

# Sheep scab explained: advising clients on prevention and spotting the signs



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In this article, the author discusses the disease, looks at preventive techniques, the clinical signs to look out for, and advises on treatment options.

**S**ince the deregulation of sheep scab control measures in 1992, the number of scab outbreaks per year in the UK has increased rapidly.

An estimated 60-fold increase in outbreak incidence has taken place between 1992 and 2007 (Rose, 2011). Scab is estimated to cost the UK sheep industry more than £8m per year (Nieuwhof and Bishop, 2005) and is primarily a welfare concern. For most flocks, economic loss is associated with the cost of treatment and prevention to avoid animal suffering (Sargison et al, 2006). As a result, sheep scab is consistently at, or near, the top of the list of health concerns for most sheep farmers.

## The disease

Sheep scab is a skin disease caused by the non-burrowing mite *Psoroptes ovis*. The mite lives on the skin surface and its faeces cause an inflammation of the skin known as allergic dermatitis. This results in severe pruritus (itching), and infected animals will then self-excoriate (scratch themselves) until their skin is raw. This intense irritation not only causes damage to the skin, with the subsequent risk of secondary bacterial infection, but also results in reduced feeding with subsequent loss in body condition and death in the most severe cases. Infection with *Psoroptes ovis*, the sheep scab mite, causes poor welfare due to pain and distress as a result of severe skin irritation and self-trauma, as well as body condition loss and poor production.

## Prevention

The most common mechanism for the introduction of sheep scab on to a farm is directly via bought-in replacement animals. The incoming animals themselves may already be infected or they may pick up the mite from contact with other sheep within a livestock market or during transport. The problem with this disease is that animals can carry the mite for a period of time without showing any clinical signs of infection. For this reason, it is vital farmers are advised to treat all incoming animals with quarantine treatments that will kill sheep scab mites and isolate the incoming sheep for at least 28 days, before those bought-in animals are allowed to enter the existing flock and mix with the sheep. Other mechanisms of entry, therefore, include "over the fence" escapes, contact with adjacent flocks through fence lines and hired rams.

The mites can also live off the sheep host for up to 17 days. There-



Sheep infected with sheep scab can remain asymptomatic for up to six months

fore, despite this parasite usually being spread by direct contact between sheep, indirect transmission can also occur, resulting in the potential for introduction of disease via shearing equipment, contaminated clothing and tags of wool or scabs attached to fences or hedges. It is, therefore, essential that shepherds are able to recognise risk factors to their own flock and act accordingly. Clearly, tightening up farm biosecurity will play a major role in preventing the introduction of disease, particularly in lowland flocks. Hill and upland flocks, however, present more of a challenge and collaboration with neighbouring farmers to instigate group control plans will be the key to success in these situations.

The products listed for treatment in **Table 1** can all be used to prevent the introduction of sheep scab in a flock. It is important to remember, however, that the injectable macrocyclic lactone (ML) products (moxidectin, doramectin and ivermectin) will also have activity against gastrointestinal worms. It is essential to consider the effect that administering this product to control scab will have on other parasites present in the sheep. Wormer resistance is a well-documented problem in sheep flocks and preventing the introduction of resistant worms into a flock should also be considered when treating animals in quarantine. Using another worming product, such as monepantel, sequentially to the injectable ML at quarantine will significantly reduce the risk of introduction of resistant roundworms into a flock. It is also extremely important to ensure all animals are dosed for the correct weight and that dosing equipment is maintained and calibrated before use to ensure the correct dose of each product is being administered.

Incoming animals should be housed or yarded on arrival, in isolation from the rest of the flock. Quarantine treatments should be administered and the animals withheld from pasture

It is vital farmers are advised to treat all incoming animals with quarantine treatments that will kill sheep scab mites and isolate the incoming sheep for at least 28 days.

