Mycotic dermatitis (Lumpy wool) and fleece rot of sheep

J Shilkin

Recommended Citation
Shilkin, J (1962) "Mycotic dermatitis (Lumpy wool) and fleece rot of sheep," Journal of the Department of Agriculture, Western Australia, Series 4: Vol. 3 : No. 11 , Article 11.
IMPORTANT DISCLAIMER

This document has been obtained from DAFWA's research library website (researchlibrary.agric.wa.gov.au) which hosts DAFWA's archival research publications. Although reasonable care was taken to make the information in the document accurate at the time it was first published, DAFWA does not make any representations or warranties about its accuracy, reliability, currency, completeness or suitability for any particular purpose. It may be out of date, inaccurate or misleading or conflict with current laws, polices or practices. DAFWA has not reviewed or revised the information before making the document available from its research library website. Before using the information, you should carefully evaluate its accuracy, currency, completeness and relevance for your purposes. We recommend you also search for more recent information on DAFWA's research library website, DAFWA's main website (https://www.agric.wa.gov.au) and other appropriate websites and sources.

Information in, or referred to in, documents on DAFWA's research library website is not tailored to the circumstances of individual farms, people or businesses, and does not constitute legal, business, scientific, agricultural or farm management advice. We recommend before making any significant decisions, you obtain advice from appropriate professionals who have taken into account your individual circumstances and objectives.

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia and their employees and agents (collectively and individually referred to below as DAFWA) accept no liability whatsoever, by reason of negligence or otherwise, arising from any use or release of information in, or referred to in, this document, or any error, inaccuracy or omission in the information.
TWO CAUSES OF FLEECE DAMAGE . . .

MYCOTIC DERMATITIS ("LUMPY WOOL") AND FLEECE ROT OF SHEEP

Matted and sometimes discoloured specimens of wool are often received at the Department of Agriculture during seasons of heavy rainfall. Two similar but quite distinct diseases are recognised as having caused this condition. They are mycotic dermatitis (lumpy wool) and fleece rot. Both conditions damage the fleece and render affected sheep susceptible to blowfly strike.

By J. SHILKIN, B.V.Sc., H.D.A., Assistant Chief Veterinary Surgeon

MYCOTIC dermatitis and fleece rot depend to some extent on the presence of moisture in the wool for their development. Both diseases are most likely to occur in seasons of excessive rainfall when the fleece is often soaked with water.

The diseases have been established in Western Australia for many years and there is little doubt that their incidence has increased with the development and stocking of properties in the wetter districts.

MYCOTIC DERMATITIS (Lumpy Wool)

This disease is caused by the organism Dermatophilus dermatonomus and while it is mainly a disease of sheep it can also affect cattle, horses and goats.

It was at first thought that the spores of the organism were often present in the soil and could enter the wool with dust.

Later investigations by C.S.I.R.O. workers have shown that the spores are most unlikely to survive for long periods or to grow in soil, and are also highly susceptible to moist heat. It is believed that sheep become infected by a direct transfer of the spores from sheep to sheep, and that the slight scabby infections on the face and ears are the chief sources of infection.

ECONOMIC EFFECTS

The cost of the disease to the wool industry would be difficult to assess because the incidence of infection is highly variable and the effects of the disease on income from wool are largely indirect.

The incidence of the disease varies between seasons, between flocks within districts and between different districts.

The reduction in value of affected fleeces is only slight in uncomplicated lumpy wool. It is serious however, when heavy rain subsequently causes bacterial decomposition or rotting of the scabby material which binds the fibres into lumps. The condition is similar to fleece rot, with damage and discoloration of the wool. The disease may also cause serious losses, particularly of lambs between birth and marking.

LIFE CYCLE

Dermatophilus dermatonomus

The infective spore, released from the mycotic dermatitis lesion is about 1/30,000 in. in diameter and is highly motile under moist conditions.
When a spore settles on a susceptible skin area it germinates and produces a small bud or germ tube which passes straight down into the skin. Once under the skin it extends as a branching thread or hypha, damaging the tissues and producing the characteristic inflammatory response of mycotic dermatitis.

