

Factsheet



Liver fluke

Introduction

Fluke, *Fasciola hepatica*, can affect both sheep and cattle. Traditionally this parasite was mainly found in the wetter, western parts of the UK but, in recent years it has spread across the country. This spread has been linked to climate change, with the increased temperatures and rainfall leading to more favourable conditions for the mud snail which is the fluke's intermediate host.

Wet land in low lying areas of pasture provides core areas of snail habitat that expand greatly in wet periods. Very acid soils do not favour the mud snail and therefore a wet hill farm does not necessarily lead to a fluke problem.

Life cycle

The liver fluke has a relatively complex life cycle of approximately 18–20 weeks, an essential component of which is the presence of a mud snail (*Lymnaea truncatula*) as an intermediate host.

The adult fluke lives in the bile ducts of cattle or sheep and lays eggs which are excreted in the dung. One fluke can pass between 5,000 and 20,000 eggs per day. When conditions are moist and warm, the eggs hatch into small infective larvae (the first of five developmental stages) which actively seek their intermediate host, the mud snail (*Galba truncatula*) (see below).

Once in the snail, they develop into the next stages of development until they are shed by the snail. After 5 to 10 weeks from a single infective larva invading a snail, the snail can shed six hundred or more of the later larval stage. These larvae attach themselves to plants where they go through another change over two or three days.



At this stage (called metacercariae) they are infective when eaten by sheep or cattle along with the herbage. At temperatures of 12 to 14 °C, up to 100% of larvae can survive for six months, though only 5% survive for 10 months. For prolonged survival, the relative humidity needs to be above 70%.

Once ingested, the young fluke burrow through the gut wall and pass to the liver where they cause considerable tissue damage. Egg laying takes place some 10-12 weeks after the initial infection.

A damp environment is essential for the intermediate snail host and some stages of the fluke also require moisture. The infective stage cannot survive strong sunlight for more than a few weeks. When the weather turns colder the development of fluke eggs and the development of stages within the snail

stops, but infected snails can form a reservoir of infection that will be shed in the spring once temperatures get above 10° C. Warm, wet summers provide ideal fluke conditions whereas dry weather in spring and early summer will prevent the snails breeding and kill many fluke eggs.

Symptoms

Liver fluke generally causes more problems in sheep than cattle. Cattle seem to have a higher natural resistance to this parasite. Fluke is normally seen in the chronic form in cattle but can be acute, sub-acute and chronic in sheep.

Cattle - clinical signs include:

- weight loss
- anaemia and accumulation of fluid (oedema) which develops gradually
- diarrhoea
- abdominal pain
- reduced milk yield

Fluke infection may also predispose cattle to other conditions due to impaired liver function.

Sheep

- clinical signs:
 - sudden death
 - dullness and anaemia.

Acute disease in sheep usually occurs in late summer and autumn from large numbers of immature flukes migrating through the liver with little or no sign of fluke eggs in faeces.

The sub-acute form of the disease is usually associated with late autumn and early winter, with both mature and immature flukes present and faecal egg count of less than 100 eggs per gram.

- sub-acute infection clinical signs:
 - rapid weight loss
 - anaemia and oedema, usually under the jaw

Chronic infection which is normally seen from January to April occurs when a population of adult flukes becomes established in the bile ducts with egg counts generally above 100 per gram (though it is not uncommon to find no eggs in some samples).

- chronic infection clinical signs:
 - scour
 - anaemia (visible as pale membranes around the eye or vulva)
 - loss of body condition

Definitive diagnosis is based on post mortem examination. Fluke egg counts in faeces can be useful indicators of infection, although false negatives do occur as the infection may not be spread evenly throughout a herd or flock. A blood test is also available, although this only indicates previous exposure, not

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current infection. Antibodies against fluke can be detected in milk, and a positive result on bulk milk indicates that fluke is present in the herd and control should be considered.

