

Internal Parasites: An Ongoing Problem on Sheep Farms

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Internal parasites cause major production and economic losses in sheep flocks. Gastro intestinal worms have been shown to reduce lamb growth rate by up to 40%. In spring and early summer, the main internal parasites of concern are roundworms and coccidia. There are 2 main categories of roundworm that infect lambs:

Nematodirus

Nematodirus (*Nematodirus battus*) completes its life-cycle in one year. April and May tend to be the greatest risk period. Lambs pick up infection from grass. Therefore, lambs over five weeks old during April and May are most at risk. Twins are likely to be eating significant amounts of grass from a younger age than singles and therefore are at greater risk and also at risk from a younger age. Lambs tend to develop resistance to Nematodirus from about ten to twelve weeks of age onwards.



Peak nematodirus hatch usually occurs during the late April early May period. Benzimidazole (white drench) or Levamisole (yellow drench) are the drugs of choice. For the control of nematodirus



A lamb with clinical signs of severe nematodirus infection

Roundworms

Teladorsagia (formerly known as *Ostertagia*) and *Trichostrongylus* species complete their life-cycle in much shorter periods of time. They tend to affect older lambs – ten weeks and older. Therefore, they tend to become a problem from late May/early June onwards.

Coccidiosis

Coccidiosis, which is caused by a coccidia called *Eimeria*, can cause problems in April/May in young lambs (3-8 weeks old). Clinical symptoms are most apparent from 6 – 8 weeks of age. This is coincidental to the time of the main threat of *Nematodirus*. Lambs are protected by antibodies in the colostrum for the first three weeks of life and they develop resistance to attack from about eight weeks of age. The information presented in Table 1 outlines the main internal parasites, when they are most likely to cause problems, clinical symptoms and prevention/control measures recommended.

Wormer groups

There are many different wormer products available on the market. However, all products fit into one of four classes. These are as follows:

1. Benzimidazole (white wormer)
2. Levamisole (yellow wormer).
3. Macrocyclic Lactones (Avermectins, also known as clear wormers)
4. Monepental (orange wormer)

The fourth wormer group, with the active ingredient of Monepental was released onto the Irish market in 2010. This was the first new group of anthelmintics developed and released in over twenty five years. It is only available through veterinary prescription. A fifth group, Spirandoles is not yet available on the Irish market but is expected to be released in 2012.

Anthelmintic resistance

The biggest problem facing roundworm control in sheep has been the development of resistance to anthelmintics among worm populations in many sheep flocks. Resistance means that the worms are resistant to the dose and are not killed by it. To-date it has not been an issue with *nematodirus* but is a significant problem with *Teladorsagia* and *Trichostrongylus* species. Studies have shown a major problem exists with Benzimidazole (white drench) and Levamisole (yellow drench). While unconfirmed yet in Ireland, resistance may also become a problem with Macrocyclic Lactones (Avermectins). Hopefully, the efficacy of the newer groups can be preserved for as long as possible. The only sure way of knowing if resistance is a problem is on your farm, is to have faecal

egg counts done pre and post dosing to check the efficacy of the treatment used. This test is a simple procedure involving taking fresh dung samples and having them analysed in a laboratory. It can be arranged through your veterinary surgeon. For further information on Anthelmintic resistance and how to deal with it see paper by B. Good in the is publication



In the case of the other roundworms a strict management approach is required and dosing should be based on results of faecal egg counts.

Dosing Guidelines

When dosing for worms, farmers should be cognisant of the principals of sustainable control of intestinal parasites. In the case of nematodirus, only anthelmintics effective against adult worms should be used with Benzimidazole (white drench) or Levamisole (yellow drench) being the drugs of choice. In the case of the other roundworms (*Teladorsagia* & *Trichostrongylus*) a strict management approach is required and dosing should be based on results of faecal egg counts. Dosing should only take place when justified. Dosing should also be delivered effectively, in particular avoid under-dosing by:

- Dose according to the heaviest lamb in the group (not the average)
- If there is a large weight variation, split flock into two groups to avoid overdosing. Then dose each group according to the heaviest lamb in that group
- Ensure the dosing gun is calibrated to deliver the correct dose

Clean Pasture

Ideally, the primary aim should be to have clean or safe pastures as much as possible (i.e. pastures with low parasite challenge). If an adequate amount of this pasture was available, the requirement for dosing would be significantly reduced. However, for lambs grazing in summer, a clean pasture is one that has not been grazed by sheep since the previous autumn. Therefore, it is rarely that a sheep farmer will have “truly” clean pasture. The nearest he will get to this is silage /hay aftermath not grazed by sheep in the current year. Even this is not common as most

