



# Te Korito Alpacas

## Alpaca Health - Parasites

For your reference, a pdf file of this page on [Alpaca Internal and External Parasites](#) (correct at 29/11/2022) can be downloaded. This webpage is regularly updated so do return for the latest pdf version.

### Internal and External Parasites.

It is very important that alpaca owners know the normal behaviours of each of their animals. Alpacas are stoic, meaning that they will try to hide the symptoms of any injury or illness so knowing what is normal makes diagnosis of illness or injury far easier. Sudden and rapid weight loss is often indicative of health issues so [condition scoring](#) or weighing your alpacas on a regular basis is valuable. Visual clues such as lack of energy, spending more time recumbent and reluctance to stand can indicate illness.

**Please note:** this information is provided only as a guide. If an owner cannot quickly determine the cause of any abnormal symptoms or behaviour by an animal, veterinary assistance must be sought.

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#### • Barber's pole worm (BPW)

The parasitic nematode worm (*Haemonchus contortus*) infects the C3/abomasum stomach compartment where it attaches and sucks blood from the lining. The female BPW produces thousands of eggs every day which are expelled in the alpaca's faeces onto the paddock where they hatch, develop into larvae and are ingested during grazing. They then pass into the stomach of the new animal and attach to the stomach wall, thus the life cycle is complete. Infections are serious as large numbers of worms may be present in the abomasum ingesting the blood of the host animal and causing severe anaemia, weakness and ultimately, death.

Symptoms include very pale pink or white mucous membranes of the eye and mouth (gums) - these should be a strong pink colour. Animals are likely to have diarrhoea, show a loss of condition and be lethargic or collapsed due to the anaemia. Treatment involves immediate oral drenching of the animal or an injectable wormer.

It should be noted that *Haemonchus* eggs can survive for long periods on the pasture during dry weather. If the alpaca dung is not removed, large numbers of eggs can build up. Warm wet weather (especially in March and April) will cause the eggs to hatch and allow infection or reinfection of an alpaca. Although conventional treatment is by routine drenching, there is now evidence of resistance to the drugs commonly used [25], a problem being seen worldwide. One approach now used is to drench only when an alpaca is shown to have *Haemonchus* eggs (or a burden of other worm eggs) in its faeces. [Dectomax](#) (Doramectin) given subcutaneously (SQ) is the usual choice although there is some discussion over the appropriate dosage for alpacas. Oral drenches such as [Matrix](#), a combination of abamectin, levamisole and oxfendazole can alternatively be used should resistance be encountered. Note that care must be taken with any drench containing levamisole as it has a low safety margin at normal dosages. Accurately weighing animals and calculating the correct dose is the best approach here.

More recently, two new approaches have been described in the literature.

- A vaccine has been developed [26] prepared from purified *Haemonchus* intestinal proteins. On injection, the animal's immune system generates antibodies that circulate in the blood. When the parasite feeds, these antibodies bind to the worm's intestinal lining and block digestion. The parasite starves so produces far fewer eggs to pass into the faeces and ultimately it dies.
- *Bacillus thuringiensis* crystal protein 5B (Cry5B). A form of this protein is currently widely used as an insecticide. However, it has now been shown as effective against *Haemonchus* (as well as other intestinal round/hookworms) in cattle, pigs, horses and sheep [47]. Predictably, there has not been any published testing of Cry5B in alpacas or llamas but efficacy is to be expected as the Cry5B protein is toxic only to the worms within the alpaca gut.

- **Liver Flukes**

Alpacas are most likely to be affected by liver flukes when they live on swampy ground which harbour snails. Fascioliasis is a condition that affects many animal species worldwide. The usual fluke associated with alpaca infections is *Fasciola hepatica*, a primitive animal with a complex life cycle. Adult flukes live in the bile duct where they shed eggs into the intestine. These eggs fall onto the paddock along with the faeces. Simply, those falling into water will hatch into a miracidium which seeks out and bores into a snail where it develops into a cercarium. These leave the snail and attach themselves to plant leaves as a cyst which are ingested by grazing animals. Once in the gut, the immature flukes hatch from the cysts, burrow through the intestinal wall and migrate to the liver, thus the life cycle is complete. For those interested, there is an excellent [YouTube video](#) showing the entire life cycle using time-lapse photography.

Two forms of fascioliasis are recognised, acute and chronic. The acute form is the result of a massive intake of cysts and produces symptoms in alpacas of weight loss, depression and a refusal to stand - all a result of liver damage. The chronic condition is caused by progressive damage to the bile ducts leading to the alpaca losing appetite, anaemic and reluctant to move. Death may result in the absence of treatment. A further complication of the chronic form is that conditions at the liver become suitable for certain Clostridial bacteria to grow - a situation that can be prevented by an [annual 5-in-1 clostridial vaccine](#). Diagnosis must be made by a vet. An enzyme-linked immunosorbent assay (ELISA) test is the best diagnostic test and can detect antihepatitis antibodies in blood serum. The most effective drug of choice against liver fluke is triclabendazole (e.g. Fasinex) which is very effective against all life stages of *Fasciola* and has a wide safety margin in sheep and cattle. This flukicide is off-label for alpacas but known to be effective.