Control and prevention

Fluke prevention and control should be part of an integrated approach to parasite control in the herd or flock health plan developed in conjunction with your vet. The following elements should be included in a fluke control and prevention plan:

- quarantine any new animals brought onto the holding - The quarantine procedure for any bought-in animals should include two treatments with a different flukicide to avoid increasing fluke burden or introducing resistant fluke. Sheep can pass fluke eggs up to three weeks after the adults have been killed, so even if treated, stock should be kept on quarantine pasture and away from fields with a fluke habitat for at least a month.
- cultural control can be achieved by drainage, but where farmers are involved in agri-environmental schemes this may prohibit drainage.
- keep susceptible stock, e.g. young calves and sheep, away from the wettest fields that could be infested by the mud snail from late summer onwards, or graze only less infected animals on those areas in spring to minimize infection of the snails.
- consider conserving forage from low lying fields rather than grazing them, this can be useful in reducing the risk of fluke as the infective larval stage dies quickly in silage.

Shared grazing of cattle with sheep, when fluke is present is a risk factor as the same fluke infects cattle and sheep. Mixed grazing or mixed use of land is only beneficial if pigs or horses are rotated with sheep and cattle. Horses can become infected with fluke but usually at low levels. Alpacas and llamas are very susceptible.

Treatment

Before considering treatment for fluke, farmers should confirm fluke status from the results of faecal egg counts, *post mortem* examination, or from abattoir feedback. If liver damage is reported at the abattoir, tapeworm infection should be discounted before treatment.

The choice of fluke treatment is important in terms of efficacy against immature or adult flukes. In choosing the correct product for the stage of flukes to be controlled it is desirable to try to limit the use of triclabendazole as this is the drug of choice for treating acute clinical fluke disease.

Treatment is often recommended in the autumn to prevent disease in livestock; but it may be worth discussing with your vet whether treatment in spring or summer in order to prevent infection of snails could be appropriate.

- **Beef cattle treatment**

Autumn/ winter treatment: The period of greatest risk is generally in the autumn and early winter when a product that kills immature fluke such as triclabendazole is advisable.

Spring treatment (April – June): a product that only kills adult fluke (e.g. closantel, nitroxynil) will be sufficient. Where clinical cases are found, it is likely that the whole herd is infected, although there may be large individual differences.

- **Dairy cattle treatment**

The timing of flukicide treatment of dairy cows needs to balance:

- the low number of products licensed for lactating cows
- the number of products licensed for dry cows
- the duration of the dry period (some products cannot be used at certain stages of pregnancy, most also set a specified interval between treatment and calving/milking)
- single treatment targeting all fluke ages vs. repeat treatment targeting adult fluke only
- the duration of the organic milk withdrawal period of each product.

- **Sheep treatment**

Acute fascioliasis: a single flukicidal treatment with a product that also kills immature fluke, combined with a move to fluke-free pasture, is the best option. However if for other reasons a flukicide that does not kill immature flukes is used, the treatment has to be repeated after 3 weeks, followed by a move to clean pasture.

Sub-acute /chronic fascioliasis¹: flukicides active against adult fluke only followed by a move to fluke-free pasture and improved nutrition to aid recovery.

There is little or no natural immunity to fluke in sheep so adult animals remain susceptible even if previously exposed.

Triclabendazole resistance

Triclabendazole has been the drug of choice to treat liver fluke infections in livestock for over 25 years, due to its high activity against both adult and immature flukes. However, resistance is increasing in the UK.

The heavy reliance on a single drug puts treatment strategies for fluke at risk. Using triclabendazole less frequently will help slow the development of resistance and preserve the efficacy of this treatment for when it is really needed e.g. for sheep with acute disease.

The use of a flukicide other than triclabendazole is sensible wherever it is thought the infection causing the illness or poor performance is due to

¹ In order to preserve drug efficacy, it is possible to treat only the most affected individuals in cases of chronic fluke infection in sheep, based on how pale mucous membranes look: colour charts (FAMACHA©) are available to guide scoring of anaemia in sheep.

mature stages of fluke. The use of combined fluke and worm products are not generally recommended, as it could lead to off-target selection for resistance, either for broad spectrum anthelmintics, or for flukicides. There may sometimes be instances in which combined treatment is appropriate.

As with all parasite treatments resistance can be slowed by limiting the number of treatments, administering the correct dosage and rotating treatments from different chemical groups.

Further information

Farm Health Online www.farmhealthonline.com

Non organic specific information

NADIS: <http://bit.ly/1HKAxNT> Liver fluke control in sheep

NADIS: <http://bit.ly/1ANJZ5D> Liver fluke control in cattle

SCOPS: www.scops.org.uk/internal-parasites/liver-fluke

Cattle Parasites: www.cattleparasites.org.uk/liver-fluke-and-rumen-fluke