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Sheep Scab

Sheep scab is an allergic dermatitis caused by the parasitic mite *Psoroptes ovis*. It is extremely contagious and impacts both welfare and economic return. Infested animals get exhausted trying to relieve the irritation by constant rubbing and scratching. They can also get dehydrated, develop secondary bacterial infections and have overall reduced disease resistance. Severe cases may result in death.

**Cycle and spread of the mite**

Mites are transmitted directly from sheep to sheep. The female lays one or two eggs daily in the fleece for up to 40 days. A larva hatches from the egg, moult/s into a nymph, and finally develops into the adult mite. This process can be as short as nine days, meaning that an infested sheep can show severe lesions within four to six weeks.

The intense irritation is thought to be an allergic reaction to the mite and its faeces. It causes leakage of fluid or exudates from the sheep’s skin and the mite feeds on this as well as shed epithelial cells and other skin debris. The fluids mix with dead skin tissue, dust, dirt, mite secretions, wool and oil which dry together into the characteristic scabbiness. As the mite population grows they spread out from the initial scabs to find fresh areas of skin.

Scab can be seen all year round, however most outbreaks occur during the winter and spring. Mites prefer a longer fleece and need a degree of moisture to thrive.

**Symptoms**

Scab infestations can be clinical or sub-clinical. Differences between strains of mite and types of sheep affect how quickly scab will progress, and how much of an allergic reaction it will cause. Mildly affected sheep and/or chronic cases are more difficult to identify in the field than acute clinical cases.

Infested but undetected sheep treated with an oral avermectin wormer could exacerbate the problem. The treatment can reduce mite populations by up to 50% but not eradicate them, leaving infested sheep in the flock that are even harder to identify and diagnose.

The sub-clinical phase is characterised by low mite numbers and small lesions (below 2.5% body cover). It can last for 14 to 40 days, during which the mite adjusts to the host and the host responds to the mite. If the sheep does not have an allergic reaction and produce the exudate that the mites feed on, the mites cannot colonize. If the sheep is susceptible and an allergic reaction occurs, an active lesion is produced.

It can take from 60 to over 240 days for clinical signs of scab to be visible after initial contact with the mites, hence the need for quarantine treatments when introducing new animals into a flock (see ‘quarantine’ below).

Some of the first visible symptoms include:
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- Excessive rubbing and scratching
- Lesions on the shoulders and flanks
- Detached wads of wool (from scratching and biting)

If scab is suspected, part the wool to check for scabs and scaly areas. Sometimes mites can be seen as moving white specks, especially on the edge of red or scabby areas. Consult your vet immediately if there is any concern.

Dormant periods

Dormant mites can survive for 10 months in folds of skin, ears, and around the base of horns. The sheep may not show any allergic response during this time, but an outbreak can flare up again following stress or another challenge to the immune system. Therefore previously treated flocks may see a re-emergence of the disease months later - even when strict biosecurity protocols have been followed in the intervening period. This demonstrates the importance of treating every animal with the appropriate dose (see ‘treatment’ below).

Mite survival when not on the sheep

Sheep scab mites can live for over 30 days off the sheep if environmental conditions are right, though usually they are only infective for up to 16 days. This still means that fence posts, handling facilities, bushes, shearing equipment and contaminated clothing can be a potential source of infection for over two weeks after contact with an infested animal.

This ‘off-sheep’ mite survival has implications for successful control of scab. There is no point treating sheep if they are returned to the same field afterwards where they can immediately be re-infested from the fence posts.

It is legal to take scab-infested sheep direct to slaughter, so livestock trailers are also potential sources of infection. Although they must be cleaned between uses, an ordinary cold pressure cleaning will not move grease from the interior where mites could survive.

Differential diagnosis

It is important not to assume that all itchy and/or patchy sheep have scab. A decision to treat should be based on a combination of clinical signs and positive identification of the scab mite.

Whilst wool loss is common in scab, it is not always seen, and it can also be caused by mycotic dermatitis, post lambing wool slip and scrapie, to name a few. Symptoms such as restlessness, rubbing, soiled and stained areas of wool, head tossing and tagged fleece can be caused by other ectoparasites such as lice, blowfly and keds. A differential diagnosis is required to rule out these other causes before scab treatment progresses.
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Treatment

If scab is found, affected animals must be treated. Non-organic farmers can use organophosphate (OP) dips or injectable moxidectin, doramectin or ivermectin.

Organophosphates
Organophosphates used to be banned for all organic farmers in the UK. Following the withdrawal of SP dips the UK’s organic compendium has changed to allow organophosphate (OP) dips. However the Soil Association do not allow them within their standards due to the adverse affects to human health and the potential effect on consumers whose confidence in organic products could be undermined if they know that OP’s have been used.

The Soil Association would not allow the welfare of sheep to be compromised in a case where no product aside from an OP dip could be used to control scab; but any sheep dipped in an OP product would lose its Soil Association status, though they could still be sold as EU organic.

Injectable products

Organic farmers have the choice of three injectables to treat scab; ivermectin, doramectin and moxidectin. There are various products containing one of these active ingredients; consult your vet on which would be the most suitable.

