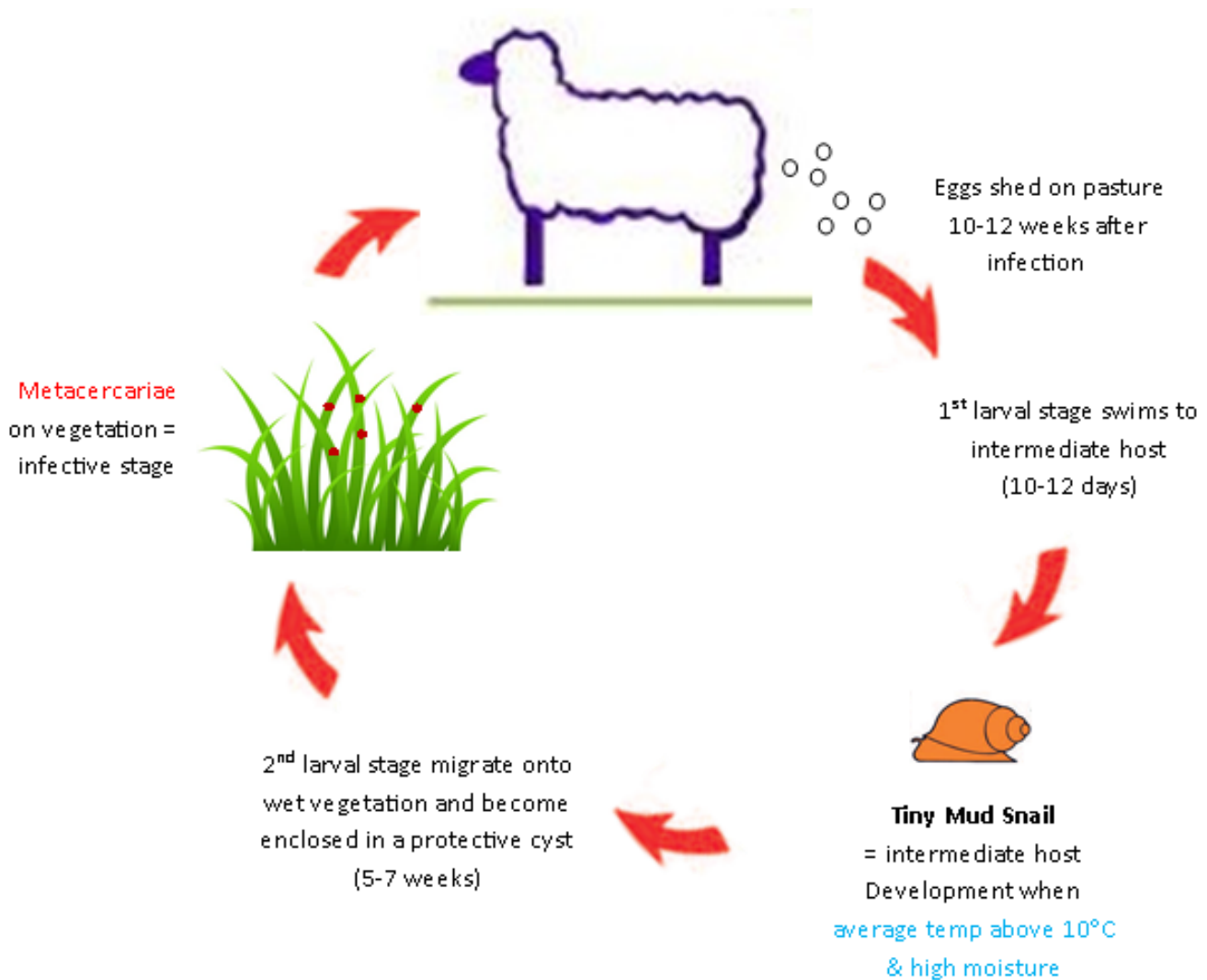


## Liver Fluke in Sheep

Liver fluke has an indirect life cycle involving a tiny mud snail which can only survive in water and boggy areas. Liver fluke can infect sheep and cattle.



The quantity of infective fluke on pasture, and therefore the risk of fluke, is directly related to the amount of rain between May and October.

NADIS provides fluke forecasts at key times of the year, particularly July and October: see <http://www.nadis.org.uk/parasite-forecast/>

These forecasts can be used to predict how frequently fluke treatments need to be administered, which can vary from year to year.

For example, very wet conditions in May, June & July result in more mud snails on pasture, which in turn lead to there being more metacercariae present (the stage which can infect sheep and cattle).

## Symptoms of fluke infection

The symptoms seen depend on the number of metacercariae eaten.

Very high numbers of metacercariae cause disease 1-3 weeks after they are eaten, and symptoms are a result of immature fluke migrating through the liver.

