

Good equine worming practice.

There are many aspects to good parasite control in addition to worming. But firstly, it's important to know about the different species of worm that can infect a horse, how dangerous they are and how to treat them appropriately.

Small strongyles: The most common worm is the small strongyle - more commonly known as the red worm (*Cyathostomum* spp). When ingested, the larvae burrow into the lining of the intestines. They can develop and re-emerge to continue the life cycle, or stay in a state of hibernation in the intestinal lining - hypobiosis. When temperatures increase in the spring, these hypobiotic larvae can all emerge at once causing severe damage to the intestinal wall which leads to serious problems such as weight loss, diarrhea, shock and ultimately death. One of the biggest challenges we face with the small strongyles is anthelmintic resistance. Also we cannot directly test for the presence of hypobiotic larvae in the intestinal wall and only certain anthelmintics will treat these hibernating parasites.

Large strongyles: The large red worm (*Strongylus vulgaris*) is a very serious parasite but is thankfully no longer very common. These eggs are ingested by the horse and once hatched they burrow into the walls of the gastrointestinal tract. Migration through the blood vessels occurs, until mature, and can cause massive internal damage and colic before they return to live in the intestinal wall.

Tapeworms: Most horses will be exposed to tapeworm eggs and infection is common in the very old and the very young. Heavy infection can result in ulceration, colic, obstruction, rupture, anemia and unthriftiness. Light infection is common and, if limited, unlikely to produce any clinical signs. The eggs are encased within segments (proglottid) meaning they will not show up on a faecal worm egg count (FWEC) even if infected. As a result, the option is to assume infected and treat periodically (autumn and summer) alternatively there is now the new tapeworm saliva test.

Ascarids: The large roundworm (*Parascaris equorum*) is a problem for young horses. As they have a naïve immune system, infection can reach high levels very quickly. Once ingested, the larvae migrate to the liver, through the lungs and back to the intestines. This can cause a great deal of internal damage and can result in weight loss, pot belly, intestinal obstruction, colic and death.

Oxyuris equi: The pinworm is a relatively harmless parasite which lives in the large intestine and passes out of the anus to lay its eggs. No eggs will be found on a FWEC. It can cause severe itching around the anus which can occasionally lead to self-trauma.

Bots: The bot (stomach worm) is not a worm but a species of fly. Once ingested, the larvae hatch in the mouth and burrow into the gums/tongue where they will spend one month before emerging and being swallowed. To develop, the larvae must burrow into the stomach lining (where they spend eight to ten months), are then passed out via the faeces and will hatch in the summer. Significant trauma to the gums and ulceration of the stomach can occur following infection

CONTROL OF PARASITES

Good equine worm control is achieved by good pasture management, good knowledge of the parasites, regular FWECs, strategic dosing based on the results and time of year. Minimising resistance and maintaining refugia (see 'how to minimise resistance') are closely related to good management factors and are extremely important in parasite control for elimination of current infestations and prevention of future problems.

Pasture Control: To minimise the burden of worm eggs/larvae in a grazing area, it's important to manage pasture well. Most important is regularly to clear horses' faeces away (left on field no more than 3 days) to prevent re-infection by physically removing the parasites. Never fertilise horses' grazing with equine manure as this will likely introduce parasites onto pasture. Rotate horses within the field by confining them to a section, and periodically vary to try and break the life cycle of the parasites. Once horses have been wormed, don't immediately move them onto clean pasture; allow them to excrete all parasites and then move. Grazing horses with other species (such as sheep) allows some of the horse parasites to be ingested and destroyed.

Faecal worm eggs counts (FWEC): Ideally FWECs should be carried out eight to ten weeks after the last anthelmintic dose or after the last FWEC determined no need for anthelmintic control. This is important as we don't want to administer unnecessary anthelmintics as it helps promote resistance. When reading FWECs, as a rule, less than 200 eggs/gram means no action is required. More than 200 eggs/gram suggests we should treat with the type of egg identified guiding the anthelmintic choice.