- **Coccidia**

In New Zealand there are four members of the genus *Eimeria* known to infect llamas and alpacas. Of these, *E. macusaniensis* may be an important gastrointestinal tract pathogen in alpacas of all ages and the species discussed in this text. There is a worldwide incidence of *E. macusaniensis* infections, with reports detailing mainly llamas but also guanacos and alpacas. It is possibly ubiquitous in the environment thus will infect most animals at some point in their lives. Mammalian coccidia are considered to be quite host specific so alpaca *Eimeria* species are not infective to other domestic or wild ruminants and *vice versa*. Infection starts with the animal eating transformed cysts in pastures or contained in feeds. In short, the cysts hatch in the gut and penetrate the gut wall where they develop, damaging the gut lining in the process. This can result in diarrhoea and the shedding of large numbers of cysts onto the paddock. Unfortunately, the cysts are very long-lived in the environment and can withstand the action of many chemical and physical treatments. Once *E. macusaniensis* cysts are present, decontamination of the affected paddocks is likely to prove extremely difficult. As always, prevention is the best course and regular removal of the middens along with treatment of any infected animals will help.

Most coccidial infections in alpacas are described as asymptomatic and self-limiting but should numbers become high then clinical coccidiosis results. Clinical symptoms are non-specific though include anorexia, weakness, weight loss and colic. Significant is that the prepatent period, the time between infection and the passing of *Eimeria macusaniensis* cysts in the faeces is between 33 and 42 days. An animal can be infected for over a month before the parasite is evident in the animal's faeces and means that it may suffer considerable damage or even die from the activity of this parasite before detection.

Veterinary treatment in this event is oral administration of toltrazuril (Baycox). Although it is clear that *E. macusaniensis* infections have the potential to infect and kill alpacas of all ages, the frequency may be overstated. Studies have suggested that other pathogens may be involved [69]. For those interested, there is an excellent review of coccidiosis in South American camelids on this link [68].

- **Fly strike (Myiasis).**

In New Zealand, fly strike is well-known as a serious condition in sheep, more commonly seen in regions with summer rainfall. Occasionally it can afflict alpacas when the fleece is short, if there is a skin lesion or the animal has rolled in faeces. An inspection of the animal for cuts is recommended after shearing although skin cuts and abrasions do occur due to vigorous rolling. If seen, faeces should be washed off and any cut or injury should be cleaned and treated with an antiseptic.

Any of several species of blowfly may lay eggs around the wound or faeces and on hatching (12-24 hours), the maggots start to degrade and liquefy the underlying tissues. Toxins released by the decomposing tissues and ammonia secreted by the maggots are absorbed into the animal's bloodstream causing systemic illness. If unrecognised or left untreated, fly strike can be fatal. Examination of the wound is likely to show maggots moving about. Once flystrike has started, the smell of decomposition attracts further flies to the infection site. Regular inspection of the herd will identify abnormal numbers of flies around any animal and if this is seen, examination for skin lesions is strongly advised.

Immediate veterinary treatment is essential as appropriate insecticides and antibiotics will be required.

- **Mites**

Alpacas can be infected by mites with three genera causing specific skin conditions, *Sarcoptes*, *Chorioptes* and *Psoroptes*. The mange mite (*Sarcoptes scabiei*) is likely the most serious of these parasites and causes sarcoptic mange, otherwise known as scabies. The mite burrows into the skin of the less hair covered areas such as the legs, ears and belly and these develop bald spots, show flaking and crusting. The skin may become thickened as the disease develops and the alpaca shows intense itching (pruritus). Scabies may be a significant zoonotic risk [20], i.e. it can spread to other animal species including humans.

*Chorioptes* mites live the entire three weeks of their life cycle on the surface of the skin where they feed on dead cells. When caused by *C. bovis*, they are found particularly on the legs, feet and tail with symptoms of mild pruritus, alopecia and scaling of the feet and tail base resulting. Species identification is based on morphology (shape). Insecticidal sprays (eg. fipronil) are used in alpacas for eliminating *Chorioptes* mites as it kills them on contact within two hours and the treatment lasts up to one month although repeat treatments at three weeks are recommended [49].

*Psoroptes* mites can infect alpacas causing crusting weeping lesions but these are more confined to the ears. The animal exhibits head shaking and scratching. The *Psoroptes* mite affecting alpacas may be the same species that causes sheep scab.

In all cases, skin scrapings can be taken from the affected areas and examined under the microscope. The morphology of any mites seen is used to diagnose the condition. Treatment of these mite conditions is by veterinary prescribed insecticides and it should be noted that all animals in the herd may need examination and treatment to prevent reinfection.

## References.

Most of the literature below can be accessed by clicking on the highlighted link. Some links will access the appropriate web page from which the article can be downloaded but others will immediately start downloading the full reference.

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