

## OBSERVATIONS FROM THE PASTURE

### To De-Worm or Not De-Worm, That is the Question

First, a caveat – I am neither a veterinarian nor a biologist (the closest I can claim is that my parents were most likely deeply concerned that I would become a mad scientist). The thoughts expressed here are meant to encourage you to think about some important herd management issues. In the final analysis your farm is unique and needs its own unique parasite control strategy developed in consultation with your veterinarian.

Meningeal worm is of significant concern on our farm because of the sizeable white-tail deer population in our area. Our parasite control strategy has been driven by this concern and we were giving all our llamas monthly injections of ivermectin from about ½ month after our pastures cleared of snow in the spring to one month after they froze in the fall.

At the past two GALA Conferences I began to hear concerns from the vets that this type of strategy runs the risk of developing drug resistant parasites. Resistance to ivermectin would extend to all the avermectins and ... there is no new family of drugs coming down the road to rescue us from our folly.

As I have been wandering about our pastures thinking about this issue of drug resistance, several other buried concerns have made their way out of my subconscious where they have been residing and churning for some time:

- I have a deep concern about the long-term affect on the body systems of our llamas of monthly injections of a potent drug, and
- While I have no objective evidence it seems that more farms are reporting increased problems with tapeworm, a parasite not controlled by the avermectins.

... and thus began my reading.

The objective of any parasite control program should be to develop an environment where parasites may be present in small numbers but do not affect the health or performance of your herd. Routine de-worming treatments delay the development of immunity in young animals. An animal that has never had parasites can not develop resistance and is thus extremely vulnerable when exposed. Similarly animals that have been recently de-wormed, and thus are not in a state of equilibrium with their environment, are at greater risk when exposed to contaminated pastures.

Another way of looking at the issue is if we have a parasite control program that is “too effective” we run a risk of increasing the susceptibility of our herds to parasites not controlled by our “drug of choice”. For example, is an increased presence of tapeworm symptomatic of a too effective meningeal worm control program?

What about the meningeal worm problem? For llamas to become infected they must ingest a gastropod (snail or slug) carrying infective third stage meningeal worm larvae. In studies at the Wilds in southeastern Ohio in a study by the Ohio State University Veterinary Teaching Hospital they found:

- there were no gastropods present during freezing temperatures,
- the number of gastropods increased during the spring as the weather moderated,
- the heat and dryness of mid-summer drove them into estivation, and
- they reappeared in late summer as the weather began to moderate.

This suggests that a meningeal worm control program built around the life cycle of the gastropods at your farm may enable you to moderate your current practice. Note that the climate and soil conditions (acidity, moisture) have a material impact on the gastropod population.

We will be reviewing our meningeal worm control program taking into consideration the weather and pasture conditions. A pasture that tends to have a wet section in the spring will not be opened until it dries out.

I recommend reading a presentation made by Cliff Monahan, DVM, PhD, Department of Veterinary Medicine, Ohio State University College of Veterinary Medicine. The topics are *Parelaphostrongylus tenuis* (meningeal worm) in the Ohio River Valley and Parasitology in Llamas and Alpacas, <http://www.vet.ohio-state.edu/docs/ClinSci/camelid/parasites.html>.

A particularly pertinent comment in his presentation is “Due to the seasonality of snails and slugs in our area, I recommend that camelid owners consider using drugs for prophylaxis during the peak risk time points, and I recommend that they do not use ivermectin year round for this purpose. This program does not give you 100% protection, but I can tell you all that the creation of drug resistant camelid parasites will be much more of a problem.” (emphasis supplied)

Dr. Monahan is currently compiling information on parasites that infect our llamas and the drugs that are being used to control them. The purpose of the study is to recognize the onset of drug resistance due to regular use of de-wormers. Fecal samples and detailed information about participating farms are being collected. Those participating will receive a detailed report on their submissions for use with their local vets. If you wish to participate, contact Dr. Monahan through the OSU web site.

If you are interested in supplementary methods of parasite control I recommend reading *The Control of Internal Parasites in Ruminants* by Jean Duval, <http://www.eap.mcgill.ca/AgroBio/ab370-04e.htm>.

### Having Fun with Fecal Floats

Llamas are fun to have and to be with and some of us find fun in rather unusual places. I have recently started to check for internal parasites by performing a fecal flotation analysis on our llamas. If you should be tempted to join in on the fun and follow suit I have a number of caveats:

- Recognize that you are an amateur and the techniques available to you are not as sophisticated as may be found at your vet's lab, and in particular at a veterinary school. Not all parasites will be detected by your methodology. It is a good idea to retain some of each sample for sending to your vet in the event you do find something disturbing.
- If you have a llama that you suspect may be compromised, e.g., is losing weight or is having difficulty gaining weight, see a vet.
- If you find evidence of parasites ... don't panic and de-worm. A low incidence of parasites may be a normal condition. Re-test in a few weeks to double check that the incidence is not getting out of control.
- If you don't find any evidence of parasites in a particular sample, don't assume that there are none. Another test several weeks later may tell a different story.

To get in on the fun I recommend obtaining a good microscope (with its own light source) and a fecal test kit. If you do not have a ready source, e-mail me, [lynd@greenbriarllamas.com](mailto:lynd@greenbriarllamas.com), and I will e-mail you

back with information on my source of equipment. Once you get started you will most likely want to augment your original kit (I am currently looking for an affordable centrifuge).

The Internet has proven to be a helpful source of information. One of the first sites to visit is <http://cal.nbc.upenn.edu/dxendopar/artifacts.html>.

You will encounter some objects under the microscope that bear little resemblance to the pictures of parasite eggs that come with your fecal test kit. Knowing what artifacts exist will substantially ease your concern as you analyze your sample. Obtaining really good images of parasite eggs to compare with what you see under the microscope is somewhat of a problem. I am in the process of building a database of images that I am acquiring from various Internet sites. I recommend visiting *Do Your Own Fecals* by Sue Reith, <http://www.saanendoah.com/fecals.html>. She provides directions on making up your own Egg Flotation Solution; I prefer a saturated sugar solution since it seems to provide a better image when you do find an egg.

I perform fecals on our individual llamas rather than taking herd samples. We have a relatively small herd, twenty-three llamas, and this process allows me to identify:

- those animals who have developed resistance to parasites, the majority of adults; and to limit their unnecessary exposure to de-wormers, and
- the types of parasites found in our herd, thus enabling appropriate selection of drugs for treatment.

Since there are seasonal differences in parasite loads I plan to make periodic checks on our herd and to develop a database for year-to-year comparison. This should help as an early warning system if changes in parasite load should develop.

Collecting the samples is a lot like waiting for a female to deliver a cria. You need patience. There is an invasive way to collect a fresh sample (it involves a glove and lubrication), but I believe in being non-invasive and prefer to wait my intended sample provider out.

If you should visit our farm, look for the bald-headed man with plastic sandwich baggies sticking out of his pocket - that's me!