

FEATURES

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ENDOPARASITES OF SMALL STOCK

Importance

Endoparasites can have an enormous impact on the production of sheep and goats with regard to lambing, wool, hair or meat production. Small stock develop immunity against roundworms slower than cattle and therefore especially young and older animals must be treated for roundworms. Tapeworms are important in young animals but can also affect pregnant ewes, even causing deaths in pregnant animals on poor winter grazing.

Flukes occur in vlei-like areas, farm dams and even around drinking troughs on some farms. Nasal worm is an important parasite of sheep and goats which can significantly affect production. Endoparasites of small stock and their control are discussed below.

ROUNDWORMS

There are many roundworm species of small stock which are mainly found in the gastrointestinal tract. The occurrence of a specific roundworm species is related to local climatic conditions on which dosing programmes are

based namely on whether it is a summer or winter rainfall area or arid area. Non-seasonal rainfall areas along the coastal strip from Port Elizabeth to Mossel Bay (or farms with irrigated pastures) will have winter and summer rainfall roundworms. Certain worms are adapted to cool, wet winters while others flourish in hot and wet summers.

Small stock pick up roundworm infestations when lambs begin to graze. They ingest the immature stage of worms in which then develop to become adults which then lay eggs which are passed out in the faeces. If the conditions are favourable the eggs will hatch and the young worms will lie in wait on the grazing for stock.

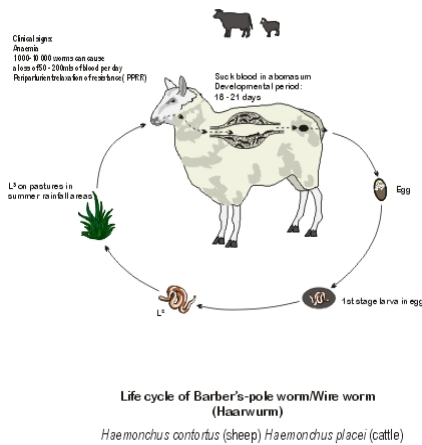
The effect of roundworms on their hosts will depend on the species: some such as wireworm and hookworm are bloodsuckers, which cause anaemia, weakness, and even deaths. Others like brown stomach worm cause damage to the stomach lining which leads to poor digestion, diarrhoea and massive protein loss. Animals lose condition and can die as a result of severe debilitation.

For good roundworm control it is important to know what roundworms occur on the farm. Identification of the main worm types can be done



when animals are slaughtered.

Fig 1: Example of a roundworm lifecycle



Dosing programs can then be drawn up in conjunction with a veterinarian specifically for the roundworms on the farm. Strategic dosing to break the life cycle of the worm for maximum effect is important. Important times for dosing are in general during late pregnancy and pre-weaning or weaning of lambs. The dosing of pregnant ewes a month before lambing will reduce the worm egg count. Chemical control of roundworms must be done in conjunction with pasture management by resting camps, using other species such as cattle as vacuum cleaners for the infective larval stages. The effect of dosing should be monitored with faecal worm egg counts, which can be done at the

nearest veterinarian or local veterinary laboratory.

Products that are available to treat roundworm infestations are Eradiworm, Tramisol, Tramisol Plus, Trami-zan, Closeco 7,5% Injectable and Ecomintic 50. There are also the macrocyclic lactones (ivermectin) - Ecomec-tin Sheep Drench and Ecomec-tin 1% Injectable

TAPEWORMS

It is helpful to divide tapeworms into three categories to understand the lifecycles and the impact on animal and human health.

Ruminant tapeworms:

This is the group in which the adult tapeworm is seen in the ruminant (sheep, goat, calf). In sheep these are the milk tapeworm, the serrated tapeworm, and the narrow tapeworm. Lambs and adults become infested when they graze on veld. They pick up infestation by ingesting a tiny soil mite which contains the tapeworm cyst or immature stage. Once the mite lands in the intestine the cyst is released, attaches to the intestine wall and develops into an adult tapeworm. The tapeworm competes for food in the gut and also has an immunosuppres-

sive effect on the animal, making it more susceptible to roundworm infestation. Infected lambs are stunted and have swollen abdomens. Pregnant ewes on poor grazing may even die from massive tapeworm burdens. Dosing of lambs just before weaning and of pregnant ewes is important to combat the effects of tapeworm infestation.

The liver tapeworm is regarded as harmless but will cause condemnation of infested livers at the abattoir.

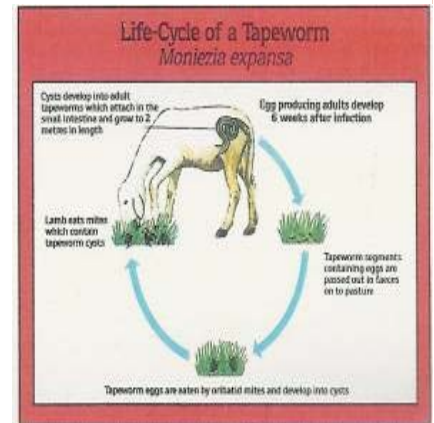


Fig 2: Lifecycle of ruminant tapeworm

Carnivore tapeworms:

These tapeworms occur as adults in domestic or wild dog species. When dogs defaecate on pastures the worm segments containing their eggs are taken in by sheep and the immature worm develops as a bladder like cyst in various organs such as the lungs,

liver, heart, in the abdomen and sometimes in the brain depending on the species of tapeworm. Cysts in the brain can become very large and can exert pressure on the brain which causes nervous symptoms. In addition organs which have cysts attached will be condemned at abattoirs. It is therefore very important that dogs are regularly dewormed to prevent this problem.

Human tapeworms:

There are two tapeworms which humans can acquire by eating infected meat, either pork (*Taenia solium*) or beef (*Taenia saginata*).

