



Sheep Scab

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Background

Sheep scab is one of the major scourges of sheep farming in many countries throughout the world. Ever since the 17th century, this disease has been endemic to South Africa. Sheep scab is an extremely infectious disease, and by law, a positive case has to be immediately reported to the local State Veterinarian. Sheep scab causes severe skin irritation, which leads to animals scratching and biting themselves, resulting in wool loss and decreased feed intake. As a result, sheep lose weight, leaving animals with decreased immunity and prone to secondary diseases such as pneumonia and internal and external parasites.

Causes

Sheep scab is caused by *Psoroptes communis ovis*, a mite which is 0.8 mm long in the adult stage and barely visible to the naked eye (Bath and de Wet, 2000; Bates, 2007). See Figure 1.



FIGURE 1: The sheep scab mite (*Psoroptes communis ovis*)

Life cycle of sheep mites

As with all mites, development goes through various larval and nymph stages (See Figure 2). In the case of sheep scab, the whole life cycle takes place on the sheep. Adult life span lasts for about 50 days, during which the female mite lays about 50 to 100 eggs on the skin of the host. The shortest life cycle duration from eggs to eggs of the next generation is about 10 to 14 days (Janquera, 2013).

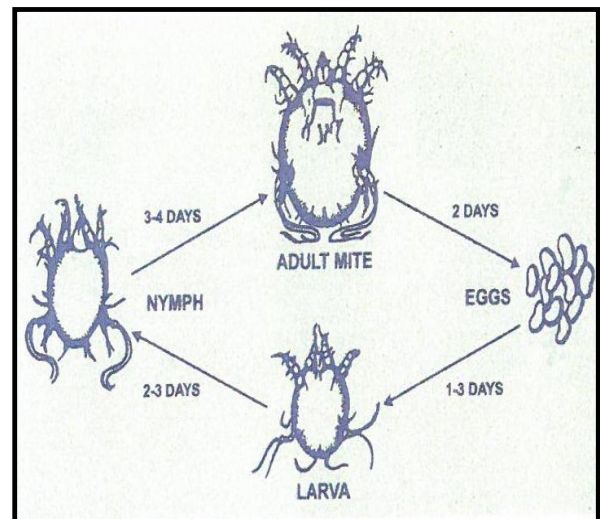


FIGURE 2: Life cycle of sheep scab

Eggs hatch and go through the various stages of development. Mites puncture the skin with their mouthparts, then feed on the exudates and secretions produced by the affected skin (See Figure 3). The serum mixes with dead tissue, dirt, secretions of the mites, wool fiber and oil, initially causing a wet wound on the skin. After a few days, the wound becomes dry and a crust is formed in the middle of the wound. The mites then move to the edge of the wound that is still wet and in this way cause the wound to expand until a very large part of the body is affected, resulting in severe irritation and inflammation.



FIGURE 3: *Psoroptes* on the skin of an animal

In severe infections, scabs may spread to cover the entire body in two to three months if left untreated (Janquera, 2013). More than half of the wool can be lost in such cases. Hairy sheep are less susceptible to sheep scab than wool sheep. Goats are not affected by sheep scab, but can be carriers (Fourie, 2016).

Season of occurrence

Visible signs of disease are common in winter when sheep have full fleeces. In winter, when temperatures and sunlight intensity decrease and wool moisture increases, parasites become more active. Parasites can be present on sheep in summer without causing scars. Goats and non-woollen sheep can, especially in summer, be carriers of the parasite, without showing any symptoms (Bath and De Wet, 2000; Fourie, 2016).

Method of transmission within the flock

Transmission within the flock is mostly by physical contact. Mites do not actively jump or crawl from one host to another one but are passively transmitted when animals come in close contact with each other. However, it is important to note that *Psoropteric* mites and their eggs can survive for two to three weeks off the host (e.g. in tags of fallen wool, on fence posts). This means that sheep can pick up mites or eggs from their environment, especially from those objects that affected sheep use for rubbing e.g. fence posts. There are no external vectors that transmit the mites (e.g. insects, worms, rats, mites, birds) as happens with other parasites (Janquera, 2013).

Symptoms

Affected sheep become itchy and constantly rub themselves against objects such as posts. Scabs or crusts surrounded by moist or wet rings will become visible on the sheep. *Psoropteric* mites especially affect areas along the back and sides, and along the tail, causing a loss of wool (Watt, 1980). See Figure 4.



