Parasitic gastroenteritis

Parasitic gastroenteritis – worms – remains the most important production limiting disease of sheep in the UK and the continuing emergence of anthelmintic resistance can make management complex. Most roundworms are managed together with the exception of Nematodirus which has a slightly different life cycle.

NEMATODIRUS

The first helminth challenge your lambs are likely to face comes from Nematodirus battus, usually from late April through to July. Nematodirus is a serious threat and can cause rapid onset profuse watery diarrhoea, lethargy, dehydration and death in a large proportion of the lamb crop. Nematodirus is different from other worm species in that its entire life cycle is dependent only on the lamb crop from one year to the next, ewes do not contribute eggs to the pasture; therefore, grazing lambs on the same pasture in subsequent years increases the risk of infection. It also causes serious disease in lambs at the larval (L4) stage before it has matured to adulthood and started to produce eggs, so faecal worm egg counts are not helpful in assessing risk.

The eggs overwinter on pasture (they can survive very low temperatures for up to 2 years) and are stimulated to hatch en masse when a cold period is followed by a rise in temperature to 10°C (ie when the grass starts to come!). Lambs are only susceptible once they start grazing reasonable amounts of contaminated pasture which is usually around 6 weeks old but often as early as 4 weeks in lambs with less milk available; twins, triplets, lambs with mothers of poor BCS, bottle fed lambs etc. Lambs develop immunity over time and so the risk of acute disease reduces from around 12 weeks old, but occasional outbreaks later in the year into autumn are possible if naïve animals are present.

Resistance to drenches is not a problem in Nematodirus and anthelmintics with persistent action against other species (Group 3 ML such as moxidectin) do not confer any persistence against nematodirus. It is therefore recommended to treat with Group 1 'white' drenches, the benzimadazoles, about every 4 weeks throughout the risk period. If you have treated young lambs with scour for Nematodirus but they have not responded after a few days, consider if they could be at risk of coccidiosis.

Summary

- A serious threat, can cause major losses (both of life and production)
- Risk depends on the weather pattern (grass growing=worms growing) and age of lambs (4 weeks+) – check NADIS or SCOPS websites for parasite risk forecasts. In general;
  > January/February/March born lambs usually treated mid-April and mid-May
  > April born lambs treated May and June
- Worm with a white or yellow drench (eg panacur, levacur etc)
- Graze young lambs on pasture not grazed by lambs the previous year, if available
- Faecal egg counts **not** helpful

their mothers since turnout. Silage / hay aftermaths can be used or grazing that has carried cattle since turnout. If your lambs have had high FEC, worm 2 days before moving.

- **Grouping lambs by age:** Keeping lambs in tight age groups at turnout has benefits when it comes to the need for treatment and the usefulness of faecal egg counts (FECs) in determining treatment requirements. It also helps with other management actions, such as weaning and withdrawal periods post treatment when drawing for market.
- **Grazing by mature ewes and cattle:** Fields used by lambs during the summer can then be followed on with mature ewes in good body condition or cattle which eat the infective larvae and then their immune system kills them off, mopping them up off the pasture and reducing contamination. (NOTE: This does NOT reduce the nematodirus risk for the next spring)
- **Nutrition:** Sheep under nutritional stress are less able to withstand a challenge from internal parasites. Use condition scoring to determine the need to drench any thin sheep before tupping. It also known that ewes fed a ration that has high levels of undegradable protein will produce fewer worm eggs in their dung around lambing, and creep feeding lambs provides additional nutritive support helping to delay early exposure to larvae on pasture.
- **Alternative and bioactive crops:** Grazing on bioactive forages, such as chicory, birdsfoot trefoil and sainfoin has been shown to reduce the negative effects of parasitism in sheep. It is not yet known whether bioactive forages act directly against incoming or established worms or whether they work indirectly by improving the nutritional status of parasitised animals.
- **Quarantine treatments:** Reduce the risk of sheep bringing in multi-resistant worms from other farms by quarantining incoming stock (including those coming back from common grazing or rented fields), treating for resistant worms, fluke and sheep scab (see SCOPS table of recommended treatments for your level of challenge), yarding for 24-48 hours (because eggs already in the faeces will not be killed by the drench and would then hatch out on your pasture) then turn out onto contaminated pasture and keep isolated for 3 weeks
- **Testing for resistance:** To check for resistance you can perform a 'Faecal Egg Count Reduction Test' – Samples are collected from 10 sheep at the time of treatment and faecal egg counts performed. These are then compared with FEC's performed on the same 10 sheep 7 days after treatment with 2-LV or 14 days after treatment with 1-BZ or 3-ML and the two counts compared to check an acceptable reduction has occurred.
- **Breeding for worm resistance and resilience:** Sheep can be selectively bred for resistance to high worm burdens (these sheep develop immunity very quickly) and also for resilience against worms (these sheep grow well despite having high worm burdens). In a closed flock ewe lambs with potential as replacements should have FEC's checked and if worm levels are high or growth rates poor they should not be retained. Ewes who breed persistently wormy lambs should also be culled.

