



# Cattle Producer's Handbook

Animal Health Section

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## Grass Tetany in Beef Cattle

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Grass tetany (Hypomagnesemic Tetany or HMT) is a metabolic disease of cattle usually associated with grazing lush pastures. This condition occurs worldwide and can affect cattle and other ruminants. Many times the cattle are simply found dead and, therefore, obtaining an accurate diagnosis is important. Low blood magnesium concentration (hypomagnesemia) is the most constant finding and the most important cause of this condition.

### Factors Leading to HMT (Grass Tetany) and Other Hypomagnesemic Conditions

Several factors are important in causing grass tetany and other hypomagnesemic conditions, some of which are listed below:

- Low magnesium (Mg) content of rapidly growing grasses and pastures.
- High potassium (K) content of rapidly growing grasses and pastures.
- High crude protein content of grasses and pastures.
- Bad weather, storms, stress, etc., that cause cattle to be "off feed" for 24 to 48 hours.
- Lactation: losses of Mg and calcium (Ca) in the milk.
- Ammonia fertilization of pastures or grasslands.
- Various combinations of the above factors resulting in low blood Mg and Ca.

### Cattle Require Mg in Their Diet

Magnesium is a required mineral for all cattle. Magnesium requirements for growing cattle are 0.1 percent of their diet (on a dry matter basis or DMB) and for lactating beef cattle 0.2 percent of their diet DMB. Additionally, most of the Mg is absorbed in the rumen, not in the lower intestine, as is the case with most minerals. So if the plants have a low Mg content, which is common in rapidly growing range plants and pasture plants,

the cattle may not have enough Mg in their diet to meet their needs. The absorption of Mg in the rumen can be interfered with by potassium (K). Since rapidly growing plants have a high content of K there is considerable interference with Mg.

Another interference problem exists with high levels of crude protein in the diet. As proteins are metabolized in the rumen, ammonia  $\text{NH}_4^+$  is released, and this molecule also interferes with Mg absorption. Ammonia can also interfere with Mg absorption by the plants themselves, so ammonia fertilization can lower the Mg content in the plants.

Also, ammonia fertilization increases plant growth and crude protein content of the plant. Thus, ammonia fertilization can interfere with Mg uptake both at the plant level and at the animal level.

Just as the requirements for Ca increase during lactation, so do the requirements for Mg. Therefore, lactating cattle are at increased risk of hypomagnesemic tetany (HMT). The heavier milkers are at greater risk of HMT. Also, if the cows are short on Ca they are more likely to have grass tetany because low Ca and low Mg combine to cause more severe disease. Commonly, the cattle will have low Mg levels for several days to a few weeks before becoming clinically ill.

Stress or fasting decreases both Ca and Mg levels, so bad weather (storms), trucking, and other stressors that cause cattle to stop eating can precipitate HMT in several cows in the herd at one time. Fall calving herds in the foothill ranges of California and southern Oregon can experience HMT as early as December in the southern regions. In other parts of the western U.S. HMT is more common for spring calving herds with disease occurring in the spring or early summer. Depending on rainfall, temperatures, and other factors producers can't predict, cattle can die rapidly due to this condition.