

Best practice guide for fluke and worm control in sheep





Introduction

This guide has been put together as a handy quick reference guide helping sheep farmers to deal with the practicalities of keeping on top of worms and fluke on farm.

The information is provided by Norbrook Laboratories, makers of Closamectin Injection for Cattle and Sheep. For more information, please speak to your veterinary surgeon or animal health advisor or view SCOPS guidelines at: www.scops.org.uk

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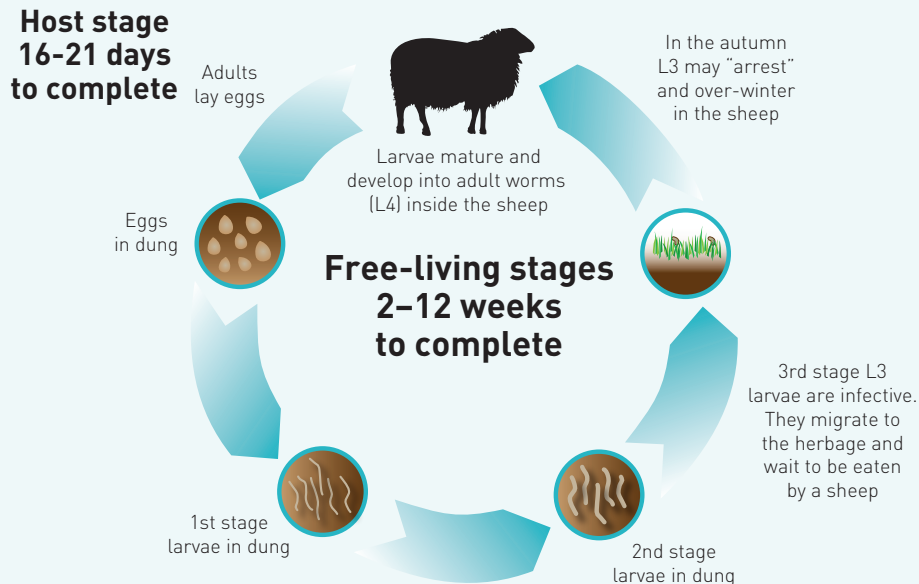
Roundworms

Worms are a major threat to sheep in the UK. Affecting their performance and health, it is vital that control strategies for roundworms are in place as part of the flock health plan.

Historical attempts to keep worms at bay have seen an increasing reliance on anthelmintics as the industry intensifies.

If you are concerned that worms may be affecting your productivity, then it is advisable to confirm the worm burden status of your sheep. This can normally be achieved by performing a simple faecal egg count and following through with treatment if required – speak to your vet or animal health advisor for appropriate treatment strategies if indicated.

General nematode life cycle



Important Worms

• Teladorsagia

Teladorsagia circumcincta are small brown stomach worms, formerly known as *Ostertagia*. These worms cause reduced appetite, diarrhoea, dehydration, weight loss and death. *Teladorsagia* is seen from mid-summer onwards in lambs that ingest large numbers of larvae during their first season of grazing. Yearlings may be affected during the winter months.



• Haemonchus

Haemonchus contortus, also known as the 'Barber's Pole worm', is widespread. The adult worm feeds on blood and is responsible for causing anaemia and death in sheep. The worm is most prevalent during the summer in warm, humid climates.

• Nematodirus

Nematodirus battus, a small intestinal worm, causes serious health problems in young lambs during late spring/early summer. It is a lamb to lamb condition where the infection passes from one lamb crop to the next year's crop via infected pastures. Young lambs of 4-8 weeks of age are generally at greater risk of disease, which causes a high number of sudden deaths and stunts the growth of many others.

The condition can strike very quickly under certain weather conditions, with little or no warning. Eggs on pasture hatch once they have gone through a cold snap followed by a rise in temperature to a mean temperature of at least 10°C. These conditions trigger a mass hatch at around the same time as lambs start to feed on significant amounts of grass, hence there are often devastating results.

• Trichostrongylus

Trichostrongylus species – traditionally caused black scour in the autumn amongst store lambs. However, more recently it has also been seen earlier in the summer months by younger lambs. Risk can now even extend into the winter and early spring.

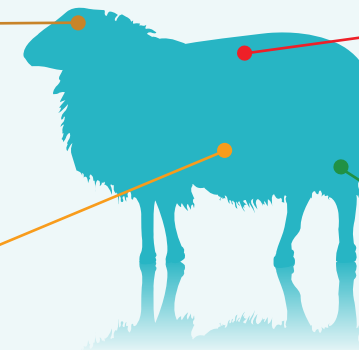
The effect of burdens in sheep

Depressed appetite which reduces feed intakes and growth rate.