Summary

- Worm ewes at lambing to reduce pasture contamination
- Monitor the need for drenches with faecal worm egg counts
- Use safe grazing where possible
- Don't forget your tups
- Treat incoming stock with a quarantine treatment

In low risk years a single treatment in October then January and lambing time should be sufficient, using different products each time. If you bring your sheep indoors in the autumn, there is no need to continue with TBZ and you should consider treating with Closantel or Nitroxynil 3 weeks after housing instead. Closantel in combination with mebendazole ('Supaverm' or 'Mebadown Super') has been shown to have enhanced efficacy compared to closantel alone and is a good choice for a January treatment. Sheep should have a final dose of a flukicide active against adults (Albendazole or Oxyclozanide) in early spring to wipe out any remaining fluke and reduce pasture contamination with eggs (ALL sheep, not just the ewes!). It is important to use **several different products throughout the year** to avoid selecting for resistance

Investigating Suspected Triclabendazole Resistance

If you have cases of acute fluke when you have recently treated with Triclabendazole then it is worth considering whether there may be a resistance problem. The investigation of flukicide resistance poses some difficulty in comparison to wormer resistance because; 1) it is difficult to test for and 2) there are also several causes of apparent treatment failure which are not because of flukicide resistance. These are;

- Pastures with very heavy infestations can mean farmers are caught out by the speed which animals become re-infected following treatment (disease can be seen as early as 3 weeks after treatment in extreme cases).
- TBZ is widely used because it kills early immature fluke and historically has been highly effective when used correctly. It does, however, have to be partly metabolised by the liver before it can work properly. If the liver is already damaged through a high fluke burden or other concurrent disease this has the potential to reduce efficacy.
- Inaccurate dosing through under dosing and/or badly calibrated and maintained equipment is often the root cause of an apparent failure.

The current tests we use for fluke are the detection of fluke eggs in the faeces and the presence of faecal coproantigen. Unfortunately, however, these tests do not reflect infection with early immature fluke as they do not excrete anything into the faeces (unlike the adults which dwell in the bile ducts). This makes investigation of acute disease or TBZ resistance early in the 'fluke season' potentially difficult as there may only be early immature fluke present and they can cause the most serious damage and losses before any adult fluke are present. Later in the season TBZ resistance can be assessed more meaningfully.

- **Coproantigen Reduction Test:**This is the preferred test as it reflects the presence of late immature as well as adult fluke and the turn around time for results is quicker. An indication of the degree of resistance present is also possible and this can affect the resulting treatment plan. 10 individually identified faecal samples before treating animals with a flukicide. Treat using best dosing practice and, **two** weeks post-treatment, collect individually identified faecal samples from the same 10 animals. If treatment has been successful, the mean percentage positivity should ideally fall by at least 90%.
- **Fluke Egg Count Reduction Test:** Indicates only adult infection. Collect 10 individually identified faecal samples before treating animals with a flukicide. Treat using best dosing practice and, **three** weeks post-treatment, collect individually identified faecal samples from the same 10

Quarantine treatment options for worms (and scab)

This information is provided by SCOPS as a guide. SCOPS does everything within its power to ensure the information is up-to-date and correct but product choices remain the responsibility of the prescriber and user. Always read the manufacturer's instructions before use. Withdrawal periods are subject to change and it is the user's responsibility to ensure withdrawal periods are adhered to.

Choose your risk category from the three options and then a carry out ALL the treatments shown in your choice of either the gold, silver or bronze columns.

	Scab risk (no dip)					Scab risk (dip)					No scab risk					
4-AD	√	√		√		√	√		√		√	√		√		4-AD
5-SI	√		√		√	√		√		√	√		√		√	5-SI
Mox (inj)	√	√	√													Mox (inj)
Do				√	√											Do
OP						√	√	√	√	√						OP
Mox (oral)							√	√				√	√			Mox (oral)

Key:-

Gold standard

Silver standard

Bronze standard

4-AD = Monepantel (Zolvix™)
Do = Doramectin (Dectomax™)

5-SI = Derquantel / abamectin (Startect™)
OP = Organophosphate plunge dip

Mox (Inj) = Moxidectin injection*
Mox (oral) = Moxidectin oral drench

**1% preferred but seek advice*