



Vet Call

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Winter tetany woes

While it is true that producers and veterinarians typically think of grass tetany as a lush grass problem, winter diets low in magnesium and low winter temperatures can combine to cause tetany as well.

A recurring problem

Every winter I have a few calls from producers asking questions about cows that have gone down a few days after the onset of cold, damp weather and that appear to be suffering from grass tetany — a disease caused by low dietary levels of magnesium (Mg). Low dietary calcium (Ca) and/or high levels of potassium (K) also contribute to the disease.

Harvested feeds such as grass hay, cereal grain hay, straw, cornstalks and tall fescue can be very low in magnesium. If the forage is excessively mature, daily intake is low, which results in underfeeding. In addition, cattle on low-quality forages and cereal hays are commonly supplemented with a protein source that is high in potassium, which increases the risk of tetany. Combining low forage magnesium levels with low intake, added potassium and the stress of cold temperatures can cause cows to deplete their small stores of magnesium and create winter tetany.

Signs and symptoms

Initial symptoms of winter tetany (and grass tetany) include nervous system problems such as excessive alertness and fine twitching of facial muscles and ears. The affected animal will progress to staggering, walking with a stiff gait and grinding its teeth. After some time, from a few minutes to three to four hours, the animal may lose the ability to stand and may have convulsions or become comatose. These symptoms are followed by death.

It is not uncommon for all symptoms to occur in a span of two to three hours, so you may not notice any problems until the cow is already dead. Cows in early lactation are the most susceptible to winter tetany problems because magnesium moves into the udder for use in the milk; however, winter tetany occasionally occurs in cows during late gestation. Older cows seem to be more susceptible to winter tetany than younger cows, because young cows are better able to mobilize magnesium stored in their bones.

Treatment options

Cows that show signs of winter tetany should be treated as soon as possible with intravenous (IV) solutions containing magnesium and calcium. Other methods of getting magnesium into the animal, such as an oral drench or an enema, can also be used. However, these routes are slower and are primarily used in addition to IV treatment.

Even after magnesium levels in the blood return to normal levels with an IV treatment, it is common for levels to fall again and the animal to relapse with tetany symptoms. Therefore, once tetany is diagnosed in a group of cattle and individual cows with symptoms are treated, it is important to start supplementing magnesium in the feed immediately to the entire herd and, if possible, to provide a forage higher in magnesium such as legumes (clover, alfalfa, etc.).

Research shows that cows in late pregnancy require about 10 grams (g) of

magnesium per day, but because magnesium levels are high in milk, the dietary requirement increases to approximately 22 g per day during peak lactation.

Many winter feedstuffs are low in magnesium, but feeding alfalfa or other legume hay may reduce the risk of tetany. Cattle on any pasture or diet that has a history of winter tetany should receive additional magnesium in a salt/mineral mixture, starting in late pregnancy. Magnesium oxide (MgO) is the most common source of magnesium added to diets, but cows do not like its taste, and it must be mixed with molasses, grains or other feeds to ensure adequate intake. Salt-magnesium mixtures should be placed where animals have easy access, and enough feeders should be used to make sure more timid animals can also consume the supplement. In large pastures, mineral feeders should be located in several places so cattle have access every day.

Nutritionists use a simple math equation to evaluate diets for tetany risk. They divide the percentage of potassium in the diet by the sum of the percentage of calcium and the percentage of magnesium:

$$\text{Tetany ratio} = \%K \div (\%Mg + \%Ca)$$

If the number is greater than 2.2, cattle consuming the diet are at risk for tetany, and magnesium needs to be added.

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