**Table 1.** Treatment options and administration protocols

Drug name	Trade name	Treatment protocol	Route of administration	Method of administration	Meat withdrawal period
Moxidectin 1%	Cyductin 1% (Pfizer)	0.1ml/5Kg bodyweight, (recommend two injections 10 days apart)	Subcutaneous in neck	Injectable	70 days (not for use in milking sheep)
Moxidectin 2%	Cyductin 2% (Pfizer)	0.5ml /10Kg bodyweight single injection (NB - do not use in animals <15Kg bodyweight)	Subcutaneous at base of ear	Injectable	104 days (not for use in milking sheep)
Doramectin 10mg/ml	Dectomax (Eli Lilly and Company)	1ml/33Kg bodyweight single injection	Intramuscular	Injectable	63 days (not for use in milking sheep)
Ivermectin	Panomec (Merial)*	0.5ml/25Kg bodyweight, Two injections 7 days apart	Subcutaneous in neck	Injectable	37 days (not for use in milking sheep)
Organophosphate dips (Diazinon 62% w/v Concentrate for dip emulsion)	Paracide 62** (Animax)	1l dip to 1,500l clean water. Replenish according to manufacturers instructions.	The sheep must be totally immersed in the dip and all parts of the sheep except for the head and ears must remain immersed for not less than one minute	Plunge dip only NB - strict regulations regarding handling of dip products	70 days (not for use in milking sheep)

\*other ivermectin injectables available, \*\*other dips containing the OP are available. Products listed as they appear in 2012 edition of the *NOAH Compendium*. Always read manufacturer's instructions before use.



for 48 hours. The treated sheep should then be turned out on to a worm "dirty" pasture and kept in isolation from the rest of the flock for at least 28 days, during which time repeat treatments for scab can be given as necessary (see **Table 1** for different product treatment protocols).

**Clinical signs**

The incidence of clinical disease can vary depending on the time of year, with low mite populations in the summer and numbers increasing through the autumn into winter, when most cases of clinical sheep scab are diagnosed. Animals in full fleece provides the ideal conditions for the sheep scab mites to thrive and their numbers increase exponentially. It is possible to see disease in the summer, however, particularly in ewes that are shorn late in the season or in fully fleeced lambs.

Unfortunately, the clinical signs of sheep scab can be mild or confused with other diseases, which is why a correct diagnosis is essential.

The clinical signs to look out for are provided below, but it is important to remember a vet should confirm the diagnosis before an expensive treatment regime is recommended.

- Orange/yellow exudate on the skin, which stains the wool in affected areas and forms a crust on the skin surface.
- Intense pruritus (itching).
- Severe self-excoriation (scratching) with resultant wool loss (or "wool tags") and trauma to the skin, particularly around the dorsum and flank areas.
- Body condition loss.
- Dull demeanour and separation from the rest of the flock.
- Commonly, more than one individual is affected, but remember in very early stage disease only be one or two animals may show clinical signs.
- Infestations can be very debilitating, with significant loss of condition, secondary infections, hypothermia and, eventually, fitting and death.

**Diagnosis**

If you suspect sheep scab is affecting a flock, it is very important to advise the shepherd to contact his or her vet for confirmation of the diagnosis. The diagnosis of sheep scab is confirmed by carrying out deep skin scrapes at the leading edges of the lesions on affected individuals to identify the mite on the skin. Once the diagnosis has been confirmed, a treatment plan can be instigated.

**Treatment**

Treatment options for sheep scab in a flock are relatively limited and can be costly, which is why it is essential this mite is prevented from entering a flock by quarantine treatments and good biosecurity. In the event of a disease outbreak, however, the following protocol should be advised to flock owners.

- Identify the source of infection.
- Notify all neighbouring sheep flocks and advise owners to treat their animals at the same time as you to prevent the risk of re-infection – particularly important for hill and upland flocks, but also applies to lowland flocks.
- Check all fence boundaries and consider double fencing to prevent re-introduction of disease into the flock – more relevant to lowland flocks.
- Ensure all in-contact sheep are treated together (even those

not displaying clinical signs) because any sheep left untreated will act as a source for re-infection of the flock.

- Ensure all sheep are removed from infected pastures for at least three weeks unless using a product that is persistent for more than 17 days (see **Table 1**)
- Ensure any sheep bought in subsequent to treatment are treated in quarantine to prevent reintroduction of disease.

