GUT ROUNDWORMS IN SHEEP

There are around 20 nematode (sheep gut roundworm) species in sheep, causing symptoms which include:

- Scouring, and increased risk of fly strike
- Anaemia
- Production losses: weight loss/ reduced growth rates, reduced food intakes and food conversion efficiency

The degree to which nematodes cause disease depends on worm factors (species of worm, numbers of worm present) and host factors (age, nutrition and body condition score).

Anthelmintics (wormers)

There are five groups of wormers in the sheep farmer's armoury against worms.

White 1-BZ, around since the 1960s. Largely ineffective on the majority of farms, but still useful for *Nematodirus battus*.

Yellow 2-LV, around since the 1960s. Ineffective on around 50% of farms.

Clear 3-AV, around since the 1980s. Resistance increasingly being detected.

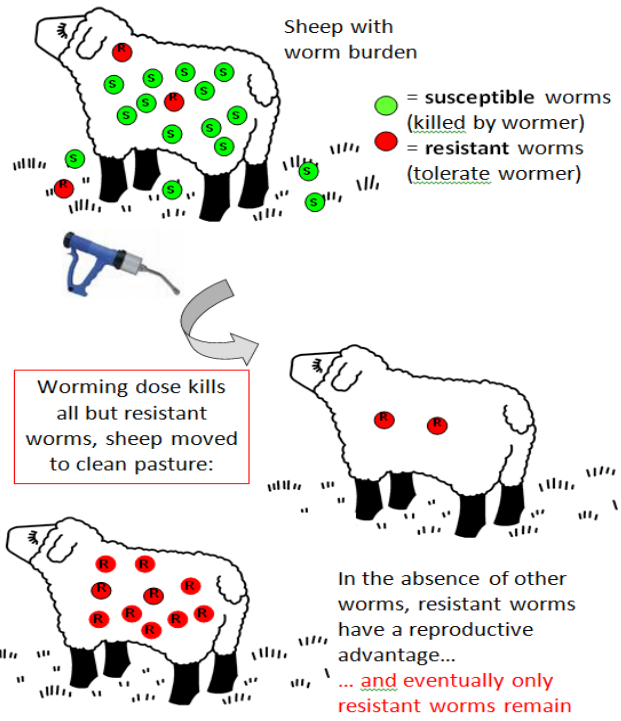
Orange 4-AD, Zolvix, 2010. Resistance first reported in UK flocks in 2018

Purple 5-SI, Startect, 2012. No known resistance – as yet.

As indicated, wormer resistance is increasingly becoming a problem.

Resistance refers to the WORMS; **a resistant worm is able to survive a dose of wormer which would normally be lethal**. This ability is heritable, so resistance will "build up" in a worm population. The diagram to the right is a simplified illustration of how resistance develops.

Unfortunately, wormer resistance is an inevitable consequence of worming sheep – but there are ways to minimise its development.



SCOPS is the industry-led group for the Sustainable Control of Parasites in Sheep and its website www.scops.org.uk is an excellent resource.
There are many measures to take in order to slow the development of resistance; the most important are as follows:

Don't Under-dose

Under-dosing allows more worms to behave as if they are resistant, and speeds up resistance development.

- Calibrate your equipment – dosing gun AND scales.
    - Take the plunger out of a 20ml syringe. Set dosing gun to 5ml. Place finger over narrow end of syringe and squirt 3 doses into syringe. This should come up to 15ml mark on syringe (3 x 5 = 15). This is much more accurate than checking the volume on a single dose.
    - Weighing scales should also be checked, for example by placing a 20kg feed sack on the scales and checking scales read 20kg.
- Weigh don't guess. Weigh some sheep and dose for the heaviest in the group
- Ensure the whole dose goes down the back of the throat and swallowed
- Don't use too small a dosing gun!

Don't Over-use

Every time you use a wormer, you are selecting for resistance: "if in doubt, worm" is not a good long-term policy.

- Don't worm if you don't need to. The decision to worm should be based on
    - **Age**. Most sheep will have good immunity to most worms by the time they are a year old. It may be appropriate to worm SOME individuals at lambing time, based on nutrition and BCS. Leaving fit ewes un-wormed at lambing time does NOT significantly increase the risk of worms in lambs. Worming ewes pre-tupping is not usually necessary or beneficial.
    - **Faecal egg count** (FEC). Microscopic examination of dung to assess worm burden can help guide whether or not it is appropriate to worm. See later section for further information.
    - **Reduction in DLWG / BCS.** Reduction in lambs' daily live weight gain can act as a very sensitive indicator of a need to worm.
    - **What the stock looks like!**
- Avoid combination products – if you are only wanting to treat for fluke, use a flukicide not a fluke/wormer combination product. Don't put unnecessary pressure on the available worming products.

Don't Over-use

Preserve the *"in refugia"* worm population. These are the worms which are not exposed to the wormer, either because they are in un-treated sheep or on pasture. The greater the *in refugia* population, the more slowly resistance will develop. Either

- Dose and Delayed Move. The whole group can be treated if the move to clean pasture is delayed by 3-5 days (this doesn't work with prolonged action wormers such as *Cydectin*), or
- Leave at least 10% of the group untreated (lambs in good condition will have low burdens and will benefit little from worming). What proportion to treat can be guided by FEC.

Additional Strategies

Other SCOPS principles are important, as follows:

- **Quarantine treatments**: don't bring resistant worms, or parasites that you don't already have (for example Haemonchus) onto your farm! Dose sequentially with Zolvix and Startect (gold standard) or clear wormer or alternatively use a moxidectin product if there is a scab risk; yard for 48 hours then turn out onto dirty pasture.
- **Use the right product**.
    - If you are only trying to treat Fluke, don't use a combination product.
    - 1-BZ (white drenches) are still effective for *Nematodirus*, so use for black scour in Spring lambs.
    - Do use the newer products, especially later in the season to get lambs finished more quickly and to knock out resistant worms which have built up over the season
- **Adopt strategies to reduce the need for wormers**. For example, rotational grazing with cattle will 'clean up' pasture for sheep. Avoid *Nematodirus* by not grazing young lambs on pasture grazed by young lambs the previous year and use NADIS parasite forecasts to predict high risk periods.

Faecal Egg Counting (FEC)

A faecal egg count is a measure of the ADULT worm burden in the sheep and is a useful monitoring tool. Typically a "mob" sample will be collected and an average taken.
A bad sample is worse than no sample – please read our "Worm egg count sampling" information sheet for more details. Briefly, samples must be

- Fresh
- Representative of the group – all animals must be a similar age, in particular don't mix ewes' and lambs' samples; select contributors at random i.e. not just scouring animals
- Equal amount from each contributor

FEC can be used alongside growth rates and the appearance of the animals themselves to guide whether or not it is appropriate to worm a group.

In addition they can indicate whether or not a wormer treatment has been effective, by sampling after a treatment has been administered as follows:

- 14 days after White (1-BZ) and Clear (3-AV)
- 7 days after Yellow (2-LV)

An **Enhanced Drench Check** can be carried out by carrying out a worm egg count on day 1 of treatment. IMPORTANT: If a proportion of the group has not been treated, make sure you only sample animals that HAVE been drenched! (Mark treated / un-treated individuals as appropriate).