Impaired mineral retention causing a small skeleton and exacerbating any trace element deficiencies.

Permanent damage to the gut which reduces the absorption of nutrients and causes diarrhoea.

Reduced protein metabolism reducing muscle growth and carcase quality.



Tapeworm in Sheep

Sheep act as final hosts for only one species of tapeworm, *Moniezia expansa*. This means that the adult worm resides within the sheep. Infestation of this type is not thought to be economically significant. Rarely, it can cause clinical signs such as:

- Diarrhoea
- Ill-thrift
- Respiratory issues

Sheep will contract *Moniezia* by ingesting infected soil mites, which then develop into adult tapeworm in the intestine. They are diagnosed by the unsightly appearance of segments in faeces. If you suspect infestation of this kind is adversely affecting your flock, speak to your veterinary surgeon or animal health advisor for advice.

Sheep can act as intermediate hosts for four different other species of tapeworm. This means that the sheep do not carry adult worms inside them, but parasitic cysts. The final hosts for these parasites are usually carnivores, for example dogs and foxes.



The sheep are accidentally infected by inadvertently grazing faeces of such carnivores. Species of tapeworm which infect a sheep in this way are of economic significance. The damage they do to organs such as the liver, brain, and heart muscle can not only cause clinical signs such as ill-thrift and 'Gid' (*Taenia multiceps*), but also lead to multiple organ rejection at slaughter. There is also a risk to human health.

To control tapeworm infestation such as this, it is advisable to worm farm dogs regularly with an active ingredient which works against tapeworm, avoid feeding fallen stock to dogs and clearing carcasses promptly.

Liver Fluke

Liver fluke disease or fasciolosis is caused by the trematode parasite, *Fasciola hepatica*. The same species affects both sheep and cattle.

Liver fluke is influenced by climate; with wetter summers and milder, wetter winters contributing to an increased risk year on year, leading to a rise in reported incidents over the last ten years. Other causes which also contribute to this rise include increased livestock movement, intensification of farming, and more reports of triclabendazole resistance around the country.

Disease is caused as a result of the migration of large numbers of immature flukes burrowing through the liver tissues and/or from the existence of adult flukes causing inflammation in the bile ducts of the liver.

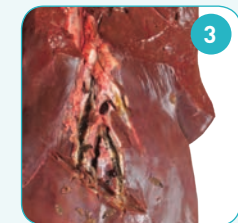
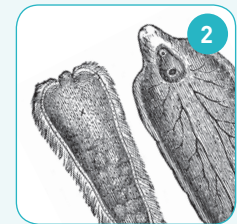
The liver fluke cycle involves two different hosts – the cattle/sheep and the mud snail *Galba truncatula*. Both hosts need to be present to continue the cycle. The snail host is found in muddy, wet areas of ground with poor drainage; hence the prevalence of fluke incidence is greater in livestock grazing such areas.

Did you know that the snail can rapidly multiply? Adults can produce 100,000 eggs in just 3-4 months¹. The parasite whilst in the snail can multiply up to 500 times or more, leaving the potential for an explosive multiplication of parasites.

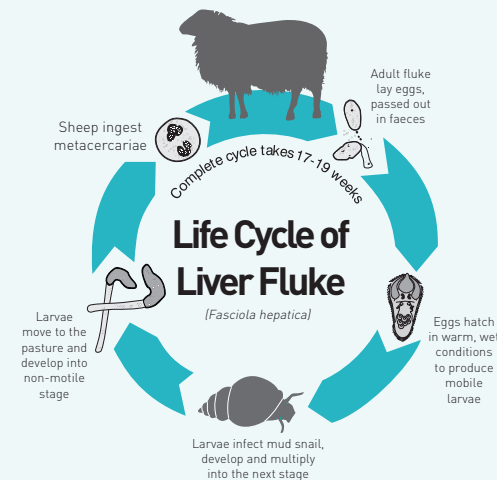
In sheep, liver fluke disease can be:

- **Acute** – leading to sudden death
- **Subacute** – rapid weight loss, anaemia
- **Chronic** – long-term weight loss and anaemia

Signs of the above vary and will be discussed on page 9.



- 1: Close up of mud snail (*Galba truncatula*)
- 2: Illustration of liver fluke
- 3: Picture indicates the devastating effect of fluke infestation in a cow's liver



Signs of Worm and Fluke Burdens



It is important for farmers to be able to quickly spot the signs of disease within flocks so treatment can be started without delay. This has economic as well as welfare benefits.

