ANIMAL HEALTH IRELAND
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Sheep Scab

PARASITE CONTROL LEAFLET SERIES SHEEPSCAB 11.02.2020

PARASITE CONTROL PROGRAMME

Parasite Control
Animal Health Ireland.ie

Animal Health Ireland, 2-5 The Archways, Carrick-on-Shannon, Co. Leitrim, N41 WN27

AHI gratefully acknowledges the financial and other contributions of our stakeholders.

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What is sheep scab?

Sheep scab is an allergic dermatitis caused by a reaction to the faeces of the scab mite, *Psoroptes ovis (P. ovis)* **(Figure 1)** and is characterised by sheep itching and scratching against objects such as fence posts, gates or walls or nibbling and/or biting at their fleeces. It is a welfare issue as sheep can spend a considerable portion of their time scratching and can also result in increased mortality rates in young lambs that are born to affected ewes. Sheep scab is a notifiable disease. **If sheep scab is suspected or confirmed in a flock, the Department of Agriculture, Food and the Marine must be notified** through the Veterinary Inspector at the Regional Veterinary Office.

What are the clinical signs?

In the initial stages of infestation, animals often appear clinically normal or they may be restless, have a discoloured fleece and show increased scratching behaviours. In later stages, animals become severely itchy and the intense rubbing and scratching can result in wool loss, skin thickening, scabbing and wounds. The intense itching can also result in a loss of condition due to decreased feed intake and secondary infections.

When does the condition usually occur?

The condition mainly occurs during the autumn and winter months. However, cases have also occurred during summer months, with lambs being particularly affected.

What is the life cycle?

P. ovis is a non-burrowing mite which lives on the skin of its host (sheep). Over a period of approximately 40 days, female mites lay one to two eggs per day. The life cycle from an egg to an adult takes approximately 14 days to complete and each development stage involves a moult which lasts 12 – 24 hours, during which time that particular life cycle stage does not feed. The mite population grows rapidly within 6-8 weeks after infestation, resulting in the observed clinical signs as described above.

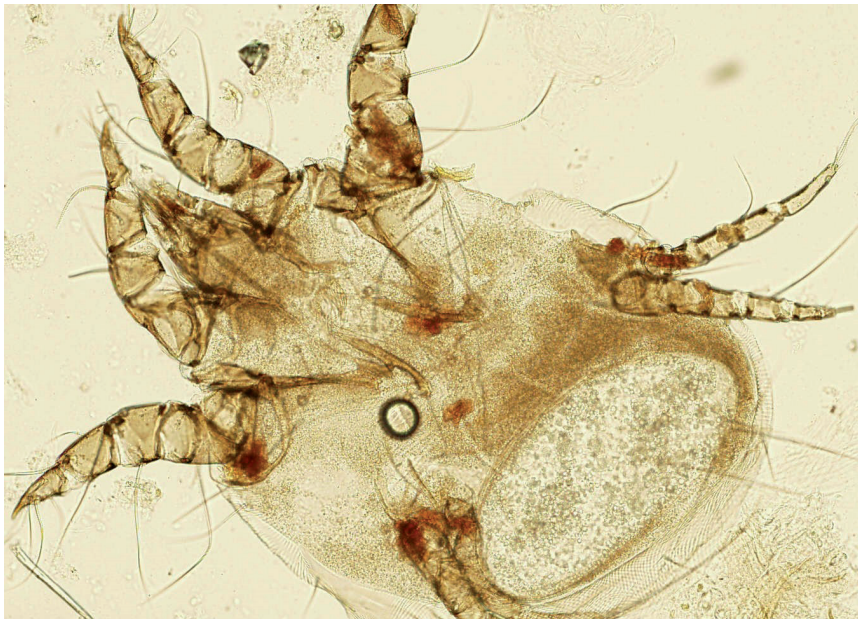

Figure 1. Sheep scab mite recovered from a wool sample.

How does it spread?

Sheep to sheep

Most commonly, it is transferred between sheep through direct contact. It is important to recognise that this **mite can survive off the host and maintain infectivity for up to 16 days** in buildings, on posts or gates where sheep have been itching and scratching or on sheep-handling equipment. As a result, other sheep may potentially become infested when rubbing against these same objects.

Farm to farm

Sheep scab can be spread from farm to farm through the purchase of infested sheep, many of which may be sub-clinically infested (not yet showing clinical signs of disease such as itching or scratching) or through the borrowing of sheep-handling equipment which has been used on infested sheep within the previous 16 days without adequate cleaning. The use of communal or shared grazing areas is also a potential risk factor for infestation when sheep from affected flocks can potentially come into contact with sheep from unaffected flocks.

