



## Fluke – a nasty potential killer

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### The Liver Fluke



The liver fluke (*Fasciola hepatica*) is 2–3 cm long, leaf-shaped, brown and with suckers at both ends. Its lifecycle is complex so control is difficult. With no reliable pasture test to expose its presence, spotting clinical symptoms, such as anaemia, infertility, pale mucous membrane and ‘bottle jaw’ is vital. It’s a blood-sucker and the damage it does to the liver can be fatal - the sheep literally bleeds to death.

FEC and blood tests can both help identify the presence of liver fluke.

Liver fluke thrives in wet conditions and now it’s becoming more prevalent in geographic areas not usually associated with the parasite. In recent years the problem has increased significantly.





## An economic parasite

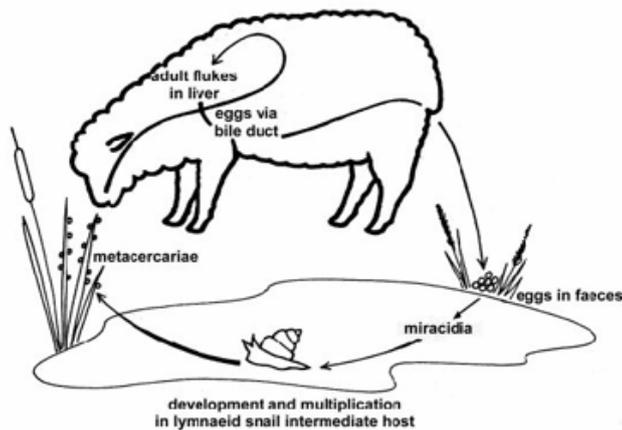
Like all bloodsuckers, the liver fluke not only causes welfare issues and death, it's an economic parasite too, costing the British sheep industry an estimated £50 million a year in Scotland alone. And it's not just the cost in deaths from untreated or chronic infection - loss of production is significant too. Ewe fertility and lambing percentages are decreased, lamb birth weights are lower and finishing times for infected lambs is longer, not to mention lower and inferior wool yields. Losses are also incurred from the condemnation of livers and the increased susceptibility of animals to clostridial infections.

## A nationwide problem aided by climate change

Liver fluke was normally associated with areas of high annual rainfall, such as western and hill areas. However, changes in weather patterns have clearly influenced the prevalence of fluke disease and it is now reported in areas that previously have been considered too dry to consistently maintain the mud snails upon which the fluke depends. Milder winters and warmer, wetter springs, summers and autumns are a major contributory factor for the change.

Environmental factors such as temperature and moisture play a vital part in the lifecycle of the snail and the liver fluke. Fluke eggs shed in the dung do not develop and hatch into infective stages and snail reproduction and development are curtailed when the average temperature is below 10°C. This is the reason that in many regions of the UK the fluke life-cycle is only fully completed between May and October.

## The Mud Snail is a resilient host



The lifecycle of the liver fluke is complex and dependent on the semi-aquatic mud snail that is its intermediate host (vector). The life-cycle of the liver fluke takes 18-20 weeks and it is greatly affected by temperature and moisture levels. The snail sheds 500-600 stages (*cercariae*) onto pasture, which encyst on vegetation as *metacercariae* and are infective for livestock for several months. Snails can overwinter in mud and emerge the following spring, and they can survive dry summer conditions by burrowing deeper into moist ground.





## Types and Symptoms of Liver Fluke Disease

Liver Fluke Disease occurs in three forms:

**Acute infection** occurs when massive numbers of infective cysts are ingested from herbage over a short period. The simultaneous migration of masses of immature fluke through the liver causes severe tissue and blood vessel damage, resulting in haemorrhage. What you will see here is the sudden death of lambs and sheep in autumn/early winter before fluke eggs appear in the dung.

**Sub-acute infection** Cysts are ingested over a longer period and the liver contains immature and some adult flukes. This occurs in late autumn/winter.