Worms

Disease caused by roundworms may be acute in onset, with outbreaks of clinical disease affecting 10% or more of a flock, and some even suffering mortality².

Clinical signs include:

- Reduced appetite
- Diarrhoea
- Anaemia

Sub-clinical disease causes:

- Reduced growth rates
- Reduced milk yield
- Reduced wool production
- Reduced body condition

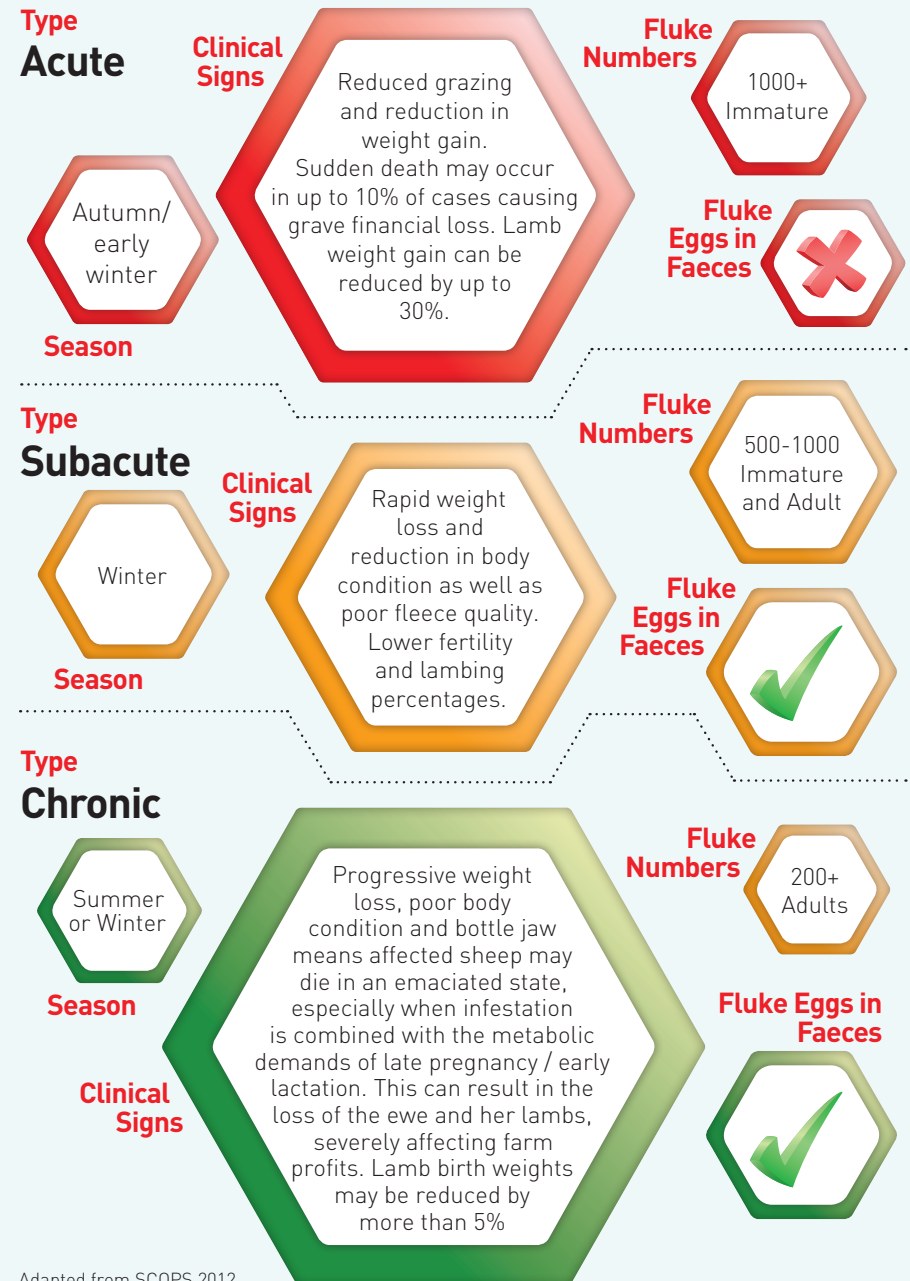
These signs are often prolonged and result in high costs to the industry.

Liver Fluke

As discussed earlier in this guide liver fluke in sheep can be acute, subacute or chronic, the occurrence of which will be different depending on the time of year.

