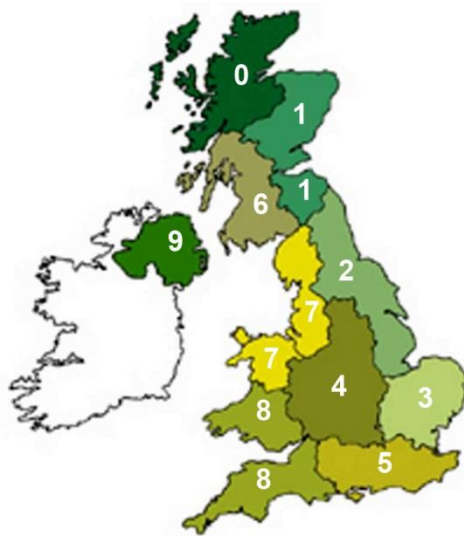


As part of AMTRA’s online CPD Programme for livestock RAMAs (SQPs), each month AMTRA will send you the Parasite Forecast which will highlight the parasitic challenge facing livestock in your area for that month. At the end of the Parasite Forecast you will find a series of multiple choice questions (quiz button) based on its contents. Answer the quiz online and you will be emailed a certificate with your score. This will form part of your RAMA (SQP) CPD requirement. The Parasite Forecast has been developed by NADIS (National Animal Disease Information Service) and is written by leading veterinary parasitologists and based on detailed data from the Met Office

NADIS Parasite Forecast – DECEMBER 2020

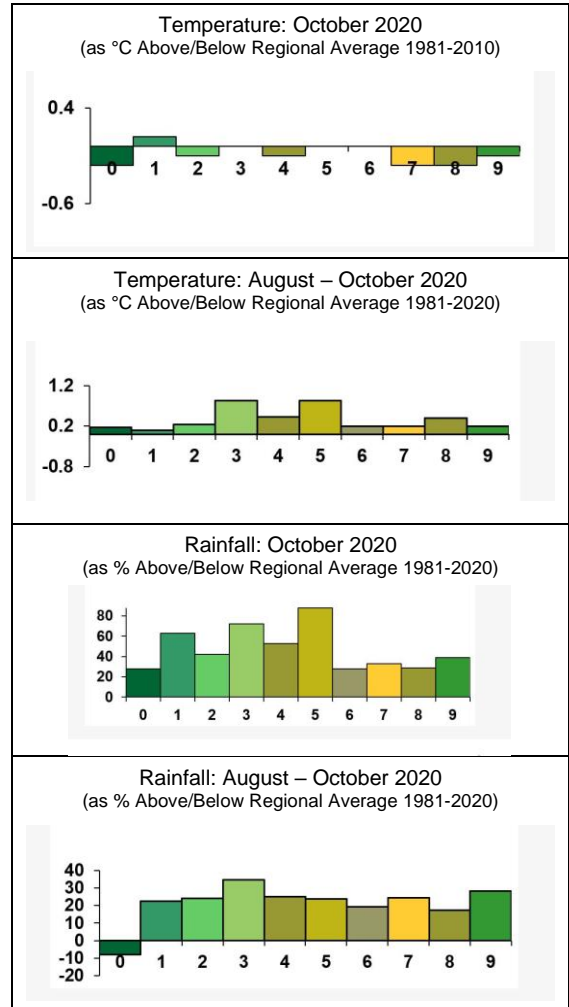
Use of meteorological data to predict the prevalence of parasitic diseases

Regional Weather (based on Met Office figures)



REGIONS

- | | |
|----------------|-------------------------|
| 0 N W Scotland | 6 S W Scotland |
| 1 E Scotland | 7 N W England & N Wales |
| 2 N E England | 8 S W England & S Wales |
| 3 E Anglia | 9 N Ireland |
| 4 The Midlands | |
| 5 S England | |



The most recent version of this monthly parasite forecast may be accessed at www.nadis.org.uk

Weather Report

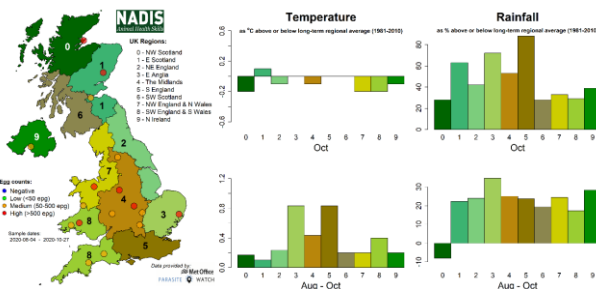


Figure 1: Temperature and rainfall by region for previous months. Egg count data shows the most recent counts for roundworms in sheep at each location between the sample dates stated.

