

Targeted Strategic Worming For Cyathostomins (Small Red Worm)

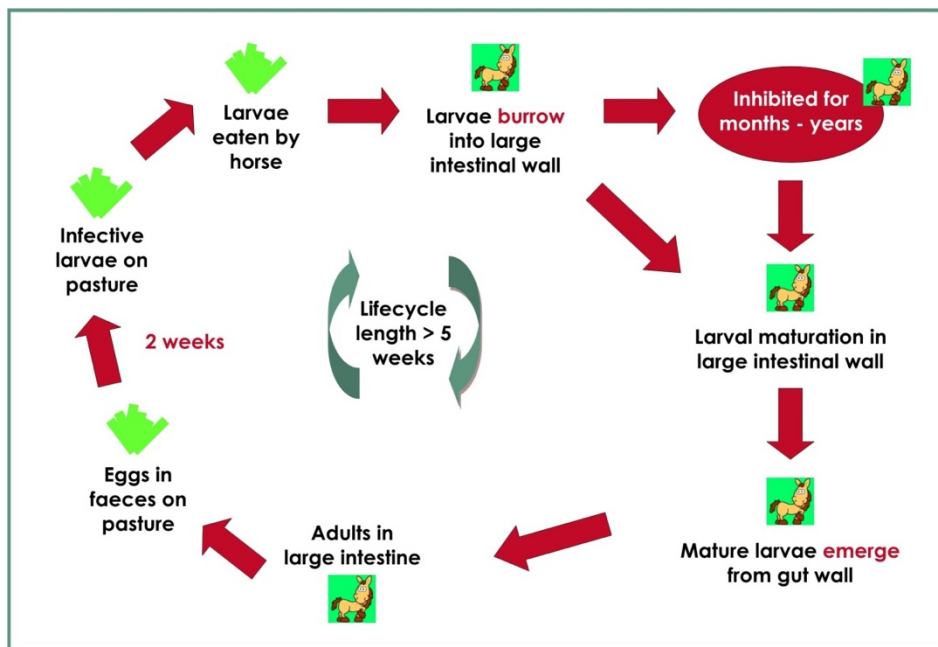
Over the last decade, resistance to worming products has become more common, particularly in small red worm (cyathostomin) populations. This means that the way we think about worming horses now needs to get smarter.



Small Strongyles (*Cyathostomin species*)

Small strongyles ('small red worm') are the **most common and harmful** intestinal worm of horses worldwide and account for 95% of faecal worm egg count burdens. The adult worms are small (1-2 cm long) and live in the horse's large intestine. The adult worms lay eggs which pass onto the pasture in the manure. Larvae (immature worms) hatch from eggs and migrate up blades of grass to ensure they get eaten by a horse. Once eaten, the larvae pass down through the digestive tract until they reach the large intestine. Once there, the larvae burrow into the wall of the gut

Once encysted in the gut wall, the larvae can continue to develop and mature into the next larval stage or, they can go into hibernation for a variable length of time (weeks to years) before continuing development. This hibernation stage is very important in the worm's lifecycle as these dormant larvae are not killed by most available worming drugs. When mature, larvae emerge from the large intestinal wall back into the digestive tract, become adults and start laying eggs. The entire lifecycle takes approximately 6-12 weeks (or much longer if larvae hibernate in the gut wall)



Key



Denotes a stage of the lifecycle that can be controlled by pasture management



Denotes a stage of the lifecycle that can be controlled by worming the horse



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Small strongyles can cause weight loss, chronic colic, diarrhoea and even severe, life-threatening inflammation of the large intestine (colitis) if large numbers of larvae emerge from the gut wall at the same time (Fig. 4). In these cases of colitis, up to 50 % of horses can die despite aggressive treatment. Young and old horses appear to be more susceptible to colitis caused by mass emergence of cyathostomin larvae.

