Source: Shagbarkridge.com

What Is A Parasite?

A parasite is an organism that grows, feeds, and is sheltered on or in another type of organism while contributing nothing to the survival of its host. In this instance, the host is our llamas although all other livestock become the hosts for parasites too. There are two classifications of parasites that affect our llamas. The first one is *Internal* parasites – parasites that live and feed inside the llama’s body. These are most often different varieties of worms that live and multiply in the small intestine or the stomach of the llama. The second classification is *External* parasites – those that live and feed off the outside of the llama’s body. Some examples of external parasites are ticks, flies, mosquitoes, lice, and mites.

Affects of Internal Parasites.....

There are many types of internal parasites known that infect llamas and keeping our llamas safe from these parasites is a year-round job for the llama owner. If parasites are not controlled, the llama can become unhealthy and unthrifty. A heavy load of parasites can cause the llama to become sickly and lose weight since the worms living in the llama steal a lot of the nutrition that is needed by the llama. Internal parasites can be a severe problem to llamas sometimes even causing death.

Preventive Measures ........

- Herd Management
- Pasture Management
- Soil Management

Good herd management is the primary prevention of parasite problems. A good nutritional program and awareness of the overall health of your animals is the first basic, but very important, step. Parasites are more likely to seek out and attack weak or failing animals. Good sanitation, pasture rotation, and the weather also play a big part in the control of parasites on your farm. The weather can make a big difference in parasites on your farm. Many think the winter’s cold temperatures kill the parasites, but in fact the summer heat is more effective in killing parasites.

The Life Cycle Of Parasites ........

Without proper management, the internal parasites become a constant cycle. The worms live inside the llama
getting nutrition from the llama’s body. When the worms are adult, they lay eggs. The eggs get passed out of the llama in their feces, or manure, and end up in the pasture. Then the eggs either hatch into larva in the manure or on the ground. Rain then washes the manure off of the larva and the larva is left to live on the blades of grass. Then a llama may swallow the larva while grazing. Once inside the nice environment of a warm llama, the eggs and larva will mature into adults in about three weeks. These adults now lay more eggs and the cycle starts all over again. So if the llama owner does not practice good de-worming herd management, the animals will eventually have a very heavy load of adult parasites. Carrying a heavy load of internal parasites also means a llama is getting only partial value from his food.

What about the llamas that are wild in the mountains of South America and don’t have owners to de-worm them? Why don’t they get sickly from parasites? Llamas that are out in the wild travel a large area while grazing and browsing. So, since they are moving from area to area, most of the time they are in new, clean grasses that do not contain eggs and larva so they are not ingesting eggs. Our llama herds here are often in smaller confined areas and if there are too many llamas for the area (over crowded pastures), then the chance of having parasites is much greater.

**Common Internal Parasites That Affect Llamas ……..**

The most common signs of internal parasites are generally diarrhea and weight loss. These are some of the most common internal parasites that we encounter here in the Midwest area.

**Trichuris (whipworm) -**

More commonly called Whipworm, this worm lives in the large intestine of the llama. The eggs are passed in the feces and the larva develops inside of the eggs. These eggs may survive for years. When eaten by the llama or the host, the eggs hatch in the small intestine and then migrate into the large intestine and develop into adults. The adults then lay eggs to continue the life cycle.

**Moniezia - Commonly known as Tapeworm**
The adult tapeworm is a white flat worm that is in segments. The tapeworm attaches to the wall of the llama’s small intestine. Segments, or pieces of the tapeworm, which contain eggs, are passed into the feces and may be seen in the llama’s manure. They will look like small grains of rice. The eggs are then eaten by the oribatid mite, an intermediate host. This mite lives on the grass or on the feces and contains the tapeworm larvae. Now the mite is eaten by the llama while eating pasture grasses. The larvae attach to the llama’s intestinal wall, mature into adults, and continue the life cycle.

**Trichostrongylus** (stomach worm)

These are very small stomach worms that live in the small intestine of the llama. The eggs are passed in the feces. They hatch and develop into larvae in the soil and in the feces. The llama may then eat these larvae from the soil or from their feed or water. The larvae grow to adulthood in the stomach and small intestine.

**Nematodirus** (thread-necked strongyle)

These eggs hatch very rapidly in wet weather. Cool, wet weather and lush, moist pastures are ideal conditions for eggs to live.

The eggs of this parasite are very large and are distinctive under the microscope. They are very sturdy eggs and may even survive the winter in the feces or the soil. The larvae develop inside of the egg and may survive for several months in the soil or in vegetation. The llama then eats the larvae on the pasture grasses which then mature into adults in the llama’s small intestine.

**Eimeria** (coccidia) - Coccidia are tiny one-celled organisms which multiply in the intestinal tract of many animals. The resulting disease, called coccidiosis, is most common in young animals or animals that are stressed – possibly from moving to a new farm. The disease is more common in the fall and winter months. Coccidia are spread in the feces of an infected animal and most commonly exists when animals are overcrowded into small areas or where unsanitary conditions exist. However an animal must ingest a large number of coccidia organisms in order to get sick. If an animal ingests only a small amount, he probably will not get sick and it will produce immunity to this disease. The main sign of coccidiosis is diarrhea. Depending on the level of infection, the diarrhea may become severe and blood may be present. Then the animal becomes depressed, loses weight, becomes dehydrated, and may become very sick. Death can occur. Corid is the most common treatment for coccidiosis and can be given by mouth or in the drinking water.
Parelaphostrongylus (meningeal worm) - Meningeal Worm is a great concern to llama owners in areas in the east where white-tailed deer have a heavy population. Although we have white-tailed deer in Indiana, luckily this doesn’t seem to be a very large problem here. This is a natural parasite which lives in, but does not affect, white-tailed deer. The worm is passed from an infected deer through its feces and then must pass through another developmental stage in a snail or slug. The disease CANNOT be passed without the ingestion of an infected snail or slug. The llama then may inadvertently ingest the snail when browsing and become infected. The worm migrates into the central nervous system causing neurological abnormalities in the llama. Signs of Meningeal Worm include staggering, paralysis, dragging of rear legs, and blindness. If aggressive treatment is not begun immediately, death may occur.

