Use the whole toolbox to guard your flock from liver fluke losses

By Liz Howse, Penbode Vets, Devon

The diagnosis and control of liver fluke can be a challenge with changing epidemiology, emergence of resistance and a need for an understanding of its complicated lifecycle. However, by understanding these factors, a sensible liver fluke control plan can be proposed and implemented on farm to minimise the potentially devastating effects of this parasite on your livestock.

Flukicide choice for treating sheep must be targeted, as resistance is developing.

Liver fluke is a flatworm, *Fasciola hepatica*, which can infect many species including sheep, cattle, humans, deer, goats and horses. The adults live in the bile ducts of the liver and shed eggs which are passed in the faeces. In warm and wet weather these eggs hatch on the pasture to release mobile miracidia. Miracidia migrate to find a snail host (the mud snail, *Galba truncatula)* where further development and multiplication occurs.

Eventually the next lifecycle stage, cercariae, are released from the mudsnail. These encyst on pasture to form metacercariae. Metacercariae are ingested and immature fluke migrate to, and through, the liver towards the bile ducts where adults can be found.

Infestation

The disease caused in sheep depends on the number of metacercariae ingested and over what period of time. Large numbers in a short time period means many immature fluke travel through the liver six to eight weeks later; this can lead to acute disease with sudden deaths. Subacute disease is seen slightly later on with a lower infection rate and can result in signs such as breathlessness, lethargy and anaemia. In smaller burdens the sheep may show few signs of infection until 10 to 12 weeks post infection. By this time adult fluke are in the bile ducts causing chronic disease, which presents itself as poor performance, bottle jaw and thin sheep.

Liver fluke infestation can be hard to detect in a live sheep but suspected infection may be confirmed by blood tests or faecal tests – *see panel*. Post mortem inspections can diagnose death from fluke and abattoir feedback is useful to indicate the level of disease in a flock. Much of an on-farm control strategy comes from combining the current situation with knowledge of the farm and local area, historic problems, weather conditions, time of year and the likely stages of infestation based on these factors.

Hatching of fluke eggs and snail multiplication varies year on year depending on conditions. Snails can be infected in the summer or, less commonly, over winter. The mud snail thrives in wet, muddy and slightly acidic soils at temperatures above 10°C. Thus it is more common in wet areas of the country with high summer rainfall. It can exist in permanent habitats such as streams and pools, and temporary habitats such as poached fields.

Warm and wet summers mean maximal snail activity and high numbers of infective metacercariae in the late summer to early autumn. Dry summers usually mean lower levels of pasture contamination. Snails infected over winter can sometimes cause heavy pasture contamination and significant disease in the spring.

Detecting liver fluke

- **Faecal coproantigen ELISA test.** This is a fairly new test that detects secretions of living fluke in the sheep's faeces. A positive result therefore means current infection. Samples need to be sent to the lab on the day of collection.
- **Fluke eggs in a faecal sample.** This indicates the presence of adult fluke, but does no pick up early infections, and egg secretion is intermittent so false negative results can occur. Occasionally eggs can be found after treatment in the absence of infection, if they are stored in the gall bladder.
- **Blood tests.** These can show signs of liver damage and the presence of antibodies to fluke. However, liver damage is not unique to fluke and antibody levels stay high for months after an infection, so positive results may not mean current infection.

The most common situation is where summer infection of snails leads to ingestion of metacercariae in the late summer or early autumn. This means adult fluke will be present in the sheep by late autumn to early winter and that pasture will be contaminated by eggs.

Control is based around two main factors: reducing the intake of metacercariae, and reducing pasture contamination. Not all measures to reduce the intake of metacercariae are practical in every situation, but when implemented they can reduce reliance on flukicide treatments. There needs to be some

Lifecycle stages killed by different flukicides

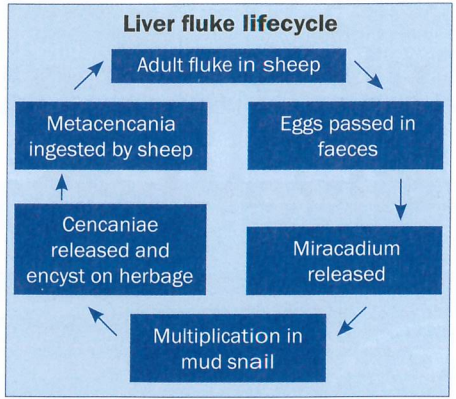
Active ingredient	Lifecycle stage killed	Example of use
Triclabendazole	All stages down to two-day-old larvae	At risk periods of acute liver fluke, six to eight weeks after ingestion of large numbers of metacercariae e.g. in the autumn after a wet summer.
Nitroxynil or closantel	Adults down to six/seven-week old larvae	Where the risk of acute disease is lower but production losses are expected from larvae in lower numbers e.g. six weeks after the temperature falls in the winter, typically around Christmas.
Albendazole or oxyclozanide	Adults only	Where adults are the only stage to be targeted e.g. to reduce pasture contamination in the spring.

See the SCOPS 'Know your anthelmintic groups' leaflet for more information on trade names and meat withholds. Request a copy from NSA or download one at www.scops.org.uk.

knowledge of the snail habitats on the farm. Wet boggy areas can be fenced off and the wettest fields avoided from July onwards. Pasture management to reduce poaching of fields and draining areas of land can also help to decrease snail habitats. On smallholdings, geese have been known to help by eating snails.

To reduce pasture contamination, delayed turnout could reduce pasture contamination. But in reality, if infestation is present farmers often have to resort to strategic use of flukicides. Treatments during winter to catch residual infection mean sheep should not be shedding liver fluke eggs back onto pasture in the spring.

There are various flukicide treatments available to kill different stages of liver fluke – *see table* – and choices should be targeted because there is resistance developing to these products. Triclabendazole has known resistance.



Careful use of these products is vital if we are to have sustainable control of liver fluke in the future. Combination products should generally be avoided unless worm treatments are needed at the same time as the fluke treatment. Bear in mind that immunity to fluke is very poor so control will be needed year on year.

With milder winters and wetter summers, the time at which we typically see clinical disease seems to be coming earlier in the season. By combining fluke forecasts, abattoir feedback, diagnostics and knowledge of your farm and its history, you and your vet should be able to produce an adaptable and sustainable fluke control programme for your farm.