

Worms in goats in the Top End

Introduction

Worms can cause serious problems in goats, leading to poor productivity and, when in large numbers in the intestines, can kill goats, especially in the tropics. Most goats in the Top End of the Northern Territory carry worms. However, the extent of their effect on goats in terms of deaths, loss of productivity and the cost of control depends on the severity of infestation and the species of the parasite.

Types of intestinal worms

Two types of worms are the cause of most persistent problems in the Top End: the Barber's pole worm (*Haemonchus contortus*) and the black scour worm (*Trichostrongylus colubriformis*).

Barber's pole worms suck blood through the intestinal wall so high worm numbers may cause severe anaemia and death in goats. Initially, goats become weak and the skin and gums become pale. An examination of the gums or eyelids will readily reveal anaemia. The gums in healthy goats should be a pale pink colour and moist to touch.

Figure 1: Healthy gums



Goats with high worm burdens may have gums that are white or grey-blue in colour. 'Bottle jaw' (swelling under the jaw), caused by low protein in the circulation, may also develop in severe cases of Barber's pole worm infestation in goats.

Black scour worms cause scouring (diarrhoea) and ill-thrift (weight loss, failure to thrive). Other parasites, such as tapeworms, are less common in the Top End and are rarely harmful. Liver fluke is not found in the Territory, unless it is present in imported goats.

Another intestinal parasite, called *Coccidia*, is common in goats in the Territory and can cause problems owing to diarrhoea in young goats. Worm drenches are not effective against *Coccidia*. If diarrhoea or deaths continue in goats after drenching, consider coccidiosis as a cause.

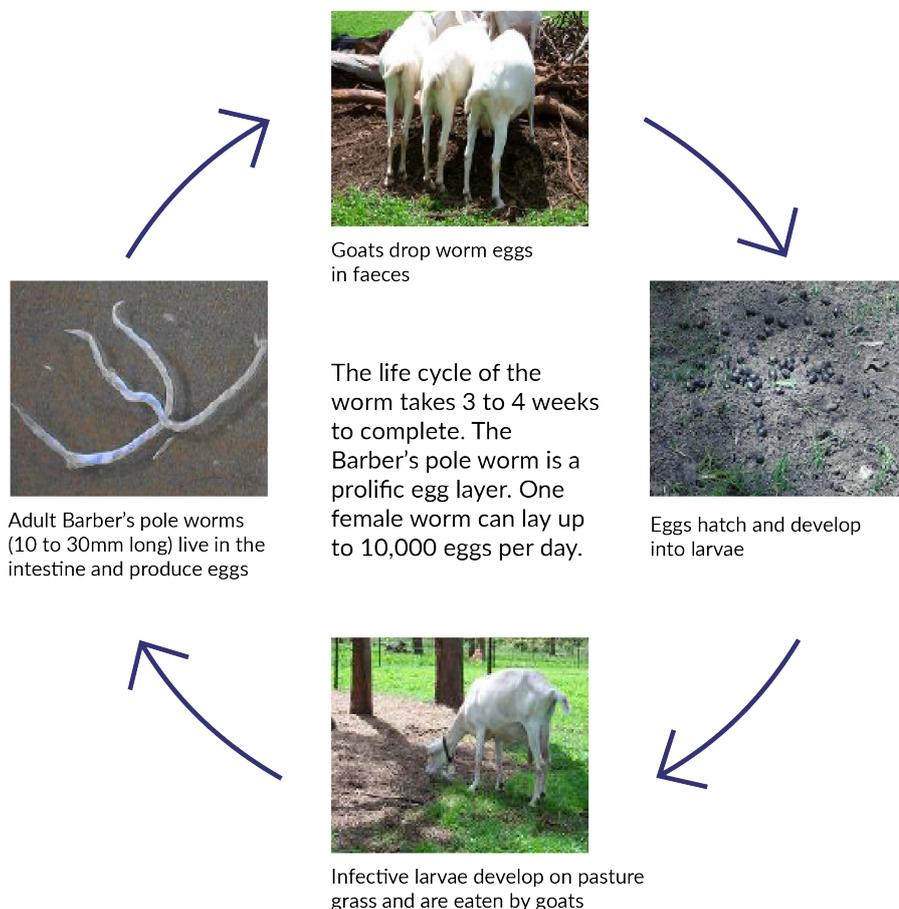
Why do worms become a problem for Top End goats?

- Goats are highly susceptible to worms and are less able to develop natural immunity compared with other livestock species.
- Warm wet weather enables a rapid build-up of free-living stages of parasites on pasture.
- High stocking rates on pasture rapidly magnify the problem in goats.
- Most species of animals become more resistant to worms as they grow older, but age resistance is less effective in goats.
- Reduced natural immunity occurs in female goats during lactation, making them more susceptible to worms.
- Worm drenches are less effective in goats, compared with sheep, so must be administered more frequently.

How do worms spread in a herd of goats?