Unfortunately, **larvae in the gut wall (and especially hibernating larvae) are more difficult for worming drugs to reach and not all products are able to kill these immature stages.** All horses allowed to graze grass will have larvae in their large intestinal wall. In fact, **up to 90 % of the worm burden carried by the horse will be these immature larval stages.** Only adult worms in the digestive tract can produce eggs and **so there is no way of determining how many immature worms (larvae) are hidden in the large intestinal wall** and so it is **very important to use a wormer active against these stages once a year**, even if faecal egg counts have been low (or zero) all year. The winter is the best time to use a larvicidal (i.e. kills larval stages in the gut wall) worming product as eggs and larvae on the pasture can not continue to develop to the infective stage in cold temperatures limiting further contamination of the horse. Only moxidectin and 5 days fenbendazole are licensed for use against hibernating larvae and are considered 'larvicidal' however there is now widespread resistance to fenbendazole and its use should be restricted to premises shown to have sensitive worm populations.



What is the Best Worming Protocol?

Over the last decade resistance has been reported, particularly in cyathostomin (small red worms) populations, despite use of an increasing number of worming drugs. This is worrying as there are no new drugs in the pipeline if worms become resistant to all the currently available drugs.

Traditional Worming Regimens

'Interval dosing', which many horse owners / yard managers use, and is promoted by drug companies, involves regular wormer administration based on the egg reappearance periods after treatment with wormer; e.g. dosing with moxidectin every 13 weeks as this is how long it takes for eggs to reappear in the manure after treating with moxidectin. It is important to realise if using this method that the **egg reappearance time differs for each wormer drug**; moxidectin 13 weeks, ivermectin 8 weeks, pyrantel 6-8 weeks and fenbendazole 4-6 weeks. It is important to look at the ingredient drug rather than wormer name to determine dosing frequency.

This is an 'easy' protocol to follow; however **this regimen will result in the routine worming of many horses that do not need it** as studies have shown that in any given population, **80 % of worms are carried by only 20 % of horses.** Not only is this a waste of money and giving your horse unnecessary drugs, more importantly this 'over-worming' is believed to have made a substantial contribution to drug resistance.

'Strategic Dosing' involves worming horses at key times when parasite burdens are thought to be highest e.g. larvicidal treatment of encysted cyathostomins in winter. Although this provides a more rational approach, problems can arise when abnormal patterns of weather lead to early or late peak pasture counts or when heavily infected animals are added to the population.

Targeted Strategic Treatment

This protocol adapts the strategic dosing programme to administer wormers at the most appropriate times of the year, based on the life cycle and environmental factors involved (e.g. pasture management), and **also takes into account the levels of infection in individual horses by monitoring individual faecal worm egg counts (FEC).** This means that *each property has its own individual treatment plan* according to the horses and factors relevant on that particular property.



Regular FEC are used to identify the horses most susceptible to worms and that are contaminating the pasture. These horses are de-wormed whilst the other horses are left untreated to reduce the use of worming drugs (and therefore the likelihood of resistance) on the property. This type of programme is typically associated with a substantial (>50%) reduction in the total amount of wormers used on a farm.

If using this programme it is important to remember that **FEC only detect adult worms and therefore a larvicidal product should be used in all grazing horses, once per year, regardless of FEC results.** Likewise, horses should be treated once per year for tapeworms (remember these annual routines can be combined using a combination wormer if desired).

Management Practices

An essential part of any worm control programme is to ensure that drug treatments are combined with good management to minimise infection levels and consequently reduce reliance on drugs:

1. Do not overstock
2. Remove faeces regularly from pasture (twice weekly)
3. Give wormer doses based on the weight of each animal
4. Quarantine newcomers for 48h and treated with moxidectin (preferably combined with praziquantel for tapeworms)
5. Co-grazing with sheep or cattle reduces pasture contamination
6. Harrowing in the *summer* (not winter!) can also be used to limit pasture contamination

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