FLUKES

Liver and conical flukes are handled as a group because they have similar lifecycles. Both flukes have an intermediate host in the form of water snails which transmit the immature flukes. The water snails need wet muddy place like vleis, dams and streams. When the temperature begin to fluctuate in February the snails release cercariae, which then float on the water or attach themselves to blades of grass, where they become resistant metacercarie. These cysts are ingested by grazing animal. The cysts hatch and become tiny flukes, which in the case of liver flukes migrate to the liver. Liver flukes lodge themselves in the bile ducts, where they suck blood and when adult the

females lay eggs which are shed in the faeces. The net result of fluke infestation is liver damage, anaemia, and loss of weight and production and even death in sheep, which are more susceptible than cattle.

For farms with serious liver fluke problems the best remedies for use contain triclabendazole e.g. Ecofluke. This remedy kills immature as well as adult flukes and therefore prevents damage to the liver caused by the developing flukes. It is best given in early winter (April), and can be repeated in spring for total control. Remedies containing closantel (Closeco), rafoxanide (Tramisol Plus) and oxcyclosanide (Tramizan) will kill adult flukes only and may need at least two treatments preferably in June, August and January. These remedies have the advantage that they treat roundworm infestations as well as liver flukes.

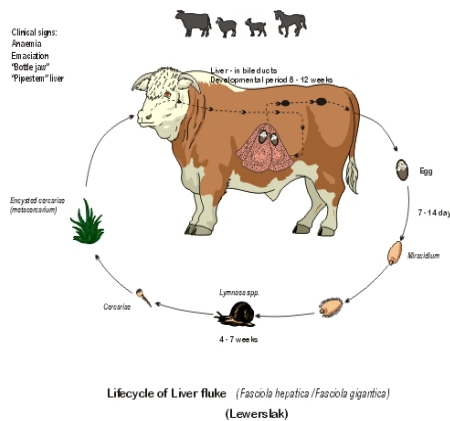
Effects and control of conical fluke

When conical fluke cysts are ingested the immature flukes reach the small intestine. They attach to the lining of the intestine and cause irritation manifested by severe diarrhoea. On post mortem the flukes may be seen in the small intestine looking like pink rice grains The adults are found in the reticulum but they are not harmful apart from the fact that they are laying eggs and re-infecting the pastures. Treatment with effective remedies such as resorantel (Ecolint Super) and rafoxanide (Tramisol Plus) will clear up the infestations. The adult conical flukes later migrate to the rumen where they don't cause irritation any more. It is generally recommended that strategic treatment be given in May and then again in September.

NASAL WORM

Nasal worm is actually the immature stage of the sheep nasal bot fly. This fly occurs over most of the country. In summer when the flies hatch out they lay their larvae around the nostrils of sheep and goats. These tiny worm like creatures crawl into the nasal cavity and enter the sinuses. Here they live on the secretions of the irritated sinus cavities. Just before the larvae become pupae they are sneezed out and they then burrow into the soil where they pupate and then develop into adult flies. The lifecycle takes 6-7 weeks to complete so a number of generations

Fig 3: Lifecycle of liver fluke



can be produced in the summer months. The effect of the larvae in the sinuses is that they cause severe irritation and affected sheep sneeze and show a yellow nasal discharge. Heavily infected sheep show rapid weight loss. Goats also show weight loss but to a lesser degree.

Nasal worm is effectively treated by injection with a macrocyclic lactone such as **Ecomectin 1%** (ivermectin) or dosing with a rafoxanide containing remedy such as **Tramisol Plus**. Both remedies are active against roundworms as well. Treatment during summer will kill the nasal worm larvae in the nose. In areas which have cold winters a treatment in winter will eradicate most of the nasal worm population.

Dr Pamela Hunter

Important points about dosing of anthelmintics (dewormers)

- **Be aware of what worms occur on the farm.**
- **Read the product's directions for use.**
- **Be aware of any adverse effects and check the label for withdrawal periods for meat and milk.**
- **Ensure that animals in each age group are weighed because it has been shown time and again that estimation of animal weights is very inaccurate.**
- **Work out the correct dose per weight : underdosing will lead to inefficacy and overdosing can cause toxicity.**
- **Withholding food before oral dosing can give better results with certain remedies (see label).**
- **Always shake well before use.**
- **Ensure that the dosing syringe is delivering the correct amount.**
- **Dose over the tongue to prevent the animals spitting out the dose.**
- **Don't dose faster than the animal can swallow as dosing into the lungs may occur.**
- **Deworming heavily infested animals can precipitate pulpy kidney so ensure they are vaccinated beforehand.**
- **Do not continuously use products from the same group of anthelmintics—rotate between products from different groups, e.g. one dosing could be from the macrocyclic lactone group, the next dosing could be from the salicylanilide group.**

IMPORTANT ROUNDWORMS OF SMALL STOCK

Worm	Area	Where found	Symptoms
Wire worm	summer rainfall	stomach	anaemia, bottlejaw, death
Brown stomach worm	winter rainfall	stomach	diarrhoea, weight loss, "swelsiekte" in Angoras
Stomach bankrupt worm	wide-spread	stomach	diarrhoea, weakness
Sandveld hook-worm	dry areas	small intestine	anaemia and death
Intestinal bankrupt worm	winter rainfall and irrigated pastures	small intestine	weight loss
Grassveld hook worm	warm and wet conditions	small intestine	anaemia and bottle jaw
Longnecked bankrupt worm	Karoo	small intestine	diarrhoea and weight loss
White bankrupt worm	NW Cape	small intestine	diarrhoea and death
Large mouthed bowel worm	winter and non-seasonal	large intestine	anaemia, diarrhoea
Nodular worm	wide-spread	large intestine	weight loss