

Internal parasites in cattle

Internal parasitism in cattle differs greatly from what is seen in sheep. The species of worms, usefulness of diagnostic tests, effects the parasites have, and treatment all differ widely from what is seen in sheep, and as such management of these parasites needs to be different to what is done in sheep production.

In cattle, the main species of nematodes seen in this region are *Ostertagia*, *Trichostrongylus* and *Cooperia*, with *Ostertagia* being the most important disease-causing worm in cattle. These worms all have similar life cycles, with mature females living inside an infected animal lay eggs which pass in the animal's faeces. If environmental conditions are favourable, the eggs hatch and grow in the faeces until they reach the 'infective larvae' stage of development where they migrate onto pasture and can be ingested by cattle to continue their life cycles and potentially cause disease. Infective larvae cannot survive on pasture in hot, dry conditions but can survive for up to a year on pasture if conditions are cool and moist. In Australia's temperate regions, the highest number of infective larvae on pasture is between late autumn and mid-spring.

Infestation with internal parasites causes a condition called parasitic gastroenteritis. There are two types of parasitic gastroenteritis:

- **Type 1:** Frequently seen in young grazing calves. Clinical signs include green, watery diarrhoea, weight loss, reduction in coat quality, dehydration and inappetence. Sudden death is generally NOT seen. Cattle affected by this type of gastroenteritis can have high faecal egg counts (FECs).
- **Type 2:** Seen in older stock (>18 months), this type of gastroenteritis causes intermittent scouring, weight loss, rough coats, and submandibular swelling (bottle jaw). This type of parasitic gastroenteritis comes about as a result of release of encysted larvae (caused by some stress event) causing massive damage to the abomasum. This type can cause sudden death.

Diagnosis of these conditions is frequently made based on clinical signs, however there are other tests that can be performed to assess whether cattle are suffering from a high worm burden:

- **FECs:** In cattle that are less than 6 months old and may be suffering from type 1 parasitic gastroenteritis, FECs can be of use to diagnose the condition. In older cattle and those suspected of suffering from type 2 parasitic gastroenteritis, FECs are of no value as disease is associated with encysted larvae being shed, rather than the number of breeding female worms present in the animal. For general herd monitoring FECs are of little benefit as cattle can have quite high worm burdens (especially of *Cooperia*) without suffering from adverse production effects

- **Plasma Pepsinogen:** Pepsinogen is an enzyme released by the glandular cells of the abomasum to become pepsin which aids in protein digestion. When there is a release of encysted nematodes as occurs in a type 2 parasitic gastroenteritis, the cells that release this enzyme are damaged causing a massive release of pepsinogen into the bloodstream. Significantly elevated pepsinogen levels in the blood are diagnostic of abomasal damage, which is most commonly (particularly in beef cattle) due to *Ostertagia* infection.
- **Post-mortem examination:** If you are a suspicious that an animal has died as a result of parasitic burden, a veterinarian can examine a freshly dead animal and see signs in the abomasum and intestines of parasitism.

Treatment for internal parasites in cattle involves drenching with one of the three classes of product available to producers. These are the 'white' drenches (albendazole, fenbendazole etc), 'clear' drenches (levamisole and morantel) or macrocyclic lactones (mectin-type products and milbemycin). Additionally, copper has a significant influence on an animal's immune system, particularly its tolerance to internal parasites. Ensuring stock have adequate copper levels will help prevent internal parasitism.

Drench resistance is increasingly becoming an issue in both cattle and sheep, and there are several strategies one can employ to ensure that resistance levels are kept to a minimum:

- **Using an appropriate product:** Current literature shows that pour-on type products are becoming increasingly less effective, and generally are not recommended. Injectable products are preferred to pour-ons, but there is increasing evidence to suggest that oral products offer the best absorption and are the most effective at killing worms. Oral products however are significantly more labour-intensive to administer than injectables. Products that also have multiple active ingredients (combination products) have greater efficacy at reducing resistance.
- **Appropriate dosing:** If a group of animals is to be treated, always dose to the heaviest animal. If only one animal is being treated, it is ideal (but not always practical) to weigh it prior to treatment. Underdosing of animals directly leads to drench resistance.
- **Avoid treating adults/non-clinical animals:** Essentially the less frequently one has to drench, the less likely it is that resistance will develop. As such, avoiding blanket treatment of mobs and targeting treatment to animals showing clinical signs is ideal.
- **Quarantine drench new stock:** Treating incoming cattle with a combination product prevents new cattle from bringing resistant worms onto your property.