As the tubes of the hyphae continue to extend and invade, the older parts near the surface of the skin undergo division and produce a fresh crop of infective spores. These can then escape and infect any other susceptible skin areas on the same sheep, or on other members of the flock.

**SYMPTOMS**

The branching threads of the hyphae damage the tissues and produce an inflammatory condition or dermatitis. This is accompanied by exudation and the formation of crusts or scabs which bind the wool fibres firmly together. As the condition develops, areas of hard matted wool appear in the fleece. These are roughly circular, about ¼ in. to 1 in. or more in diameter, and extend from 1 in. to about 3 in. along the wool fibres forming the hard horn-like processes projecting upwards like fingers in the fleece.

Outwardly the full woolled sheep usually appears normal, and the condition may not be found until shearing. The lesions are usually confined to the back and sides of the animal, but some cases have been observed when other parts of the body including the head and limbs have become affected.

In advanced cases, separate areas of the affected wool may join together. Large areas of the skin then become covered with hard masses of matted wool which firmly adheres to the underlying skin, leaving a raw, bleeding surface if forcibly detached.

In time the crusts tend to separate from the skin and are pushed outwards by the new growth of wool and may subsequently be shed.

**SUSCEPTIBILITY**

Mycotic dermatitis is largely a disease of young sheep. Older animals are much more resistant and the disease does not usually recur, so that an animal affected during one season is generally found to be free of the condition at the next shearing. The disease has been observed chiefly amongst Merinos, but cross-breds are also susceptible, and occasionally cases have been reported in the British breeds.

**PREVENTION**

It is considered by C.S.I.R.O. workers that the spread of infection largely depends on these three factors:—

- Enough sheep in the flock with active infection (probably only on the face and ears), to provide infective spores.
- Suitable conditions and possibly vectors of some kind to transfer spores to susceptible sheep. Factors
involved here may be rain, heavy
dew, dipping, pasture length,
population of flies or other insects
and shearing combs.

• Large numbers of sheep simulta-
neously susceptible.

It is known for instance that Merino
sheep are susceptible:

(1) For the first week or two after
birth.
(2) Between three and 12 months of
age.
(3) For a week or two after shearing,
and,
(4) When they have been dip-scalded.

When some of the above factors coincide,
the possibility of body infection must
obviously be increased. It is possible also
that some strains and breeds of sheep may
be inherently more susceptible, but the
only evidence at present tends to incrimi-
date the broader wool types of Merino.

At present the only practical recom-
mendation for prevention is to spray with
0.2 per cent. to 0.5 per cent. Zinc sulphate*
straight off shears to avoid most of the
infection which occurs in shearing cuts.

Infection at other times however cannot
be dealt with in this way because of the
difficulty of predicting when the outbreaks
may start.

**TREATMENT**

The causative organism is highly sus-
ceptible to penicillin in the laboratory and
tests in the field have shown that some
infected sheep can be cured by a course
of penicillin injections, but that a single
dose is of little value. This is probably
because many of the invading thread-like
forms, or hyphae, are located in niches in
the skin which are inaccessible to the
penicillin diffusing from the blood vessels
into the infected skin. There is no effec-
tive treatment suitable for use on a flock
basis at present.

* Zinc sulphate spray—
  0.2 per cent.—1 lb. Zinc sulphate to 50 gallons water.
  0.5 per cent.—2 lb. Zinc sulphate to 50 gallons
  water.

**FURTHER RESEARCH**

The main aim of the research pro-
gramme is to find a way of preventing
infection of the woolled skin.

A relatively inapparent form of the
disease is found in most flocks in southern
Australia, usually causing only small scabs
in the haired regions of the face and ears.
We do not know why the infection extends
into the body areas to cause lumpy wool
in some flocks, but not in others.

Experiments currently being undertaken
by the C.S.I.R.O. were designed to answer
three main questions—

(1) At what stages of its life cycle
is the causative organism access-
ible for destruction?