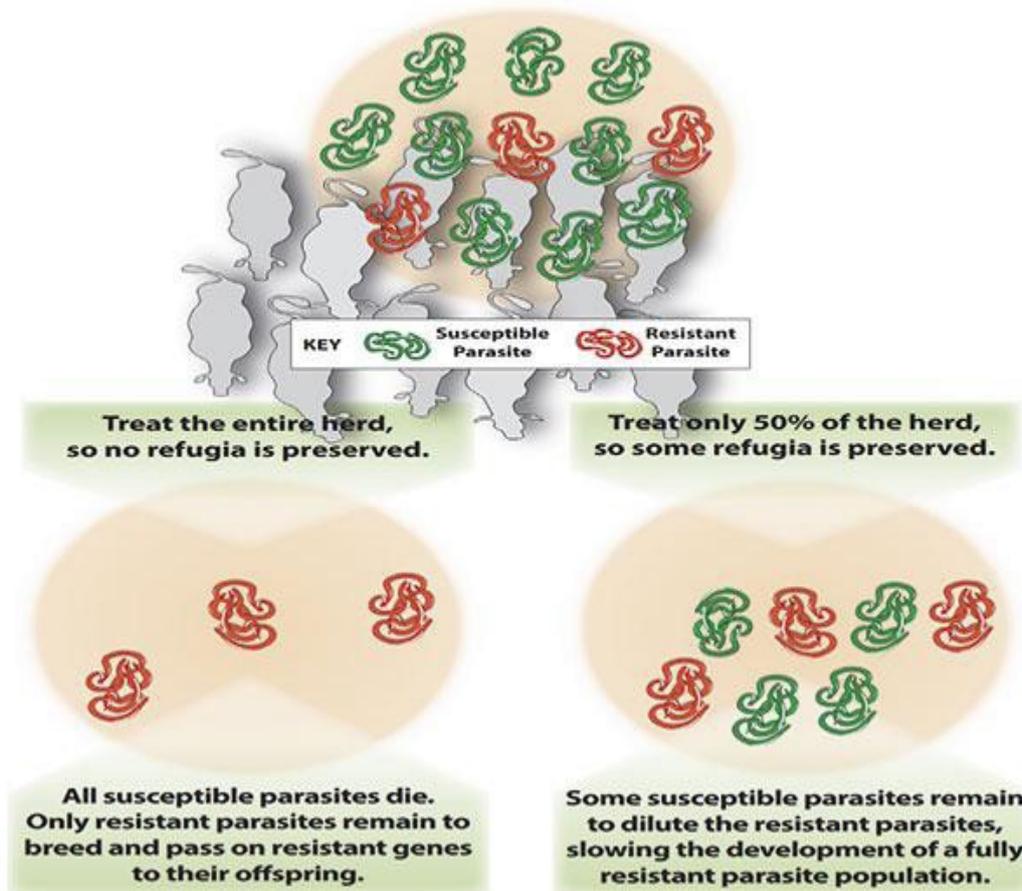
New Tests for identifying horse burden are being developed and all horse owners and yard managers and riding schools should endeavor to keep their knowledge as up to date as possible to ensure future efficacy of the current anthelmintics available.

Antiparasitic resistance

That parasites can become resistant to certain worming treatments is a growing concern. We are currently seeing evidence of anthelmintic resistance in small strongyles, large roundworms and also in pinworms. Resistance means that the parasite is no longer killed by dosing with an anthelmintic that would have previously killed it.

The Importance of Preserving Refugia

Parasite population within the herd:



What promotes resistance?