Most common worms have two stages of development: the larval stage, which develops on pasture, and the adult parasitic stage, which occurs in the intestine of goats. Adult worms in the goat's intestine lay eggs that are passed out in faeces. The eggs hatch and develop into larvae on pasture. The larvae are then consumed off pasture by the goat, and develop into adults in the intestine where they start laying more eggs. Understanding these stages helps in the management of parasitic problems. The life cycle of these parasites is represented in Figure 2.

Figure 2: Life cycle of worms



How can worms be controlled in a herd of goats?

The use of anthelmintic medicines, commonly referred to as drenches, is important in worm control. However, they only target a specific part of the parasite life cycle. Worms in goats become rapidly resistant to chemical drenches. To control worms effectively in the long term, a strategy is required that also manages worms in the environment.

1. Monitoring parasite burdens

Control strategies should include surveillance using faecal egg counts (FECs). This laboratory test counts the number of worm eggs per gram of faeces. Samples collected at drenching indicate the current level of infection. Testing again 10 to 14 days post-drenching will indicate the effectiveness of the drench. This is the FEC reduction test (FECRT).

Collect fresh faeces for FECs from 10% of the goat herd to determine parasite burdens. Submit samples through your local veterinarian or your stock inspector.

2. Control with anthelmintics

Anthelmintic drenches are used to help control worm infestations. Many goat farmers rely on frequent drenching at set intervals, sometimes every 2 to 4 weeks in severe situations. There are 4 different types of broad-spectrum drenches:

- benzimidazoles or 'white' drenches, such as Albendazole and Fenbendazole.
- levamisoles or 'clear' drenches, such as Levamisole and Morantel.
- macrocyclic lactones, such as Ivermectin, Abamectin, Doramectin and Moxidectin.
- organophosphates, such as Trichlorofon.

Most of the anthelmintics registered for use in goats are benzimidazoles, to which there is widespread resistance. Increasing resistance in Australia to the latest anthelmintic groups called macrocyclic lactones, means that the options for drug use are limited and need to be wisely applied. Worms can become resistant to drenches within 2 to 3 years. An annual or biannual FECRT is recommended if you are using anthelmintics.

To obtain effective results from drenching and delay the emergence of resistance, follow these guidelines.

- Drench at the recommended dose. Drenching doses will not be the same for sheep and goats. When calculating dose rates, it is important to weigh or calculate the weight of a few goats. Check drenching guns' dose volume accuracy and confirm effective doses with your veterinarian.
- The effectiveness of a drench can be increased if animals are fasted prior to dosing. It is recommended to hold the goats off feed (in a yard) for 24 hours before drenching. This may not be advisable for does with kids.
- A minimum of four drenches is recommended in the Top End, between October and April, or more frequently if indicated by FECRT results.
- Girth measurements of goats can be correlated with weight. Place a tape snugly around the chest behind the front legs, then use this length to estimate the weight from Table 1.

Figure 3: How to measure girth



Table 1. Estimating goat weights from girth measurements

Girth (cm)	Weight (kg)	Girth (cm)	Weight (kg)
30	2.75	70	30
35	4	72.5	34
40	6	75	36
45	9	77.5	40
50	12	80	43
52.5	14	82.5	47
55	16	85	51
57.5	18	90	60
60	21	95	69
62.5	23	100	78
65	25	105	88
67.5	28		

Important considerations

- Not all drenches are registered for use in goats. Always read and follow the manufacturer's instructions on the label.
- Using a drench not registered for goats is considered an 'off-label' use. Under the *Agricultural and Veterinary Chemicals (Control of Use) Act 2004*, off-label use of a drench in goats requires authorisation by an Australian Pesticides and Veterinary Medicines Authority permit, or written instructions under prescription from your local veterinarian. Correct precautions regarding withholding periods of meat and milk must be followed.

3. Other control strategies

Strategies for long-term control of worms work by minimising contamination of the pasture with worm larvae. The following guidelines are suggested.

- **Timing of drenches:** Worm larvae develop rapidly on pasture during wet summer months. Reduce infection pressure by drenching in the early wet season to prevent the build-up of large numbers of adult parasites in goats. Strategic drenching of does prior to kidding and lactation, kids at weaning, and all animals in the herd on at least 4 occasions over the wet season should be considered in a property management plan.
- **Paddock rotation:** Worm larvae develop rapidly in wet conditions in the tropics and die quickly when their energy systems are exhausted. Most larvae will die if the pasture is left ungrazed for 3 weeks.
- **Low stocking rates:** Low stocking density will reduce pasture contamination.
- **Feed off the ground:** If goats are fed supplements (fruit and vegetables, grain or hay), provide food in troughs or hay mangers to avoid faecal contamination of food. Remove spoiled food regularly. Consider removal of faeces in areas of high goat traffic.

For more information on goat management, visit the Meat and Livestock Australia site at <http://www.rangelandgoats.com.au>

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