The various products that can be used for treatment of sheep scab are provided in **Table 1**. As well as using the correct product to kill the mite, it may be that some individual animals require further supportive treatment, such as anti-inflammatories and antibiotics, where secondary infection is present. Severely affected animals may require additional feeding and housing in inclement weather if the skin is severely traumatised.

**Summary**

From the many studies carried out in the UK in the past few years, it is evident the difficulties faced by farmers attempting to control sheep scab in extensively grazed flocks are considerable (Rose, 2011). The risk factors identified as the most significant with regards to hill and upland farms differ considerably to those for lowland farms. It seems that identifying the specific risk factors for each individual farm is the key to controlling this disease. A cost-effective approach to scab control may be to consider upland and lowland farms as separate epidemiological systems, with upland regions requiring a coordinated, systematic approach to achieve any significant management of the problem. In contrast, on lowland farms outbreaks can be largely contained effectively through good biosecurity (including quarantine of incoming animals) and treated on a case-by-case basis if they occur (Rose, 2011).

It seems unlikely there will be any compulsory legislation in the near future to facilitate the eradication of sheep scab in Britain and, therefore, it is down to farmers, vets and other animal health advisors to work together to control this disease.

➤ The incidence of clinical disease can vary depending on the time of year, with low mite populations in the summer and numbers increasing through the autumn into winter, when most cases of clinical sheep scab are diagnosed.

14

Sheep scab mites can remain viable off the host for up to 17 days in tags of wool on fences or shared equipment



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Animal Health Advisor Vol 1 No 6

## Multiple choice questions



- 1** Which type of organism is *Psoroptes ovis* (the cause of sheep scab)?
- [a] Louse  
[b] Mite  
[c] Fly  
[d] Bacteria
- 2** Which of these is the most common clinical sign of sheep scab?
- [a] Intense itching  
[b] Hard scabs all over the body  
[c] Lameness  
[d] High temperature
- 3** What is the duration of time that *Psoroptes ovis* will survive in the environment?
- [a] 0 days  
[b] Up to 7 days  
[c] Up to 17 days  
[d] Up to 27 days
- 4** How is sheep scab diagnosed?
- [a] Coat brushings are taken to be examined under a microscope  
[b] The disease is diagnosed based on the clinical signs seen only  
[c] A skin scrape is taken to be examined under a microscope  
[d] A blood sample is taken
- 5** When sheep scab is diagnosed, which animals should receive treatment?
- [a] All the animals in the affected group  
[b] The affected individual animals only  
[c] All the animals in the affected flock  
[d] None of the animals
- 6** Which one of the following treatments for sheep scab is not an injectable formulation?
- [a] Organophosphate  
[b] Moxidectin  
[c] Doramectin  
[d] Ivermectin
- 7** Which of the following treatment products has the shortest meat withdrawal period?
- [a] Organophosphates  
[b] Moxidectin  
[c] Doramectin  
[d] Ivermectin
- 8** Which of the following is the best way to prevent sheep scab from entering a flock when buying in replacement animals?
- [a] Examine the replacement animals carefully at time of purchase  
[b] Quarantine treat your replacement stock  
[c] There is no way to prevent this disease from entering the flock  
[d] Test the animals on arrival by carrying out skin scrapes on several individuals
- 9** If a flock has been diagnosed with sheep scab what further action should the shepherd be advised to carry out before he treats his animals?
- [a] Notify his next door neighbours and advise them to treat their sheep also  
[b] Keep quiet about his problem – it would be embarrassing if his neighbours found out  
[c] Go to his doctor  
[d] Have all his sheep shorn
- 10** When did the deregulation of sheep scab control measures take place?
- [a] 1991  
[b] 1992  
[c] 1993  
[d] 1994

## References and further reading

An Evidence Base for New Legislation and Guidance for Implementation of a Compulsory Treatment Period for Sheep Scab PDF 51 [PDF, 925.0 kb: 17 Jul 2008] available at [www.scotland.gov.uk](http://www.scotland.gov.uk).

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SCOPS website: [www.scops.org.uk](http://www.scops.org.uk), accessed 02/07/12.

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