Grass tetany, or hypomagnesia, is caused by low blood levels of magnesium.

It is most prevalent when cows and ewes that are in late gestation or heavy lactation graze lush spring growth, usually in April and May, but cases can be seen in the fall. Rapidly growing forages have low levels of magnesium, and the availability of magnesium is further reduced by high levels of protein and potassium in the forage.

Grass tetany also is known as grass staggers and wheat pasture poisoning. Grass tetany is most prevalent in spring pastures that had very short grazing heights the previous fall or contain little to no carryover residue.
Species most likely to cause grass tetany include cool-season grasses (crested wheatgrass, bromegrass, bluegrass and timothy), annual cereal grasses (wheat, rye, oats) and native range that lacks standing litter from the previous year.

Leaving sufficient forage in the fall will not only trap snow, retain subsoil moisture and reduce runoff potential, but it also will provide sufficient magnesium in the old growth to help balance the mineral profile and reduce the potential for grass tetany in the spring. In addition, pastures containing legumes or legume/grass mixes will reduce the chances of livestock developing tetany.

Pastures fertilized with nitrogen (N) and potassium (K) fertilizers also are more likely to induce grass tetany. The plants’ uptake of nitrogen and potassium from the fertilizer further decreases the amount of magnesium available to the animal. Test the soils to ensure that nutrient rates in the fertilizer are not in excess of plant requirements for growth.

### Susceptibility to Tetany

Cows and ewes in heavy lactation and late gestation are most susceptible to the disease. If conditions are favorable for grass tetany, dry cows and heifers, stocker cattle and cows with calves older than 4 months can be grazed on those pastures.

Cows grazing grass-dominant pastures account for most cases of tetany. Cloudy, windy, rainy weather with the daytime temperature between 40 and 60 F seems to be the environmental conditions most likely to induce grass tetany symptoms.

Tetany seldom occurs when legumes or legume-grass mixtures are a major portion of the animal’s diet. Legumes usually contain at least twice the magnesium as grasses grown in the same soil.

### Symptoms

Animals with grass tetany may experience excitable and erratic behavior. They can appear to be blind. Clinical signs can include hypersensitivity to touch, muscle tremors, frequent urination, staggered walking pattern, separation from the herd, convulsions, coma and, ultimately, death.

The onset of the condition can be very rapid, and the first clinical sign producers may see is a dead animal. The ground surrounding a dead cow should be studied for marks indicating whether a cow was lying down and thrashing her feet while convulsing prior to death.

A veterinarian should investigate all unexplained sudden deaths immediately. Anthrax also can cause unexplained sudden deaths (see NDSU Extension publication “Anthrax,” V561).

### Magnesium Intake Important

Animals have limited body reserves of magnesium; therefore, they need consistent intake from feed to maintain blood magnesium at required levels, especially during late pregnancy and early lactation. Reductions in feed intake associated with weather, estrus activity, injury or management may increase the likelihood of grass tetany if the forage growth conditions are favorable for the disease.

However, not all cows with low blood magnesium develop grass tetany; why certain animals exhibit symptoms of the disease while others remain unaffected is unclear. Brahman or Brahman-influenced cattle are less susceptible to tetany, compared with British breeds, which are less susceptible than dairy breeds.

In addition, animals that develop tetany once and recover are likely to develop tetany again if low-magnesium forage conditions are present. A normal level of magnesium is about 2.25 milligrams (mg) per 100 milliliters (ml) of serum. The level of serum magnesium in cows affected by grass tetany usually is below 1 mg per 100 ml of serum.

In some cases, animals with low blood levels of magnesium that appeared normal developed severe tetany after handling.

Low-stress handling of susceptible cattle when growing conditions are favorable is another important step in preventing grass tetany.
Wait until grass is 8 to 10 inches tall before turning cattle out to problem pastures.

Graze less susceptible classes of cattle on potential problem pastures.
Here are some techniques to prevent the disease:

✔ Encourage daily intake of magnesium. Magnesium oxide is the most common source of supplemental magnesium. Keep mineral boxes filled and scattered at several locations in the pasture, especially October through May.

✔ Do not start grazing pastures too early in the spring; wait until new growth is 8 to 10 inches tall. Magnesium is more available in mature grass plants than in new, lush, growing shoots.

✔ Make sure lactating cows receive 0.20 percent magnesium in the diet on a dry-matter basis. This is equal to 18 to 21 grams of magnesium intake daily.

✔ Use salt mixtures containing magnesium oxide as a magnesium source. To be effective, the mineral mix should contain at least 10 percent magnesium.

✔ Mix magnesium oxide with other supplements because it is unpalatable (tastes bad).

✔ Graze legume or mixed legume-grass pastures first because early, lush grass growth is more problematic than legume mixed pastures. 

  **Note:** Grazing unlimited lush growth of legume pastures can lead to cases of bloat. Take appropriate precautions if managing cattle on legume or legume-mixed pastures.

✔ Graze less susceptible animals on problem pastures. These animals include dry cows, heifers, stocker cattle and cows nursing calves more than 4 months old. Cows and sheep in heavy lactation are the most susceptible classes of livestock.