

Faecal Egg Count Reduction testing (FECRT) and interpretation of results in equines

The traditional parasite control programmes, which often featured regular interval rotational anthelmintic treatment, were based on concepts and strategies that were developed when *Strongylus vulgaris* was the most important parasite in horses. Rotational treatment is no longer considered to be the most effective way to control parasitic infections in adult horses, particularly parasites such as *Cyathostome spp* and tapeworms. In foals and weanlings, *Parascaris spp* remains the most important parasite and this must be factored into treatment decisions. Anthelmintic resistance is an issue with cyathostomes and *Parascaris spp* and this must be considered when making treatment decisions. As a result of these resistance concerns, properly timed treatments with effective anthelmintics administered at the correct time of year using information about parasite burdens in individual horses is advised.

Faecal egg count reduction tests can be performed to determine anthelmintic resistance involving strongyles and ascarids (including *Parascaris spp*) to a specific anthelmintic. The test should be performed frequently in horses as part of individual anthelmintic treatment plans. It should also be performed where there is suspicion of treatment failure or reduced efficacy as a result of resistance.

The FECRT is used to determine if strongyles and/or ascarids are resistant to a given anthelmintic. However, a finding of reduced efficacy may or may not mean there is resistance present. Therefore, suggested cutoffs should be viewed as a guide for interpretation, but not be viewed as the final answer. To perform the FECRT a faecal sample is collected prior to deworming. The anthelmintic in question is administered and a faecal sample is collected 14 days following treatment. Using the equation below, the number of eggs in the pre-treatment and post-treatment faecal samples is used to calculate the percent reduction in FEC for each horse individually. The mean reduction for all horses tested is then calculated to determine the percent reduction for the farm or stable. This value is then used to make inferences regarding the presence or absence of drug resistance.

$$\frac{\text{EPG (pre-treatment)} - \text{EPG (14 day post-treatment)}}{\text{EPG (pre-treatment)}} \times 100 = \text{FECRT}$$

Specific guidelines for FECRT in horses do not currently exist but are being developed by parasitologists under the auspices of the World Association for the Advancement of Veterinary Parasitology (WAAVP). Until those guidelines are published, the cut-off values listed in the following table should be used as a guide for interpreting the results of a FECRT.

Observed results of the FECRT				
Anthelmintic	Expected efficacy if no resistance	Susceptible (no evidence of resistance)	Suspected resistant	Resistant
Fenbendazole/Oxybendazole	99%	>95%	90-95%	<90%
Pyrantel	94-99%	>90%	85-90%	<85%
Ivermectin/Moxidectin	99.9%	>98%	95-98%	<95%

It is recommended to include at least six horses in a FECRT on each farm. Further, it is recommended to always recruit the horses with the highest possible pre-treatment egg count for the FECRT, and to use an egg counting technique with a limit for detection of less than 25 EPG. Horses should not have received anthelmintic treatment at least 8 weeks prior to the FECRT (preferably 12 weeks, if moxidectin was used). When interpreting results of a FECRT it is important to appreciate that there are many factors that can affect the observed results of a FECRT. FEC are by their very nature quite variable, so if testing is done with few horses there is potential for high variability, which could lead to an incorrect inference. Therefore, borderline results should be interpreted with care, and the test should be repeated before any firm conclusion is made.

In addition, all horses sharing pastures share the same population of parasites, and resistance, if present, should always be evident across that population. It is extremely unlikely that resistant worms are present in some horses but not others. However, unless efficacy is very high for all horses tested, high variability in results among the horses is quite common. Ultimately, FECRT results can only be interpreted for the population (herd) and not on the individual level. It should always be borne in mind that a borderline reduced efficacy can be caused by factors other than resistance. Issues such as under dosing and a failure to administer the full appropriate dose to the animal being treated can be incorrectly interpreted as resistance.

Vets, horse owners and Suitably Qualified Persons (SQP), who have concerns that a horse may have resistant parasite infections, are advised to contact the technical department of the company whose products are involved to seek advice and guidance and to report concerns of suspected lack of expected efficacy.

Reference

American Association of Equine Practitioners (AAEP) Parasite Control Guidelines

https://aaep.org/sites/default/files/Guidelines/AAEPParasiteControlGuidelines_0.pdf