FIGURE 4: Affected sheep with sheep scab

Sheep scab could lead to weight loss, wool loss, reduced milk production and general weakness that makes the affected animals more susceptible to other diseases (Janquera, 2013; Corke and Broom, 1999). In early stages of the disease, it is difficult to detect the disease since an animal behaves and appears normal (Bates, 2007).

Diagnosis

A small piece of infected skin and wool from the sheep needs to be examined under a microscope for positive identification of sheep scab. A private or State Veterinarian or veterinary laboratory can assist with a positive identification.

Note: Sheep scab infections can easily be confused with red lice infections.

Prevention

According to Bates (2007) and Fourie (2016) the following preventative strategies can be followed:

- Quarantine incoming sheep for at least three weeks. Treat them for scab, whether they show signs of having the disease or not.

- Buy sheep only from known sources.
- Ensure good fencing to prevent stray animals on the farm.
- Disinfect livestock trailers after transporting livestock.
- Remove all debris (wool etc.) from contaminated housing and do not re-stock for at least three weeks.
- Treat all sheep and goats annually with an approved dip, as a further precaution.
- Be alert for any signs of scab in the flock.

It is advisable to dip or inject all sheep on the farm in autumn/winter with a long-acting product. It is a good strategy to arrange with neighbours to treat within the same two to three weeks.

Important points

Sheep scab or any cases of skin conditions need to be reported to a State Veterinarian to aid in control and confirm the diagnosis.

- Treatment needs to be with a registered product and must be repeated 8-10 days later.
- Pen or kraal needs to be rested for at least three weeks. Disinfection might aid.
- Amitraz products under a 12% concentration used for ticks is not effective in sheep scab control.

Treatment

A treatment plan against sheep scab should be in place because of the high economic and welfare cost of the disease. Sheep farmers and owners should discuss the plan with the local veterinarian and communicate with neighbours to maximize the benefits of their actions.

When sheep scab outbreaks are declared, all small stock on the farm must be treated with a remedy that is registered for a specific breed under Law 36 of 1947. Infected sheep must be treated twice with an interval of eight to ten days. That will ensure that newly hatched larvae, that were still in the egg stage at the time of the first treatment are also treated.

Wool from infected animals must be destroyed rather than sending it to the buyer (i.e. BKB). If the wool is sent to the buyer, the wool will be marked as scab wool as it is heavier than normal wool. See Figure 5.



FIGURE 5: Fleece with sheep scab infection

The wool is worth less than clean wool and the farmer or supplier will be penalized financially. The more preferred option is for the farmer to get rid of the wool by destroying it.

Treatment can be done by either plunge dipping or the use of registered injectable remedies for sheep scab (Table 1). Severely infected animals must be shorn before treatment. Make sure that during the dipping process animals are submerged for at least two minutes and the head must be submerged at least twice.

Pour-on dips, sprays, jettors or showers are not recommended as they are ineffective in the control of sheep scab. Both dips and the injectable remedies include products which have a short and long action. Long-acting products kill mites on the animal and provide protection against re-infection. Short-acting products kill mites on the animal but offer no protection against re-infection.

TABLE 1 Registered remedies for the treatment of sheep scab

GROUP	TRADE NAME	CHEMICAL	APPLICATION METHOD
Organophosphors and carbamates	Cooperzon 30 Dazzel NF Zipdip	Diazinon 30% m/v Diazinon 30% m/v Triazophos 40% m/m	Dip or topical application
Pyrethrins and pyrethroids	Decatix 3 Delete X5 Langa/dip	Deltamethrin 2.5% m/v Deltamethrin 5% m/v Cypermethrin 20% m/v	Dip or topical application
Formamidines	Supatraz 25% Triatix 500 Triatix 250	Amitraz 25% m/v Amitraz 50% m/m Amitraz 25% m/v	Dip or topical application
Macrocyclic lactones*	Cevamec 1% Ecomectin 1% Cydectin 1% Dectomax	Ivermectin 10mg/ml Ivermectin 1% m/v Moxidectin 1% m/v Doramectin 1% m/v	Injectables
Combinations	Ivomec Super Closamectin Solution 3.5% LA	Ivermectin 1% m/v, Clorsulon 10% m/v Ivermectin 0.5% m/v, Closantel 12.5 m/v Ivermectin 2.25% m/v, Abermectin 1.25% m/v	Injectables
* several more ivermectins are registered, consult local veterinarian % m/m = amount of grams of active ingredient/100 gram of drug % m/v = amount of grams of active ingredient/100ml of drug			

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