

Factsheet



Fly Control

Fly strike or myiasis is the infestation of living tissues with the larvae of flies. There are various types of fly strike. Generally breech or tail strike is the most common but body strike, foot strike, head strike and pizzle strike are all possible.

In body strike flies are attracted to sheep by the odours of excessive sweating and or decaying organic matter in the fleece, usually over the loins, shoulders, flanks, back, throat or abdomen. In breech or tail strike flies are attracted to fleece contaminated with urine or faeces and are particularly associated with scouring.

Head strike occurs in horned breeds with accumulation of dirt and grease in the horn base or from wounds from fighting or de-horning and pizzle strike occurs in the wool around the opening of the prepuce. Foot strike can also occur; however the vast majority of strike occurs around the tail or breech.

Symptoms

Sheep suffering from fly strike show obvious signs of distress. They may appear agitated or dejected and spend less time grazing. In tail or breech strike infested sheep stamp their hind legs, shake their tails vigorously or gnaw and rub at the breech. As lesions develop a distinctive odour is noticeable and the wool becomes matted and discoloured. If the infestation remains untreated the affected area increases and wool is shed from the centre accompanied by signs of constant discomfort. On close examination the strike lesion appears as a foul smelling area of moist brown wool often with early stage maggots visible.

Understanding the life cycle of the fly

The most common fly species that cause fly strike problems in the UK are: *Lucilia sericata* (the greenbottle) *Phormia terrae-novae* (the black blowfly) and *Calliphora erythrocephala* (the blue bottle). Unlike scab mites or lice these flies do not depend on sheep to complete their life cycle (they are not "obligate" parasites) and they can perform some beneficial tasks such as aiding the decomposition of dung and carcasses.

Fly strike is predominantly caused by the greenbottle (*Lucilia sericata*) and related fly species which lay eggs on the living sheep. Unlike other species of blowflies *L. sericata* will not enter areas of low light intensity; consequently they are rarely encountered in houses or barns. Fly strike may occur on any part of the body where the wool has become soiled or infected with bacteria. Blowflies have low population

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densities with less than 1500 flies per square mile, and only females that are going to lay eggs are attracted to sheep.

Adult flies can fly 10 miles and are not greatly impeded by wind speed. Blowflies attack in waves, classified as primary, secondary or tertiary fly waves. Primary flies (*Lucilia* and *Phormia*) lay eggs on damaged or soiled areas of fleece. Female flies can begin to lay eggs 5 to 9 days after emerging from pupae and 2000-3000 eggs can be laid in 9 to 10 batches over a three week period depending on temperature. Eggs hatch within 24 hours into first stage larvae if there is sufficient humidity in the fleece. Eggs are continually being deposited on the fleece but these first stage larvae cannot survive in wool with moisture content below 70 to 90%. Emerging larvae or maggots are very active. Larvae feed for a variable time period depending on the availability of food. The mature maggots crawl off the fleece and pupate in the soil where they remain in the pupa for 3 to 21 days under summer conditions. Overwintering pupae remain inactive until the soil temperature rises above 7 °C.

Secondary flies are attracted by the smell of the primary lesion. *Calliphora* rarely initiate strike on their own but can be found in later waves of fly attack. Similarly the third wave of flies is attracted by the increasing lesion and secondary bacterial infection. If unchecked, extensive infestations of secondary, tertiary or further waves of flies occur and the sheep can die a quick agonizing death.

The prevalence of blowfly strike is weather dependent, with the majority of cases of body strike occurring during periods of high humidity or warm periods after heavy rain. Breech strike depends less on weather as the moisture supplied by urine and/or scouring is sufficient to attract flies. The risk of blowfly strike increases with flock size and stocking density, but decreases with altitude.

Start of season ewes are most likely to get fly strike. The incidence of ewe strikes was significantly associated with higher mean temperature, rainfall and shearing; shearing was associated with a 95% reduction in the risk of ewe strike. In lambs, the incidence of strike was significantly related to higher fly abundance, ewe shearing, treatment and mean ambient temperature. Lambs were more than four times more likely to be struck after the ewes had been shorn than before.

