Facial Eczema - Treatment and prevention (3-6)

Facial Eczema (FE) is a disease of the liver that significantly impacts on the health and productivity of cattle and presents significant welfare concerns for the industry.

Facial eczema is caused by the fungus *Pithomyces Chartarum* which grows on dead and decaying pasture. When the weather is warm and humid the fungus starts multiplying and producing spores filled with a toxin (Sporidesmin) that when ingested causes damage to the liver and bile ducts of ruminants.

The damaged liver cannot rid the body of wastes and a breakdown product of chlorophyll builds up in the body causing sensitivity to sunlight, which can cause inflammation of the skin.

**Symptoms**
The first symptom of FE is a drop in milk production within 24 hours after ingesting FE spores (subclinical FE). The majority of animals affected by FE will not show any other signs other than a milk production drop of up to 50%. However their liver is badly damaged (Figure 1). It is estimated that for every 3 in 100 cows showing clinical FE.

**Figure 1**

![Clinical FE, Subclinical FE, Normal Liver](image)

<table>
<thead>
<tr>
<th>% of Herd</th>
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<tbody>
<tr>
<td>Clinical FE</td>
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<tr>
<td>Subclinical</td>
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<td>Normal</td>
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Other subtle signs of FE may be restlessness at milking time, seeking shade and licking the udder.

Clinical FE is when the un-pigmented skin or thin skin swells, thickens and peels. White areas, teats, inside the hind legs, udder and udder support area are all common places that will show signs.

Badly damaged liver tissue will not regenerate. Chronic wasting and/or death may occur at the time of damage or months later when the animals are under stress (e.g. calving).

**Timing of FE**
The fungus grows and multiplies on the loose ryegrass debris below the mid-height of the sward. It starts to multiply when grass minimum temperatures are above 12°C. However optimal conditions are when temperatures are about 24°C.

When warm temperatures are accompanied with humidity and moisture the fungus sporulates. Most spores are found at the base of the pasture where the fungus is but they are still able to be moved with air flow and will settle on green leaves as well.

**Risk**
Long term intake of low numbers of spores can cause just as much damage as short term intake at high numbers. Even though milk production is affected immediately, it will take 10-20 days for visual signs such as skin damage to appear so if you see these clinical signs in your herd, the problem started weeks prior.

**TREATMENT AND PREVENTION**
There is no cure for FE so prevention is the only way of protecting animals.

**Spore counting**
Pasture spore counting is an excellent tool to visualise pasture spore count trends.

However variability between farms is very large because every farm, paddock and even sections of paddocks contains a slightly different micro-climate for the fungus. It is possible to have spore counts varying by as much as a 500,000 spores/g of pasture or more between farms and between paddocks.

It is therefore important that when regional spore counts start trending upwards to reach 20,000 to gather a picture of your own farm.

Similarly, it is not uncommon for spore counts to decrease unusually early or unusually late. Therefore do not stop your management program until you are certain that the spore counts are trending down and are consistently below 10,000 spores/g for three weeks.

For information on collecting samples on farm go to [www.dairynz.co.nz/facial-eczema](http://www.dairynz.co.nz/facial-eczema)
**Zinc treatment**

Cattle need to be fully dosed with zinc as soon as there is an indication that spore counts are rising on your farm. Regular spore counting is crucial for making this decision.

Research in 2014 has found that only 31% of cows that were dosed with zinc had blood zinc concentrations in the range to be protective against FE.

*A sample of cows should be blood tested to make sure they are getting an adequate level of zinc for protection against facial eczema.*

For more detail on protocols and testing go to [www.dairynz.co.nz/facial-eczema](http://www.dairynz.co.nz/facial-eczema)

For drench recipes and dose rates see *FarmFact 3-7.*

**a. Zinc Oxide drench**

Drenching should start when spore counts start to rise on your farm. Daily individual cow drenching at full dose is optimal for protection against FE.

Dosing adult and young stock cattle at greater than daily intervals may cause toxicity, milk fever or inadequate protection in some cattle. If you cannot drench daily, blood test your cattle at the tail end of the drench interval to make sure that they have enough zinc in the blood for protection against FE.

Dosing adult and young stock cattle at half doses may cause inadequate protection against the FE toxin.

**b. Zinc Sulphate water treatment**

In-line dispensers, adding zinc to the tank supplying the water reticulation system and floating in trough dispensers are all possible ways of providing zinc via water. Direct addition of zinc sulphate to the water trough without using a dispenser is not recommended.

Water treatment at a half dose should begin 3-4 weeks before the FE season starts to prime troughs. It is recommended that a flavour is added to the water to help disguise the taste.

Full dose rates should be dispensed when spore counts start to rise on your farm.

- Water treatment is only suitable for long term daily dosing
- Water treatment is not suitable where stock have access to alternative water sources, e.g. streams and drains
- Zinc treated water must be reticulated to livestock only, not household or farm dairy supplies
- Cows should be blood tested to check zinc levels. Make sure the dose is suitable for your cows.

**c. Zinc in feed**

Zinc oxide can be added to feed for in-shed feeders or added to feed on the feed pad. zinc for in-shed feeders is often added by the feed company. zinc administration onto pasture is not recommended. Pelletized feed or a mixer wagon will give a more constant distribution of zinc in the feed in comparison to un-pelletized feed and silage feed out wagons.

Administer full dose rates of zinc oxide in the feed when spore counts start to rise on your farm.

- If there are cattle that eat more than others they may be at risk for zinc toxicity
- If there are cattle that do not eat the feed or eat small amounts, they will not be protected against FE and should receive an alternative treatment
- If zinc is not properly mixed into the feed in a silo or wagon, cattle may be at risk of toxicity or have inadequate protection against FE
- Consider independently testing zinc in feed.
d. **Intraruminal bolus**

An intraruminal bolus (capsule) slowly releases zinc into the rumen over a period of 4-6 weeks.

There are two brands of capsule, Face-Guard® and TimeCapsule®.

Both are extremely consistent and effective at managing FE as long as it is administered before the FE challenge and is administered at the correct dosing intervals (for Face-Guard® first re-treatment is 6 weeks, then 4 weeks; for TimeCapsule® 4-6 weeks depending on challenge).

The TimeCapsule® bolus provides protection against facial eczema in animals from 90-600kg.

- Capsules must be administered with correct applicator
- Do not use damaged capsules
- Capsules administered every 4 weeks could cause toxicity so animals should be blood tested to check for zinc levels.
- Capsules are significantly more expensive for administering zinc than other options but reliability and cost effectiveness need to be considered

**Fungicide Spray**

Fungicides are used to slow the development and spore production of the fungus that causes facial eczema. This is an effective way of managing facial eczema without the use of zinc but only if:

- Pasture has confirmed spore counts below 20,000 spores/gram pasture when fungicide is applied.
- Pasture is green and growing (in dry conditions the grass will not uptake the fungicide)
- Spraying should cover all areas including fence lines, under hedges and under trees
- Pasture will be covered for 4-6 weeks after fungicide application. After this pasture should either be immediately re-sprayed or monitored with spore counting.
- Ensure the product is rain fast

**Other management**

- Minimise the build-up of soft litter through avoiding topping and managing pasture quality in November/December
- Avoid grazing below 4cm pasture height during summer months; use supplements to reduce grazing pressure
- Don’t forget to treat replacement animals grazing off the farm
- If cows get affected, provide shade, dry off, treat skin lesions with ointments and provide access to water and plenty of feed
- You may wish to consider culling older cows that have not recovered by May
- Administration of zinc may depress tissue copper levels in areas of copper deficiency
- Zinc is toxic in high doses; care should be taken in calculating dose rates.