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Facing up to facial eczema

By J. Edwards*

Until the autumn of 1978 facial eczema was fairly rare in Western Australian sheep. In this year facial eczema affected about 2500 sheep on 31 properties in the Albany district and in the following year, sheep on ten properties were affected. It is likely to be a problem when climate and pasture management favour the growth of the fungus.

Facial eczema is a disease of sheep and cattle caused by eating plants infested with a particular fungus. It causes liver damage leading to sensitivity to sunlight (photosensitivity). The outward signs of photosensitisation on the unwoolled parts of the sheep’s skin give the condition its name.

Up to 80 per cent of the animals are affected in some Western Australian flocks, and it is a major disease of sheep and cattle in New Zealand and southern Victoria during the warm autumn period.

Cause
The fungus, *Pithomyces chararum*, grows on dead leaves of legumes and grasses. It has also been grown on old cereal hay in Western Australia.

The fungus likes warm, moist conditions, including dead leaves on the bottom of tall swards, or dead summer pasture overgrown by new autumn growth.

When climatic conditions are suitable, the fungus grows rapidly and produces spores containing a toxic substance called sporidesmin. When eaten, sporidesmin destroys liver cells and damages that part of the liver which produces and excretes bile. Large amounts of the toxin reduce the liver’s efficiency and may cause death.

The conditions which allow the fungus to grow also encourage rapid pasture growth. The chlorophyll in this green feed is broken down into several products, one of which is called phyloerythrin. This is normally excreted into the gall bladder with bile but, if the liver is damaged by sporidesmin, phyloerythrin and bile circulate in the blood stream.

When phyloerythrin passes through the blood vessels beneath the skin, direct sunlight activates it into an agent toxic to the vessels and skin. This is the cause of the initial damage. The circulating bile causes the yellowish colour, or jaundice.

Symptoms
Affected sheep seek shade, shake their heads or stamp their feet. As the blood vessels beneath the skin become damaged, fluid accumulates and the unwoolled parts of the face, ears and fetlocks begin to swell. Eventually, the skin cracks and sloughs off leaving raw, oozing surfaces. These areas then become covered with scabs which may cover the whole face or ears.

Jaundice, when present, shows up in the membranes of the eye and mouth. Affected sheep lose condition and severe cases may die.

These signs only appear when liver damage is severe, and in an outbreak many sheep will have partially damaged livers but will not show skin lesions.

At autopsy, the main signs of the disease are jaundice and liver damage. In early cases, the liver is swollen (seen as blunt, rather than sharp edges) and mottled.

In later stages the liver may be pale and fibrous along the edges and have a knobbled appearance on the underside while in advanced cases the liver may be shrunken into a rounded toughened mass.

Treatment
There is no specific treatment for facial eczema. Only the secondary symptoms can be treated while the sheep’s liver heals itself.

All sheep should be removed from the affected pasture or hay to a paddock with plenty of high quality feed and shade.

Another measure which may be helpful is to remove the source of chlorophyll from the diet and to supplement completely with dry feed. Skin lesions may recur if the liver is still damaged on release.

Sale of sheep should be considered, if facial eczema is detected early and the sheep are in saleable condition. Sheep which apparently recover should be culled when saleable as they
Above: The weathered debris around these fodder rolls at Many Peaks had spore counts above 200,000 per gram (potentially toxic), while spore counts in the rolls themselves were low. Grazing such debris may be dangerous when weather conditions are favourable for development of facial eczema.

Control

In Western Australia widespread management controls may not be necessary except in the Albany district. Where there has been a previous outbreak on the property or in the district the following points may be helpful.

- Whenever there is dead plant material during autumn and early winter and warm, moist conditions prevail, there is a chance of facial eczema if the fungal spores are present.
- Since the fungus grows on dead grass, pastures could be grazed heavily over the summer or burnt immediately before the break of the season to reduce the risk. Once conditions are favourable, pastures should be grazed as lightly as possible, as the greatest concentrations of toxic spores are found close to the ground.
- In New Zealand pastures are made safe by spraying with Benlate at 300 g/ha seven days before they are to be grazed. Such paddocks can be grazed heavily and a new paddock sprayed before use. This method has to be evaluated under local conditions.

Prediction

In New Zealand, "danger" periods are predicted by a combination of spore counts and weather conditions. The combination of 4 mm rainfall followed by three successive nights with minimum temperatures of the grass greater than 12°C are potentially dangerous. Pasture spore counts above 200,000 per gram are considered toxic. Similar conditions occur during the autumn of most years in Western Australia. The occurrence of disease will therefore depend on how much dry matter residue remains in autumn.

Similar symptoms

Facial eczema must be differentiated from other diseases which cause photosensitisation of the skin and affect the face. Scabby mouth which is often confused with facial eczema results in scabby crusty lesions around the mouth, lips and feet, whereas facial eczema affects all the non-woolled areas of the face, ears and other areas.

Western Australian sheep and cattle are sometime affected with photosensitisation when grazing new growth of subterranean clover or burr medic; especially after a short set-back to the plant. In this case there is no fungus involved, the liver appears normal, and the plant itself is causing the photosensitivity.

Many other plants may produce similar symptoms in sheep, and these include lupins, zamia palm nuts, caltrop and heliotrope.

Progress in control

Since the severe outbreak of facial eczema in 1978, the problem has received close attention. The Albany office of the Department of Agriculture has been monitoring paddocks to determine the spore counts, weather conditions and grazing patterns associated with Western Australian outbreaks.

During the critical period of the 1979 season, this office provided a spore counting service with results within 24 hours. This allowed farmers to make best use of paddocks while they were safe.

An enzyme test (serum GGT) is done to monitor sheep grazing affected paddocks. Eventually it may be possible to predict the level of damage to the liver using this test, and identify sheep with severe liver damage.

Other research planned will evaluate the role of pasture management in outbreaks, and methods of control such as zinc supplementation to prevent liver damage and spraying pasture with Benlate to attempt to reduce spore counts. Monitoring of paddocks will continue until outbreaks can be confidently predicted.

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