Temperature has a big effect on fly strike. Below around 9°C flies do not lay eggs. The incidence of lamb breech fly strike does not seem to have a relationship with weather condition; however the risk of body strike in lambs was significantly associated with higher rainfall and higher maximum temperatures. Clearly, any factors that facilitate larger *L. sericata* populations, such as increased average ambient temperatures, are likely to increase the incidence of strike.

Factsheet



Veterinary medicines for prevention and treatment

There are several licensed pour on products that can be used against fly strike. Some products only prevent the problem; others both prevent and treat. You must make sure you are using an appropriate product at the right application rate. The table below lists available pour-on products and their withdrawal times

Product	Active ingredient	Prevention / treatment	Statutory withdrawal	SA Organic withdrawal	Persistence of prevention
Crovect	Cypermethrin	Prevention & treatment	8 days	24 days	Up to 8-10 weeks
Clik	5% Dicyclanil	Prevention	40 days	80 days	Up to 16 weeks
ClikZin	1.25% Dicyclanil	Prevention	7 days	21 days	Up to 8 weeks
Spot On	Deltamethrin	Treatment	35 days	70 days	N/A
Dysect	Alphacypermet hrin	Prevention & treatment	49 days	98 days	Up to 8-10 weeks

Treatment of blowfly strike should aim to kill any maggots present, prevent the likelihood of further fly strike and assist the wound to heal. The wool should be carefully clipped away from around the wound and surrounding area. A suitable insecticidal cream should be applied to the infected areas. Mild cases should heal quickly with correct treatment. Special attention should be paid to high risk sheep, such as those with dirty rear ends particularly during the period of risk, from May to September.

Non-organic farmers may also use Organophosphate plunge dips to control fly strike but these are not permitted under Soil Association standards. Iodine, Stockholm tar and maggot oil may also be used to treat minor attacks for individual sheep and for discouraging further problems.

Note the differing persistence of prevention for the different preventative products. Note also that the manufacturers do not say that a product will definitely last for a certain time, but that it may last for up to so many weeks. Depending on conditions you may well need to apply pour-on preventatives at least twice during the fly strike season.

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Deciding upon which pour on to use

In terms of choosing which pour on to use, products which have cypermethrin as the active ingredient are more restricted when issuing permissions for group treatments. Products such as Crovect can be used to treat individual cases of strike, due to its insecticidal effect. Care must be taken to ensure that the product does not seep into open flesh wounds, as this will cause affected animals even more discomfort. It is possible to obtain permission to treat whole groups if it is confirmed that there are already animals which have succumbed to flystrike within the group, and if it is clear that more larvae will hatch on animals which are not yet showing symptoms.

Herbal remedies

While there is no 'organic' fly killer, a range of herbal repellent preparations are available, such as Barrier's *Blow Fly Repel* which may provide a short-term but safe, environmentally-benign and effective alternative. Essential oil-based repellents, such as citronella or lavender, may also act as repellents.

If the weather is dry and sheep are clean these herbal repellents can be effective for a few weeks. But, if the weather is very wet or sheep are dirty more regular reapplication will be required.

Shearing and dagging

Shearing temporarily reduces the risk of strike - recently sheared sheep are seldom struck - but susceptibility increases as the fleece grows. Crutching and dagging, the removal of soiled wool from around the breech and inside the back legs, is an effective control of breech strike. The operation is best started in early April and must be repeated every 4 to 6 weeks to remain effective.

Scour

Flies are attracted to soiled wool. Sheep with worms often scour. Effective worm control, through pasture management and worming treatments—helps keep wool clean and less attractive to flies. Attention to nutrition can also help: lambs on rich spring pastures with no access to dry forage, for example, will have very loose or liquid dung which is far more likely to stick to the wool – and attract flies. Control of scouring caused by changes in diet and digestive disturbances due to lush grass is therefore essential.

