



FACT SHEET

JANUARY 2017

PREVENTING FACIAL ECZEMA (FE) BY PASTURE SPECIES SELECTION AND GRAZING MANAGEMENT

Facial Eczema (FE) is caused by a fungus, *Pithomyces chartarum*, which grows on dead pasture litter. In late summer and autumn, when periods of warm humid weather are common, the fungus can multiply rapidly producing large numbers of spores which contain a toxin called sporidesmin. When livestock ingest pasture with high spore loads, the toxin can cause severe liver damage and affect productivity and welfare.

The impaired liver function, and damage to the biliary system in the liver, reduces the ability of the animal to excrete waste products and in some animals this leads to the photosensitivity and damage to exposed areas of the skin, especially to the face and ears of sheep (giving the common name of facial eczema) and the breech and udder of cattle. Most animals with sporidesmin-damaged livers however show no visible symptoms, but the damage can be detected by a blood test.

As FE often occurs during the sheep mating season it can have a major effect on lamb production, not only in that year, but also in subsequent years.

In addition to the losses due to deaths and the culling of animals with clinical FE, sub-clinical FE causes:

- an increase in barren ewes (up to 12% more barren ewes in affected mobs).
- a decrease in ewes carrying multiple lambs.
- an increase in death rates and lower productivity among ewes in subsequent years (lifetime performance can be reduced by up to 25% even when no symptoms are visible).

These losses occur even in flocks where little or no clinical eczema is observed. If you get 5% of the flock showing clinical signs, then at least 50% of the flock will have unseen, sub-clinical FE (damaged livers).

In cattle, grazing toxic pastures has immediate effects depressing milk yield and/or growth rates and long term effects on survival.

In the short term, FE can be prevented by dosing susceptible stock with zinc oxide as a drench, or slow release bolus, spraying pasture with fungicides to reduce the development of the FE fungus and grazing or feeding safe feed during periods of high risk. The best long term strategy is to breed animals that are more FE tolerant.

Research has shown that FE can also be controlled through the choice of **pasture species** and/or grazing **management**. Success depends on understanding where the fungus grows.

The fungus grows on the dead litter at the base of the pasture. The more litter present, the greater the potential for explosive fungal growth when periods of high humidity coincide with grass minimum temperatures exceeding 12-13°C. The fungus overwinters on litter at the base of pastures and then colonises fresh litter later in the spring.

Most of the spores are situated in the 5 to 6 cm at the base of pastures. Spore loads also increase progressively from the youngest to the oldest leaf material. Thus choosing species such as chicory, red clover or tall fescue which produce pastures with very little litter, and then grazing laxly to avoid forcing animals to graze the lower pasture horizons can greatly reduce the risk of FE.

Numerous trials measuring the spore loads found on various grass and herb species have shown that pure tall fescue swards and grass-free crops of chicory, plantain and legumes maintain much lower spore counts than most other grass-dominant pastures.

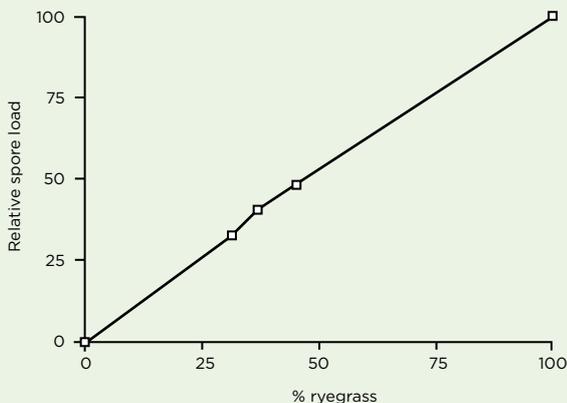
Table A: FE risk on different pasture species.

HIGH	MEDIUM	LOW
Cocksfoot, ryegrass, Yorkshire fog, browntop, dogstail, fine fescues.	Paspalum, danthonia.	Chicory, plantain, legumes (lotus, white and red clover), kikuyu, tall fescue, sweet vernal.

In grazing trials, ryegrasses, browntops, cocksfoots, fine fescues, dogstail and Yorkshire fog had the highest spore loads. As a result, stock grazing on any of these grasses had the highest spore intakes and were at the most risk. **These pasture species are most likely to be involved in Facial Eczema outbreaks.**

Chicory, red and white clover and tall fescue cultivars were found to consistently have the lowest spore counts and, most importantly, to support higher growth rates than grass-dominant pastures. However it is most important to remember that these pastures are only safe so long as they are free of weed grasses, especially ryegrass and species common on low fertility sites.

Graph A: Increase in spore load as % ryegrass in pasture increases. (Source: AgResearch)



Grazing systems and FE risk

Knowing that most of the fungal spores are concentrated in the bottom few centimetres of the pasture, and that the fungus needs a moist warm environment for rapid growth and spore production, points the way to adjust grazing management to minimise the risk of FE.

Grazing trials have shown that rapid rotational grazing systems result in animals ingesting lower numbers of toxic spores than set stocking systems, as the animals do not graze down into the lower levels of the pasture where spore numbers are highest.

Summary for managing pastures and forage to minimise FE:

- Grow an area of special-purpose ryegrass free pasture/herbage for use during FE danger periods. The better animal performance on these pastures will boost profitability by up to 20%.
- Avoid making stock graze to the base of pasture. Use a fast rotation, leaving a high pasture residual.
- Dark green urine-patch sites in dry paddocks generally have very high spore loads. Daily rotational grazing will minimise stock grazing these areas.
- Keep pasture green and leafy with high clover levels and minimise dead material.
- Monitor spore counts to ensure pastures are safe, and graze pastures with the lowest counts.
- Avoid sheltered moister paddocks as the spore counts are likely to be higher than drier more exposed paddocks.

If you require further information on testing or control of FE, please consult your local veterinarian.



Dr Neale Towers and Robert Carter discuss FE management on a Beef + Lamb New Zealand podcast – listen at beeflambnz.com/news-events/podcasts

For further information freephone Beef + Lamb New Zealand on 0800 BEEFLAMB (0800 233 352), email enquiries@beeflambnz.com or visit www.beeflambnz.com.

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