**Facial eczema**

**Dairy cattle**

Facial eczema (FE) is a disease that causes liver damage, lowered production, skin irritation and peeling, and sometimes death. It costs New Zealand farmers an estimated $332 million annually in lost production, Facial Eczema (FE) has been a problem for New Zealand farmers for over 100 years. FE costs the New Zealand dairy sector at least $100 million annually in lost production

The disease is caused by a **fungal spore** called *Pithomyces*chartarum*.*The fungus grows on dead plant material found at the base of the pasture – especially perennial rye grass – releasing spores (sporulation) during the summer months, usually between January and May.

Under warm and humid conditions, spore numbers can rise rapidly. Areas susceptible to higher spore counts are around urine patches, areas sheltered by hedges, and northern and western facing slopes.

When fungal spores are ingested they release a toxin called sporidesmin which causes damage to the bile system of the liver. This, in turn, results in the accumulation of other toxins in the animal’s bloodstream, leading to poor health, low production, and potentially death.

An important secondary effect of the liver damage is called ‘photosensitisation’, visible as a severe and painful inflammation of unpigmented areas and exposed skin such as the udder, teats, ears and face (this is how the disease got its name). But it’s important to note that the disease is not always visible:



Around 70% of a mob may be affected if just 5% of the animals show symptoms of facial eczema.

**Facial eczema signs to look for**

* A drop in milk production
* Cows are restless, seeking shade and licking their udder
* Exposed unpigmented or thin skin reddens, thickens and peels

Milk production of animals with subclinical FE can be depressed by up to 50%. Blood tests can be used to monitor the extent of subclinical FE,

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

**Timing**

The fungus produces spores when grass minimum temperatures are above 12°C for two or three nights and humidity is high (usually January to May). The fungus grows on soft litter at the base of the pasture so hard grazing during danger periods increases the risk of spore intake. Pasture management, which increases the build-up of soft litter is a likely contributor to increased FE risk

**Prevention**

There is no cure for FE so prevention is the only way of protecting animals. To be effective, preventative measures need to be in place before eczema spores are found.

**Preventative measures include:-**

* monitoring pasture spore count and either dosing animals with zinc or spraying pastures with a fungicide.
* breeding cows that are more tolerant to facial eczema is a solution to reduce the impact from facial eczema in the long term.

**Monitor pasture spore count**

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Pasture spore counting is an excellent way to visualise spore count trends and predict likely risk periods. Spore counts between paddock is highly variable but the risk level is a guide.

1. Monitor regional spore counts
2. Monitor farm spore counts when regional counts reach 20,000 spores/g of pasture

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**Zinc Dosing**

Start early – at least two to three weeks before the spore growth danger period.

* Weigh a representative sample of at least 20 cows of each of the mobs to be treated to calculate the dose of zinc required
* Fully dose cows with zinc: drenching with zinc oxide, water dosing with zinc sulphate, administering in feed or as an intraruminal bolus (e.g. Time Capsule, Face-Guard).
* The more control a farmer has over the amount of zinc a cow receives the more likely it is that the cows are receiving the correct daily dose. Zinc drenching and intraruminal bolus will, for this reason, provide more reliable protection than adding zinc sulphate to drinking water
* Zinc is toxic in high doses; care should be taken in calculating dose rates

**Pasture spraying**

* Spraying the pasture with a fungicide will slow the development of the fungus and subsequent production of spores.
* Apply only when
* Pasture has confirmed spore counts below 20,000
* Pasture is green and growing.

Spraying should cover all areas including fence lines and under hedges. Check spore counts after spraying and before grazing, to ensure pastures are below acceptable levels. Pasture will be safe for 4-6 weeks after which they will need to be resprayed or monitored with spore counting.

**Pasture 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.

**Facial eczema tolerant genetics**

Facial eczema tolerance is a heritable trait, and the right breeding programme can reduce the severity of the disease over time. Research and development completed by CRV Ambreed, AgResearch and DairyNZ resulted in the ability to identify facial eczema tolerant bulls. These sires will typically breed daughters that are 25% less reactive to a facial eczema challenge, compared to the average bull.

Cows resulting from FE tolerant sires will typically have

* Improved tolerance to FE spores
* Improved production

For a herd starting a breeding programme with FE tolerant sires the first benefits (FE tolerance in young stock) are not available for 18 months after first insemination. Gains in FE tolerance will be made as each generation of daughters from FE sires enters the herd. A full herd with FE tolerance is achievable in 7-8 years

Facial eczema **breeding value**. A new breeding value to help combat bovine facial eczema has been developed, enabling farmers to breed cows that are more resistant to the disease, which costs the New Zealand dairy sector at least $100 million annually in lost production.

**Treatment**

* Cows showing clinical signs of facial eczema can recover if prompt action is taken
* Dry off affected cows now, to reduce pressure on the liver
* Put zinc cream on white areas of the coat and the udder
* Move affected stock into dense shade. Indoors is best (hay-barn, calf-rearing and implement sheds) but make sure there is a good water supply and supplementary feed available for cows
* Feed cows at night, so they are not exposed to sunlight and stop hard grazing so cows do not graze down into dead matter where the spores that cause FE live
* Feeding maize and/or silage can help, but cows will still tend to graze if they are kept on pasture.
* Make sure the diet is balanced, with good levels of energy and protein.

**In addition for very sick cows**

* Use a starter drench to boost metabolic
* Use vitamin B12 supplementation
* Seek veterinary advice regarding additional pain relief treatment.

Practical indicators of recovery include liveweight gain and improvement in body condition score (BCS). Be aware that animals can take up to 12 months to fully recover. Animals with a previous history of clinical FE have a lower chance of recovery than previously unaffected animals.

When making decisions to cull cows act early before body condition score and the severity of the condition cause unnecessary distress and suffering. If sending cows for processing farmers need to be aware that animals will not be accepted if emaciated or with severe skin damage (sores, weeping wounds etc).

**In summary the best cure is prevention**

* Keep an eye on [regional spore counts](https://labportal.gribbles.co.nz/#/public/facial-eczema)
* Do spore counts across your own farm.
* Spray your pasture with fungicide before spore counts begin to rise
* Avoid using paddocks with a history of high spore counts
* Using supplementary feeds such as hay, silage and crops
* Use of zinc preventively:
  + in feed, drenches or water, or
  + for best protection, individual dosing of cattle and sheep with a zinc bolus such as Face-Guard
  + Another option is ZincCheck – the new Fonterra Bulk Milk test (based on 3 tests taken within 5 – 15 days apart) that measures zinc levels.
  + Use FE tolerant genetics

***Exercise***

1. *Describe what causes of FE, include in your answer*

* *Causal agent*
* *Time of year*
* *Environmental conditions*

1. *Referring to the Graph below for Farm Brown. Explain why FE spore counts vary from month to month and from year to year.*
2. *Describe the visual signs that a dairy cow has facial eczema.*
3. *Explain how FE affects production.*
4. *There are several management practices farmers can use to prevent FE. One of these is the use of zinc. Describe the methods of how zinc can be used to protect cows from FE and discuss advantages and disadvantages of each method.*
5. *The use of FE tolerant genetics is recommended as a preventive management practice in conjunction with other preventive management practices. Discuss why the use of FE tolerance genetics should be used and why genetics alone will not prevent FE in dairy cows*
6. *Discuss how FE affects farm productivity.*

Apr

Feb

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Mar