Ryegrass Staggers - Seasonal Alert (Published 15/4/2013)

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Special Fact Sheet 7

The drying of perennial ryegrass due to the hot summer temperatures triggered the condition known as Ryegrass Staggers (RGS) in Tasmania and Gippsland Victoria, in the early months of 2013.

It is also referred to as Perennial Ryegrass Toxicoses (PRGT). It is not the same disease as 'Grass Tetany' which occurs in grazing animals due to a magnesium deficiency.

It is caused by horses grazing perennial ryegrass containing a fungus in the cells of the plant (*Lolitrem perennial*).

Perennial ryegrass can harbour the endophyte fungus (called *Neotyphodium Lollii*) within the stem between the leaf cells. The high endophyte perennial ryegrass varieties were initially selected to improve resistance to drought and attack by insects. The endophyte affecting perennial ryegrass is usually present in older plantings in a pasture which has endured for a number of seasons. It out-yields perennial ryegrass without an endophyte infection as it is more resistant to insect attack.

A new non-endophyte type of perennial ryegrass which enables good pasture yield is now available and does not cause staggers or a loss of growth in grazing sheep and cattle.

The intracellular fungus, which produces the alkaloid neurotoxin, lolitrem B, cannot be controlled by topical anti-fungal sprays as it resides in the plant cells. The mycotoxin (toxin) which accumulates in the seeds, leaves and base of the plant under dry conditions, affects part of the cerebellum of the brain in grazing animals, causing trembling, convulsions, incoordination and staggers. Owners of affected cattle and sheep refer to it as a 'drunken' gait, because of the inability of the animal to balance and coordinate its limbs. They lose weight and in some severe cases can die of starvation as they cannot graze.

The wet spring of 2012 in Southern Australia resulted in a flush of perennial ryegrass, which when stressed by the dry conditions of summer, resulted in toxin accumulation. Ryegrass Staggers affects horses, sheep, cattle, deer and alpacas, although goats are less affected possibly because they prefer to browse on shrubs and trees. The warm dry periods of early summer, with mycotoxin build up in the base of the leaves and the seed heads increased the risk earlier than in normal seasons.

Symptoms in Horses

Horses have been observed to develop similar signs of a mild occasional staggering, an incoordinated gait, as well trembling with 'wave-like' muscle twitches spreading over the shoulders and barrel when standing or during handling. When exercising under saddle, they may exhibit symptoms similar to head shaking. They might display behaviour often associated with a fear-like or mild 'panic' reaction when approached in the pasture or when being caught.

Horses also can develop more severe signs with weakness, tremors and collapse in acute cases when they have been grazing endophyte contaminated perennial ryegrass pastures. It is unwise to ride horses when they are exhibiting limb incoordination problems as they could stumble and fall.

Handy Hint

Ryegrass has a High Sugar and Potassium Content

Lush ryegrass pasture is a high yield palatable grazing pasture for horses, cattle and small ruminants. However, it contains high levels of fructan sugars and other soluble sugars and non-structural carbohydrates (NSC's) during spring growth. This can trigger Spring Founder in grazing horses. The rapidly growing grass also has a high potassium content which can reduce magnesium uptake, which can intensify muscle incoordination (as in 'Grass Tetany') and result in erratic nervous 'spooky' behaviour due to low magnesium uptake. Horses can become unpredictable and 'spook' at objects which they normally do not find frightening. Daily supplementation with **Kohnke's Own Mag-E™**, containing organic magnesium, is recommended to offset the high potassium content during lush periods if you are riding a horse grazing on spring pastures.

Did You Know that….

- The high risk period for RGS is in late summer and early autumn in Southern Australia with winter rainfall. It occurs about 7-14 days after horses graze infected pasture.
- The endophyte fungus cannot spread from plant to plant by contact as it resides in the plant cells - it is only spread in seeds.
- Endotoxin levels in standing ryegrass can remain high for 6 months. It is leached out by regular rainfall on dry ryegrass. Moist cured silage and haylage can retain dangerous levels of toxin for 7 months. The toxin deteriorates in stored dry hay over a 12 month period to make it safe to feed normal quantities to horses.
- The toxin can remain viable in stored infected seeds for more than 2 years, but highest levels are found in seeds up to 3 months after harvest.
- Hard grazing of infected pasture by horses increases toxin production and the risk of RGS associated symptoms.
- Young horses and other young livestock are most susceptible. Other affects include reduced fertility in mares and increased risk of heat stress during hot weather in horses grazing dried-off pasture, as well as poor growth in foals and diarrhoea.

Perennial ryegrass. Photo Arthur Chapman

Management

Not all anxious behaviour in horses at pasture is due to ryegrass mycotoxin poisoning. Horses are not all affected to the same extent, but fatalities can occur in severe cases. The risk of injury due to incoordination or sudden panic must be considered and horses kept in a small paddock away from noise.

1. Avoid allowing horses to graze close to the ground on affected pasture. Rotate them around and limit access to grazing so that they are not grazing the plant bases which are high in mycotoxins.
2. Take them out of the pasture when ryegrass seeds are forming or the grass is drying off. You may need to slash the pasture to re-invigorate its growth so that less mycotoxin is formed.

   Remove growing horses, mares in late pregnancy and lactating mares which are likely to graze more pasture and risk a higher mycotoxin intake.
3. Consider the use of a mycotoxin binder and magnesium supplement which has a role in maintaining normal nerve function. Many horse owners in high risk areas and seasons have found that supplementing with double doses of **Kohnke's Own Mag-E™**, can help. Mag-E™ contains organic magnesium and Vitamin E, which have a role in normalising nerve and muscle function. **A special trial nutritional product is being field tested to evaluate its role in helping to normalise neuromuscular function in affected horses.**
4. If it is a seasonal problem from year to year, consider replanting the ryegrass or other grass species not affected by endophytes. Low endophyte varieties of perennial ryegrass are also available, although new endophyte infected varieties are recommended which do not cause RGS as the toxin type is different and the endophyte assists the growth of the plant.
5. If RGST has occurred in previous years and the seasonal conditions may favour its development, shift horses out of contact with the infected grass as it dries off. If horses start to become affected by RGS, they may be difficult to safely move to new safe pastures. Avoid worming, trimming their hooves and herding them if they are showing any signs of RGS, or it is likely to develop due to seasonal conditions. Once the season breaks and the ryegrass regenerates, the level of endophyte in the plants decrease and it is safe to move horses back onto the pasture. Ideally, the perennial ryegrass with endophyte contaminators should be sprayed out or over sown or replanted with a new low or safe endophyte variety to re-establish a safe pasture for years to come.

Storing endophyte affected perennial ryegrass seed for 2 years under moderate temperature and humidity will reduce the endophyte content of the seed to a low level and it can then be over sown into the pasture. The fungus does not spread from plant to plant, only in seeds.