, loss of nutrients, and organ damage.

There are over 150 species of worms that can affect the horse. The most common are:

- Small Strongyles
- Large Strongyles
- Ascarids (roundworms)
- Tapeworms
- Bots
- Pinworms
- Lungworms
- Threadworms.

Small Strongyles/Cyathostomes are seasonally transmitted during the winter in Florida. Small Strongyles are the internal parasite of highest concern with counts of more than 100,000 worms/horse, they are transmitted in Florida from November through April. They have a short life cycle (4-6 weeks) and are resistant to many de-wormers.

Roundworms (Ascarids) are a concern for year round infection.

Resistance is when a greater frequency of individuals in a population can tolerate doses of a compound than in a normal population of the same species. This is of concern because resistance may be inherited and susceptible worms die leaving only those resistant individuals to reproduce,

Another group of parasites of concern are refugia. These are the parasites that have not been exposed to the drug at the time of treatment. They may include eggs and larvae on pasture forage, certain stages in treated horses (depending on drug/dose), and those in untreated horses. Refugia are critical to limit resistance; they provide a pool of sensitive parasites.

In a study examining resistance of Small Strongyles to four commonly used de-wormers, 'Resistant Small Strongyles on SE horse Farms' (Kaplan et al, 2004), 1274 horses from 44 large farms in GA, SC, FL, KY and LA were tested. The percent of farms in the study found to harbor resistant worms were as follows:

- -97.7% for fenbendazole
- -0% for ivermectin

- -53.5% for oxbendazole
- -40.5% for pyrantelpamoate

Large Strongyles can migrate into large mesenteric blood vessels causing colic. Historically this worm has been the most deadly worms affecting horses but is less significant now as a result of the treatment with ivermectin or moxidectin at least 2 times per year.

Ascarids (Roundworms) cause impaction and colic in foals. Adult horses develop immunity. Their eggs can live for years in contaminated soil.

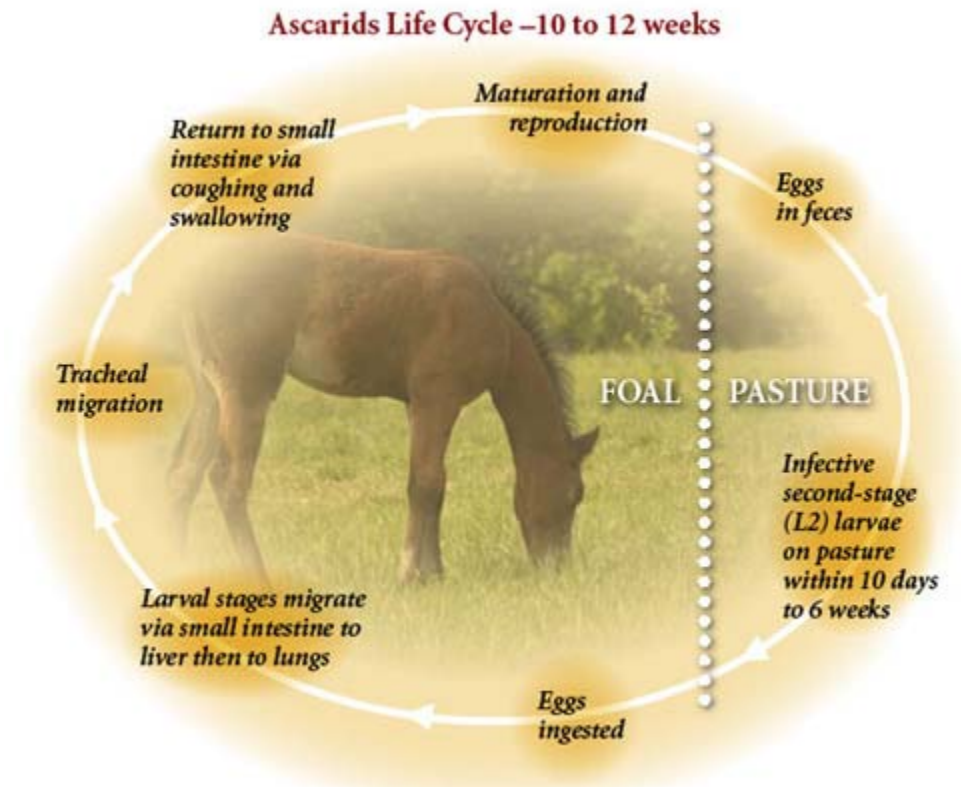


Image: <http://www.foalcare.com/foal/deworming.aspx>

Studies have shown 82% of horses have tapeworms. Young and older horses are most susceptible. Tapeworms are difficult to detect on fecal exam. De-worm with product containing praziquantel (Quest Plus®, Equimax®, ZimectrinGold®) or double dose of StrongidT®.