Is there transfer of mites between cattle and sheep?

Although the species that affects cattle is considered to be the same species that affects sheep, there is **limited transfer of the mite between cattle and sheep**. Indeed, the scab mite strain that is found on sheep tends to feed on skin oils which contrasts with the mite strain found on cattle, where red blood cells form an important part of the diet. If it is suspected that cattle are affected by *P. ovis*, this should also be reported to the local Veterinary Inspector.

How is sheep scab diagnosed?

Sheep scab is commonly diagnosed based on clinical signs such as itching, scratching and nibbling. Other ectoparasites such as lice must also be considered when investigating the potential cause(s) of these clinical signs. To confirm a diagnosis, both skin scrapes and samples of wool should be collected from the edges of active lesions and examined for the presence of ectoparasites such as mites and lice.

A blood test has been developed in the UK which can be used to detect sub-clinically infested animals. Antibodies detectable in blood are produced by the sheep from two weeks after exposure to the sheep scab mite. This test can be particularly useful, as in many cases purchased sheep that are not showing any clinical signs are a means of introducing this mite into a new flock. Animals that are brought onto a farm should be quarantined and treated if necessary, before mixing with the main flock to prevent spread of mites.

Control and treatment

It is important to recognize that although the entire life cycle of the scab mite is spent on the sheep, **these mites can also survive off the host and maintain infectivity for up to 16 days**. Thus, fields or sheds which previously housed sheep scab-infested animals can only be considered mite-free areas if these locations have been kept free of sheep for more than 16 days.

The treatment of sheep scab involves the use of either dips (e.g. organophosphate-based diazinon or the synthetic pyrethroid cypermethrin) or injectable macrocyclic lactone anthelmintics (wormers) (e.g. ivermectin, doramectin and moxidectin). There are important differences in administering the treatment and the speed of action between dips and injectable treatments. There are also differences within the macrocyclic lactone wormer group as regards their persistence of action. These differences are outlined below in **Table 1** below.

	Plunge Dips (Pyrethroid/Organophosphate)	Wormers (Macrocyclic Lactones)
Route of administration	Dipping. Ensure that sheep are plunge-dipped for at least 1 minute with heads dipped under twice.	All macrocyclic lactones wormers used in the treatment of sheep scab are given by injection.
Persistence	Most have persistence of activity of greater than 16 days.	This varies depending on the product used. Only moxidectin has a persistence of greater than 16 days.
Speed of action	Mites normally killed within 24 hours.	May take several days to kill the mites present. In addition, sheep may continue to itch for a number of days post-treatment until all mite faeces has been washed off the fleece.
Potential to contribute to the development of gut worm resistance to wormers	Their use does not contribute to increasing the risk of gut worm resistance to wormers.	Their use in the control of sheep scab can inadvertently increase the risk of gut worm resistance to wormers.
Health and safety	Dips require precautions for safe handling and disposal for user health and safety and to prevent environmental contamination.	Standard handling and disposal of a medicinal product applies.

Table 1. Sheep scab control options.

What product should I use if I am returning sheep to a pasture or shed used by untreated sheep in the previous 16 days?

In this case, it is advisable to use either a plunge dip or give a moxidectin injection. Both treatments will have a persistence of activity greater than 16 days, thereby outliving any potential mite challenge.

Given that the persistence of both ivermectin and doramectin is shorter than 16 days, the use of either wormer in this scenario can result in the sheep becoming re-infested as the treatment effect will have waned within the period that mites can survive off the host animal. If using these wormers, it is advised to move sheep after treatment to a mite-free environment such as an area that has been free of untreated sheep for more than 16 days.

If I treat sheep that have sheep scab with an injectable wormer (e.g. moxidectin, doramectin or ivermectin) what are the additional post-treatment considerations?

Sheep treated with any of these three wormers must not be mixed with untreated sheep for a period of 14 days post-treatment unless those animals will also receive treatment. This is because there is a risk of potential mite transfer from affected to non-affected sheep due to the variable speeds of action of these wormers in killing sheep scab mites.

Mite Resistance to Treatment

Cases of resistance to moxidectin by sheep scab mites have been reported in four flocks in the UK in 2018. As a result, it is advised that any cases of suspected treatment failure be fully investigated and reported to the manufacturer so that the extent of true resistance can be fully established, whilst also ruling out other common causes of treatment failure (e.g. poor administration technique, inappropriate product choice).

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