



Horsemen's Update

Deworming: Products and Procedures

Equine parasites are the primary cause of colic in horses and can contribute to digestive and respiratory problems. Just about every horse owner has heard of or experienced problems with equine parasites, and most have familiarized themselves with some type of antihelminthic (dewormer) protocol to protect their horses. What may be surprising to some owners, however, is that protection against equine parasites does not solely involve deworming. Good deworming practice with the best interest of the horse in mind involves proper selection based on time, place and horse, and successful deworming goes hand-in-hand with good management.

Equine Parasitism: A Silent Danger

Parasites, which can ultimately damage the health of a horse, vary in type and range in size from inches to feet. Approximately 150 types of parasites can infect a horse, but intestinal parasites are the most common culprits. Their potential physiological effects on the horse include allergic reactions, anemia, decreased immune system function, toxicity, nutrient depletion, and obstruction of blood vessels, lymphatic channels or the gastrointestinal tract. What's more, it is very difficult to detect the symptoms of parasites. By the time the horse is visibly infected, it may be too late.

The parasites enter the horse when the horse ingests hay or grass with manure particles that have been infected with eggs or larvae. While different types of parasites migrate to different parts of the equine body and have different life cycles, a common life cycle for intestinal parasites involves eggs hatching and developing into larvae, migrating through the body of the host and maturing into adults that replicate on a daily basis.

The "Recipe"

When deworming procedures emerged in 1966, a common strategy was proposed by veterinarians to protect equine herds from the damaging effects of parasites. According to what is referred to as the recipe, each horse in the herd was dewormed every two months. This routine was based on one parasite, the large strongyle, which was prevalent at the time, and

one drug used to deworm the horses. Now, however, large strongyles have been greatly reduced in well-managed herds, but small strongyle populations are showing resistance to one or two classes of dewormers.

Common Types of Equine Parasites

Strongyles: one of the most harmful; larvae ingested by the horse via grazing mature in the GI tract and migrate through blood vessels to reenter the intestine, causing damage (large strongyles) or becoming encysted and resistant to treatment for a period (small strongyles); colic and diarrhea may occur.

Ascarids: also known as roundworms; ascarid eggs are fairly resistant to environmental conditions so prompt manure removal and deworming are necessary.

Stomach Worms: fly larvae that have taken in worm larvae deposit the worm larvae on the lips of a horse or other feeding ground (eyes, nose, sores); serious tissue damage may result.

Tapeworms: mites that have taken in worm larvae are ingested by the horse.

Bots: adult flies lay eggs on the hair of the horse (usually forelegs or flank) and enter the mouth of the horse during licking to settle in the gums, cheek or tongue. They eventually migrate to the stomach or intestine causing damage in migration.

Strongyles are the most significant nematode parasite in mature horses and are therefore the core targets of parasite control. Both small and large strongyles are transmitted in pasture via grazing and have somewhat predictable seasonal patterns based on eggs hatching and developing to the infective larval stage. Strongyles tend to persist and develop between 45 and 85 degrees Fahrenheit. Development is unsuccessful below 45 degrees and above 85 degrees. The infective third-stage larvae rely on stored energy, and their energy reserves are lost when catabolism increases to deal with high temperatures. In short, temperature and energy restraints make the spring and autumn ideal for strongyles, and while they do not develop during winter, they can survive it.

Veterinarians today suggest using two tests in combination to diagnose parasitic infections: fecal flotation, which allows for observation of the types of eggs present under high magnification, and fecal egg count, which quantifies the number of eggs per gram of manure. Horses are treated with dewormers to remove parasites from the intestinal tract. The egg reappearance period (ERP) is the time between treatment with an anthelmintic drug and the resurgence of eggs. The ERP is predictable for available drugs, and ranges anywhere from 10 to 12 weeks. Successful deworming involves treatments scheduled to coincide with the ERP length of a certain drug for a particular parasite. However, the repeated use of one dewormer may select for resistance.

Resistance is a major concern currently contributing to the equine parasite problem. With no new classes of dewormers predicted to emerge in the next few years, veterinarians and researchers urge farm management to break from the old routine, which is thought to contribute to resistance among parasites. Resistance develops when a small number of the targeted parasites survive by avoiding treatment effects of a drug and then passing the ability to survive to offspring. This yields an increasing gene pool of resistant parasites with every treatment process. To help combat the problem of resistance, veterinarians suggest deworming less frequently than every two months and consulting with a veterinarian to select a drug. Resistance presents yet another reason why parasite control must be a complete, sustainable program instead of just persistent use of a dewormer.

Sustainable Control

To effectively control equine parasites without contributing to resistance, new guidelines have been formulated and are to be applied to the individual horse and farm. The new recipe addresses which anthelmintics remain effective against a particular parasite, which horses need anthelmintics, and what timing intervals are appropriate for control. To begin with, the herd should be sampled by a pre-treatment fecal egg count. Based on the egg count, horses should be assigned as low-, moderate- or high-risk contaminators — referring to their potential for carrying the developing and reproducing parasites that could infect the herd. Only 20 to 30 percent of the animals in a herd harbor the majority of the parasites. For this reason, it is important not to deworm all members of a herd with the same frequency, because

frequent treatment would contribute to resistance and be more costly. Veterinarians recommend minimal maintenance for low-risk horses: one larvicidal treatment every six months (spring and autumn, ideally). For moderate-risk horses, those biannual treatments should each be followed by a subsequent treatment timed to match the ERP for the drug used (four total annual treatments). For high-risk horses, the bi-annual treatments should each be followed by two subsequent treatments according to the ERP for the drug used (six total annual treatments).

Apart from the correct schedule for drug treatment, a successful program for control of equine parasites also calls for effective management procedures. Horses naturally graze to best avoid areas where there are more larvae. Thus, overgrazing and crowding increase transmission while dragging a pasture spreads larvae from heavily infected parts and potentially contaminates more pasture. Research suggests that unoccupied pastures should be dragged in the heat of summer and be inactive for weeks to follow. Further, stalls should be cleaned of manure daily and pastures weekly, in order to minimize fecal contamination and potential for transmission. Pastures should be drained well and not overcrowded. Practicing fly control is also very important, as flies are agents of contamination or infection for horses.

Finally, one of the most important steps management can take to maintain parasite control is to monitor their program's efficacy. Taking fecal samples or performing fecal egg counts can ensure the control is decreasing the number of adult parasites and eggs in the herd, and can give warning of resistance.

The take-home message: the rules are changing when it comes to suggested control for equine parasites. Due to resistance, chemical control alone is no longer reliable. Parasite control is as much about a management commitment as it is about the dose of drug. Effective control requires knowledge of the parasite, feed sources and stables, the horse itself, and the variable seasons and climatic variations of the local area. Consult with a veterinarian to ensure the type of dewormer and the timing of treatment are best suited to the needs of the herd and the farm. According to the AAEP, establishing effective parasite control is one of the most important things that can be done for the wellbeing and safety of the horse.

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