Controlling The Parasite Problem ...........

As part of preventive health maintenance for llamas, owners de-worm them with various medications on a proper deworming schedule. Controlling the number of eggs and infective larva that a llama consumes is the starting point of any effective de-worming program. The de-worming schedule is important as well as the type and dosage of medication administered.

When de-worming, the entire herd should receive the medication – except for those females that are within 60 days of birthing or within 60 days of breeding. (Females in this stage should not receive any medications whatsoever.)

Then after approximately three days the pastures should be cleaned of the manure on the ground to prevent the llamas from re-infecting themselves with parasite eggs in the pasture. The eggs take 3-4 days to mature so you have that length of time to remove manure from the contaminated pastures. This will greatly decrease the chances of new infections. Or, another good method is pasture rotation …… put the animals into a new, clean pasture until the first pasture is cleaned and sun dried.

However de-worming is not the only effective way to help control parasites. Managing your llama’s environment is one of the best strategies for parasite control. Since the major objective is preventing pastures from being contaminated with worm eggs, manure removal from their barn areas and pastures will greatly help in breaking up the parasite life cycles. When cleaning pastures, although not all the manure may be able to be removed, the manure is getting raked and broken up, so on hot, dry days, the sun dries out the eggs and larvae and they die. Parasitic larva in manure in the sunlight dries out whereas larva in manure in moist, damp, dark areas survive for months. Cool, wet weather and lush, moist pastures are ideal conditions for eggs to live.

Hay racks, feed dishes, water buckets, and automatic waterers should be regularly cleaned to prevent any possibility of parasites living there. Llamas should not be fed on the ground, as this would increase the likelihood of llamas infecting themselves with parasites that may be living on ground vegetation. To check how effective your parasite management program is you can have your veterinarian check your llama’s feces for parasite eggs.

What To Treat With ............

Some infective larva, such as Nematodirus and Trichurs, can even become dormant over the winter and survive temperatures to 20 below zero. Then they can become infective again about one month after pastures begin new growth in April and May. For this reason, only third generation wormers that are larvacidal are recommended for treatment. Examples are Ivermectin, Oxbendazole (Synanthic), and Albendazole (Valbazen). A third generation wormer attacks the eggs, the larva, and the adults. Panacur or Safeguard is only effective for adult worms and does not affect the larva. Ivermectin or Dectomax is mainly effective on Brown Stomach Worms and Meningeal Worm.

Both Valbazen and Synanthic address Nematodirus and Trichurs. Strongyles normally will respond to Fenbendazole (Panacue or Safeguard) or Ivermectin.

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Common External Parasites

The most common aggravation in the barnyard, flies, seem to go hand in hand with raising animals. However there are some effective methods of control. Although primarily an annoyance, flies may cause problems such as eye
irritations from feeding on tears, painful bites, and carrying disease from one animal to another. Manure removal is the most effective aspect of fly control since so many flies need manure for their eggs. A fly repellant is most helpful on the legs of the llama. Disposable fly traps, although quite smelly, can be hung around the area and can be quite effective trapping adult flies. Thousands of adult flies can be trapped per trap - and that’s thousands that do not lay eggs and multiply! Natural predators can also be very beneficial in the reduction of flying critters such as flies and mosquitoes. Barn Swallows and Purple Martins both eat flying insects. It is claimed that Purple Martins eat as many as 2,000 mosquitoes a day. A bat house may also attract bats to your property which are beneficial in reducing flying insects at night.

Other external parasites include mites, ticks, and lice. A mite, whose entire life cycle is spent on the animal, burrows into the outer layer of tender skin areas with thin hair coats such as the face, belly, chest, and legs causing Sarcoptic Mange. The area develops hairless spots, dandruff, scabs, and becomes crusty. It may or may not itch. As it develops, the skin becomes thick, crusty, and leather-like. Ivermectin injections are used as treatment as well as an external dousing of the area with a parasite control.

Two types of lice may infest llamas - the biting lice and the sucking lice.

The sucking lice feed entirely on blood and can cause anemia and spread disease. They prefer the head, neck and withers area where they actually imbed in the skin. Treatment is Ivmec injected 1cc/110 lbs. Biting lice nibble on hair and debris on the skin surface and can be seen with the naked eye when disrupted. They are found most often by the base of the tail or the side of the neck. Biting lice may be treated with Coral dust (also used to dust rose bushes) by parting the wool down the center of the back and pouring on the dust - about 3 Tbl. per adult llama or 1 Tbl./100 lbs. One method of applying the dust is to put the dosage into a mustard bottle and squeeze it out own the spine. Sevin, also a dust, is also used in the treatment of lice. If lice is diagnosed in the herd, it could be treated by putting the Seven in the llama’s dust bowls. The llamas enjoy rolling in it and dust themselves.

Ticks can also infest llamas, but the tick type is dependent upon the geographical area. The Rocky Mountain wood tick causing tick paralysis is not found in this Midwest area. Ticks attach to their host and feed on the blood. Remove a tick carefully and perhaps treat the bite with hydrogen peroxide.

Ticks

These little guys just sit on a blade of grass for a long time – just waiting for a nice llama to stroll by.