At lower levels of infection, disease takes longer to develop, with different symptoms caused by the fluke moving into the bile ducts of the liver.

- **Acute fluke:** occurs due to very high levels of infection
  - 1-3 weeks after infection: Late summer in v wet years
  - Sudden death, lethargy, difficulty breathing, reluctance to move
  
- **Subacute fluke:** occurs due to medium levels of infection
  - 4-7 weeks after infection: typically Autumn/winter
  - Anorexia, sudden weight loss, anaemia, bottle jaw
  
- **Chronic fluke:** due to lower levels of infection. **MOST COMMON**
  - Several months after infection: typically January to April
  - Weight loss (not sudden), poor fleece, bottle jaw, diarrhoea, fluid in abdomen

## Treatment and Prevention

Not all farms will need to treat for fluke. Diagnosis is covered in the next section.

### Quarantine

Protect yourself! All farms, in particular those without fluke, should include fluke treatments in their quarantine protocol for incoming stock:

- Graze in dry fields with no snail habitats for as long as possible. During this period:
- Treat with a Triclabendazole product on arrival
- Treat with Closantel or Nitronxynil 6 weeks later

**Alternatives to flukicides** are not always practical but should be considered. They include

- Fencing off fluke habitats
- Improving drainage – planting trees can help
- Avoid grazing high risk fields from late summer
- Encouraging waterfowl as they will eat the intermediate host and break the life cycle
- Be aware that cattle are also susceptible to fluke, so co-grazing or grazing rotation will NOT help reduce the risk.

## Flukicides

A variety of flukicides are available, and treatment protocols need to ensure that the right product is used at the right time.

It is particularly important not to over-use Triclabendazole products and to only use them when there is a concern regarding ACUTE and SUBACUTE fluke. Triclabendazole is the **only** flukicide capable of treating immature fluke, and already resistance is reported.

In addition, a number of flukicides are available in combination with wormers for gut roundworms. These are only appropriate if the sheep to be treated also need worming – if not, avoid these!

The table below shows flukicide products and the stage of fluke they can treat.

Those lower down the table should be reserved for use on higher risk farms; lower risk farms should use products lower down the table.

Product	Stage of infection (weeks) & expected effectiveness				Suggested treatment time
	1-4	5-8	9-11	12-14	
<b>Albendazole</b> <i>Albenil, Albex, Endospec</i>	-	-	50-70%	80-99%	<u>Spring</u> /Summer
<b>Oxyclozanide</b> <i>Zanil</i> <i>Also combination product</i> <i>Levafas Diamond</i>	-	-	50-70%	80-99%	<u>Spring</u> /Summer
<b>Nitroxynil</b> <i>Trodax</i>	-	50-90%	91-99%	Avoid use	Late Autumn/ Winter
<b>Closantel</b> <i>Flukiver, Solantel</i> <i>Also combination products</i> <i>Supaverm, Closamectin</i>	-	50-90%	91-99%	Avoid use	Late Autumn/ Winter
<b>Triclabendazole</b> <b>Use only for acute &amp; subacute infections</b> <i>Endofluke, Fasinex, Tribex, Triclafas</i> <i>Also combination products</i> <i>Fasimec Duo, Cydectin</i> <i>TriclaMox, Combinex</i>	90-99%  If no resistance	91-99%  If no resistance	AVOID USE		Autumn  ACUTE cases

## Four Point Plan for Fluke control

1. Spring - reduce infection of snails
2. Summer - reduce snail population (drainage etc)
3. Autumn - avoid high cyst challenge – graze away from high risk areas
4. Winter - strategic use of flukicides for at risk animals

If possible treatment should be delayed until 1-2 months after housing as this will increase the chance that all fluke present will be killed by the dose. Closantel can cause inappetance so ideally treat ewes AFTER lambing.

Ideally treatment should be performed after faecal testing that confirms a need to treat. For more information on diagnosis, see below.

## Diagnosis

1. **Abattoir feedback** is an underused yet enormously valuable tool for evaluating the effectiveness of control strategies.
2. **Faecal samples** can be used to detect chronic infections. Flotation techniques detect infection 10-12 weeks after first infection. Pooled samples can be useful (take samples from up to 10 sheep, similar quantity from each contributor; minimum 50g faeces required). A faecal coproantigen test can detect infection a few weeks earlier and should be carried out on individual samples.
3. **Post-mortems** are the only way of definitively diagnosing acute liver fluke; these are important to carry out, as a positive diagnosis enables other at-risk sheep to be treated (TCBZ)
4. **Blood tests** can detect fluke antibodies from 2-4 weeks after infection. Levels may stay positive for several months after effective treatment so this method is most useful for flock-level and quarantine screening.