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Farm hygiene & environment

Good hygiene in yards and fields will minimise the environments in which flies breed. Therefore keep dung/compost heaps on areas away from stock and ensure fields are well drained. These measures reduce the incidence of fly strike significantly, but may be insufficient to prevent it in many flocks.

Blowflies prefer a warm, moist and sheltered environment, so moving sheep to more exposed pastures can reduce the risk of strike when weather conditions become humid.

Traps

Fly traps can be used either to monitor fly populations or to try to reduce them. Monitoring can be used to ensure chemical preventatives are applied at the right time. A study in 2003 showed that strike incidence in trial flocks that used trapping only and trial flocks that used trapping plus a chemical preventive was on average five times lower than in the control flocks, but the percentages struck on the sites in the trapping only and trapping plus insecticide groups were not significantly different from each other. The results of that study showed that traps can make an effective contribution to blowfly strike control on individual farms

It is possible to make traps or to buy them. They can be made from plastic drink bottles baited with chopped liver or other offal. Traps that are available to buy include Agrilure, Redtop Flycatcher and the Rescue Disposable Fly Trap. See below for sources and reference to an Eblex paper comparing their efficacy.

Control of other health issues

Good husbandry to prevent other skin infections will greatly benefit strike control. Excessive chewing of the fleece in order to relieve irritation by ticks or lice can increase fleece moisture and together with bites and open wounds through excessive rubbing can attract blowflies.

Castration and tail wounds, clipping wounds, head wounds on fighting rams and any other open wound will attract flies (wound strike), particularly if infected by bacteria. The smell of foot rot is particularly attractive to flies, and especially blowflies. When an animal with foot rot lies down, the skin and wool over the chest wall becomes contaminated from the infected foot, and this area can then serve as an attractant to the flies.

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Tail docking?

Tail docking is often cited as being necessary to reduce the risk of fly strike. However, following changes in the EU regulation on organic production which came into effect in January 2009, some farmers implemented new management techniques and found that for their meat lambs at least there was no need to tail dock. Regulation 889/2008 says that "Any suffering to the animals shall be reduced to a minimum by applying adequate anaesthesia and/or analgesia and by carrying out the operation only at the most appropriate age by qualified personnel. " Whilst this does not require farmers to stop tail docking or any other operation it has caused some to re-examine management and mutilations.

Sheep have tails for a reason: tails help protect the anus, vulva and udder. It is thought that the ability of a lamb to shake its (undocked) tail can help minimize fly strike by deterring flies from landing, while also helping to spread and scatter its faeces. It is important to note that it is the amount of soiling around the tail and breech area of the sheep and length of wool which causes the problem of fly strike, not necessarily the length of the tail.

Farms that follow the prevention methods outlined above (managing internal parasites and minimising scour, regular dagging or clipping around the breeches and tail to remove soiled wool and use of pour-on insecticide treatments, may find that tail docking is unnecessary.

Conclusion

Fly strike is a well-known problem for UK sheep farmers. The issue is widespread and can cause major welfare problems for affected sheep. There are however a range of chemical and non-chemical prevention methods that can be used to combat the problem. The best approach is to use a range of prevention methods to minimise scour as well as well-timed applications of chemical pour-on preventatives. This will be more effective than using a pour-on alone. If the decision is made not to use pour-on preventatives for any groups of sheep due to withdrawal concerns it is important that other management is put in place to protect the animals.

Factsheet



References and further reading

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<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2010.02361.x/pdf>

SOURCES OF BLOWFLY TRAPS

Agrilure

Head office: Arlanda Way, Humberside Airport, Kirmington, North Lincolnshire, DN39 6YH

Telephone: 01652 688046

Website: <http://www.agrimin.co.uk/>

Redtop fly catcher

Head office: Ashmoat Limited, Barton Grange, Worlingworth, Suffolk IP13 7PE

Telephone: 01728 627100

Website: <http://www.redtopflycatcher.co.uk/>

Eblex comparison of blowfly traps for the control of flystrike

<http://www.eblex.org.uk/research/animal-health-and-welfare/animal-health-and-welfare-sheep/evaluating-blowfly-traps/>

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