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tips&tools
ANIMAL HEALTH AND WELFARE

Controlling nematode parasites of goats in pasture-based systems

Worms, or parasitic nematodes of the gastrointestinal tract, of goats are a major constraint to efficient production in pasture–based systems worldwide.

The overuse of chemicals to control worms in the sheep and cattle sectors has led to significant resistance issues and anecdotal evidence suggests a similar situation in goats.

The sustainable control of worms involves a dramatic reduction in chemical use and increased diligence in monitoring for worm burdens, testing drenches for efficacy and incorporating browse and nutrition supplementation as a minimum standard for better worm control.

Less reliance on chemical use is important in preserving those drench actives still giving good control. Management of worms is as much about management of drench resistance as it is about the worms themselves. **Without a change in attitude towards drench usage, drenches currently effective are unlikely to be so in a year or two.**

The integration of non-chemical control strategies with infrequent drenching is therefore imperative in achieving the sustainable production of a residue–free product.

Key benefits

- Understand the importance of grazing management to worm control
- Learn how to maximise the effectiveness of a drench in your operation
- Counteract drench resistance

Key nematodes

The major nematode parasites of concern in goats are the barber's pole worm (*Haemonchus contortus*) and the small brown stomach worm (*Teladorsagia* [*Ostertagia*] *circumcincta*) that parasitise the abomasum. The scour worms (*Trichostrongylus spp.*) are resident in the small intestine and the nodule worm (*Oesophagostomum columbianum*) is found mainly in the large intestine.

Detecting infections

Most of the clinical signs associated with worm infections are not highly specific but are generally related to intestinal disturbances such as scouring (winter scour worms), constipation (barber's pole worm) or hunched back with mucoid scours (nodule worm). These changes in digestion can lead to inappetance, poor growth, a rough coat, weight loss, emaciation due to reduced appetite, scouring and sometimes death.

Laboratory testing

Laboratory testing can offer goat owners a number of tests to monitor the progress of infections over time and to determine worm populations and if drenching is required.

By the time the clinical symptoms above become evident, **productivity losses would have already occurred**. Laboratory worm egg count testing provides a method to monitor any rise of worm egg counts and allows clear decision making on the need to drench or not to drench. The latter saves money on treatment and helps prevent or delay worm resistance.

Worm egg count and larval culture: It is standard practice within the ruminant industries to base decisions to drench on the results of a worm egg count for the numbers present and a larval culture to identify the types of worms present.

Drench resistance testing: A faecal worm egg count resistance test (FECRT) is the standard to determine drench usefulness in killing worms. Checking drenches for a change in the resistance pattern is recommended every 2 years.

Your local state government or private veterinary laboratory will assist with trial design and procedures for the FECRT and the drench–screen and will also provide interpretation of worm egg counts specific to your location.

Controlling infections

The nematode cycle of constant infection and reinfection can be broken by preventing new infections and by treating existing infections.

Preventing new infections

Reducing the size of new infections can be accomplished by reducing the intake of infective larvae from the pasture and strengthening the host's ability to prevent establishment of these ingested larvae.

Reducing the intake of infective larvae: Goats are browsing animals and should have at least 30-50% of their food supplied as browse for optimal nutrition and good worm control. Grazing lower than 10cm above the ground exposes goats to larval parasites that congregate there because of the greater moisture levels at the soil–grass interface. Separation of the feed from larval contamination can be achieved through the provision of browse. Browse does not necessarily mean trees. Browse plants, such as lucerne and other leguminous crops in pasture–based systems, will supply extra nutrition when pasture quality is poor, provide food free of larval contamination and contribute a moderate antiparasitic effect due to their contained condensed tannins.

Cattle grazed with goats will contribute strongly to better worm control and improvements in pasture quality. Goat and cattle interchanges are based on host specificity. Goats share the same nematodes with sheep but only one with cattle. Adult cattle are resistant to nematode infection and any larvae eaten while grazing will not develop to adults. Attention must be paid to stocking rates however cattle can be grazed with goats or in rotation with them.

Strengthening the overall immunity to worms: Malnourished goats are particularly susceptible to nematode infection. Extra nutrition in the form of protein, energy and minerals may be required during critical times. This typically occurs at weaning in kids and in does for about 2 weeks before and up to 8 weeks after kidding.

During a moderate worm infestation, many goats appear unaffected while others seem to be severely affected. Identifying those goats less able to carry worm burdens without productivity losses and culling them will increase the overall immunity of the herd to worms.

Drenching nematode infections in goats

The need to treat existing burdens can be determined by worm egg counts and larval cultures. Strongly resilient goats are however well able to carry worm burdens without productivity losses and this attribute needs to be considered in the interpretation of worm egg counts.

Every time a goat owner picks up a drench gun they should consider the 4'R's;

- worm RESISTANCE to drenches,
- the number of parasites in REFUGIA,
- the use of REGISTERED drenches and
- chemical RESIDUES in product.

When a chemical treatment is administered a few resistant worms are left in the goat because drenches are not 100% effective in all goats at all times. Their progeny then replace susceptible worms on pasture. In other words, a drench becomes less effective every time it is used, albeit very slowly initially. This rate of decline in efficacy is largely influenced by the numbers of free–living parasite stages on the pasture ie in refugia. In dry weather when few larvae are on pasture, heavy selection for drench resistance takes place. Following on from this, utilise browse paddocks in dry weather rather than drenching.