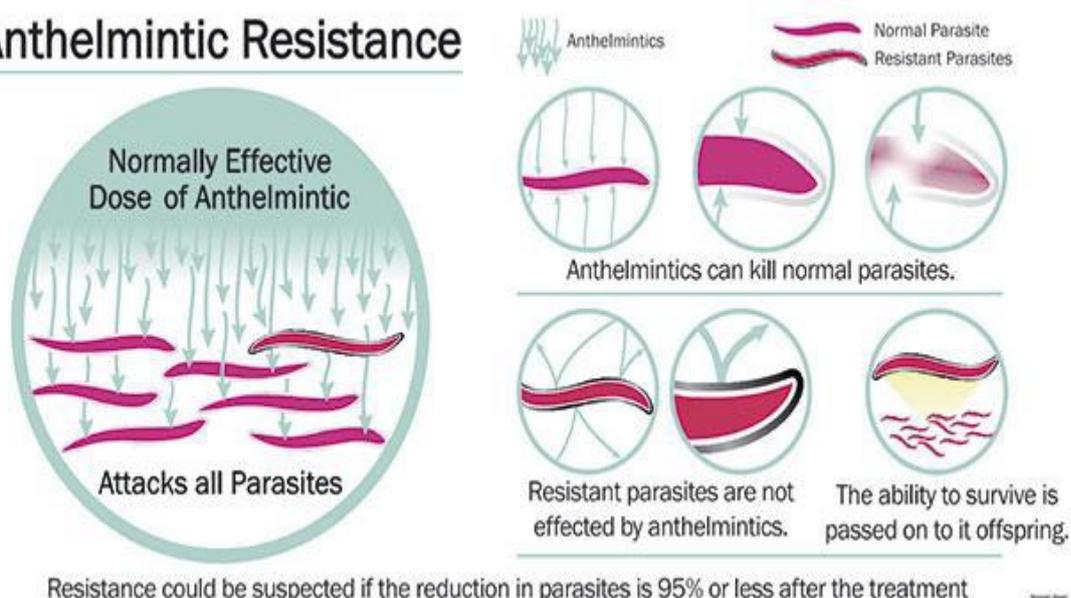
- Genetic mutations which can allow the parasite to tolerate anthelmintics.
- Biology: faster life cycles and the number of eggs produced can influence how quickly resistance can occur.
- Anthelmintic dose: if under-dosed the parasites can 'learn' to tolerate the drug and develop resistance to it.
- Treating too frequently: this means that susceptible parasites are wiped out leaving only resistant parasites. With no competition, resistant parasites thrive.
- Treating with the incorrect anthelmintic choice: the parasite must be exposed to the correct drug to kill it.

HOW TO MINIMISE RESISTANCE

Maintain susceptible populations: In order to minimise resistance, we

must maintain 'refugia'. In other words, it's important to allow a population of worms susceptible to anthelmintics to remain in order to compete with the resistant worms. This lowers the resources available to the resistant ones and dilutes the susceptible parasites that will be passed on. If we remove all the susceptible worms, the resistant ones would be able to thrive and pass on genes for resistance.

Anthelmintic Resistance



Avoid too frequent dosing: When using anthelmintics where not required, we actually do more harm than good and help the resistant population to thrive. This is why it's so important to carry out regular FWECs to ensure that we are selecting the correct active ingredient to control the parasites identified. The great worry is that eventually all of the drugs we have may one day be ineffective - and we currently have a lack of new anthelmintics as back-up.

Long acting vs short acting wormers: While long acting wormers are useful for owners, there is some controversy over their use. An FDA advisory body found that long acting drugs can select for resistance in populations more quickly than short acting drugs.(1) Long acting wormers should be used with care and should not be seen as the complete answer to parasite control.

Worming to weight: FWEC results determine what anthelmintic (if any) is required to treat a horse based on the number and different types of eggs found. You must also treat accurately for a horse's weight because under-dosing can promote resistance. If no weighbridge is available then a weight tape is the next best option.

In summary: to affect good worm control, different approaches should be incorporated. Worming too frequently is very harmful in the long run. Surveillance is the best tool to keep horses healthy and minimise the risks associated with parasites. Nothing beats a good knowledge of the parasites and keeping abreast of the epidemiological situation and all new developments in the area.