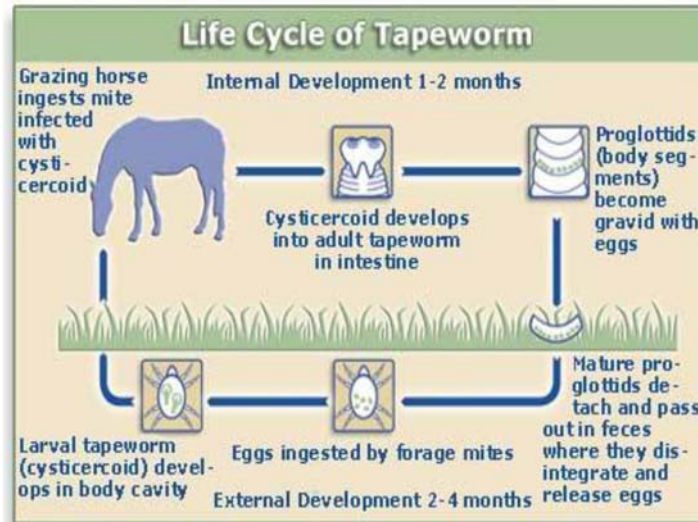


Image: <http://www.thehorse.com/images/content/tapewormlifecycle.jpg>

Bots are flying insects that lay eggs on the horses' leg hairs. Horses inadvertently swallow eggs when licking their hair and larvae hatch and attach in the stomach. Ivermectin/moxidectin kill bots.

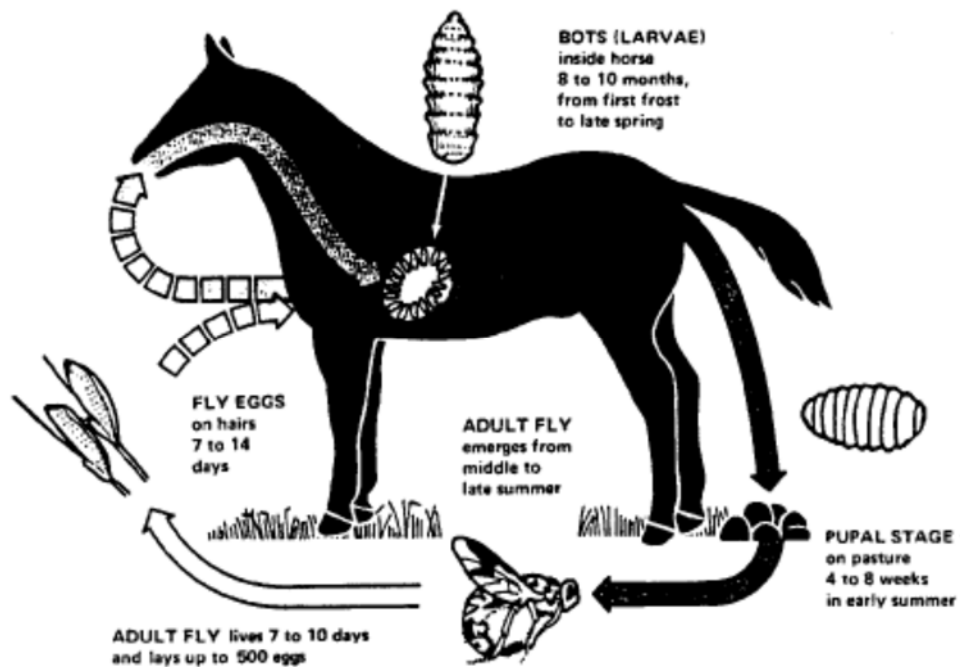


Image: <http://www.ag.ndsu.edu/pubs/ansci/horse/eb55-18.gif>

Pinworms (*Oxyuris equi*) live in the cecum, colon, and rectum. Tail rubbing is a common sign of Pinworms. Threadworms (*Strongyloides*) affect young foals. They are transmitted contaminated milk. May cause diarrhea in young foals before the rapidly developing immunity is able to protect them.

