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Health & Husbandry

Rye Grass Staggers in Sheep - What can be done?

Rye Grass Staggers can be treated.

Rye grass staggers is one manifestation of sheep ingesting perennial rye grass that harbors endophyte fungi.

Endophyte fungi are simple filamentous fungi that have formed an association with grass that mutually benefits both the grass and the fungus. The fungus that associates with rye grass is called *Neotyphodium Loli*. This fungus is present in virtually all perennial rye grass pastures throughout Australia and New Zealand. It has a very simple life cycle as it grows between the plant cells and as the plant grows and sets seed it enters the seed head and as the seed germinates it then grows into the developing leaves and the life cycle is complete. It is heavily disguised as it never leaves the plant and can only be detected by sectioning the leaf blades and staining the fungus that can then be seen under the microscope.

The fungus and plant together produce some novel chemicals called alkaloids. These are similar to many of the drugs that people use to stoke out on. Endophyte react with the plant to improve water relationships and plants containing endophyte are more drought resistant.

On the other hand plants infected with this endophyte produce three major alkaloids, lolitrem B, ergovaline and peramine.

- **Peramine** is highly beneficial as it is toxic to many insects and prevents a number of insects particularly Argentine Stem Beetle, from damaging the plant.
- **Ergovaline** is detrimental to sheep and cattle. When it is absorbed it causes constriction of the blood vessels and these animals maybe heat stressed at high environmental temperature. The signs of this in the animal is reduced grazing time and reduced pasture intake with lowered productivity. Ergovaline also causes damage to the intestinal wall, which results in a sticky diarrhea.
- **Lolitrem B** affects the central nervous systems causing staggers particularly when the animals are disturbed and when they are grazing the new growth of rye grass after a dry period followed by rain when they "chase the green pick".

Low productivity or ill-thrift, that can vary from difficult to detect levels to major reduction in productivity, are probably occurring year round on pastures dominated by rye grass as the alkaloids are produced in the growing plant continuously and are also in high concentrations in mature senesced pasture in the dry season and are unaffected when the pasture is made into silage.

Obvious ill-thrift that resembles intestinal parasite infestation, and some times catastrophic death rates can occur in sheep and cattle when temperature humidity are high and they consume the infected pasture.

Staggers are a mere reminder that the animals are consuming poisons and it is almost certain that insidious losses are occurring in the animals on that pasture.



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The other symptoms of endophyte toxicosis are also important resulting in economic loss and include a high faecal dags and wool stain around the rump. Diarrhea can be so prevalent in effected lambs to cause 20-30kg of dags that have to be removed and, of course, heavy

contamination of the rear of the animal leads to fly strike that can hit the hip pocket more than having to crutch the lamb.

Lamb survival is compromised when ewes are on infected rye grass, as the ingestion of alkaloids reduces milk production and, at extremes, ewes will dry off soon after lambing with subsequent death from starvation of the lamb, particularly where the season is cold or wet.

In hot periods, there are recorded cases of large numbers of sheep drowning, apparently so over-heated from the ingestion of alkaloids that they bolt for water and animals are drowned in the subsequent rush. There are also cases where mishandling in the yards or running the animals back to the paddock has resulted in overheating and death of large numbers of animals.

Staggers whilst disturbing for the grazier, are indicative that there is a potential problem and the problem can be much more serious if the weather suddenly turns warm and where reproductive efficiency and survival rates of the lamb are reduced.

So is there anything that can be done?

The problem arises where rye grass is dominant in the pasture, so the first step is to manage the pasture to ensure a good mix of other grasses and clovers so that sheep and cattle can select non-infected pasture plants.

If the pasture is dominated by rye grass then feed out other feed such as hay, silage (not made from rye grass as this will still have alkaloids in it) or probably a large bale of straw with high leaf content. In the latter case if the pasture is mostly dry then there should be mineral and urea supplements to ensure efficient digestion of the forage (use the Indicator System for best results)

If the problem of staggers persists then the animals may be better off on stubble with supplements until the dangerous periods are over. With experience, sheep can be moved if a moist hot front is predicted to pass through the district. If sheep are in late pregnancy then it is good idea to ensure the ewes are supplemented with other feed.

Where animals remain on rye grass pasture, then a good bet is to feed bentonite through a block lick such as the Olsson's Bentobite block. The use of bentonite came out of research at the University of New England by Peter Fenn a Doctoral student who showed that feeding 15g of bentonite per day increased wool growth in grazing Merinos by approximately 25% or 1kg/year in small framed animals.

Bentobite has been trialled by graziers all over the country and is one of Olsson's top rated blocks. In places providing bentonite, it has made impressive differences to the production of grazing sheep.

Claims by graziers that it lowers the incidence of diarrhea in sheep and cattle are consistent with bentonite's known qualities in binding alkaloid toxins.



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Aflatoxins are amongst the worst carcinogens produced by a fungus that is present on grains and vegetable protein meals. It is readily absorbed and enters milk when contaminated feed is fed to dairy cows. Adding bentonite to the feed removed 60% of the aflatoxins from milk of dairy cows. This showed that bentonite can bind alkaloids and prevent them from being absorbed by animals. Bentonite has also been shown to bind the endophyte alkaloids but no trials have been done to see if feeding bentonite can protect grazing animals from the detrimental effects of these toxins.

The use of bentonite to lessen the effects of endophyte toxicosis is tentative, so any grazier who has a problem of staggers should be careful to test whether there are benefits from feeding bentonite.

A suggested routine would be to split a mob and feed one group bentonite blocks. Prior to putting out the blocks walk among the mob and count the sheep that exhibit staggers and or have dags; put out the blocks and repeat the measurements in both the supplemented and non-supplemented groups. Cross over the treatments and repeat the measurements. Of course measurements should be made only after the sheep have come on to the blocks.

In conclusion, rye grass staggers are a symptom of potentially major production losses that occur when ruminants graze rye grass pastures. If it occurs on your property it is a fair bet that the lowered production is costing you an appreciable proportion of your profits. It is a major cause of production losses that requires some well-targeted research and it is suggested that the grazier should try bentonite as a supplement where cases of rye grass staggers arise.

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