Think before you dose

Don't dose ewes unless there's proof they need it… and other tips to prevent resistance to wormers

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Internal parasites, especially gut worms, are a serious challenge to sheep flocks. One of the major issues we face in controlling them is the development of anthelmintic resistance, i.e. where parasites survive a dose that should kill them.

We largely depend on dosing animals with a product containing an active ingredient from either: Group 1-BZ: Benzimidazoles (white), Group 2-LV: Levamisole (yellow) and Group 3-ML (clear) to treat stomach worms but many farms now have resistance to one or more of these products.

Teagasc, along with industry partners, has focused efforts on promoting four key actions that will help maintain a susceptible worm population and prolong the efficacy of commonly used anthelminthics.

The first key action in this initiative is to not dose adult ewes for stomach worms unless there is a demonstrated need.

Adult ewes have good immunity to stomach worms, though there are a number of circumstances where dosing may be warranted which we will discuss later.

Unfortunately, dosing ewes with wormers either directly or through unintended use, has become common practice on many farms.

Why is dosing ewes an issue?

Firstly, each time we dose ewes (or lambs) with an anthelminthic (wormer) we are also exposing the worm burden in the ewes to this product, that's what they were intended to do.

Ideally, this would kill every single one the worms present, but as the population of the worms is continually exposed to these treatments they begin to develop genetic resistance to the effects of the wormer.

Over time, a proportion of them are able to survive the dose and the level of resistance increases.

The genetic resistance the worms have developed varies depending on which anthelminthic class they are exposed to.

When we treat sheep with an anthelminthic that the worms have begun to develop resistance to, all the susceptible ones will be killed and only the resistant ones will be passed out onto pasture.

This gives the resistant worms a competitive advantage over the susceptible ones on the pasture. Gradually, the population of worms on pasture will change as we continually dose with ineffective products.

This poses a major challenge for lambs grazing these pastures as they will pick up more and more resistant worms. These worms won't be killed off by the wormer and lamb performance will suffer.

This brings us to our second point: We need to manage the population of worms in refugia i.e. the worms not exposed to the dose or our susceptible worms.

Now this may seem to fly in the face of trying to get rid of all worms, but we actually need to keep these susceptible worms active on pasture as they are key to maintaining how effective our wormers will work in the coming seasons.

There are two main sources of refugia on farms (a) on pasture and (b) undosed ewes. We now need to start considering how we manage pasture to help maintain a susceptible worm population, i.e. keep a population of worms that the dosing products we use on farms are still effective against.

So why are ewes being dosed?

Direct use: there is often a perceived performance benefit to dosing ewes. For healthy adult ewes this is not true. However, there are circumstances where dosing, using an effective

Table 1: Summary of flukicide activity

Chemical actives available to treat for liver fluke in sheep	Liver fluke stage		
	Early immature	Immature	Mature
Triclabendazole	+	+	+
Closantel		+	+
Rafoxanide		+	+
Nitroxynil		+	+
Oxyclozanide			+
Albendazole			+

product, is justified:
• As part of a quarantine programme for purchased or incoming stock on to the farm to avoid buying in resistant worms
• Lactating yearling ewes are compromised while rearing lambs and may warrant a dose at similar time points to their progeny up until the point of weaning
• Thin/compromised mature ewes may warrant a dose. If mature ewes need routine dosing consult your vet/advisor as there may be an underlying nutrition/health issue. Theses ewes should be selected for culling.

Unintended use: ewes can often receive a wormer when the intention was to treat for a different parasite. For example, treatment against fluke through the use of combination fluke and wormer products.

These products have a role in quarantine programmes and, in some circumstances, the treatment of lambs during the latter part of the year where both the active wormer and flukicide are effective. But, in many circumstances, their use is problematic:
• Firstly, their use in adult ewes excluding the quarantine process exposes ewes to an unnecessary wormer.
• If the wormer contained in the combination dose is already showing signs of developing resistance on your farm administering it is only speeding up the development of resistance, that applies to its use in both ewes and lambs.
• Is the flukicide contained in the combination dose appropriate for the time of year and type of fluke you are aiming to treat? During the autumn and early part of the winter the main liver fluke issue is immature fluke. Not all flukicides are effective at treating this stage of fluke. The information in Table 1 is a guide to the various stages of fluke each of the active ingredients are effective against.

The second unintended use is during treatment against external parasites. With the arrival of injectable 3-ML macrocyclic lactones products provided an effective, easy to administer means of treating ewes for scab and other external parasites.

But this also exposes ewes to a wormer that they don't necessarily need which, in turn, promotes the development of anthelminthic resistance.

Again, these products have a role in quarantine programmes and the treatment of individual adult sheep, but their widespread use is a problem.

Key messages

- Anthelminthic resistance is a major challenge. We need to change our approach to help maintain a susceptible worm population and prolong the efficacy of commonly used anthelminthic products.
- Adult ewes have good immunity to stomach worms and do not require routine treatment.
- If mature ewes need routine dosing consult your vet/advisor as there may be an underlying nutrition/health issue.
- Target liver fluke with an effective flukicide appropriate for that time of the season.
- Consider using one of the alternatives when treating ectoparasites on sheep.

Alternative treatments

Instead, producers should consider using the alternative treatments available:
• **Plunge dipping:** correct plunge dipping is a highly effective means of controlling a broad range of sheep ectoparastites. Best practice needs to be followed in relation to dip use and disposal. For those who don't have suitable dip facilities there are mobile plunge dipping contractors providing this service.
• **Topical applications:** there are a number of Cypermethrin or Deltamethrin based products that can provide effective treatment against lice and other external parasites. Best practice should be followed when applying these products.