- **Ivermectin** has no residual action and will not kill mite larvae or eggs. Therefore sheep require two treatments seven days apart, and following each treatment they need to be moved to pasture which has not carried sheep in the previous 16 days.

- **Doramectin** both treats scab and protects against it in a single intramuscular injection, however the protection is limited. After a single treatment sheep should be moved to fresh pasture which has not carried sheep in the previous 16 days.

Because of the lack of residual effect, Ivermectin and Doramectin products should only be used for the treatment of infested sheep. If one animal is missed, re-infestation of the whole flock is a real possibility.

- **Moxidectin** has been shown to both treat and protect against sheep scab. A single subcutaneous injection provides residual protection for at least 28 days, although some products recommend two treatments 10 days apart in the case of disease outbreaks. Some longer-acting products can provide protection for up to 60 days, but the withdrawal periods are usually significantly longer as a result, making them an unattractive option for treating lambs.

Withdrawal periods

Statutory withdrawal periods must be at least doubled for organic animals; check with your certification body for details.
Correct dosing

These treatments will not be effective unless the correct dosage is administered, which is based on the weight of the animal. Do not rely on guesswork to judge it – weigh some animals in the group and inject to meet the needs of the heaviest one. Mark the sheep as you inject them so you can detect any that slip through the net.

It is also important to check whether the product is for intra-muscular or subcutaneous injection; getting it wrong may reduce its efficacy. Sometimes the injection site is also specified, i.e. in the neck or at the base of the ear.

What’s best?

Always seek veterinary advice to ascertain the most appropriate treatment for your situation. However as a general rule choose one that gives protection for longer than the 16 day survival of mites off the sheep; i.e. either a doramectin or moxidectin product. Remember that these tend to have very long organic withdrawal periods, which must be doubled for organic animals, and also that you must seek permission from your certification body in advance of treatment.

Summary for treatment

- Confirm diagnosis
- Involve local vet practices
- Warn neighbouring farmers
- Contact organic certification body
- Select most appropriate treatment
- Be aware of the statutory and organic withdrawal periods
- Use correct dose and delivery method
- Treat all infected sheep and those in contact with them
- Treat all sheep that have used the same fields as infected sheep

Note that even though injectables kill the mites, it takes time for the scabs to heal so sheep may still show signs of irritation for some days after treatment. This does not necessarily mean that treatment has failed.

Avoid resistance

Ivermectin, doramectin and moxidectin are commonly used for internal parasite control as well as to treat scab - particularly on non-organic farms.

Prevention – farm level

Preventing scab in the first place will always be preferable to treating an outbreak, so security of the farm and the flock are crucial.

Health planning

Farms that may be at risk of scab should work with their veterinary surgeon to put in place management practices to minimise any risk of introducing scab to the flock. They should also have an appropriate plan of action if an outbreak occurs so that treatment can commence promptly when needed.
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**Premises**
If the farm adjoins other sheep farms, double fence shared boundaries with at least 1.5 meters between fences. Padlock all roadside gates to prevent ‘helpful’ individuals rounding up strays and inadvertently mixing another farmer’s sheep with the resident flock.

**Closed flocks**
Keeping closed flocks should help prevent scab since the greatest risk comes from transporting sheep from one area to another. Within ‘stratified sheep systems’ (the movement of store and breeding stock from upland regions to lowland farms), the principle of closed flocks can still be met through full knowledge of the health and disease status of the sheep being moved. Effectively the ‘closed flock’ encompasses the source flock and the destination flock.

Only purchase sheep from a known clean flock, and use the farm’s own transport whenever possible as there is a risk of mite survival on partitions and gates within transport vehicles. Always ensure sheep leave and arrive with full documentation regarding their parasite status and details of the treatments given. Always quarantine stock on arrival to avoid any parasite spread to existing stock.

**Quarantine**
Under Soil Association standards sheep bought in must be isolated for at least 21 days. If scab is suspected then appropriate treatment can be administered. This ensures that a comparatively small number of sheep are treated and it should be easier to ensure accurate dosing.

If there is any suspicion that incoming sheep may harbour scab, a quarantine treatment should be given even before any symptoms are apparent. If there is any uncertainty then it is safest to assume the sheep are infected. Remember to request permission from your certification body prior to any treatment.

Before unloading sheep make sure the quarantine area is fully secure. Do not mix incoming sheep with the resident flock until the end of the quarantine period and after any treatment is complete.

**Prevention – regional level**
On isolated farms, action at farm level may be sufficient to keep scab out of the flock. For many other farmers it will not be sufficient to fully guard against the disease. This is not a reason to ignore good practice on farm but it does mean that a more co-operative approach is needed.

Where sheep from several flocks have the potential to mix – for example hefted hill flocks or where common grazing is used – it is important for farmers to communicate with their neighbours and, where practical, co-ordinate any treatment of sheep. If a source of infection can be identified all neighbouring farms should be notified.
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Useful links

Sustainable Control of Parasites in Sheep - http://www.scops.org.uk/