A detailed investigation of the
life cycle has now been in progress
for some time.

(2) How can invasion of the skin by
the organism be prevented?

This question is being answered
by an investigation of the sheep's
natural barriers to the organism's
entry, and of factors which
weaken or damage these barriers.

(3) How can sheep be induced to
throw off an infection soon after
it has started?

The lesions on many sheep, in-
cluding most adult sheep, usually
heal early. This aspect is also
being investigated.

**FLEECE ROT**

Fleece rot occurs under conditions of
excessive rainfall.

Prolonged wetting of the skin causes the
outer layers to swell and soften and results
in the development of a mild dermatitis
(inflammation of the skin). This is
accompanied by exudation and the forma-
tion of crusts at the base of the wool
fibres which mat them together.

Examination of an affected sheep will
show a greyish yellow band of matted wool
½ in. to ¾ in. wide at a level in the fleece
corresponding to the period when the
inflammatory process occurred. Should
the condition recur with the onset of
further rains, a second band may be seen, but closer to the skin. The wool covering the withers, back and sides is most commonly affected.

Sheep six to 12 months old are more severely affected probably because of the openness of the fleece, which allows the penetration of moisture. Sheep of all breeds are susceptible and the condition has most often been seen in Merinos.

The exudate on the skin, when associated with warmth and moisture is an excellent medium for the growth of bacteria, some of which produce pigments which discolour the wool. The colours range from yellow, green, blue and red to brown, black and violet.

The green discoloration commonly seen in this State is caused by the organism *Pseudomonas aeruginosa*. The colour is usually confined to the matted bands of wool but may be diffused through most of the staple, extending almost to the tip.

**CAUSE**

Recent research has shown that the occurrence of fleece rot is influenced by certain fleece characteristics, the most important of which is the proportion of wax to wool. Wax has a waterproofing effect and helps to protect the fleece from wetting by rain.

The high wax content of low-yielding fleeces increases resistance to penetration by rain and helps the sheep to resist fleece rot. High-yielding fleeces with a lower wax content are more readily penetrated by water. Sheep with fleeces of this type may therefore be expected to be more susceptible to fleece rot.

The ability of the skin to stand continuous wetting despite any protection afforded by wax in the fleece is also a factor of considerable importance. The skin of some sheep is tolerant to continuous wetting and they do not suffer from dermatitis or fleece rot. The skin of susceptible sheep cannot stand prolonged wetting and they develop dermatitis with characteristic lesions in the fleece.

Differences in susceptibility have been observed in certain families of Merino sheep and there is reason to believe that this variation in skin reaction is inherited.

**PREVENTION**

Shearing immediately before the start of the rainy season when the disease is most likely to occur has been recommended as a means of preventing fleece rot. This practice, however, will rarely be found practicable in the fleece rot–liable areas of Western Australia. A short fleece, while readily penetrated by rain, dries out quickly and seldom becomes affected by fleece rot.

**BLOWFLY STRIKE**

Sheep affected either by fleece rot or mycotic dermatitis become susceptible to blowfly strike. An odour is produced which is attractive to the fly and the moisture present is favourable for the development of the maggots.

Extensive strikes involving the withers, back and sides may result and unless promptly treated may cause the death of the animal.

Treatment involves removing a considerable amount of the most valuable part of the fleece.

Sheep may of course be protected against body strike by spraying or jetting with proprietary blowfly preparations available for this purpose.
Gather more seed faster!

BARROW LINTON Clover Seed Harvester

You can make a handsome profit from your clover paddocks with the efficient Barrow Linton Clover Seed Harvester. Simple to operate, it does the complete job, gathering clover seed direct from the seed bed, threshing, screening and conveying to a seed hopper for final bagging. The Barrow Linton is the most widely used Clover Harvester in Australia. Write or call for details.

FROM SEED BED TO BAG IN ONE OPERATION!

Manufactured and distributed by

Barrow Linton's

763-7 Wellington St., Perth. 21 9151

Please mention the "Journal of Agriculture of W.A." when writing to advertisers.