October began very unsettled, with Storm Alex bringing rain and strong winds to much of England and Wales. It remained wet and/or windy for most of the month. The provisional UK mean temperature was 9.4 °C, which is similar to the 1981-2010 long-term average. For most of the UK it was wetter and duller than average, although the south of Northern Ireland and the Isle of Man had above average sunshine.

Liver fluke: final autumn forecast

The final liver fluke forecast for autumn 2020 is based on temperature and rainfall from May – October. The weather conditions this year have led to a lower risk of fluke than last year. Only south west Scotland and Northern Ireland are considered high risk, with the rest of Scotland, north west England and north Wales falling into the medium risk category (Figure 2). Farmers with livestock grazing in high and medium risk regions are advised to be vigilant for signs of disease, especially in sheep. Local conditions are very important for liver fluke, and farms with a lot of wet or muddy pasture, and/or a previous history of liver fluke, may be risky even if in a low risk area. If in doubt, please seek veterinary advice.

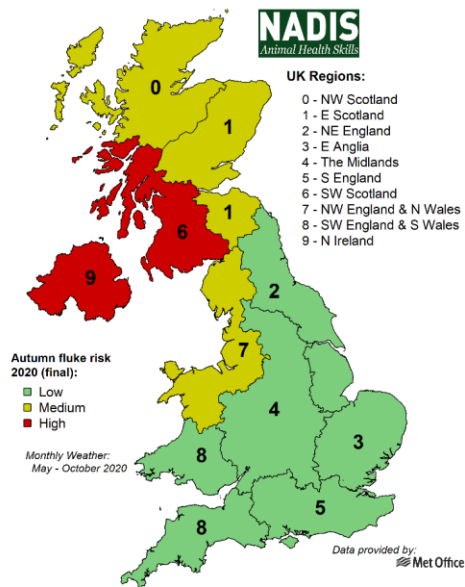


Figure 2: Final 2020 UK autumn fluke risk forecast by region.



Figure 3: Areas of permanently wet pasture can provide optimal conditions for mud snails, and by extension liver fluke. Such areas can be found on some farms year-round even with low levels of rainfall. Photo courtesy of Dr Philip Skuce, Moredun Research Institute.

Sheep are more susceptible to acute fluke infection than cattle, but both species may harbour chronic infections for months or even years if left untreated. Chronically infected animals may show no obvious signs, yet such infections can adversely affect productivity by reducing fertility, growth and milk yields. It is also important to consider the risk of Black disease at this time of year; this clostridial infection may take root in liver tissue damaged as a result of fluke infection (Figure 4). Unvaccinated animals are especially at-risk, potentially leading to cases of sudden death.

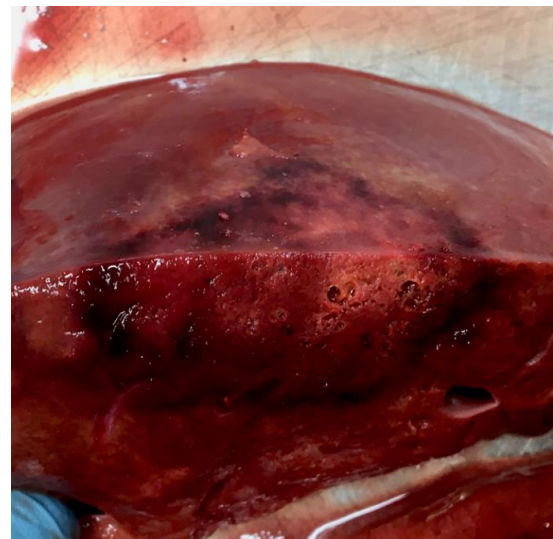


Figure 4: Risk in cattle (and sheep) of Black disease increases significantly in animals infected with Liver fluke. Photo courtesy of Ben Strugnell, Farm Post Mortems.

Advised actions include:

- Monitoring for signs of disease. Both sheep and cattle are susceptible to infection with liver fluke, although acute outbreaks are more common in sheep:
 - Sudden death in heavy infections
 - Dullness, anaemia and shortness of breath
 - Rapid weight loss, fluid accumulation (e.g. bottle jaw)
- Routine diagnostic testing to give a greater insight into current infection status:
 - Post-mortem of lost stock in acute outbreak allows for a definitive diagnosis, whilst abattoir feedback can provide useful information on overall infection rates (Figure 5).
 - Antibody ELISAs are useful in detecting acute infections in lambs through regular (e.g. monthly) blood sampling of about 10 individuals per group. Treatment is required if/when the first lambs become positive.
 - Although not useful in acute fluke cases, copro antigen testing and worm egg counts can be used later in winter or in spring, to see if animals need treatment whilst housed or prior to turn out. These can be used with pooled samples to test group-level infections.
 - Herd-level infection status in dairy cattle can be assessed through testing of bulk milk tank samples, although these values will tend to remain similar throughout the year, so are not useful for determining when to treat
- Identify and avoid grazing high risk “flukey” pastures at this time.
 - Mud snails are generally found in damp, muddy areas such as the borders of permanent water bodies, wet flushes (often identifiable through presence of rushes and other water loving plant

species), ditches, boggy areas etc. (Figure 3).