Generally the majority of fluke infection cases seen in sheep present as acute liver disease, caused by migrating immature fluke, rather than cattle, where the presentation is most often subacute or chronic.

Early Identification of Liver Fluke



Adapted from SCOPS 2012

As the prevalence of fluke increases, and the mild winters and wet summers persist, fluke disease is becoming less easy to predict purely by season.

Product Choice - Get it Right First Time

There are many products available to help with the control of parasites; getting the most from these active ingredients is key in ensuring ideal livestock performance and reducing the risk of resistance.

When choosing the right product for your livestock and your farm needs it is important to make an informed choice.

Look to achieve this by:

- Making the right choice of product to target the parasite(s) in question: 'Getting it right first time'
- Effective administration – using the right equipment which has been calibrated, the right dose for weight and the right application method
- Grouping large flocks of sheep according to those that are similar in weight and then weighing and dosing based on the heaviest weight per group
- Consulting with your vet/animal health advisor
- Reading the entire product insert and packaging prior to use

Your choice of anthelmintic (wormer) will be influenced by what you are looking to treat. Anthelmintics can be broad spectrum where they cover many parasites such as gut roundworms, lice, mites, fluke etc, or narrow spectrum covering for example fluke only or tapeworm only. Applying Sustainable Control of Parasites in Sheep (SCOPS) principles in the approach to worm and liver fluke control is recommended.

After treatment it is advised that sheep are placed back onto dirty pastures for a few days before moving onto clean pasture.

Liver fluke has become more widespread across the country with climate changes being favourable to the parasite. If you are on a farm with a known infestation then it is recommended that sheep are treated again in the autumn months using a product which is active against immature fluke; further treatments may be required over autumn/winter to treat all at-risk sheep for late immature fluke if they have not been moved off fluke infested pastures.

Group	Group Type	Group Colour
Group 1	Benzimidazoles (BZ)	White
Group 2	Levamisole (LV)	Yellow
Group 3	Macrocyclic Lactones (ML)	Clear
Group 4	Amino Acetonitrile Derivatives (AD)	Orange
Group 5	Multi-actives (SI)	Purple

Products which fall into these groups will cover the major species of gut roundworms and lungworms. At appropriate doses, white drenches can also treat for adult tapeworms and fluke.

Anthelmintic Resistance

What is resistance?

Resistance is where the parasite which we are looking to control has the ability to tolerate the normally effective dose of the anthelmintic being used. Where the parasite survives the dose given and then passes this genetic capability for resistance onto its offspring, the parasite will then be considered as resistant.

Anthelmintic resistance is widely reported in sheep. SCOPS have developed strategies which aim to reduce the rate of resistance development.

Incorporating a rotation regime of active ingredients into your health plan will help to minimise the risk of anthelmintic resistance and should be discussed with your veterinary surgeon or animal health advisor.

If you think you may have a problem with resistance then we would advise you to speak to your vet about how to test for wormer resistance, adapting your flock health plan and suitable quarantine recommendations specific to your farm.

