

## **FECAL SAMPLING AND FECAL EXAMINATION**

There is a large number of techniques available for generating fecal egg counts in equines, and Appendix A provides protocols for two of the most widely used techniques. Automated smartphone-based egg counting systems are currently under development and will be made commercially available to veterinarians in 2016.

### **REASONS TO PERFORM FECAL EGG COUNTS (FEC)**

To evaluate the anthelmintic efficacy using the FECRT.

To evaluate and monitor the egg reappearance period (ERP) of the most recently administered dewormer.

To determine the shedding status of the horse at the time of sampling.

To determine whether parasite burdens in foals and weanlings are primarily *Parascaris* spp. or strongyle.

### **LIMITATIONS OF FEC**

They do not accurately reflect the total adult strongyle or *Parascaris* spp. burden of the horse.

They do not detect immature or larval stages of parasites including migrating large strongyles and ascarids, and/or encysted cyathostomins.

Tapeworm infections are often missed or underestimated by fecal techniques.

Pinworm eggs are usually missed since they are adhered as egg packets around the anus rather than being shed in the feces.

### **RECOMMENDATIONS FOR FECAL SAMPLING AND STORAGE**

Samples should be stored in airtight and leak-proof containers or plastic bags.

Collected manure should be as fresh as possible. Samples less than 12 hours old are acceptable, but should be refrigerated immediately after collection (Nielsen et al., 2010b).

Refrigeration is always recommended for storage of fecal samples, but anaerobic storage at room temperature will also prevent eggs from hatching. Anaerobic storage can be achieved by squeezing all the air out of the bag, or by using a vacuum-sealing device. Note that anaerobic storage works best on wet feces; if feces are dry, it is difficult to achieve an anaerobic state. • Samples should preferably be tested within 7 days of collection, although there are indications that eggs can remain intact for longer if adequately refrigerated

Fecal samples that are or have been frozen are not acceptable, as this will damage the eggs and decrease the recovery rate. • Diarrhea samples are not acceptable for FEC, but can be used for qualitative testing. Note that if a horse has diarrhea that may be associated with parasitism, deworming may be indicated per clinician's recommendations without regard to results of the FEC. FEC Training and Microscope Maintenance • Make sure that microscope lenses are adjusted to the parasitology slides used for the egg counts. • Make good use of contrast (aperture condenser) to get a better image of morphological features. • To improve skills at parasite egg identification, several resources are available

online and through use of textbooks. One should consider review by a veterinary parasitologist if questions arise. • It is recommended that microscopes be equipped with an ocular micrometer so that eggs and other questionable objects can be measured. Having measurements can greatly assist in the identification.

### **INTERPRETATION OF EGG COUNT DATA**

In managed horses, greater than 99% of all strongyle eggs seen in a fecal are from the cyathostomins. In feral horses or in cases of severe neglect, 90-95% of the eggs seen will be from the cyathostomins and the remaining few percent will be from several large strongyle species, which are potentially more pathogenic. It is not possible to distinguish a large strongyle egg from a small strongyle egg while doing a FEC. This requires culturing the feces, recovering, and identifying the L3 larvae. This procedure is not difficult to learn, but does require some training. Larval culture and ID procedure presently is not offered by commercial laboratories, but may be available in a few university veterinary diagnostic laboratories. An ELISA test recently has been developed to detect the presence of *Strongylus vulgaris* larvae in the bloodstream (Andersen et al., 2013) and may be made commercially available in the future.