Diagnosis of Internal Parasites

Fecal Egg Counts (FEC) reported as Eggs per Gram (EPG) are recommended. Although FEC do NOT correlate directly with actual intestinal worm infestation, they do indicate how much a horse is contaminating the environment. 20% of the horses shed 80% of the worm eggs! Negative FEC does not always mean no parasites are present. Fecal Egg Counts (FEC) are performed by collecting two to three fresh fecal balls. Place samples in a plastic (Ziploc®) bag and keep them refrigerated (do not freeze). Submit samples within 24 hours to your veterinarian or testing lab. Some horses have greater immunity against parasites, while others are high shedders of eggs throughout their lifetime. Use fecal egg counts (FEC) to identify these high shedders. Perform FEC on all members of the herd 10-12 weeks after their last deworming:

- High counts = > 500 EPG
- Moderate counts = 200-500 EPG
- Low counts = < 200 EPG

The Fecal Egg Count Reduction Test (FECRT) measures response to a de-wormer. The FEC is administered 14 days after de-worming. If parasites are sensitive to the de-wormer they should be reduced more than 90%. This test should be repeated on several horses on the same farm where possible.

De-wormers work by starving the worms or paralyzing them. No de-wormer is 100% effective. The recommendation is to use a broad spectrum product as basis for control (ivermectin, moxidectin). Be sure to treat for tapeworms one to two times per year using a double dose Strongid® or praziquantel.

The following de-wormers are currently available:

- Avermectins(cause flaccid paralysis, cannot eat/swallow)
 - Ivermectin(Eqvalan®, Zimectrin®, Equimectrin®)
 - Moxidectin(Quest®)
- Tetrahydropyrimidines(cause rigid paralysis of worm)
 - Pyrantel(Strongid®, Rotation 2®)
- Benzimidazoles(interfere with energy metabolism)
 - Fenbendazole(Panacur®, Safeguard®)
 - Oxibendazole(Anthelcide®)
- Praziquantel(disrupt the integument of worm)

The recommended internal parasite control program schedule for adult horses in Florida is as follows:

- **Oct 1** - Perform FEC on ALL horses. Treat all horses with Ivermectin or moxidectin(+praziquantel)

- **Dec 1** - Treat horses that were treated with ivermectin in October with oxibendazole and/or pyrantel. All horses with FEC > 500 epg. +/- treat horses with FEC 200-500 epg.
- **Jan 1** - Treat ALL horses regardless of FEC, use ivermectin/praziquantel or moxidectin/praziquantel; perform FEC all horses
- **April 1** - Treat only high shedders if moxidectin was used in January. Treat with oxibendazole, pyrantel, or power pack
- **May-September** - NO TREATMENT necessary. Too hot for transmission of worms.
- Monitoring FEC is critical for this program.

Recommendations for Foals and Yearlings (< 2 yo)

- Treatment based on FEC not recommended
- Minimum of 4 treatments in 1st year, starting at two to three months old (use benzimidazole first)
- Treat again before weaning. Perform FEC to determine if round worms or strongyles are primary
- Treat again at nine months and 12 months
- Perform yearly FECRT to determine efficacy of treatment
- Critical to perform FECRT on all drugs used in foals and monitor egg reappearance
- Administer Ivermectin or moxidectin at least every 6 months for large strongyles
- For roundworms –resistance has been documented to ivermectin/moxidectin
- Start treatment at two to three months old with benzimidazole, pyrantel
- Monitor ERP –may be as short as every four to six weeks and require retreatment
- Larvacidal treatment for small strongyles between six 6 months –2 years in late spring

Strategic Deworming programs present the following:

Pros	Cons
<ul style="list-style-type: none"> • Horses aren't treated unnecessarily • Problem horses are identified and treated • Reduced egg load on pastures • Cost of testing should be recouped in money saved on de-worming products 	<ul style="list-style-type: none"> • Fecal egg counts may cost more than de-wormer • It takes one to two years to determine the shedding status of horse(s) • Testing lab or equipment required • Careful sample handling required

Additional Management Strategies

- Remove manure from pastures regularly
- Feed horses grain and hay from a rack or trough, not from the ground
- Mow pastures to reduce “roughs”
- Harrow pastures to break up fecal piles during the hottest and driest season of the year
- Keep horses off the dragged field for at least a week
- Rotate pastures regularly
- Rotational graze with other species if possible
- Do not overstock pastures
- Remove bot eggs regularly from the horse’s hair coat to prevent ingestion (caution –can infect human eyes)
- For new arrivals, submit a fecal sample and de-worm new horses prior to turning them out to pasture
- Always follow the instructions on the label when administering any anthelmintic
- Dose according to weight
- Make sure the horse receives the full dose

References

eXtensionHorse Quest Community of Practice

http://www.extension.org/pages/Management_and_control_of_internal_parasites_in_horses

The Horse. Deworming Your Horse: Take 2. Webinar (June 7, 2010) available at:

<http://www.thehorse.com/Video.aspx?VID=413>

Kaplan, R. 2009. Florida Equine Institute Proceedings

<http://cflag.ifas.ufl.edu/documents/2009EquineInstit/Kaplan1>.