**Chronic infection** is the most common and is associated with a prolonged intake of moderate numbers of infective cysts and the accumulation of adult fluke in the bile ducts. They cause damage to the duct walls and feed on blood causing anaemia. Sheep with long term infections can show bottle-jaw, brittle wool and impaired production/fertility. It is seen in late winter/early spring and the disease is exacerbated by poor nutrition.

## Detection - how can we get a diagnosis?

Clinical signs can help but for a really accurate diagnosis a faecal egg count (FEC) will indicate fluke eggs and blood tests can identify liver damage. And remember to ask your abattoir if livers are rejected if the cause is liver fluke.

## Treatment of Disease

Following diagnosis, treat both sub-acute and acutely affected sheep **immediately** with a flukicide that is effective against young immature fluke (eg Triclabendazole). Move treated livestock to well-drained pasture. Treat animals that remain on infected pasture with a further dose 3 weeks later.

Sheep suffering from chronic infection should have a single treatment with any flukicide which has high efficacy against adult fluke. Moving to low-risk pasture will help prevent re-infection.





## Treatment schedule (for an average rainfall season)

- **Spring/early summer:** treatment of adult sheep in April/May with a flukicide which is effective against the adult fluke that accumulated from the previous year's infection. This will reduce deposition of eggs onto the pasture and reduce the summer infection of snails.
- **Autumn:** treat all sheep around October with a flukicide which is effective against immature fluke to prevent the migration and development in the liver and to improve the condition of the ewe.
- **Winter:** treat all sheep around January with a flukicide which kills immature and adult fluke to prevent liver/biliary damage and ill-thrift.

Further treatments may be necessary in high risk areas if the season has been very wet.

Watch out for anthelmintic resistance in flukicides too. At the moment resistance to flukicides in the UK is rising. It is important to monitor the effectiveness of flukicides, use them correctly and where possible to avoid using only one chemical family of flukicide year after year.

## Preventative Measures

### First Line of Defence is Pasture Management

So how can we stop the problem arising? Without water, and lots of it, the fluke cannot survive. If we can remove the intermediate host the lifecycle of the fluke is interrupted and they cannot survive. So efforts to reduce the mud snail's habitat must certainly be the first line of defence. Effective pasture drainage reduces wet areas, standing water, mud and rushes.

Fencing off wet boggy areas, ponds and watercourses and supplying water troughs instead can help keep sheep away from infested areas.

Avoid grazing sheep on heavy, wet, low-lying pastures, or beside muddy ponds or ditches. Mixed species grazing can help.

### Soil Health - a Copper-bottomed solution

Whilst evidence is at present anecdotal, the mud snail thrives on copper deficient land and is very susceptible to copper applied as part of a mineral dressing direct to pasture (after proper soil analysis to get the quantities right). Intensive grazing for many years will reduce copper in the soil, particularly in peaty or marshy ground and adding copper to soil benefits both the plants and the sheep.





## Biosecurity

The movement of animals from endemic fluke areas has also introduced infection into previously unaffected areas if mud snails are present. Treat all imported livestock from known snail habitats with a flukicide that kills immature fluke and if possible keep them on drier pastures or housed for 3 – 4 weeks.

## NADIS Fluke Forecast

NADIS parasite forecasts are invaluable and can be delivered by e-mail monthly on request.

Wet summers are often a precursor to increased risk of liver fluke disease the following autumn/winter. June rainfall is a good guide to the prevalence of fluke disease and watching this may be useful (*NADIS*). However, fluke contamination of pastures is likely to have started from high levels in many areas given the favourable conditions seen during the last couple of years.

## Sources

- Martin Lane's article 'Cultural Control of Liver Fluke' NSA magazine Jan/Feb 2013
- SCOPS website
- NSA website updates on SCOPS
- *Article on Liver Fluke* by Dr Bob Coop originally published in the *Sheep Farmer* magazine;
- *Various NADIS monthly reports on parasites* <https://www.nadis.org.uk/parasite-forecast/>
- *Line drawings for fluke lifecycle: HWI Australia*

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