Table 1. Internal Parasites of Mid Season Lamb

Parasite	Coccidia	Roundworms	
Species	<i>Eimeria</i>	<i>Nematodirus battus</i>	<i>Teladorsagia (Ostertagia)/ Trichostrongylus</i> species
Time of Problem	<ul style="list-style-type: none"> Lambs 3- 8 weeks Young lambs grazed after older lambs Lambs coming together e.g. for creep feeding 	<ul style="list-style-type: none"> Lambs 5-10 weeks April/May Triggered by cold weather followed by warm spell (Synchronised hatch of eggs) 	<ul style="list-style-type: none"> Lambs > 10 weeks old June onwards (<i>Teladorsagia</i>) Late summer / autumn (<i>Trichostrongylus</i>)
Symptoms	<ul style="list-style-type: none"> Acute Diarrhoea Blood in scour (maybe) Poor thrift Loss of appetite Scouring still apparent after dosing for <i>Nematodirus</i> 	<ul style="list-style-type: none"> Diarrhoea Wasting Dehydration Mortality Lambs congregating around drinkers while ewes continue to graze 	<ul style="list-style-type: none"> Diarrhoea Weight loss Dehydration
Prevention /Control	<ul style="list-style-type: none"> Hygiene Avoid overcrowding Adequate colostrum of newborn lamb Move feeders or drinkers regularly Keep feeders drinkers at a raised level to avoid faecal contamination Feed additive e.g. Deccox or dose e.g. Vecoxan. If possible move treated lambs to 'clean' area 	<ul style="list-style-type: none"> Clean Pasture not grazed by sheep/calves the previous year Dose with white wormer or Levamisole at 5 weeks (+) i.e. late April/May (Dept. of Ag. Issues warnings) 	<ul style="list-style-type: none"> Clean pasture (hay / silage after-grass) Combination of pasture management and planned dosing programme Dosing based on faecal egg counts Test for anthelmintic resistance

farmers graze their silage ground before closing for silage. In the past, the general recommendation was to dose and move to 'clean' pasture'. However, even if you have clean pasture, it is now believed that dosing followed by a direct move to 'clean' pasture is highly selective for resistance. Worms that survive treatment (hence resistant) will contribute significantly to the population that subsequently arises on the 'clean' pasture. Consequently, various alternatives to this direct 'dose and move' approach have been suggested. These alternatives include;

- Delay the move until 4-7 days after dosing.
- Move to clean pasture for a few days before dosing.
- Some of the lambs (10%) may not be dosed at all.

The reason for these measures is to ensure that some of the worms that survive on the farm are susceptible and therefore maintain the efficacy of the dose.

Protocol for Dealing with Purchased Sheep

When introducing sheep onto your farm from an outside source special care is essential. It is best practice to assume that all sheep being introduced are probable carriers of gastrointestinal parasites that are resistant to anthelmintics. Therefore, all bought in sheep should be treated accordingly. The following is the recommended practice:

- The number one choice is a drench with a monepantel (4-AD) product followed immediately by moxidectin. The dual dose is used to increase the chance of killing all resistant worms being carried by the purchased animals. (A less effective alternative is to use a levamisole product followed by a macrocyclic lactone).
- To prevent shedding of anthelmintic-resistant larvae on pasture in the days after dosing, hold treated sheep inside or on concrete for up to 48 hours
- Turn out on to pasture that has carried sheep in that season and keep isolated from other sheep in the flock for at least 3 weeks
- Check for anthelmintic resistance by monitoring faecal egg counts after dosing (14-16 days after macrocyclic lactones, 7 days after levamisole)

Withdrawal Dates

Finally, the importance of adhering to withdrawal dates must be stressed. Particular attention is needed with lambs approaching slaughter weights. If there is a possibility that they will be slaughtered before the expiry of the drug withdrawal period the dose should not be given or an alternative product could be used.

Summary

Internal parasites are of major concern for Irish sheep farmers. There is a heavy reliance on the use of anthelmintics to control these worms. The problem of anthelmintic resistance is now a significant challenge facing roundworm control in sheep flocks. To preserve the effectiveness of wormers being used a strategic approach is required. This should involve only dosing when necessary and based on faecal egg counts. It should also involve following the guidelines outlined above. Furthermore, whenever possible, better use should be made of clean, pastures with low worm burdens.