A new method incorporates fecal egg counts and helps counter rise in resistance.

by Rebecca Brundidge, complements of Summit Equine Nutrition, LLC

Every three months, you find yourself staring at a shelf full of dewormers with more questions than answers. More often than not, you grab for a familiar-sounding wormer such as an ivermectin like Zimectrin®, a fenbendazole like Panacure®, or a moxidectin like Quest®. Although each of these wormers has their own purpose, few know which anthelmintic to use at what time. It turns out, this method of routine worming has inadvertently led to problems with parasite resistance.

Resistance on the Rise

Articles released by the American Association of Equine Practitioners and University of Florida's Large Animal Clinic report startling information about the emergence of resistant parasites. These parasites are essentially able to survive a dose of a dewormer that will typically kill their non-resistant counterpart. Furthermore, resistance is passed on genetically from parent to offspring thus further spreading the new, next generation parasite (Sangster, 1999).

Around 40 years ago, veterinarians recommended regular deworming intervals as a way to control large strongyles—a very prominent parasite that posed serious problems at the time. The regular intervals essentially diminished the population by keeping larvae from growing into harmful adults. Now, after years of this method, the problem has shifted away from the less-prevalent large strongyles and toward other parasites (AAEP).

In 2001, Kaplan, Klei et al. conducted a study to examine resistant parasites in Southern United States and found that small strongyles are creating a new threat to horses. Small strongyles are now showing resistance to fendendazole, oxibendazole, and pyrantel pamoate, which leaves only one deworming drug (avermectin/milbemycin) without resistance. This means that some horses (nearly half of those they tested) only have one drug class left that will kill parasites.

Furthermore, small strongyles elsewhere in the world are showing resistance to avermectin/milbemycin (Kaplen, et al). The problem arises from horse owners today following parasite control recommendations from 40 years ago. If this continues, treatments will become less effective and give rise to greater problems.

Deworming Meets Modern Methods

Veterinarians are now recommending a new method of parasite control that does not involve a “one size fits all” approach. They are shying away from using a routine calendar deworming schedule and now suggesting a more customized regime for a healthy and happy horse. Owners should treat their horses by targeting a specific parasite with its biology and lifecycle in mind using an affective anthelmintic to get the job done. This starts by having your veterinarian perform a fecal egg count (FEC) to determine if your horse is in need of parasite control and, if so, which kind of control. They can also test the horses to reveal which dewormers work and which dewormers do not work for the horse.

Most horses have low populations of worms at any given time. Although this causes many horse owners to cringe, it is actually okay and makes for a healthy animal. Low levels of parasites stimulate immunity and very rarely cause any disease. Therefore, it is important to perform these tests regularly to know the healthy baseline for your horse versus when populations need to be controlled.

The Fecal Egg Count Reduction Test (FECRT) can tell you if your horse’s strongyles or ascarids are resistant to a given dewormer. A veterinarian performs a fecal egg count before deworming and then another fecal egg count 14 days after giving the dose. Those numbers are then used to calculate the change in parasites by using the FECRT equation. The AAEP has guidelines of suggested levels of no resistance, susceptible to resistance, suspected resistance and resistance. Your veterinarian may apply the result from the FECRT equation to these guidelines to get a better understanding of your horse’s parasites. If a horse has a higher than normal result, a veterinarian can provide you with the exact product and dosage to treat the problem efficiently and effectively.

Deworming Schedules for Different Horses

For those curious about a “typical” deworming schedule, Colorado State University and the Association for Equine Practitioners outline a few guidelines for adult horses, pregnant mares

and foals. After a vet performs a fecal egg count, they will know the eggs per gram of manure (EPG). Adult horses will fall into either of three categories: Low Shedders (less than 200 eggs per gram), Moderate Shedders (between 200 and 500 eggs per gram), and High Shedders (greater than 500 eggs per gram). Your veterinarian can then determine if deworming is needed and the correct dosage. If needed, Colorado State University suggests the following products and times based on the EPG from a fecal egg count:

Adult Horses

Shedding Rate	EPG	FEC Test Time	Spring	Summer	Fall	Winter
Low Shedders	<200	Test in spring and fall	Ivermectin Moxidectin	N/A	Ivermectin Moxidectin with praziquantel	N/A
Moderate Shedders	200-500	Test in spring and fall	Ivermectin Moxidectin or double-dose fenbendazole for 5 days	Pyrantel Pamoate Fenbendazole	N/A	Ivermectin w/ praziquantel moxidectin with praziquantel
High Shedders	>500	Test in spring and fall and look for resistance	Ivermectin Moxidectin Or double-dose of fenbendazole for 5 days	Pyrantel pamoate fenbendazole	Ivermectin with praziquantel moxidectin with praziquantel	Pyrantel pamoate Fenbendazole Oxibendazole

Pregnant Mares

For pregnant mares, Colorado State suggests giving ivermectin with praziquantel or moxidectin with praziquantel when vaccinating before foaling in addition to the method for a normal adult horse.

Foals

Many horse owners have questions about if and when they should deworm foals. Horses under the age of 3 should have a different parasite program because they are at a higher risk for infestation.

2 Months	Ivermectin
4 Months	Oxibendazole—Pyrantel pamoate at 5 months
6 Months	Moxidectin with Praziquantel
8 Months	Pyrantel pamoate—Fendendazole at 9 months

10 Months Ivermectin
12 Months Fenbendazole

It is important to note that dosage will depend on a couple factors. A horse's susceptibility to parasites varies depending on: their lifestyle, living arrangements, resistance to anthelmintics, time of year, weight, age, level of egg shedding, etc. (AAEP). Therefore, make a point to discuss a plan with your veterinarian.

The cost of a FEC test varies by vet but should only cost around the same price as a tube of dewormer. During your next check-up, be sure to do your part in preventing parasite resistance and ask your vet about a fecal egg count test. Together we can make healthier and happier horses.

Author Rebecca Brundidge is a senior at University California Davis and will be graduating with a major in Animal Science, emphasis in Equine Science, and a minor in Nutrition Science. She frequently writes for Summit Equine Nutrition LLC's blog found at www.summit-equine.com .

Works Cited

Kaplan, Ray M. These Ain't Your Father's Parasites: Dewormer Resistance and New Strategies for Parasite Control in Horses (n.d.): n. pag. Large Animal Clinical Services University of Florida. Web.
American Association of Equine Practitioners AAEP Parasite Control Guidelines (n.d.): n. pag. AAEP Parasite Control Subcommittee of the AAEP Infectious Disease Committee Web.
Sangster, N.c. "Anthelmintic Resistance: Past, Present and Future." International Journal for Parasitology 29.1 (1999): 115-24. Web
Colorado State University (n.d.):n. pag. Equine Recommended Deworming Schedule CSU Web