- Pastures previously grazed by fluke-infected sheep should be considered a risk to cattle and vice versa. Cattle farmers grazing sheep on their pastures overwinter should bear this in mind when selecting which pastures to graze them on.
- Routine clostridial vaccination will help prevent Black disease and should be considered if not already in place.



Figure 5: In sheep, acute fluke infection (left) is caused by juvenile flukes migrating through the liver. The tracks are left by migrating fluke are visible on the surface of the liver. Chronic fluke infection (right) is caused by adult flukes living in the bile ducts (see enlarged and thickened bile ducts), and may also be detected at slaughter.

- Where acute disease occurs, treatment with triclabendazole is recommended as this is the only product effective against both adult and early immature stages of the parasite. **However**, due to growing concerns over drug resistance:
 - Ensure such treatments are carried out correctly by following the manufacturer's recommendations, checking calibration of dosing equipment prior to use and dosing by weight of the animal.
 - Where drug failure is present or resistance suspected, it is strongly advised that treatments are accompanied by resistance testing through faecal egg counts. For more

- information please seek veterinary advice.
- Closantel is an alternative for use in sheep where resistance makes triclabendazole ineffective. It kills immature fluke from 5 weeks so careful timing is needed to ensure treatment is soon enough to prevent disease but late enough to be kill the flukes that are present.
 - Alternatives to triclabendazole can be used in infected but otherwise healthy animals after housing for the winter. If taking this approach it is necessary to either repeat or delay treatment so that all flukes are of a sufficient age to be killed by the chosen treatment:
 - It is much more efficient to delay treatment for 6-10 weeks after housing (exact time depends on product used) to ensure all fluke within the animal are mature enough to be killed by treatment, than it is to treat at housing but leave a large immature fluke burden within the animal that can then remain there until the next treatment a year later.
 - A list can be found on the COWS website showing details of what ages of fluke are killed by different products. Meat and milk withhold times are also shown, although do check the packaging of the product as well because these can change.
<https://www.cattleparasites.org.uk/app/uploads/2018/04/Flukicide-product-table.pdf>
 - Treatment of dairy cows is particularly awkward as many products can only be used in the dry period, if at all. Triclabendazole is generally suitable for cows being dried off between August and December, however residues in milk are an increasing problem, so take care to check packaging for details of when treatment can be given.
 - For cows that are being dried off now and have been housed for more than 6-8 weeks, it is better to use a non-triclabendazole product to delay resistance developing.
 - In lactating cows, treatment is best avoided, but if treatment is needed urgently due to clinical disease, some albendazole and oxclozanide containing products are licensed but a 60 or 72 hour milk withhold must be observed. Please check the product label for milk withhold times
 - The SCOPS groups suggest using closantel or nitroxylnil at 3 weeks post housing in sheep, with a further treatment to kill any residual adult parasites the following spring (www.scops.org).
 - In the absence of any obvious signs, chronic infection should still be considered where animals have been grazing at risk pastures. In such instances, the decision to treat can be informed by diagnostic testing such as worm egg counts, evidence of poor body condition score and/or sub-optimal productivity.
 - When planning flukicide treatments, it is important to check labelling of individual products for range of activity, withhold times etc. For more information, please speak to your vet or RAMA.

SHEEP

Parasitic gastroenteritis (PGE)

Due to the seasonal colder weather, roundworm larvae are likely to have stopped development. However, infective stage larvae already present on pastures may still present an infection risk. Egg count data from the [Parasite Watch](#) from August to October shows medium and high egg counts on farms across the UK (Figure 1).

In particular, *Trichostrongylus* species can continue to be a risk in store and replacement lambs and, sometimes, yearlings at pasture over the winter (Figure 6). It is therefore important to maintain vigilance for signs of disease in at risk animals grazing potentially contaminated pastures.

