

Grass Tetany
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Springtime brings the growth of new spring grasses, but also the potential for grass tetany. Most veterinary texts define 'grass tetany' as a deficiency of magnesium (Mg). Although signs of grass tetany appear as a magnesium deficiency, the reasons for this expression vary.

Grass tetany

Grass tetany is a disorder in cattle when the level of magnesium in the cerebrospinal fluid, which surrounds the brain and spinal cord, decreases below a critical level. In the development of grass tetany, the level of magnesium in the blood decreases before the level in the cerebrospinal fluid. So, the analysis of the magnesium level in the blood is a guide to the disorder.

Although low blood magnesium levels (hypomagnesemia) are always involved with grass tetany, the disorder can occur under a variety of circumstances. Low levels of blood magnesium (hypomagnesemia) are usually associated with low levels of blood calcium in late pregnant cows and cows with calves at their side. These low levels mean that the muscles of the body cannot work properly, so the animal dies, as it cannot breathe.

The disorder can be complex, with many factors contributing:

- the age of the cow—older cows with young calves are most vulnerable;
- feeding on grass-dominant pastures and/or early crops;
- acid soils
- high-potassium soils and/or soils treated with potassium fertilizers;
- environmental effects such as:
 - wind, rain and exposure
 - sudden lowering of temperature.

Low magnesium intake

Generally, young grass and cereals have lower magnesium levels than older grass and cereal crops, e.g. grazing oats. Grasses and cereal crops have lower magnesium levels than clovers. This means that it is more risky to graze cattle on pastures that are mainly of grasses, or cereal crops, especially when they are young.

Pasture management, such as spraying broadleaf weeds, results in less competition to grasses. It also sets back clover growth, encouraging grasses to dominate. 'Bad clover years' may also mean grass dominance and a higher risk of grass tetany.

Heavy nitrogen or potassium fertilizer application reduce the amount of magnesium available to the plant from the soil and so reduce plant magnesium levels. Anything that reduces feed intake reduces

magnesium intake, so unpalatable food, bad weather, yarding or transport can cause outbreaks of grass tetany through reducing feed intake.

Poor magnesium storage in the animal

Cows can store only very small amounts of magnesium in their bones and soft tissues. They lose magnesium in milk, urine and digestive secretions, and unless replaced, grass tetany will result.

Interference from other minerals

In the soil, and in plants and animals, other minerals such as sodium, potassium, chlorine and manganese can interfere with the amount of magnesium a cow will be able to obtain from its feed.

Clinical Signs

For most farmers, the first sign of an outbreak of grass tetany is finding dead cows. Usually, there is froth from the mouth and nose, and obvious struggle where the animal's legs moved violently before she died. Excitement and muscular spasms (tetany) are the most common symptoms.

In the mildest form of the disorder, the cow may have an abnormally low level of magnesium in the blood and yet show no signs. Initial signs of the disorder include twitching of the face and ears, a wary appearance and a stiff gait. Often, these early warning signs are missed.

In the intermediate form of the disorder, the cow is wild, her front legs 'goosestep', she does not like being driven, the tail is held a little bit high and she may appear blind. A few recover at this stage, but without treatment the condition of most of them will worsen and they will die.

Excitement, galloping, bellowing and staggering are common in the worst form of the disorder. The cow soon goes down on her side, with her legs outstretched, stiff and thrashing backwards and forwards (leg paddling). Her head arches back slightly and she froths at the mouth. If the animal is down, any disturbance (especially if she is touched) may start leg paddling. The animal may die within minutes of being seen staggering, especially if she is driven or stressed in any way.

Other factors contributing to the risk of grass tetany

- **Time of calving**

- **Stress**

Any form of stress can cause an outbreak of grass tetany once blood magnesium levels are lower than normal. Some of the more common stresses are:

- wind, rain and exposure
- sudden change of feed and feed quality
- sudden lowering of temperature
- transport—do not transport cows in the last 6 weeks of pregnancy.

Treatment

As explained earlier, grass tetany may not always arise from a simple deficiency of magnesium. Straight magnesium supplements are therefore sometimes ineffective as a sole treatment.

A veterinarian will usually inject calcium and magnesium intravenously (i.e. into the vein) followed by a subcutaneous (i.e. under the skin) injection of magnesium. Injecting these solutions intravenously requires extreme caution, as an injection given too quickly, or at too large a dose, will kill the cow.

Prevention:

These are a few of the recommendations:

- Increase energy and roughage intake with good quality hay
- supplementation of magnesium (Mg)
- Pellets or grain can be added if introduced carefully and cattle are accustomed to these
- Provide salt if a natural source is not available
- Move lactating cows (especially older animals) to high legume and high dry matter pastures
- Provide shelter
- Reduce stress factors

If you have had grass tetany on your farm in the past, consult with your Extension agent, nutritionist, or local veterinarian on a prevention control program for your cattle. If you have any further questions, please contact me at, lstrick5@utk.edu, or 865-974-3538.