Managing drench resistance

Drench resistance develops from two main sources – it can be developed on–farm from ineffective drenching and through frequent use of drenches at suboptimal dose rates particularly in dry weather or by being imported onto property with purchased or agisted goats.

Strategies to counteract drench resistance include:

- Use feed withdrawal at drenching.

  Withdrawing feed 24 hours before and 12 hours after drenching will extend the useful activity of the BZ and abamectin drenches, with concomitant increases in efficacy against resistant strains of worms. Do not withdraw feed if using the Neguvon drench. Ensure access to water at all times.

- Use grazing strategies to stabilise drench resistance.

  Stock should be treated with registered drenches and left on a low-worm long pasture or a browse paddock. As reinfection may occur very quickly a move to the low-worm long pasture or browse paddock a few days prior to drenching is advocated.

- Follow with paddock rotations.

  Paddock rotation of goats either at short interval for barber's pole or at longer intervals for black scour worm has been successful on many properties.

Hints for effective drenching

- Know the capacity of registered drenches to kill worms on your property by conducting a drench–screen–check with your local veterinary laboratory for details.
- Use drenches at the correct dose rate.

- Check the accuracy of the drenching gun. Set the gun at the required dose rate (eg. 2ml), make five squirts into a medicine glass and the level should be five times the dose rate eg. 10ml. If not, adjust the gun until it is delivering an accurate dose.
- Dose to the heaviest in the group. If bodyweights vary throughout the herd separate goats in weight groups and dose to the heaviest in each group.
- Administer drugs effectively. Make sure that the dose is given at the back of the mouth as a firm squirt. If the dose is placed at the front of the mouth it will be directed to the abomasum and not to the rumen.
- Always drench in a race. Goats should be standing properly in the race so that the dose can be swallowed quickly and the tube to the gun doesn't suck in air from the pack. This occurs when the operator's head is down and the pack is inverted. Don't miss any animals.
- Always use registered chemicals and adhere to WHP and ESIs.

All chemicals should be used according to labelling requirements with particular attention to WHP and ESIs.

Withholding period

The withholding period (WHP) is the minimum period which must elapse between last administration or application of a veterinary chemical product, including treated feed, and the slaughter, collection, harvesting or use of the animal commodity for human consumption. WHPs are mandatory for domestic slaughter and on the label of every registered product.

Export slaughter interval

An export slaughter interval (ESI) is the time that should elapse between administration of a veterinary chemical to animals and their slaughter for export.

Commercially available anthelmintics registered for nematode control in goats

Parasite	Active group	Constituent	Brand name	Manufacture	WHP meat (days)	ESI (days)
Nematodes, large lungworm, tapeworm and liver fluke (aid in the control of adult fluke)	BZ	albendazole* (19g/L)	Alben	Virbac	10	10 (inferred)
	BZ	albendazole* (19g/L)	Albendazole (Sheep, Lamb & Goat)	WSD	10	Not set
	BZ	albendazole* (19mg/mL)	Valbazen Sheep Lamb & Goat Drench	Coopers	10	Not set
Nematodes, large lungworm and tapeworm	BZ	fenbendazole‡ (25g/L)	Fenbendazole	4Farmers	14	Not set
	BZ	fenbendazol‡ (25g/L)	Fenbendazole	WSD	14	Not set
	BZ	fenbendazole‡ (25g/L)	Panacur 25	Virbac	14	Not set
	BZ	oxfendazole* (45.3g/L)	Oxfen LV	Virbac	10	14 (inferred)
Nematodes	Morantel citrate	morantel citrate* (30mg/mL)	Oralject Goat & Sheep Wormer	Virbac	7	Not set
Nematodes, large lungworm	Macrocyclic Lactone	abamectin" (0.8mg/mL)	Caprimec	Virbac	14	28

Baber's pole only	Organophospha	trichlorfon§ 800mg/kg	Neguvon	APVMA permit PER9864	7	Not set
Liver fluke (immature and adults)	BZ	triclabendazole*† (100g/L)	Exifluke Oral Flukicide	Bomac	21	Not set
	BZ	triclabendazole*† (100g/L)	Fasinex 100 Oral	Novartis	21	Not set
	BZ	triclabendazole*† (100g/L)	LV Triclabendazole Flukicide	WSD	21	Not set
	BZ	triclabendazole*† (50g/L)	Flukguard S	Norbrook	21	Not set
	BZ	triclabendazole*† (50g/L)	Tricla 50	Youngs	21	Not set
		triclabendazole*† (50g/L)+Se as sod.selenate (0.5g/L)	Flukare S With Selenium	Virbac	21	63 (inferred)

* Not to be used in goats producing milk for human consumption or processing
† Kids fed this milk should not be slaughtered for human consumption within seven days
‡ Fenbendazole is registered for use in lactating does whose milk is to be used for human consumption. Milk withholding period is 24 hours.
§ Not to be milked for at least 28 days after treatment
" Caprimec is registered as of August 2007. The withholding period for milk is four days.

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Further information

Tips & tools: Guidelines for controlling lice and other external parasites on goats

Going into Goats: Profitable producers' best practice guide Module 9 'Parasite Control'

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