As conditions become colder it is also important to consider encystment and the arrested development of roundworm infections like *Haemonchus* and *Teladorsagia*. Encysted larvae

will resume their development in the spring, with yearling lambs carrying high levels of such infections potentially at risk of scours similar to type-2 ostertagiosis in cattle. Encysted larval populations can also be an important source of early pasture contamination in the next grazing season. The decision to treat such infections is not necessarily straightforward, since worm egg counts can be negative. It is therefore important to consider at-risk animals, previous grazing history, treatments and levels of infection observed earlier in the year. If treatment is indicated, a number of products in different worming groups carry a licence of efficacy against arrested larval stages. For more information on anthelmintic selection and treatment options please speak to your vet or RAMA.



Figure 6: Trichostrongylosis is a common problem in store and replacement lambs in the autumn and winter months

Advised actions include:

- Monitoring for signs of disease:
 - Loss of appetite
 - Diarrhoea (black scour)
 - Dehydration
 - Rapid weight loss
- For active ongoing infections, such as *Trichostrongylosis*, consider worm egg counts and weight gain in at-risk animals to determine infection status and need for treatment. Where treatments are required:
 - Leave animals on the dirty pasture for 2-3 days after dosing, then move to a safe pasture if available.
 - Aim to leave at least 10% of the flock untreated
 - Check efficacy through worm egg counts; Re-test 10-12 individuals at 7-14 days post treatment depending upon the product used.
- When assessing the potential risk of encysted larval stage infections:

- Egg counts are not a reliable indicator.
- Consider groups of at-risk animals, their previous grazing and treatment history
- Use an anthelmintic licenced for use against larval encysted stages
- If you are unsure, please seek veterinary advice

Scab and Lice

Scab (mite) and louse infestations can become a problem in sheep flocks over the autumn and winter months, typically from September-April. Whilst the signs of scab and louse infestations (pediculosis) are similar, treatment options may differ considerably, making diagnosis an important first step towards treatment.

Sheep scab is caused by psoroptic mites (*Psoroptes ovis*; Figure 7). Infestations cause loss of condition, secondary skin infections and potentially death if not treated. Signs include severe itching, wool loss, restlessness, biting and scratching of affected areas and weight loss or reduced weight gain. When examined, the fleece may be wet, sticky and yellow due to serum discharge and the skin may become thickened and corrugated (Figure 8). Studies show scab mites can remain infective in the environment for up to 17 days. Consequently, fields, sheds and pens where infected sheep have been kept and handled should be considered a potential source of infection to other sheep during this period.



Figure 7: Psoroptic mites (left) can be identified from skin scrapings, whilst louse infestations can be confirmed in affected fleece (right). Photos courtesy of Dr Joseph Angell.

Louse infestations in the UK are mainly caused by chewing lice (e.g. *Bovicola ovis*; Figure 7) and may present in a similar way to scab. Thin sheep tend to be worst affected. If louse infestations become widespread within the flock, this may indicate an underlying problem.

To reach a diagnosis:

- For scab, diagnosis can be made through microscopic examination of skin scrapings from suspected animals to detect the mites (Figure 7), or by detection of antibodies in blood samples with an [ELISA test](#).
 - Chewing lice live in the fleece and can be identified from wool samples taken from affected areas. Lice can sometimes be seen with the naked eye and confirmed by microscopy (Figure 7).
 - For more information concerning diagnosis, please speak to your vet.
 - **Sheep scab is notifiable in Scotland.**
- Seek veterinary advice if treatment does not seem effective.
 - Louse infestations can be controlled with [topical products containing synthetic pyrethroids](#). These products are most effective on shorn sheep.
 - Plunge dipping with diazinon is effective against both scab and louse infestations. Again, resistance is threatening to become a problem so dips must be used according to instructions, including submerging sheep for the required length of time. Use of these dips as a shower is ineffective and illegal.



Figure 8: A severe case of sheep scab characterised by wool loss, yellow crusty discharge from the skin, and thickening of the skin.

Where treatment is required:

- First, ensure the correct diagnosis has been reached.
- Injectable macrocyclic lactone (3-ML) products are effective against sheep scab with [varying periods of protection](#).
 - Group 3-MLs are also a roundworm treatment, so their use should be integrated into an overall parasite control plan
 - Scab mites resistant to group 3 MLs have been found in the UK. To reduce the risk of further resistance developing, it is important to closely stick to recommended treatment protocols and avoid unnecessary treatment.