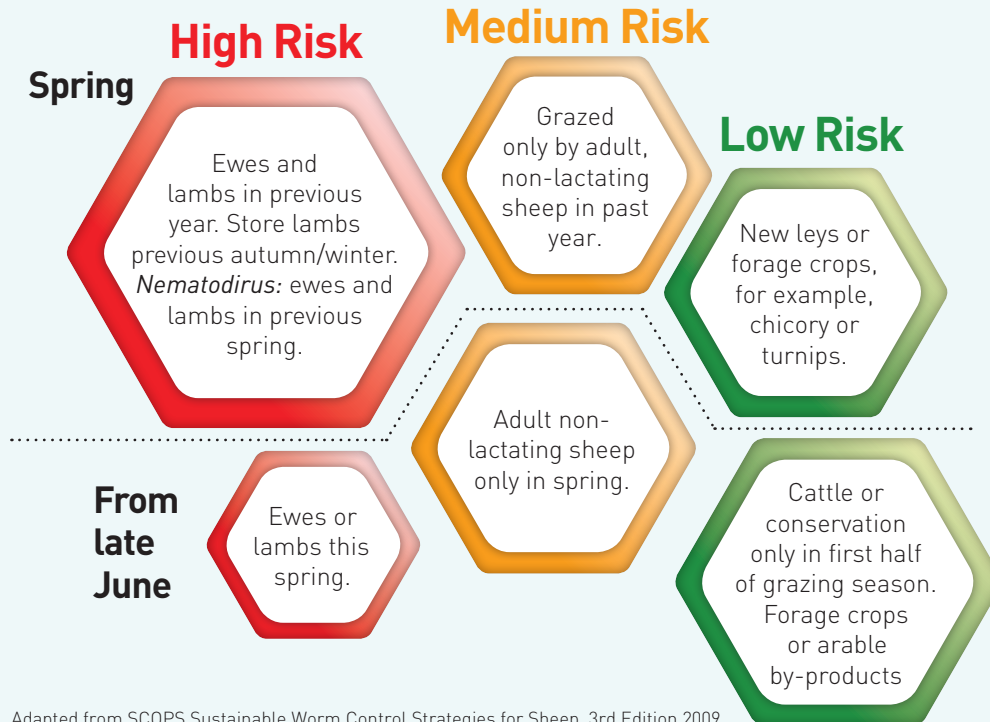
Worm populations can be divided into 2 sub-populations: parasitic (worms living within the host) and free-living (those living on the pasture). These sub-populations can further be divided again into those exposed to anthelmintics (parasitic) and those 'in refugia' which are free living or living within hosts which remain untreated. The relative size of these populations is an important factor which influences resistance. The larger the 'in refugia' population of worms that have not been treated, the more slowly resistance will develop as it will be less likely that the worms surviving exposure to treatment will be able to fully populate the next generation. Therefore placing treated sheep back onto dirty pastures will ensure that any surviving resistant worms do not produce purely resistant populations as quickly as they could if the sheep were placed on clean pasture.

AHDB outlines the following to help minimise the risk of resistance development:

- Discuss a control strategy with your vet or animal health advisor
- Quarantine new animals to prevent importing resistant worms
- Administer anthelmintics effectively
- Use anthelmintics only when necessary
- Select the appropriate anthelmintic for the task
- Monitor efficacy of the anthelmintics used

Pasture Management

Pastures should be assessed to determine their level of risk to sheep during the key season and whether this is high, medium or low. For example, to avoid an outbreak of *Nematodirus* newborn lambs should not be placed on pastures grazed by lambs the previous year. Other ways to manage pasture should also be considered: for example adult sheep have a much higher immunity against internal parasites than lambs, therefore if possible it is good practice to move older lambs once weaned onto pastures which pose a lower risk.



Adapted from SCOPS Sustainable Worm Control Strategies for Sheep, 3rd Edition 2009

Liver fluke has over the years become more widespread; if your farm is located in a 'flukey' area then treatment with a relevant product should be provided to control the disease. If possible you should try and remove sheep from flukey pastures, otherwise further treatments are likely to be required.

Testing and Control

Speak to your vet or animal health advisor for advice on when and how to carry out faecal egg counts (FEC); carrying out these tests on your sheep before they are wormed will ensure that your sheep do not receive any unnecessary treatment.

At the same time it is advised that other factors such as your:

- Pasture history
- Health plan from the previous year
- Seasonality
- Age of stock grazing the previous year previous year
- Weather

... should all be considered.

Remember a scouring sheep does not always mean worm burden!
Other causes can include: stress, coccidiosis, bacterial/viral infections, and nutritional deficiencies to name a few.

Quarantine Regimes

All animals entering the farm such as bought-in/replacement stock, and even those returning to the farm, e.g. from a show - should be quarantined. This will help prevent the introduction of internal parasites and although not covered in this guide, external parasites such as scab³. Carrying out a risk assessment will help you to determine the health of the sheep.

It is advisable not to put incoming sheep directly onto pasture or in contact with other sheep as soon as they arrive on your farm. They should be drenched with a group 4-AD or group 5-SI wormer. Using an injectable macrocyclic lactone will prevent scab too, but a second injection may be required, depending on the active ingredient. The sheep should be left on hard standing² for 48 hours after which they can be moved onto pasture that has been grazed by sheep during the current season and kept isolated from the resident flock for a minimum of 21 days. The recommended quarantine guidelines are from current SCOPS advice.

Quarantining and observing all incoming sheep and appropriately treating will help to prevent the introduction of sheep scab, lice, resistant worms/fluke, and other diseases such as footrot and contagious ovine digital dermatitis (CODD). It is an ideal opportunity to monitor the overall general health of bought in sheep, to conduct infectious disease testing, and administer any vaccinations that may be required

Notes

References:
^{1,2} SCOPS Sustainable Worm Control Strategies for Sheep, 3rd Edition 2009
³ Sheep Disease Directory, AHDB/EBLEX, 2013



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