Cattle

Treatment at housing

Spring-born suckler calves, dairy calves and other growing cattle housed after their first or second season may require treatment at housing with a product effective against encysted larval stages of roundworms such as *Ostertagia*. This is because roundworm infections acquired in the latter stages of the grazing season may encyst in the stomach wall and lie dormant over the winter rather than continue their development. If untreated, heavy burdens of encysted larvae can cause type-2 ostertagiosis in late winter or spring due to a triggered mass emergence (Figure 9). These encysted larval burdens cannot be assessed by worm egg count. Several products containing either a group 3-ML or 1-BZ anthelmintic carry a licence against encysted roundworm infections in cattle. For more information please speak to your vet or RAMA. Some group 3-ML preparations also have the added advantage they are also effective against both sucking and chewing lice (see below).

Due to the short time spent at pasture and the small quantities of grass they will have consumed, Autumn born suckler calves are unlikely to require anthelmintic treatment at this time.

Adult cattle should not require any treatment for gut worms, but may benefit from treatment if in poor condition.

See above for things to consider when treating housed animals for liver fluke.

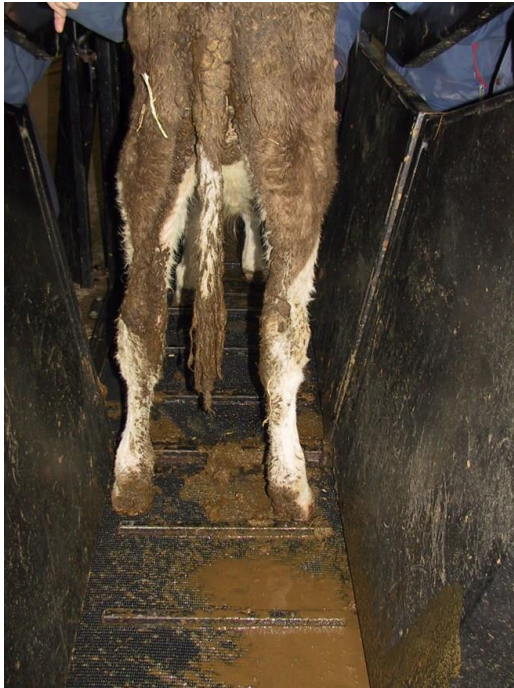


Figure 9: Type-2 ostertagiosis is a potentially serious disease that occurs in housed young stock in the late winter early spring. It is caused by triggered mass emergence of encysted larval infections acquired at the end of the previous grazing season. It is important to consider at-risk animals at this time and treat appropriately to avoid clinical disease.

Whilst housing prevents further infection with pasture-associated parasites like roundworms and fluke, the risk of louse and mite infestation increases at this time (Figure 9). These parasites can spread directly from animal to animal very easily once they are penned in close proximity to one another in relatively dry, warm conditions. Cattle can be affected by sucking or chewing lice, and by three species of mange mites, the most common of which causes chorioptic mange. Psoroptic and sarcoptic mange are less commonly seen in the UK, but can have more severe effects.

Often, infestations are well tolerated, producing only mild and localised signs. Occasionally, however, infestation with some ectoparasites, particularly mange mites, can be more severe with noticeable irritation, discomfort, hair loss and thickening of the skin (Figure 9). A number of products containing either synthetic pyrethroids (SP) or group 3-MLs are available for treatment of ectoparasites in pour-on and spot-on formulations, as well as injectable group 3-ML products. In instances where treatment is required, it is important to first determine whether mites (and if so, which species) or lice are to blame, to determine the most appropriate treatment.

For the treatment and control of ectoparasites the [COWS group](#) currently advise:

- **Lice:** Pour-on SP or 3-ML preparations for chewing lice, and injectable group 3-ML preparations for sucking lice. Most treatments are not effective against louse eggs, meaning animals can potentially become re-infested if products with little or no residual activity are used.
- **Mites:** Permethrin-based SP products or pour-on group 3-MLs can be used for chorioptic mange. Sarcoptic mange can be treated with injectable group 3 MLs. Psoroptic mange is more difficult to treat – seek veterinary advice.
- It is necessary to treat all animals on the affected premises to avoid re-infection. Treated animals should be moved to an area free of cattle for at least 3 weeks to avoid re-infection from the environment.
- Always check the label of products to ensure they are effective against the right parasite. For more information, speak to your vet or RAMA, see the [COWS group guidelines](#) and the [NADIS information page](#) for more details.



Figure 10: Ectoparasites (louse and mite infestations) in housed cattle usually produce only mild, self-resolving signs (top). However, some parasites and circumstances, such as psoroptic mange (bottom) can lead to more severe disease and the need for appropriate treatment informed by diagnosis.

[Don't forget to try the interactive quiz](#)

Local farm conditions may vary so consult your veterinary surgeon. Parasite control should be part of your veterinary health plan.

*To watch a webinar (video) based on this article and take an electronic quiz worth 3 CPD points, click [**WEBINAR**](#)*

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